2.2.3 Confirmation of the foreign principals of the Bidder that the commission/remuneration, if any, reserved for the Bidder in the quoted price (s) may be paid by the Procuring Entity in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.

2.3 In either case, in the event of the contract materialising, the payment terms shall provide for payment of the commission /remuneration, if any, payable to the agents/representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.

2.4 Failure to furnish correct and detailed information as called for in paragraph - 2.0 above shall render the concerned bid liable to rejection or, in the event of a contract materialising, the same liable to termination by the Procuring Entity. Besides this, there would be a penalty of banning business dealings with the Procuring Entity or damage or payment of a named sum.

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Additional Information – Integrity Pact

1. **Proforma of Integrity Pact (IP)** shall be uploaded by the Bidder/s along with the **un-priced bid documents duly signed** (or digitally signed in case of e-tender) 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 upload the IP duly signed (Digitally) along with bid documents shall result in the bid not being considered for further evaluation.

2. If the Bidder has been disqualified from the tender process prior to the award of the contract in accordance with the provision of the IP, BPCL shall be entitled to demand & recover from Bidder **Liquidated Damages** amount by forfeiting the EMD/Bid Security as per provisions of IP.

3. If the contract has been terminated according to the provisions of the IP, or if BPCL is entitled to terminate the contract according to the provisions of the IP, BPCL shall be entitled to demand & Recover from Contractor **Liquidated Damages** amount by forfeiting the Security Deposit/Performance Bank Guarantee as per provisions of IP.

4. Bidders may raise disputes/complaints, if any, with the nominated **Independent External Monitors (IEMs)**. The name, address & contact number of the IEMs are as given below.

Sr. No.	Name of IEM	E-mail ID
1	Shri Atanu Purkayastha	dratanu2011@gmail.com
2	Shri Pradeep Kumar	pradeepawasthi1981@gmail.com
3	Shri Javeed Ahmad	Javeed60@yahoo.com

However, clarification with respect to the tender/RFQ shall be taken up only with the contact personnel as mentioned in the Tender/RFQ.



FORM G

SELF DECLARATION

Form-G

SELF DECLARATION

(AS PER ITB ON LETTER HEAD OF BIDDER)

Bidder's declaration as furnished herein shall supersede the stipulations mentioned elsewhere in their bid.

SL. NO.	DESCRIPTION	BIDDER'S DECLARATION
1	We confirm that we are not on Holiday/ Negative list of EIL/BPCL/MoP&NG as on date of submission of our bid.	
2	We confirm that we are not under insolvency, liquidation, court receivership or similar proceedings.	
3	We confirm that we are not under a declaration of ineligibility by OWNER for Fraudulent practices as defined at clause no. 41 of ITB.	
4	We confirm that we are not affiliated with a firm or entity: i) That has provided consulting services related to the work to the Owner during the preparatory stages of the works or of the project of which the works form a part, or ii) That has been hired by the Owner as engineer/consultant for the contract	
5	We confirm that we are not involved in any Litigation/Arbitration. (or) We 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.	
6	Whether any of the directors of bidder is a relative of any director of BPCL/EIL or the bidder is a firm in which any director of BPCL/EIL or his relative is a partner of the bidder or a private company in which any director of BPCL/EIL is a director.	
7	We confirm that the content of the Enquiry Document including Price Schedule and Corrigendum / Addendum (if any) have not been altered or modified.	

(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 H

CHECKLIST FOR SUBMISSION OF BID

FORM-H

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.

Please tick the box and ensure compliance:

(A) **PART-III- ORIGINAL DOCUMENTS**

S.No.	Documents	Submitted
1.	Earnest Money Deposit (EMD) / Bid Security in accordance with Clause no. 6 of IFB	

(B) PART-I- TECHNO-COMMERCIAL/ UNPRICED BID

√whichever is applicable

S.No.	Documents	Submitted
1.	Scanned Copy of Earnest Money Deposit (EMD) / Bid Security	
2.	Bid forwarding letter	
3.	Table of Contents of the Bidding Document and Amendment/addendum	
4.	Integrity Pact (in the prescribed format with the name of work & Bidding Document number duly filled signed & stamped) in accordance with Clause No.**12.4 of ITB.**	
5.	Scanned copy of certified documents towards proof of meeting Bidder Qualification Criteria.	
6.	Scanned Copy of Power of Attorney in favour of person (s) digitally signing the bid that such person (s) is/are authorised to sign the bid on behalf of the bidder and any consequence resulting due to such signing shall be binding on the bidder in line with clause 45.0 of ITB.	
7.	Bid Form as per **Bidding Form-A**	
8.	Information about Bidder in accordance with **Bidding Form B**	
9.	Details of Specific Experience fulfilling Qualification Criteria as per **FORM-C**.	
10.	Past experience along with details and supporting documentation as called for in the Bidder Qualification Criteria (BQC) as per **FORM-D**	
11.	Detailed Financial Statement for the preceding three financial year.	

S.No.	Documents	Submitted
12.	Copies of documents defining constitution or legal status, place of registration and principal place of business of the Company	
13.	Compliance to Bid requirement (**Bidding Form-E)**	
14.	Self-Declaration as per **Bidding Form- G**	
15.	Bank Mandate Form duly signed and stamped with the Banker's certification as per **Bidding Form-I**	
16.	Unpriced copy (without price) of Summary of Prices along with Signed & stamped copy of preamble, pre-priced SOR & detailed SOR	
17.	PAN NO.	
18.	Document – self certification - affidavit as per DM&ISP policy	
19.	Signed and stamped copy of Undertaking (on Company's Letterhead) attached with Appendix-I of ITB in line with Government guidelines regarding procurement from bidders from a country or countries sharing Border with India	
20.	Form-2 & Form-3 attached with Appendix-II of ITB (under PPP-MII Order, 2017)	
21.	Signed & stamped copy of List of Key Construction Manpower and Key Construction Equipments as enclosed in Annexure-V and Annexure-VIII to SCC.	
22.	Annexure-A to IFB.	
23.	Signed and stamped copy of Annexure-I (Time for Completion) to SCC.	

(C) PART-II- PRICE BID

S.No.	Documents	Submitted
1.	FORM SP-0	

FORM–I

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

BIDDER TO ENSURE SUBMISSION OF CANCELLED CHEQUE WITH THIS MANDATE FORM

FORM –J

DECLARATION CONFIRMING KNOWLEDGE ABOUT WORK SITE VISIT AND SURROUNDING CONDITIONS

DECLARATION CONFIRMING KNOWLEDGE ABOUT WORK SITE VISIT AND SURROUNDING CONDITIONS

To,

BHARAT PETROLEUM CORPORATION LTD.

Dear Sir,

Sub: **Declaration confirming knowledge about Work Site visit and surrounding conditions**

Ref : 1) Tender Name

2) Tender Reference No: ……,

3) All other pertinent addendum / corrigendum / amendment

I/We, _____ hereby declare and confirm that we have visited the Project work Sites and its surrounding as referred in BPCL Tender Specifications and acquired full knowledge and information that may be necessary for preparing the bid and entering into the Contract if selected.

Yours faithfully,

(Signature, Date & Seal of Authorized

Representative of the Bidder)

FORM –K1

DELETED

Form –K2

DELETED

FORM–L

FOR BIDDERS' QUERIES

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	EIL REPLY
	PART/VOL.	PAGE NO.	CLAUSE NO.	SUBJECT		

NOTE: The Pre-Bid Queries may be sent by e-mail to concern persons, the details of which is provided in BDS.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

FORM–M

ANNUAL TURNOVER STATEMENT

The bidder shall indicate herein his annual turnover during preceding 3 years based on the audited balance sheet/profit & loss account statement.

A. FINANCIAL DETAILS

1.	FINANCIAL YEAR / YEAR ENDING	ANNUAL TURNOVER (RS.)
	YEAR ( )	
	YEAR ( )	
	YEAR ( )	
2.	AVERAGE ANNUAL TURNOVER DURING THE IMMERDIATELY PRECEEDING THREE FINANCIAL YEARS:	
3.	NET WORTH FOR LATEST FINANCIAL YEAR :	

NOTE:

Bidder to submit the audited annual report including balance sheet and profit & loss account for above three years.

FORM–N

FORMAT OF BANK GUARANTEE IN LIEU OF EARNEST MONEY DEPOSIT / BID SECURITY

PROFORMA OF BANK GUARANTEE

(On non-judicial paper of appropriate value)

FOR EARNEST MONEY / SECURITY DEPOSIT TOWARDS PERFORMANCE

To

Bharat Petroleum Corporation Ltd.

Dear Sirs,

M/s._____have taken tender for the work_____CRFQ No/PO No

_____for Bharat Petroleum Corporation Ltd.

The tender Conditions of Contract provide that the Contractor shall pay a sum of Rs._____ (Rupees_____) as earnest money/security deposit in the form therein mentioned. The form of payment of earnest money/security deposit includes guarantee executed by Scheduled Bank, undertaking full responsibility to indemnify Bharat Petroleum Corporation Ltd. in case of default.

The said_____have 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 conditions of the tender or in payment of any money payable to Bharat Petroleum Corporation Ltd. We shall on demand pay to you in such matter as to you may direct the said amount of Rupees_____only or such portion thereof not exceeding the said sum as you may from time to time require.

2. You will have the full liberty without reference to us and without effecting this guarantee postpones 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 for bear from endorsing any power of rights or by reason of time being given to the 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 change of constitution or insolvency of the said_____but shall in all respects and for all purposes be binding operative units 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 guarantees shall remain in force until_____unless a suit or action to enforce a claim under_____Guarantee is filed against us within six months from _____(which is date of expiry of guarantee) all our rights under the said guarantee shall be forfeited and shall be relieved 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.

FORM O

AFFIDAVIT OF DMI&SP POLICY

Annexure-2

(to be submitted in Bidder's letter head)
[Item rate /EPC /Package Contracts]
UNDERTAKING ON LETTERHEAD

Item / Works:
Bidding Document no:

This has reference to "Policy for providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement" issued by Ministry of Steel, Govt. of India, vide their notification "The Gazette of India, Extraordinary Part..... dated .....including its amendments thereafter (if any)".
We confirm:

- that we will comply the Policy for providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement" issued by Ministry of Steel, Govt. of India.

- that we will submit Notarized Affidavit of Self Certification of Domestic value addition in Iron & Steel Products and submit to Owner/ EIL at the time of delivery of related iron and steel products required under the bidding document.

Sign & Stamp of bidder

Annexure-2A

(to be submitted in Bidder's letter head)

[for Bidders who are selling agents/authorized distributors/authorized dealers/authorized supply houses]

Item:

Bidding Document no:

This has reference to "Policy for providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement" issued by Ministry of Steel, Govt. of India, vide their notification "The Gazette of India, Extraordinary Part -..... dated..... including its amendments thereafter (if any)".

We confirm:

- that we will comply the Policy for providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement" issued by Ministry of Steel, Govt. of India.

- that we will submit authorization certificate issued by the domestic manufacturer at the time of delivery of related iron and steel products required under the enquiry document.

Sign & Stamp of bidder

Annexure-3

DECLARATION OF NON-APPLICABILITY OF DMI&SP POLICY

(to be submitted in Bidder's letter head)
UNDERTAKING ON LETTERHEAD

Item / Works:
Bidding Document no:

This has reference to "Policy for providing Preference to Domestically Manufactured Iron & Steel Products DMI&SP) in Government Procurement" issued by Ministry of Steel, Govt. of India, vide their notification "The Gazette of India, Extraordinary Part ..... dated ..... including its amendments thereafter (if any)".

We confirm that, we have understood the scope and terms & conditions of above mentioned DMI&SP Policy and also confirm that, based on the Prices quoted by us for each individual item, DMI&SP Policy is not applicable for the following items –

Where evaluation is on Item wise basis	
S. No	MR Item No
1	
2	
3	

Where evaluation is on Group wise basis		
S. No	Group	Item no of the respective group
1		
2		
3		

Further, in case at any stage before or after award, if it is observed by the EIL/OWNER the value of the above items is more than INR 5 Lakhs (Excluding Freight and GST) it shall be construed as the false/wrong declaration and procuring entity is entitled to take penal action as per provision of Bidding Document.

Sign & Stamp of Bidder

Annexure-4

Item / Works:

RFQ/Bidding Document no:

Form-1

Affidavit (Notarized) of Self-Certification for Compliance with Melt & Pour Requirements (Appendix-A) and/or Domestic Value Addition Requirements (Appendix-A & Appendix-B)*
**For Appendix-B capital goods, this affidavit must accompany the statutory auditor's / cost auditor's / CA certificate, as mandated under the policy.*

I,_____, Resident of _____, being the authorized signatory of M/s _____, do hereby solemnly affirm and declare as under:

1. I have read and understood the Domestically Manufactured Iron & Steel Products (DMI&SP) Policy, 2025, issued vide Notification No. _____ dated _____. I agree to abide by all terms and conditions of the said policy and the tender in which this affidavit is submitted.

2. This affidavit pertains to the following iron & steel product(s)/capital good(s):-

   Name of product (s):.....
   HS Code (s):.....
   Appendix classification: Appendix-A / Appendix-B (select as applicable)
   Procuring agency: .....

3. Melt & Pour - Applicable only for Appendix-A items with Melt & Pour condition
   I hereby declare that the above product(s) satisfy the Melt & Pour in India requirement as notified in Appendix-A. Specifically: The steel was melted and poured in India.

   The first solid shape (slab/billet/ingot/other) was produced at the following location(s): as specified below / as per Form-1A *(strike through which is "Not Applicable").*
   Steelmaking facility: .....
   Location: .....
   Heat numbers:.....
   Batch details: .....

   I undertake to produce mill test certificates, heat records, and any other documentary proof to substantiate this declaration whenever required by the procuring agency. *(If not applicable, write "Not Applicable".)*

4. Domestic Value Addition - Applicable for Appendix-A DVA items and Appendix-B capital goods:
   I hereby declare that the Domestic Value Addition (DVA) for the product(s) is: _____% / as per Form-1A *(strike through which is "Not Applicable").* The DVA has been computed as per DPIIT guidelines and the formula specified in the DMI&SP Policy, 2025.

   4A. For Appendix-B Capital Goods (Mandatory): A certificate issued by the statutory auditor / cost auditor / chartered accountant is enclosed herewith, confirming the DVA of the capital good package in accordance with the policy. (If Appendix-A item only, strike this clause out.)

5. I confirm that: All information furnished is true and correct. All input steel costs, imported content, and domestic content calculations have been verified. All manufacturing, purchase, and pricing records are available for examination.
   If any information is found incorrect or misleading: The procuring agency may disqualify me / my firm from Government tenders as per the procuring agency norms. I agree to pay all assessment costs and penalties, including forfeiture of EMD, as per policy and tender conditions.

6. I undertake to maintain the relevant records, and make them available to any statutory authority.

7. Declaration: I do hereby declare that the statements made above are true to the best of my knowledge and belief. I understand that any misrepresentation shall attract penalties under the DMI&SP Policy, applicable laws, and tender conditions.

For and on behalf of M/s _____

(Authorised Signatory)
(Place &
Date)

Note: Bidder may submit information sought against clause no 2, 3 and 4 in Form-1A if required. In that case, Form-1A also shall be part of Affidavit.

FORM-1A

(Applicable for the iron and Steel products specified in Appendix-A only)

BIDDER:	
TENDER / RFQ NO:	
PROCURING AGENCY:	
APPENDIX CLASSIFICATION:	Appendix-A

MR Item No	Name of product (s):	HS Code (s)	Steelmaking facility:	Location:	Heat numbers	Batch details:	Domestic Value Addition (DVA) for the product(s) in %.
shall be referred from MR		These columns shall be filled for items with required condition as "Melt & Pour"					This column is applicable for items "condition" with specific DVA.
							.....%
							.....%
							.....%
							.....%
							.....%

Note –

a. Bidder to refer "Condition" and "Domestic Value Addition" specified in Appendix-A while certification of the above Form-1 and Form-1A.
b. Form-1A shall form part of Affidavit (Form-1)

Date:10.11.2025

GENERAL CONDITIONS OF CONTRACT (GCC)

BHARAT PETROLEUM CORPORATION LIMITED

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GENERAL CONDITIONS OF CONTRACT

SECTION - I

DEFINITION OF TERMS

In the contract documents as herein defined where the context so admits, the following words and expressions will have following meanings :

1) "The Owner/Company/BPCL" means the Bharat Petroleum Corporation Limited, incorporated in India having its registered office at 4 & 6, Currimbhoy Road, Ballard Estate, Mumbai - 400 038 or their successors or assigns

2) "The Contractor" means the person or the persons, firm or Company whose tender has been accepted by the Owner and includes the Contractor's legal representative, his successor and permitted assigns.

3) The "Managing Director" shall mean the Chairman and Managing Director of the Bharat Petroleum Corporation Limited or his successor in office designated by the Owner.

4) The "Engineer-in-Charge" shall mean the person designated as such by the Owner and shall Include those who are expressly authorised by the Owner to act for and on his behalf for operation of this contract.

5) The "Work" shall mean the works to be executed in accordance with the contract or part thereof as the case may be and shall include extra, additional, altered or substituted works as required for purpose of the contract.

6) The "Permanent Work" means and includes 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) The "Construction Equipment" means all appliances, Tools/Tackles and equipment of whatsoever nature for the use in or for the execution, completion, operation or maintenance of the work unless intended to form part of the Permanent work.

8) The "Site" means the areas on which the permanent works are to be executed or carried out and any other places provided by the Owner for purpose of the contract.

9) The "Contract Document" means collectively the Tender Document. Designs. Drawings or Specifications, agreed variations, if any, and such other document constituting the tender and acceptance thereof.

10) The "Consultant" means the consulting engineers Nominated/appointed by the Owner for this Project / job.

11) The "Sub-Contractor" means any person or firm or Company (other than the Contractor) to whom any part of the work has been entrusted by the Contractor, with the written consent of the Engineer-in-Charge, and the legal personal representatives, successors and permitted assigns of such person, firm or company.

12) The "Contract" shall mean the Agreement between the Owner and the Contractor for the execution of the works including therein all contract documents.

13) The "Specification" shall mean the various technical specifications attached and referred to in the tender documents. It shall also include the latest editions, including all addenda/corrigenda, of relevant Indian Standard Specification, specifications of the other country published before entering into Contract.

14) The "Drawings" shall include maps, plans and tracings or prints thereof with any modifications approved in writing by the Engineer-in-Charge and such other drawings as may, from time to time, furnished or approved in writing by the Engineer-in-Charge.

15) The "Tender" means the tender submitted by the Contractor for acceptance by the Owner.

16) The "Alteration Order" means an order given in writing by the Engineer-in-Charge to effect additions to or deletion from and alterations in the works.

17) The "Completion Certificate" shall mean the certificate to be issued by the Engineer-in-Charge to the contractor when the works have been completed to his satisfaction.

18) The "Final Certificate" in relation to a work means the certificate issued by the Engineer-in-Charge after the period of liability is over for releasing the retention money/ PBG /Insurance Surety Bond .

19) The "Period of Liability" in relation to a work means the specified period during which the Contractor stands responsible for rectifying all defects that may appear in the works.

SECTION - II

GENERAL INFORMATION ABOUT SITE

2.1 LOCATION OF SITE &ACCESSIBILITY:

The site location is described in the Special Conditions of Contract. The intending tenderer should inspect the site and make himself familiar with site conditions and available facilities.
Entry into the BPCL areas is restricted depending on location/site. Only pass holders as also vehicles with special permits are permitted in such restricted areas. Inside the premises access to various work spots is also further regulated by permits issued for each area. Non-availability of access roads or permits for entry of vehicles/equipment to any specific area shall in no case be the cause to condone any delay in execution of works or be the cause for any claims or extra compensations.

2.2 SCOPE OF WORK

The scope of work is defined in the Special Conditions of Contract and specifications. The Contractor shall provide all necessary materials, equipments / Tools and Tackles / Supervision / labour etc. for the execution and maintenance of the work till completion unless otherwise mentioned in these tender documents. All materials that go with the work shall be approved by Engineer-in-Charge prior to procurement and use.

2.3 LAND FOR CONTRACTOR'S FIELD, GODOWN AND WORKSHOP:

The tenderer should visit the site and acquaint himself with site conditions, availability of water, electricity, approach roads, construction materials as per specifications, shelter for his staff, etc. since these are to be provided/arranged by the tenderer (unless otherwise specified) at his cost.
The owner will, at his discretion and convenience based on availability for the duration of the execution of the work, make available, land for construction of contractor's field office, go-downs, workshop and fabrication yard required for the execution of the contract. The contractor shall at his own cost construct all these temporary buildings and provide suitable water supply and sanitary arrangement approved by the Engineer-in-Charge.
On completion of the works undertaken by the Contractor, he shall remove all temporary works/ shed 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 material, dispose off 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 claim in respect of any such surplus materials disposed off as aforesaid. But the Owner reserves the right to ask the Contractor any time during the pendency of the contract to vacate the land by giving seven days notice on security reasons or on material interest otherwise.

2.4 SAFETY STANDARDS FOR TEMPORARYBUILDINGS

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

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SECTION - III

GENERAL INSTRUCTION FOR THE TENDERER

3 SUBMISSION OF TENDER:

3.1 The quotation should be submitted only in the manner and the form prescribed in the Request For Quotation (RFQ)/Tender enquiry.

3.2 Addenda/Corrigenda to this tender document if issued must be signed and submitted along with the tender document. The tenderer should consider the Addenda/Corrigenda and should price the work based on revised quantities when amendments for quantities are issued in addenda.

3.3 Tenders should always be placed in double sealed covers, superscribing Tender No_____Tender for _____(name of job), Bharat Petroleum Corporation Limited, due for opening on _____

The full name, postal address and telegraphic address of the tenderer shall be written on the bottom left hand corner of the sealed cover. (This will not be applicable in the case of e-tenders) Tenders received in open condition (priced bid) are liable to be rejected.

3.4 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 like extra taxes, duties etc.
   c. Copy of price bid with prices blanked off.
   d. Any other relevant information.
iii) Price Bid shall have only prices as per schedule of Rates.
iv) Techno-commercial bid and price bid shall be enclosed in two separate envelopes with the subject job, type of bid, bidders name super-scribed on top. Both these envelopes shall be sealed in a common envelope and submitted as specified above and in covering letter. (This will not be applicable in the case of e-tenders)

4 DOCUMENTS:

4.1 The tenders, as submitted shall include all documents/details asked for by BPCL in the RFQ/Tender enquiry.

4.2 All pages to be initialed:

Wherever signed tender documents are submitted, all signatures in the documents shall be dated, as well as all the pages of the documents shall be initialed 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 authorizing him to sign on behalf of the tenderer before submission of tender. Tenders without signatures as stated above are liable to be rejected.

4.3 Rates to be in Figures and Words:

The tenderer should quote the rates in English both in figures as well as in words. Offers received without the rates in figures and in words are liable for rejection. In case of discrepancy exists between the rate quoted in figures and in words, the rates quoted in words will prevail.

4.4 Corrections and Erasures:

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.
In case of priced bids containing overwriting/cuttings/erasures in the quoted rates and in case these are not attested by the signatory of the bid, such priced bids are liable to be rejected without giving any further notice.

4.5 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 with company stamp. Partnership firms shall furnish the full names of all partners in the tender. It should be signed in the partnership name by all the partners or by duly authorized representative followed by the name and designation of the person signing with company stamp.
Tender by Company or Corporation registered under the relevant companies act, shall be signed by the authorized representative and a power of attorney in that behalf shall accompany the tender.Transfer of tender documents issued to one intending tenderer to another is not permissible.

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5 PURCHASE PREFERENCE:

Owner reserves its right to allow Public Sector Enterprises (Central/State), purchase preference as admissible/applicable from time to time under the existing Govt. policy. Purchase preference to a PSE shall be decided based on the price quoted by PSE as compared to L1 Vendor at the time of evaluation of the price bid.

Owner reserves its right to allow Micro and Small Enterprises (MSEs), MSEs owned by Women Entrepreneurs and MSEs owned by Scheduled Caste (SC) or the Scheduled tribe (ST) entrepreneurs, purchase preference as admissible/applicable from time to time under the existing Govt. policy. Purchase preference to a MSE, a MSE owned by women entrepreneurs and a MSE owned by SC/ST entrepreneurs shall be decided based on the price quoted by the said MSEs as compared to L1 Vendor at the time of evaluation of the price bid.

6 (a) EARNEST MONEY:

The tenderer must submit/ deposit earnest money, if specified in the RFQ/Tender enquiry, failing which the tender is liable to be rejected. Earnest Money Deposit shall be submitted in the form of crossed Demand Draft in favour of "Bharat Petroleum Corporation Ltd." / Electronic Funds Transfer to BPCL Bank Account / Bank Guarantee executed by any Scheduled Bank approved by Reserve Bank of India (as per Proforma provided in Annexure) / Insurance Surety Bond (as per Proforma provided in Annexure). Earnest Money Deposit (EMD) shall be valid for a period of 6 (Six) months from the due date of opening of Techno-commercial Bids and shall be submitted from any Indian Scheduled Commercial Bank / Indian Branch of Foreign Bank. EMD submitted by foreign vendors shall be in USD / EURO only.
In case of limited tender, Earnest Money deposit (EMD) is not applicable for registered contractors of BPCL.

NOTE : Exemption of Bidding Document fee and EMD will be applicable for Micro and Small Enterprises (MSEs) registered with District Industries Centres (DIC) or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation (NSIC) or Directorate of Handicraft and Handloom or MSEs having Udyog Aadhaar Memorandum or any other body specified by Ministry of Micro, Small and Medium Enterprises. Such bidder shall submit Self attested copy of the certificate, valid upto validity of the offer, indicating that their registration includes the items/works under tender. The registration certificate should remain valid during the period of the contract that may be entered into such successful bidder. Such tenderers should ensure validity of the Registration Certificate for the purpose.
NOTE: No interest shall be paid by the Owner on the earnest money deposit by the tenderer. The earnest money of the unsuccessful tenderer will be refunded after the completion of BQC evaluation / Technical Evaluation / Priced Bid Evaluation as applicable.

(b) 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 / Insurance Surety Bond, 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 18 shall also be applicable limiting to a maximum of 10% of the contract value.

7 (a) BID VALIDITY:

Tender submitted by tenderers shall remain valid for acceptance for a period of four months from the date of opening of the tender (Technical Bid in the case of two bid). The tenderer shall not be entitled during the said period of four months, without the consent in writing of the Owner, to revoke, or cancel his tender or vary the tender given or any term thereof. In case of tenderer revoking or canceling his tender, varying any terms in regard thereof without the consent of Owner in writing, appropriate penal action will be taken by BPCL as deemed fit including putting the tenderer/contractor on 'Holiday listing'/'Delisting' barring the tenderer/contractor from participating in future tenders for an appropriate period from the date of revocation/cancellation/varying the terms. Further in the case of contractors who are not registered with BPCL, the earnest money deposited by him will be forfeited. Once the quotation is accepted the rates quoted shall be firm till the entire work is completed.

(b) LANGUAGE OF BID:

The Bid, all correspondence and documents relating to the bid, between Bidder and BPCL, shall be written in English language only. Any supporting document furnished by Bidder may be written in other language provided that this literature is accompanied by an authenticated English translation in which case, for purpose of interpretation of the Bid, the English translation shall govern.

8 ADDENDA / CORRIGENDA:

Addenda/ Corrigenda to the tender documents may be issued prior to the date of opening of the tenders to clarify documents or to effect modification in the design or tender terms. All addenda/corrigenda issued shall become part of tender Document.

9 RIGHT OF OWNER TO ACCEPT OR REJECT TENDER:

9.1 The right to accept the tender will rest 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.

9.2 The whole work may be split up between two or more contractors or accepted in part and not entirely if considered expedient.

9.3 Tenders in which any of the particulars and prescribed informations are missing or are incomplete in any respect and/or the prescribed conditions are not fulfilled are liable to be rejected.

9.4 Canvassing in connection with tenders is strictly prohibited and tenders submitted by the tenderer who resort to canvassing will be liable to rejection.

9.5 Tender containing uncalled remarks or any additional conditions are liable to be rejected.

10 (a) INTEGRITY PACT (IP):

Vendors are requested to sign & return our pre-signed IP document, if applicable. This document is essential & binding. Vendor's failure to return the IP document duly signed along with Bid Document may result in the bid not being considered for further evaluation.

(b) HOLIDAY LISTING:

The vendors / contractors are expected to adopt the ethics of highest standards and a very high degree of integrity, safety and quality consciousness, commitment and sincerity towards the work undertaken and dealing with BPCL in such matters. Also, while participating in the tender and performing the contracts, Contractors are required to meet certain performance criteria and adherence to the terms and conditions of the tender / contract. BPCL shall have the right to remove from the list of approved suppliers / contractors or to ban business dealings, if any agency has been found to have committed misconduct or fraud or poor performance or anything unethical not expected from a reputed agency. The guidelines and procedures for Holiday Listing as adopted by BPCL and available separately in BPCL website shall be applicable in the context of all tenders floated and consequently, all Orders / Contracts / Purchase Orders placed, by BPCL. It can be accessed using the following link: https://www.bharatpetroleum.in/pdf/Holiday-Listing-Policy-2024.pdf

(c) 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:

(i) 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.

(ii) Tax Residency Certificate (TRC)

TRC containing prescribed particulars as per the Annexure 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.

(iii) 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. 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.

11 COLLECTION OF DATA TENDERER'S RESPONSIBILITY & TIME SCHEDULE:

The tenderer shall visit the site and acquaint himself fully of the site and no claims whatsoever will be entertained on the plea of ignorance or difficulties involved in execution of work or carriage of materials.

The time period allowed for carrying out the job shall be as shown in tender document. Request for revision for time schedule after tenders are opened will not be received for consideration.

12 RETIRED GOVERNMENTS OR COMPANYOFFICER:

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

13 SIGNING OF THE CONTRACT:

The successful tenderer shall be required to execute an agreement in the proforma attached with tender enquiry within a period of one month of the receipt by him of the notification of acceptance of tender. The payment will not be processed till the time the agreement is executed.

14 (a) FIELD MANAGEMENT:

The field management will be the responsibility of the Engineer-in-Charge, who will be nominated by the Owner. The Engineer-in-Charge may also authorize his representatives to perform his duties and functions.
Coordination of Work - The Engineer-in-Charge shall coordinate the work 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 strictly in accordance with the site instructions to avoid hindrance to the works being executed by other agencies.

14 (b) CONSULTANCY CONTRACTS:

This General Conditions of Contract (GCC) will be binding for Consultancy jobs only to the extent of its applicability to the context of consultancy jobs.

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SECTION - IV
INTERPRETATION OF CONTRACT DOCUMENTS

15 INTERPRETATION OF CONTRACT DOCUMENT:

15.1 Except if and to the extent otherwise provided by the Contract, the provisions of the General Conditions of Contract and special conditions 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 matter may be referred to Engineer-in-Charge, who shall give his decisions 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.

15.2 Works shown upon the drawing but not mentioned in the specifications or described in the specification without being shown on the drawings shall nevertheless be held to be included in the same manner as if they had been specifically shown upon the drawings and described in the specifications.

15.3 Headings and marginal notes to the clauses of these General Conditions of Contract or to specifications or to any other tender document are solely for the purpose of giving a concise indication and not a summary of the content thereof, and they shall never be deemed to be part thereof or be used in the interpretation or construction thereof of the Contract.

16.4 Singular and Plural:

In these contract documents unless otherwise stated specifically, the singular shall include the plural and vice-versa wherever the context so requires. Words indicating persons shall include relevant incorporated companies/ registered as associations/ body of individual/ firm or partnership.

16 SPECIAL CONDITIONS OF CONTRACT:

16.1 Special Conditions of contract shall be read in conjunction with the General Conditions of Contracts, specification of work, Drawings and any other documents forming part of this contract wherever the context so requires.

16.2 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.

16.3 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 provision of the General Conditions of Contract and shall to the extent of such repugnance or variations, prevail.

16.4 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.

16.5 The materials, designs and workmanship shall satisfy the 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.

17 CONTRACTOR TO OBTAIN HIS OWN INFORMATION:

The contractor in fixing rate shall for all purposes whatsoever be deemed to have him self independently obtained all necessary information for the purpose of preparing his tender. The contractor shall be deemed to have examined the Contract Documents, to have generally obtained his own information in all matters whatsoever that might affect the carrying out the works at the scheduled rates and to have satisfied himself to the sufficiency to his tender. Any error description of quantity or omission there from shall not vitiate the contract or release the Contractor from executing the work comprised in the contract according to drawing and specifications at the scheduled rates. He is deemed to have known the scope, nature and magnitude of the works and the requirements of materials and labour involved etc. and as to what all works he has to complete in accordance with the contract documents whatever be the defects, omissions or errors that may be found in the Contract Documents. The Contractor shall be deemed to have visited surrounding 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 to and regress 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 building as may be necessary for executing and completing the works, to have made local independent enquiries as to the sub-soil water and variations thereof, storms, prevailing winds, climate conditions and all other similar matters affecting these works. He is deemed to have acquainted himself as to his liability for payment of Government taxes, customs duty and other charges.

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 risk or liabilities or the entire responsibility from completion of the works at the scheduled rates and time in strict accordance with the contract documents.

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

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18 PERFORMANCE SECURITY DEPOSIT/RETENTION MONEY:

18.1 To ensure performance of the contract and due discharge of the contractual obligations, the successful contractor will have to provide security deposit of 10% of the basic value of contract unless otherwise specified in the Special Conditions of Contract. Amount received/retained towards this clause will be considered as security deposit.
This Security deposit may be furnished in the form of an Account payee Demand Draft payable to BPCL or Bank Guarantee / Insurance Surety Bond in the prescribed format. The contractor shall have the option to adjust any Earnest Money Deposit- (EMD) if paid by demand draft towards security deposit if he so desires or otherwise if submitted by way of bank guarantee / Insurance Surety Bond the validity of the same to be extended suitably as advised by BPCL.
In the case of security deposit submitted in the form of Bank guarantee / Insurance Surety Bond, the Bank Guarantee / Insurance Surety Bond shall be valid and remain in force till the contractual completion period (expiry of the defect liability period- refer clause-74, if applicable) and with a claim period of six months thereafter. The Bank Guarantee / Insurance Surety Bond shall be in the form prescribed.
In case the successful contractor is not furnishing the performance security deposit as referred above on award of the job, the same shall be deducted from each running account bills at the rate of 10% of bill value till overall security deposit of 10% as mentioned above is collected.
The security deposit will be retained till the successful completion of the work and thereafter till the expiry of the defect liability period (refer clause-74), if applicable. This retention money / Bank guarantee / Insurance Surety Bond held shall be released after the expiry of the defect liability period provided that any defects appearing during that period are corrected by the contractor and subject to Clause 18.2 below.
In the case of value/rate/quantity contracts, the security deposit shall be based on individual release orders issued. In case of LSTK (Lump Sum Turnkey Contracts) / EPC: PBG / Insurance Surety Bond @ 10% within 15 days of notification of award. In case of Annual Rate Contracts (ARCs): Submission of PBG / Insurance Surety Bond @ 10% of Total Contract Value (TCV) or submission of initial security deposit @ 2.5% of TCV within 15 days of notification of award. In cases where only 2.5% of TCV has been submitted, 7.5% of individual release order shall be subsequently deducted from RA bills.
Vendors/contractors shall be asked to submit the SD within 15 days from the date of notification of award and in the event of delay in submission of SD, the contract can be terminated. However, if termination of contract is not in the interest of the work/ BPCL, an additional time up to 30 days can be allowed for submission of SD depending on merits of each case, beyond which the contract may be terminated with subsequent actions following termination as per tender/procedure.

18.2 If the contractor/ sub-contractor or their employees shall break, deface or destroy any property belonging to the Owner or other agency 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). These expenses can be recovered from the security deposit/retention money if recovery from other sources is not possible.

18.3 All compensation or other sums of money payable by the contractor to the Owner under terms of this contract may be deducted from his security deposit/retention money or from any sums which may be or may become due to the contractor by the Owner on any account whatsoever and in the event of his security deposit/retention money being reduced by reasons of any such deductions. The contractor shall within ten days thereafter make good any sum or sums, which may have been deducted from his security Deposit/retention money. No interest shall be payable by the Owner from sum deposited as security deposit/retention money.

18.4 The security deposit shall be held by the Owner, as security for the due performance of the Contractor's obligations under the contract, provided that nothing herein stated shall make it incumbent upon the Owner to utilize the security deposit/retention money in preference to any other remedy which the Owner may have, nor shall be construed as confining the claims of the Owner against the contractor to the quantum of the Security Deposit/retention money.

18.5 The Bank guarantee if submitted shall be from any Indian scheduled bank or an international bank of repute having a branch in India or a corresponding banking relationship with an Indian scheduled bank. The security deposit/retention money shall be in Indian Rupee in the case of domestic bidders and in US Dollars/EUROS in the case of foreign bidders. In case of Insurance Surety Bond, the same shall be from the Insurance company as approved by Insurance Regulatory and Development Authority of India (IRDAI).

18.6 Process for submitting Bank Guarantee / PBG under SFMS (Structured Financial Messaging System) mode as follows:

Vendors shall insist their Bank for issuance of SFMS Bank Guarantee for faster payments. Vendors shall provide BPCL's Bank Account No. & IFSC Code (Details given below) to their Bank as beneficiary at the time of application for Bank Guarantee in favor of BPCL. Issuing Bank shall issue the Bank Guarantee & send SFMS message to BPCL's Bank confirming the authenticity of Bank Guarantee who in turn shall send the confirmation to BPCL.
Vendor should ensure the following for issue of E- bank guarantee:

a. The issuing bank is on SFMS platform
b. SFMS Message type used is 760 COV and SFMS Delivery report/ Message copy is sent along with original BG
c. For BG amendment, message type 767COV is to be used.
d. SFMS contains following details:
i. Beneficiary's bank name: ICICI Bank
ii. IFSC Code: ICIC0000393

iii BPCL'S Customer 1D: 8PCL583493800

e. BG Issuing Bank should send the BG Issuance advice through SFMS to BPCL's designated Banker: ICICI Bank, Backbay Branch, Mumbai (IFSC: 1CIC0000393).

f. BG Issuance advice should mention applicable Unique Identifier Code (U1C) in row/ field number 7037 of SFMS Delivery Report.
   a. BPCL Location : Kharghar , Navi Mumbai
   b. Head office : Ballard Estate
   c. UIC : BPCL583493800

g. The Original BG should be submitted along with print out of SFMS Delivery report from the BG Issuing Bank Branch.
h. SFMS BG will help in faster verification of BGs and prompt release of payments to Vendors.

19 TIME OF PERFORMANCE:

19.1 The work covered by this contract shall be commenced as detailed in the purchase order or as per the instructions of the Engineer in charge and be completed in stages on or before the dates as mentioned in the time schedule of completion of work. The contractor should bear in mind that time is the essence of this agreement unless such time be extended pursuant to the provision of clause No. 21. Request for revision of Completion time after tenders are opened will not receive consideration.

19.2 Time Schedule of Completion: The general time schedule of completion is given in the tender document. Contractor should prepare a detailed monthly and weekly execution programme, jointly with the Engineer-in-Charge within two weeks of receipt of Letter of Intent or acceptance of tender. The work shall be executed strictly as per the time schedule given in this document. The period of completion given includes the time required for testing, rectifications, if any, retesting and completion in all respects to the entire satisfaction of the Engineer-in-Charge.

20 FORCE MAJEURE

Circumstances leading to force majeure

(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 industrial dispute which is 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.

- **Notification of Force Majeure**

Contractor shall notify 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.

- **Right of either party to terminate**

If an event of Force Majeure occurs and its effect continues for a period of 180 (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.

- **Payment in case of termination due to Force Majeure**

The Contract Price attributable to the Works performed as at the date of the commencement of the relevant event of Force Majeure.

The Contractor has no entitlement and Owner 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. Time extension for such cases will be worked out appropriately.

21 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 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 / Insurance Surety Bond if submitted, towards security Deposit/retention money suitably.

22. LIQUIDATED DAMAGES FOR DELAY:

22.1 Time is the essence of the contract. In case the contractor fails to complete the whole work within the stipulated period, he shall be liable to pay liquidated damages of 0.5% of the basic value of contract per week and or part thereof of the delay subject to a maximum of 5% of the value of the contract. The parties 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 or 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 Security Deposit. In case where the concluded contract value is different from the original contract value due to the change orders/variation in executed quantities/extension of time, etc., the concluded contract value should be considered for recovery of Liquidated Damages for late delivery/delayed completion.

22.2 The owner shall be at liberty to deduct or retain from any amount payable to the contractor periodically, the proportionate or full amount of liquidated damages as the case may be for the delay periodically caused by the contractor.

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

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

24 TERMINATION/OFFLOADING:

24.1 The contractor fully understands that timely completion of the work as per the schedule is of paramount necessity as otherwise it would lead to adversely affecting the schedules of other works/project with resultant financial and other losses to the Company/owner. In view of this, the contractor unconditionally agrees and binds himself to be liable for all the consequences for non-completion of the work within the stipulated time.

24.2 In case a situation is brought about by the contractor warranting termination/off-loading of the whole or any part of the work for any reason whatsoever, the Company/owner shall have the liberty and right to entrust/engage/award the work so terminated/off loaded at the risk and cost of the contractor to any other agency/contractor by adopting any mode of inviting tenders, i.e. open/limited/single party/negotiation basis etc. in order to ensure completion of the work as per the schedule or at the quickest possible time.

25. FORFEITURE OF SECURITY DEPOSIT:

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

26 ACTION WHEN WHOLE OF SECURITY DEPOSIT IS FORFEITED:

In any case in which, under any clause or clauses of this contract, the contractor shall have forfeited the whole of his security deposit (whether paid in one sum or deducted by installment) 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 rescission notice in writing to the contractor under the hand of the owner shall be conclusive evidence) in which case the security 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 any part of the work, debiting contractor with the labour cost of tools and plants and equipment charges, the cost of the materials for which a certificate of the Engineer-in-Charge shall be final and conclusive against the Contractor and 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 manner and at the same rates as if it had been carried out by the Contractor under the term of his 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 the original contractor, if the whole work had been executed by him (of the amount of which excess, the certificate in writing of the Engineer-in-Charge shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by the Owner under the contract or otherwise or from his security deposit 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 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.

27 CONTRACTOR REMAINS LIABLE TO PAY COMPENSATION IF ACTION NOT TAKEN UNDER CLAUSE 26:

In any case in which any of the powers conferred upon the owner by clause 26 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 exercised in the event of any further case of default by the contractor for which any clause of hereof he is declared liable to pay compensation amounting to the whole of his security deposit and the liability of the contractor for past and future compensation shall remain unaffected. In the event of the Owner putting in force the power under sub-clause (a), (b) or (c) vested in him under the proceeding clause he may, if he so desires takes possession of all or any tools and plants materials and stores in or upon the works 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 for the same in account at the contract rates or in case of these not being applicable at current market rates to be certified by the Engineer-in-Charge whose certificate thereof shall be final otherwise the Engineer-in-Charge may give notice in writing to the contractor or his clerk of the works, supervisor or other authorized 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 contractors 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 proceeds and any expenses of any such sale shall be final and conclusive against the contractor.

28 NO COMPENSATION FOR ALTERATION IN OR RESTRICTION OF WORK:

If at any time from the commencement of the work the owner shall for any reasons whatsoever, not require the whole or part thereof as specified in the tender to be carried out, the Engineer-in-Charge shall give notice in writing of the fact to the contractor, who shall have no claim to any payment or compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full, but which he did not derive in consequence of the full amount of the work not having been carried out, neither shall he have any claim for compensation by reason of any alterations having been made in the original specifications, drawings, designs and instructions which shall involve any curtailment of the work as originally contemplated.

29 CHANGES IN CONSTITUTION:

Where the contractor is a partnership firm, the 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 sub-contractor enters into any agreement with other parties, where under the reconstituted firm would have the right to carryout 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 clauses 35 hereof and the same action may be taken and, the same consequence shall ensure as provided in the said clause.

30 IF THE CONTRACTOR DIES

Without prejudice to any of the rights or remedies under his contract, if the contractor dies, the Owner shall have the option of terminating the contract without compensation to the contractor.

31 EMPLOYEES OF THE OWNER NOT INDIVIDUALLY LIABLE:

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

32 OWNER NOT BOUND BY PERSONAL REPRESENTATIONS:

The contractor shall not be entitled to any increase on the item rates of the contract or any other right or claim whatsoever by reason of representation, explanation or statement or alleged representation, promise or guarantees given or alleged to have been given to him by any person.

33 CONTRACTOR'S OFFICE ATSITE:

The contractor shall provide and maintain an office at the site, if space provided by the owner, for the accommodation of his agent and staff and such office shall be open at all reasonable hours to receive instruction, notices, or other communications.

34 CONTRACTOR'S SUBORDINATE STAFF AND THEIR CONDUCTS:

34.1 The contractor, on or after award of the work shall name and depute a qualified personnel having sufficient experience in carrying out work of similar nature to whom the equipments materials, if any, shall be issued and instructions for works given. The contractor shall also provide to the satisfaction of the Engineer-in-Charge sufficient and qualified staff to supervise the execution of the-works, competent sub-agents, supervisor 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, expeditious working. Whenever in the opinion of the Engineer-in-Charge, additional properly qualified supervision staff is considered necessary, they shall be employed by the contractor without additional charges 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.

34.2 If and whenever any of the Contractor's or sub-contractor's agents, sub-agents, assistants supervisor 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 Engineer-in-Charge, it is undesirable for administrative or any other reason for such person or persons to be employed in the works, the contractor, if so directed by the Engineer-in- Charge, shall at once remove such person or persons from employment thereon. Any person or persons so removed from the works shall not again be employed in connection with the works without the written permission of the Engineer-in-Charge. Any person so removed from the works 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 works he shall do so and shall bear all costs in connection herewith.

34.3 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 neighborhood and in the event of such employee 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 activities.

34.4 All contractor's personnel entering upon the Owner's premises shall be properly identified by badges issued by owner which must be worn all times on Owner's premises.

35 SUB-LETTING OF WORK:

Sub letting of contracts shall not be generally permitted. However owner may permit sub letting of work on specific cases subject to the following:-

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

ii) Sub Contractors for Temporary Works Etc.:- The Owner may give written consent to sub-contract for execution of any part of the works at the site, being entered into by the contractor provided each individual sub-contract is submitted to the Engineer-in-Charge before being entered into and is approved by him.

iii) List of Sub-Contractors to be supplied: - At the commencement of every month the contractor shall furnish to the Engineer-in-Charge list of all sub-contractors or firms engaged by the contractor and working at the site during the previous month with particulars of the general nature of the sub-contract or works.

iv) Contractor's Liability Not Limited By Sub-Contractors:- Notwithstanding any sub-letting with such approval as aforesaid and notwithstanding that the Engineer-in-Charge shall have received copies of any sub-contracts, the contractor shall be and shall remain solely responsible for the quality and proper and expeditious execution of the works and the performance of all the conditions of the contract in all respects as if such sub-letting or sub-contracting had not taken place and as if such work had been done directly by the Contractor.

v) Owner may Terminate Sub-Contracts:- If any sub-contractor engaged upon the works at the site executes any work which in the opinion of the Engineer-in-Charge is not in accordance with the Contract documents, the owner may by written notice to the contractor request him to terminate such sub-contract and the contractor

upon the receipt of such notice shall terminate such sub contract and the latter shall forthwith leave the works, failing which the owner shall have right to remove such sub-contractors from the Site.

vi) No Remedy For Action Taken Under This Clause:- No action taken by the owner under the clause shall 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 right to remove such sub-contractors from the Site.

36 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 carryout the works in conformity with the contract documents, or
ii. Fail to carryout the works in accordance with the time schedule, or
iii. Substantially suspend work or the works for a period of Fourteen days without authority from the Engineer-in-Charge, or
iv. Fail to carryout and execute the works to the satisfactions of the Engineer-in-Charge, or
v. Fail to supply sufficient or suitable constructional equipments, temporary works, labour materials or things, or
vi. Commit or suffer or permit any other breach of any of the provisions of the contract on his part to be performed or observed or persist in any of the above mentioned breaches of the contract for the fourteen days, after notice in writing shall have been given to the Contractor by the Engineer-in-Charge requiring such breach to be remedied, or
vii. Abandon the works, or
viii. During the continuance of the contract, become bankrupt, make any arrangement or composition with his creditors, or permit any execution to be levied or go into liquidation whether compulsory or voluntary not being merely a voluntary liquidation for the purpose of amalgamation or reconstruction.

Then in any such case, the Owner shall have the power to enter upon the works and take possession thereof and of the materials, temporary works, constructional equipment, and stock thereon, and to revoke the contractor's license to use the same, and to complete the works, by his agents, other contractor 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 authorize the use of any materials, temporary works constructional equipment, and stock as aforesaid without making payment or allowances to the contractor for the said materials other than such as may be certified in writing by the Engineer-in-Charge to be reasonable, and without making any payment or allowance to the contractor for the use of the temporary said works, constructional equipments and stock or being liable for any loss of damage thereto, and if the Owner shall by reason of his taking possession of the works or of the works being completed by other contractors (due account being taken of any such extra work or works which may be omitted) then the amount of such excess as certified by the Engineer-in- Charge shall be deducted from any money which may be due for work done by the contractor under the contract and not paid for. Any deficiency shall forthwith be made good and paid to the Owner by the contractor and the Owner shall have power to sell in such manner and for such price as he may think fit all or any of the constructional equipment, materials etc. belonging to and to recoup and retain the said deficiency or any part thereof out of the proceeds of the sale.

37 CONTRACTORS RESPONSIBILITY WITH OTHER AGENCIES:

Without repugnance to any other condition, it shall be the responsibility of the contractor executing the work of civil construction, to work in close co-operation and co-ordinate the works with other contractors or their authorized representatives and the contractor will put up a joint scheme, showing the arrangements, with other contractors / agencies for carrying his portion of work to the Engineer-in-Charge, and get the approval. The contractor before finally submitting the schemes to the Engineer-in-Charge shall have the written agreement of the other agencies. The Engineer-in-Charge before communicating his approval of 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 any statutory regulations, ordinances or by laws of any local or duly constituted authorities or public bodies which may be applicable from time to time to the works or any temporary works. The contractor shall keep the Owner Indemnified against all penalties and liabilities of every kind arising out of non-adherence to such statutes ordinances, laws, rules, regulations, etc.

38 OTHER AGENTS AT SITE:

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

39 NOTICES:

Any notice hereunder may be served on the contractor or his duly authorized representative at the job site or may be served by registered mail direct to the address furnished by the Contractor. Proof of issue of any such notice could be conclusive of the contractor having been duly informed of all contents therein.

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40 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 contractors reasonable opportunity for access to the works for the carriage and storage of materials and execution of their works.

ii) Whenever the work being done by any department of the Owner or by other contractors employed by the Owner is contingent upon work covered by the 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.

41 RIGHT OF OWNER TO DETERMINE / TERMINATE CONTRACT

i) 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, in which case, the cost of approved materials at the site at current market rates as verified and approved by Engineer-in- Charge and of the value of the work done to date by the contractor shall be paid for in full at the rates specified in the contract. A notice in writing from the Owner to the contractor of such determination and termination and the reason thereof, shall be the conclusive proof of the fact that the contract has been so determined and terminated by the Owner.

ii) Should the contract be determined under sub-clause (i) of this clause and the contractor claims payments to compensate expenditure incurred by him in the expectation of completing the whole of the work, the Owner shall consider and admit such claim as are deemed fair and reasonable and are supported by vouchers to the satisfaction of the Engineer-in-Charge. The Owner's decision on the necessity and propriety of any such expenditure shall be final and conclusive and binding on the contractor.

42 TERMINATION FOR CONVENIENCE :

BPCL 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 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.

If the contract is terminated under this provision, the contractor is entitled to be compensated as under:-

a. the contract price attributable to the works performed as at the date of termination

and

b. the reasonable costs incurred by the contractor for termination of subcontractors or the repatriation of the contractors' and subcontractors' employees

less

the aggregate of all previous payments allocated to the works.

Any sums due to BPCL from the contractor accruing prior to the date of termination 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 such negative sum to BPCL within 15 days of BPCL intimating the contractor.

43 PATENTS AND ROYALTIES:

43.1 The contractor, if licensed under any patent covering equipment, machinery, materials or compositions of matter to be used or supplied or methods and process to be practiced or employed in the performance of this contract, agrees to pay all royalties and licence fees which may be due with respect thereto. If any equipment, machinery, materials or composition matters, to be used or supplied or methods and process to be practised or employed in the performance of this contract, is covered by a patent under which 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 royalties 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 expenses 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, and process methods to be supplied hereunder. The 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 employee in or as a result of the performance of the work under the contract.

The Owner shall indemnify and save harmless the contractor from any loss on account of claims on contractor for the contributory infringement of patent rights arising out and based upon the claim that the use by the Owner of the process included in the design prepared by the Owner and used in the operation of the plant infringes on any patent right with respect to any sub-contract entered into by contractor pursuant to the provisions of 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.

43.2 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.

43.3 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.

44 LIENS:

44.1 If, at any time, there should be evidence or 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 in discharging such lien or claim including all costs and reasonable expenses.

44.2 Contractor will not disclose details of the work to any person or persons except those engaged in its performance, and only to the extent required for the particular portion of the work being done.
Contractor will not give any items concerning details of the work to the press or a news disseminating agency without prior written approval from Engineer-in-Charge. Contractor shall not take any pictures on site without written approval of Engineer-in-Charge

45 OPERATION OF CONTRACT:

45.1 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.

45.2 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.

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SECTION - V

PERFORMANCE OF WORK

46 EXECUTION OF WORKS:

46.1 All the works shall be executed in strict conformity with the provisions of the contract documents 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 works 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 following all safety requirements of BPCL and as stipulated in work permits as per the directions and to the entire satisfaction of the Engineer-in- Charge.

46.2 Wherever it is mentioned in the specifications that the Contractor shall perform certain work or provide certain facilities/materials, it is understood that the contractor shall do, so at his cost unless otherwise specified.

46.3 The materials, design and workmanship shall satisfy the relevant Indian Standards, the Job specification contained herein and codes referred to. Where the job specification stipulate requirements in addition to those contained in the standards codes and specifications, these additional requirements shall also be satisfied.

47 COORDINATION AND INSPECTION OFWORK:

The coordination and inspection of the day-to-day work under the contract shall be the responsibility of the Engineer-in-Charge. The written instructions regarding any particular job will be normally be passed by the Engineer-in-Charge or his authorized representative. A work order book / logbook will be maintained by the Contractor for each job in which the aforesaid written instructions will be entered. These will be signed by the contractor or his authorized representative by way of acknowledgment within 12 hours. The non maintaining of the order book or non signing by the contractor shall not preclude the contractor from complying with the instructions.

48 WORK IN MONSOON ANDDEWATERING:

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

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

49 WORK ON SUNDAYS ANDHOLIDAYS:

For carrying out work on Sundays and Holidays if needed, the contractor will approach the Engineer-in-Charge or his representative at least two days in advance and obtain permission in writing. No special compensation on this account will be payable.

50 GENERAL CONDITIONS FOR CONSTRUCTION AND ERECTION WORK:

50.1 <u>Place of Work:</u>

The work has to be executed at specified premises as per the tender. Contractor should apprise himself of all the conditions prevailing in such 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 complied with, by the contractor will also be provided along with the tender. No idle time wages or compensation for temporary stoppage of work or restrictions would be paid, and the rate quoted for the various items of work should cover the cost of all such contingencies and eventualities. Substantial structures and utilities exist both above ground and underground, adjacent to the work site. (The construction activity gets restrained by the existence of such structures and utilities). Special care is necessary in transportation, storage, working on equipments and other construction activities to protect the existing features and prevent damage to any facility. Necessary protective structures barricades etc. have to be erected at various places as directed by Engineer-in-Charge. No extra payment of such protective works will be made unless specially provided in the tender.

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

50.3 The contractor must arrange for the placement of workers in such a way that the delayed completing of the work or any part thereof for any reasons whatsoever will not affect their proper employment. The Owner will not entertain any claim for idle time payment whatsoever.

50.4 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.

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51 DRAWINGS TO BE SUPPLIED BY THE OWNER:

51.1 Where drawings are attached with tender, these shall be for the general guidance of the contractor to enable him to visualize the type of work contemplated and scope of work involved. The contractor will be deemed to have studied the drawings and formed an idea about the work involved.

51.2 Detailed working drawings on the basis of which actual execution of the work is to proceed will be furnished from time to time during the progress of the work. The 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.

51.3 Copies of all detailed working drawings relating to the works 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 works. Reference is also invited to clause 43.2 and 43.3 above regarding drawings and other documents.

52 DRAWINGS TO BE SUPPLIED BY THE CONTRACTOR:

52.1 Where drawings/data are to be furnished by the contractor, they shall be as enumerated in the special conditions of contract, and shall be furnished within the specified time.

52.2 Where approval of drawings before 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 the 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 the certification stamps duly signed by both the contractor and the Engineer-in-Charge.

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

53 SETTING OUT WORKS:

53.1 The Engineer-in-Charge shall furnish the contractor with only the four corners of the work site and a level bench mark and the contractor shall set out the works and shall provide efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.

53.2 The contractor shall provide, fix and be responsible for the maintenance of all stacks, templates, level marks, profiles and other similar things and shall take all necessary precaution to prevent their removal or disturbance and shall be responsible for the consequence of such removal or disturbance should the same take 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 in setting out the work shall not relieve the contractor of any of his responsibilities.

53.3 Before beginning the works, the contractor shall at his own cost, provide all necessary reference and level posts, pegs, bamboos, flags, ranging rods, strings and other materials for proper layout of the work in accordance with the scheme, for bearing marks acceptable to the Engineer-in-Charge. The centre, longitudinal 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.

53.4 Pillars bearing geodetic marks located at the site of work under construction should be protected and fenced by the contractor.

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

54 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 the work and shall rectify effectually any errors or imperfections therein. Such rectifications shall be carried out by the contractor, at his own cost, when instructions are issued to that effect by the Engineer-in-Charge.

55 MATERIALS TO BE SUPPLIED BY CONTRACTOR:

55.1 The contractor shall procure and provide the whole of the materials required for construction including tools, tackles, construction plant and equipment for the completion and maintenance of the works 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 materials procured by the contractor shall be BPCL approved/specified quality.

55.2 All materials procured should meet the specifications 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.

55.3 Manufacturer's 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.

56 MATERIALS SUPPLIED BY OWNER:

56.1 If the specifications of the work provides for the use of any materials of special description to be supplied from the Owner's stores, price for such material to be charged therefore as herein after mentioned being so far as practicable for the convenience of the contractor but not so as in any way to control the meaning or effect of the contract. The contractor shall be bound to purchase and shall be supplied such materials as are from time to time required to be used by him for the purpose of the contract only. The sums due from the contractor for the value of the actual materials supplied by the Owner will be recovered from the running account bill on the basis of the actual consumption of materials in the work covered and for which the running account bill has been prepared. After the completion of the works, however, the contractor has to account for the full quantity of materials supplied to him as per relevant clauses in this document.

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

57 CONDITIONS FOR ISSUE OF MATERIALS:

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

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

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

iv) The contractor shall construct suitable godown at the site of work for storing the materials safe against damage by rain, dampness, fire, theft etc. He shall also employ necessary watch and ward establishment for the purpose.

v) It shall be duty of the contractor to inspect the material supplied to him at the time of taking delivery and satisfy himself that they are in good condition. After the materials have been delivered by the Owner, it shall be the responsibility of the contractor to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and/ or replaced by him at his own cost, according to the directions of the Engineer-in-Charge.

vi) The Owner shall not be liable for delay in supply or non-supply of any materials which the Owner has undertaken to supply where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstances beyond the control of the Owner. In no case, the contractor shall be entitled to claim any compensation or loss suffered by him on this account.

vii) It shall be the responsibility of the contractor to arrange in time all materials required for the works other than those to be supplied by the Owner. If, however, in the opinion of the Engineer-in-Charge the execution of the work is likely to be delayed due to the contractor's inability to make arrangements for supply of materials which normally he has to arrange for, the Engineer-in-Charge shall have the right, at his own discretion, to Issue such materials If available with the Owner or procure the materials from the market or elsewhere and the 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 the 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 the work.

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

ix) 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.

x) The contractor shall furnish to the Engineer-in-Charge sufficiently in advance a statement showing his requirements of the quantities of the materials to be supplied by the Owner and the time when the same will be required by him for the works, so as to enable the Engineer-in-Charge to make necessary arrangement for procurement and supply of the material.

xi) A daily account of the materials issued by the Owner shall be maintained by the 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. requisition, issues etc. and shall be always available for inspection in the contractor's office at site.

xii) The contractor should see that only the required quantities of materials are got issued. The contractor shall not be entitled to cartage and incidental charges for returning the surplus materials, if any, to the stores/location 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 utilized for any other purpose(s) than issued for.

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58 MATERIALS PROCURED WITH ASSISTANCE OF OWNER:

Notwithstanding anything contained to the contrary in any or all the clause of this document where any materials for the execution of the contract are procured with the assistance of Owner either by issue from Owner's stock or purchase made under orders or permits or licences issued by Government, the contractor shall hold the said materials as trustee for the Owner and use such materials economically and solely for the purpose of the contract and not dispose them off without the permission of the owner and return, if required by the Engineer-in-Charge, all surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination for any reason, whatsoever on his being paid or credited such prices as the Engineer in-Charge shall determine having due regard to the condition of the materials. The price allowed to the contractor however, shall not exceed the amount charged to him excluding the storage charges if any. The decision of the Engineer-in- Charge shall be final and conclusive in such matters. In the event of breach of the aforesaid condition, the contractor shall in terms of the licenses or permits, and/or for criminal breach of trust, be liable to compensate the Owner a double rate or high 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 and his decision shall be final and conclusive.

59 MATERIALS OBTAINED FROM DISMANTLING:

If the contractor in the course of execution of the work is called upon to dismantle any part for reasons other than those stipulated in clauses 66 & 70 hereunder, the materials obtained in the work of dismantling etc. will be considered as the Owner's property and will be disposed off to the best advantage of the Owner.

60 ARTICLES OF VALUE FOUND:

All gold, silver and other materials, of any description and all precious stones, coins, treasure relies, antiquities and other similar things which shall be found in, under or upon the site, shall be property of the Owner and the contractor shall duly preserve the same to the satisfaction of the Engineer-in-Charge and shall from time to time deliver the same to such person or person indicated by the Owner.

61 DISCREPANCIES BETWEEN INSTRUCTIONS:

Should any discrepancy occur between the various instructions furnished to the contractor, his agents or staff or any doubt, arise as to the meaning of any such instructions or should there be any misunderstanding between the contractor's staff and the Engineer-in-Charge's staff, the 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, or doubts, or misunderstanding shall in any event be admissible.

62 ALTERATIONS IN SPECIFICATIONS AND DESIGNS AND EXTRA WORK:

A) The Engineer-in-Charge shall have power to make any alterations in, omissions from, additions to of 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 the work and the contractor shall be bound to carry out such altered / extra / new items of work in accordance with any instructions which may be given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions or substitutions shall not invalidate the contract and any altered additional or substituted work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respect on which he agree to do the main work. The time for completion of work may be extended for the part of the particular job at the discretions of the Engineer-in-Charge, for only such alteration, additions or substitutions of the 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:

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

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

c) If the rates for the altered, additional or substituted work cannot be determined in the manner specified in sub-clause (a) and (b) above, then the contractor shall inform the Engineer-in-Charge of the rate which 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 rates on the basis of the prevailing market rates of materials, labour cost at schedule of labour plus 10% to cover contractor's supervision, overheads 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 the contractor.

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d) Provisions, contained in sub-clause (a) to (c) above shall not, however, apply:

Where the value of alterations / additions / deletions or substitutions exceeds beyond plus or minus 25% of the estimated contract value (i.e. quoted item rates of contractor shall hold good for variations etc. within plus or minus 25% of estimated contract value)

B) In the event and as a result of such alternatives / additions / substitutions / deletion, the scope of contract work exceed the value stipulated in the contract by more than the limits given in clause (d) above, the Contractor shall claim revision of the rates supported by the proper analysis in respect of such items for quantities in excess of the above limits, notwithstanding the fact that the rates for such items exist in the tender for the main work or can be derived in accordance with the provision of sub-clause (b) of Clause 62 A, and the Engineer-in-Charge may revise their rates having regard to the prevailing market rates, and the contractor shall be paid in accordance with the rates so fixed. But, under no circumstances the contractor shall suspend / stop / slowdown the work on the plea of non-settlement of rates of items falling under this clause.

63 VARIATION IN CONTRACT VALUE :

Compensation for Reduction in Contract value due to change in quantity:

- Upto & inclusive of (-) 25% of Total Contract Value (TCV): No cost compensation.
- Beyond (-) 25% of TCV: Cost compensation @ 10% of reduction in the contract value from (-) 25% of TCV (i.e. 75% of TCV).

Discount to be obtained for Increase in contract value due to change in quantity:

- Upto & inclusive of (+) 50% of TCV: No discount.
  Beyond (+) 50% of TCV: Reduction @ 10% of increase in the contract value beyond (+) 50% of TCV.

64 ACTION WHERE NO SPECIFICATIONS ISSUED:

In case of any class of work for which there is no such specification given by the Owner in the tender documents, 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.

65 ABNORMAL RATES:

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

66 INSPECTION OF WORK:

66.1 The Engineer-in-Charge will have full power and authority to inspect the works at any time wherever in progress either on the Site or at the contractor's premises / workshop where situated premises /workshops of any person, firm or corporation where work in connect with the contract may be in hand or where materials are being or are to be supplied, and the contractor shall afford or procure for the Engineer-in-Charge every facility and assistance to carry out such Inspection. The contractor shall at all time during the usual working hours and at all other time for which reasonable notice of the intention of the Engineer in-Charge or his representative to visit the works have been given to the contractor, either himself be present to receive order and instructions or post a responsible agent duly accredited in writing for the purpose. Orders given to the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself. The contractor shall give not less than seven days, notice in writing to the Engineer-in-Charge before covering up or placing any work beyond reach of inspection and measurement 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 carrying out such measurement or inspection.

66.2 No materials shall be dispatched by the contractor before obtaining the approval of Engineer-in-Charge in writing. The contractor is to provide at all times during the progress of the work and the 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 the works by the Engine in-Charge.

67 ASSISTANCE TO THE ENGINEERS:

The contractor shall make available to the Engineer-in-Charge, free of cost necessary instruments and assistance in checking of setting out of works and taking measurement of work.

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68 TESTS FOR QUALITY OF WORKS:

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

68.2 All the tests necessary in connection with the execution of the work as decided by Engineer-in-Charge shall be carried out at the field testing laboratory of the Owner by paying the charges as decided by the Owner from time to time. In case of non-availability of test facility with the 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.

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

69 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 the work. Such samples shall be submitted before the work is commenced and in ample time to permit tests and examinations thereof. All materials furnished and finishing applied in actual work shall be fully identical to the approval samples.

70 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 the contractor for the execution of the work are unsound or of a quality inferior to that contracted for, or otherwise not in accordance with the contract, the contractor shall on demand in writing from the Engineer-in-Charge or his authorised representative, specifying the work, materials or articles complained of, notwithstanding that the same have been inadvertently passed, certified and paid for forthwith shall rectify or remove and reconstruct the works specified and provide other proper and suitable materials or articles at his own charge and cost, and in the event of failure to do so within a period to be specified by the Engineer-in-Charge in his demand aforesaid, the contractor shall be liable to pay compensation at the rate of one percentage of the estimated cost of the whole work, for every week limited toa maximum of 10 per cent of the estimated cost of the whole 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 expenses of the contractors in all respects. The decision of the Engineer-in-Charge as to any question arising under this clause shall be final and conclusive.

71 SUSPENSION OF WORKS:

The contractor shall, if ordered in writing by the Engineer-in-Charge or his representative, temporarily suspend the works or any part thereof for such period and such time as so ordered and shall not, after receiving such written order, proceed with the work therein ordered to be suspended, until he shall have received a written order to proceed therewith. The contractor shall not be entitled to claim/ compensation for any loss or damage sustained by him by reason of temporary suspension of the works aforesaid. An extension of time for completion, corresponding with the delay caused by any such suspension of the works as aforesaid will be granted to the contractor, should he apply for the same, provided that suspension was not consequent to any default or failure on the part of the contractor.

72 OWNER MAY DO PART OF WORK:

Upon failure of the contractor to comply with any instructions given in accordance with the provisions of the contract, the owner has the alternative right, instead of assuming charge for entire work to place additional labour force, tools, equipments and materials on such parts of the work, as the owner may designate or also engage another contractor to carry out the work. In such cases, the owner shall deduct from the amount which otherwise might become due to the contractor, the cost of such work and materials with ten percent added to cover all departmental charges and should the total amount thereof exceed the amount due to the contractor, the contractor shall pay the difference to the owner.

73 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 the work. Such possessions or use shall not be deemed to be an acceptance of any work completed in accordance with the contract agreement. If such prior possession or use by the Engineer-in-Charge delays the progress of work, suitable adjustment in the time of completion will made and contract agreement shall be deemed to be modified accordingly.

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74 PERIOD OF LIABILITY FROM THE DATE OF COMPLETION OF WORK:

74.1 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. In case the defect arises within the abovementioned Defect Liability Period (DLP) and the same is repaired/replaced, the DLP for the repaired/replaced job/item will be extended suitably so as to cover the original DLP. However, in no case, such extension will exceed 24 months from date of start of initial DLP.

74.2 If the contractor feels that any variation in work or in quality of materials or proportions would be beneficial or necessary to fulfill the guarantee called for, he shall bring this to the notice of the Engineer-in-Charge in writing. The work will not be considered as complete and taken over by the Owner until all the temporary works etc., constructed by the contractor is removed and work site cleaned to the satisfaction of Engineer-in-Charge.

74.3 Care of Works:

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

74.4 Effects prior to taking over:

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

a) Decide that any work done or materials used by the contractor or any sub-contractor is defective or not in accordance with the contract or that the works or any portion thereof are defective or do not fulfill the requirements of contract (all such matters being herein after called 'Defects' in this clause) and

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

In the case contractor shall fail to do so, the Owner may take, at the cost of the contractor, such steps as may in all circumstances, be reasonable to make good such defects. The expenditure, so incurred by the Owner shall be recovered from the amount due to the contractor. The decision of the Engineer-in-Charge with regard to the amount be recovered from the contractor will be final and binding on the contractor. As soon as the works have been completed in accordance with the contract (except in minor respects that do not affect their use for the purpose for which they are intended and except for maintenance thereof provided in clause 74.1) and have passed the tests on completion, the Engineer-in-Charge shall issue a certificate (hereinafter called completion certificate) in which he shall certify the date on which the work have been so completed and have passed the said tests and the Owner shall be deemed to have taken over the works on the date so certified. If the works have been divided into various groups in the contract, the Owner shall be entitled to take over any group or groups before the other or others and thereupon the Engineer-in-Charge shall issue a completion certificate which will however, be for such group or groups as taken over only.

74.5 Defects after taking over:

In order that the contractor could obtain a completion certificate, he shall make good with all possible speed, any defect arising from the defective materials supplied by the Contractor or workmanship or any act of omission of the contract that may have been noticed or developed after the works or group of the works has been taken over. The period allowed for carrying out such work will be normally one month. If any defect be not remedied within a reasonable time, the Owner may proceed to do the work at the contractor's risk and expense and deduct from the final bill such amount as may be decided by the Owner. If by reason of any default on the part of the contractor a completion certificate has not been issued in respect of every portion of the work within one month after the date fixed by the contract for the completion of the works, the Owner shall be at his liberty to use the works or any portion thereof in respect of which a completion certificate has been issued provided that the works or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completing these works for the issue of completion certificate.

74.6 The Security Deposit/retention money deducted / furnished as per clause 18 of GCC shall be retained for the period of liability as given in clause 74.1 above. This Retention amount / Bank Guarantee / Insurance Surety Bond furnished against Security Deposit / retention money 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.

74.7 Performance of contractor shall be evaluated on each job by Engineer-in-Charge and recorded. Review of performance will be carried out at appropriate intervals by BPCL.

SECTION VI

BILLS / MEASUREMENT / PAYMENT

75 SCHEDULE OF RATES AND PAYMENTS:

i) Contractor's Remuneration

The price to be paid by the Owner to contractor for the whole of the work to be done and the performance of all the obligations undertaken by the contractor under the contract documents shall be ascertained by the application of the respective item 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 the contractor under the contract and no further payment whatsoever shall be or become due or payable to the contractor under the contract.

ii) Schedule of rates to be inclusive:

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

Generality of this present provision shall not be deemed to cut down or limit in any way because in certain cases it may and in other cases it may not be expressly stated that the contractor shall do or perform a work or supply articles or perform services at his own cost or without addition of payment or without extra charges 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 equipment, temporary work (except as provided for herein), pumps, materials, labour, the insurance, fuel, stores and appliances to be supplied by the contractor and other matters in connection with each item in the schedule of rates and the execution of the works or any portion thereof, finished, complete in every respect and maintained as shown or described in the contract documents or may be ordered in writing during the continuance of this contract.

iv) Schedule of Rates to cover Royalties, Rents and Claims:

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

v) Schedule of Rates to Cover Taxes and Duties:

No claim or exemption or reduction of customs duties, GST, quarry 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 Risk of Delay:

The schedule of Rates shall be deemed to include and cover the risk of all possibilities of delay and interference with the contractors conduct of work which occur from any cause including orders of owner in the exercises of his powers and on account of extension of time granted due to various reasons and for all other possible or probable cause 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

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which have been fixed by the contractor and agreed to the 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 workwise, Schedule of rates shall be furnished, suitable for evaluating the value of work done and preparing running account bills.

76 PROCEDURE FOR MEASUREMENT / BILLING OF WORK IN PROGRESS:

i) Measurements:

All measurements shall be in metric system. All the works in progress will be jointly measured by the representative of the Engineer-in-Charge and the Contractor's authorise agent progressively. Such measurement will be got recorded in the measurement book by the Engineer-in-Charge or his authorised representative and signed in token of accepted by the contractor or his authorised representative.
For the purpose of taking joint measurement the contractor's representative shall be bound to be present whenever required by the Engineer-in-Charge. If, however, he absents for any reason whatsoever the measurement will be taken by the Engineer-in-Charge or his representative and this will be deemed to be correct and binding on the contractor.

ii) Billing:

The contractor will submit a bill to the Engineer-in-Charge of the work giving abstract and detailed measurements for the various items executed during a month, before the expiry of the 1st week of the succeeding month. The Engineer-in-Charge shall take or cause to be taken the requisite measurements for the purpose of having the same verified and the claim, as far as admissible, adjusted, if possible, before the expiry of 10 days from presentation of the bill.

iii) Dispute in Mode of Measurements:

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

77 LUMPSUMS IN TENDER:

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

78 RUNNING ACCOUNT PAYMENTS TO BE REGARDED AS ADVANCES:

All running account payments shall be regarded as payment by way of advance against the final payment only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound and imperfect, or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of the contract, or any part thereof in this respect, or of the accruing of any claim by the contractor, nor shall it conclude, determine or affect in any way the powers of the Owner under these conditions or any of them as to the final settlement and the adjustments of the accounts or otherwise, or in any other way vary or affect the contract.
The final bill shall be submitted by the contractor within one month of the date of physical completion of the work, and settled immediately but not later than 60 days otherwise the Engineer-in charge's certificate of the measurement and of total amount payable for the work accordingly shall be final and binding on all parties. 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.

79 EXTRA WORK:

Should the contractor consider that he is entitled to any extra payment for extra job carried out whatsoever in respect of the works, he shall forthwith give notice in writing to the Engineer-in-Charge that he claims extra payment for the extra work. Such notice shall be given to the Engineer-in-Charge within one week from the ordering of any extra work or happening of any event, upon which the contractor bases such claims, and such notice shall contain full particulars of the nature of such claim with full details and amount claimed. Failure on part of the contractor to put forward any claim with the necessary particulars as above within the time above specified shall be an absolute waiver thereof. No omission by the owner to reject any such claim and no delay in dealing therewith shall be waiver by the owner of any rights in respect thereof.

80 PAYMENT OF CONTRACTOR'S BILL:

Generally no payment shall be made for works estimated to cost less than Rs. 50,000/- till the whole of the work shall have been completed. But in case of works estimate to cost more than Rs. 50,000/- the contractor on submitting the bill thereof be entitled to receive a monthly payment proportion to the part thereof approved and passed by the

Engineer-in-Charge, whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the contractor. This payment will be made after making necessary deductions as stipulated elsewhere in the contract document for materials, security deposit or any moneys due to the Owner etc.
75% payment of the Running Account bill (RA bill) shall be released within 15 calendar days of receipt of RA bill duly certified by Engineer-in-charge (EIC) and the balance payment shall be released within 30 days of receipt of RA bill by EIC after detailed scrutiny.

81 CONCLUSION OF CONTRACT:

In a situation where the L1 bidder is not lowest for some specific line items and the L1/L2 parity is likely to be affected during the execution of the contract, due to variation in quantities of individual line items in contract based on site conditions, then the final payment could be restricted to ensure that the overall total payment of the executed work does not exceed the overall amount that would have been payable to the then L1 as per the latter's quoted rates.

82 MODE OF PAYMENT:

Payment will be made to the contractor normally through NEFT mode.

82A Bill discounting through TreDs

The eligible MSME bidders can avail discounting Facility as follows:

Trade Receivables Discounting System (TReDS) is an institutional mechanism set up in order to facilitate discounting of trade receivables of MSMEs from corporate buyers through invoice discounting by multiple financiers. Bharat Petroleum Corporation Limited (BPCL) is registered with TReDS platform of the aggregators M/s. Receivables Exchange of India Ltd (RXIL), M/s Invoice mart, M/s. M1 xchange, M/s C2treds and M/s DTX. The eligible MSME bidders can avail the discounting facility by registering either in one or multiple TReDS platform of the aggregators. It enables the sellers (MSMEs) to discount their invoices through the aggregators to the financiers at competitive rates thus unlocking their working capital swiftly.

83 COMPLETION CERTIFICATE:

83.1 Application for Completion Certificate:

When the contractor fulfills his obligation under clause 74.4, he shall be eligible to apply for completion certificate. The contractor may apply for separate completion certificate respect of each such portion of the work by submitting the completion documents along with such application for completion certificate.
The Engineer-in-Charge shall normally issue to the contractor the completion certificate within one month after receiving an application therefore from the contractor after verifying from the completion documents and satisfying himself that the work has been completed in accordance with and as set out in the construction and erection drawings and the contract documents.
The contractor, after obtaining the completion certificate is eligible to present the final bill for the work executed by him under the terms of contract.

83.2 Completion Certificate:

The contractor shall be furnished with a certificate by the Engineer-in-Charge of such completion, but no certificate shall be given nor shall the work be deemed to have been executed until all scaffolding surplus materials and rubbish is cleared off the site completely or until the work shall have been measured by the Engineer-in-Charge whose measurement shall be binding and conclusive. The work will not be considered complete and taken over by the Owner, until all the temporary works, labour and staff colonies etc. constructed are removed and the work site cleaned of all debris etc., as described in clause in 83.3 below and to the satisfaction of the Engineer-in-Charge.

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

83.3 Clearing the site:

Cart away all debris generated from the work and dispose it off without giving rise to any complaints from local, municipal or government authorities. Metal scraps or any other scrap including wooden packing materials shall be disposed as instructed by the Engineer-in-Charge or as follows:

a) All unused scrap steel bar/ structural steel sections/pipe materials etc., (Free issue by owner) shall be the property of the owner and the same shall be returned by the contractor category-wise at their own cost to Owner's store. The weighment slip issued by the Warehouse (in original) is required to be attached along with the final bill/ material reconciliation statement. In case, the material is supplied by the contractor, as per their scope of work, the scrap material generated out of the same should be taken out at their own cost before the settlement of the final bill.

b) Insulation material (either issued by owner to the contractor or supplied by contractor) shall be kept in the area allocated by owner. During the insulation activities, the contractor should keep the work area clean on day-to-day basis. On completion of insulation job, all debris/packing should be taken out to the designated location or as directed by the Engineer in charge for disposal at their own cost before the settlement of the final bill.

83.4 The financial implication of above, if any, should be taken care of in the quoted rates; and no separate claim shall be entertained on this account. The final bill of the contractor shall be linked with the area cleaning in all respects, including removal of shuttering material, disposal of debris/scrap etc. to the entire satisfaction of Engineer-in- Charge.

84 FINAL DECISION AND FINAL CERTIFICATE:

Upon Expiry of the period of liability and subject to the Engineer-in-Charge being satisfied that the works have been duly maintained by the contractor during monsoon or such period as herein before provided in clause 74 and that the

contractor has in all respect duly made up any subsidence and performed all his obligations under the contract, the Engineer-in-Charge shall (without prejudice to the rights of the Owner to retain the provisions of relevant clause hereof) give a certificate herein referred to as the final certificate to that effect. The contractor shall not be considered to have fulfilled the whole of his obligations under the contract until Final Certificate have been given by the Engineer-in-Charge notwithstanding any previous entry upon the work and taking possession, working or using of the same or any part thereof by the owner.

85 CERTIFICATE FOR PAYMENTS AND EVIDENCE OF COMPLETION:

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

SECTION VII

TAXES/DUTIES/INSURANCE

86. TAXES AND DUTIES:

The contractor agrees to and does hereby accept full and exclusive liability for the payment of any and all taxes, duties, etc. now in force or hereafter Imposed, increased 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 Government authorities which are imposed with respect to or covered by the wages, salaries, or other compensations paid to the persons employed by the contractor and the contractor shall be responsible for the compliance with all obligations and restrictions imposed by the Labour Law or any other law affecting employer - employee relationship and the contractor further agrees to comply and secure the compliance by all sub-contractors, with all 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 of Local Authority by reason of any violation by contractor or sub-contractor of such laws, regulations or requirements and also from all claims, suits or proceeding that may be brought against the Owner arising under, growing out of, or by reason of the work provided for by this contract by third parties, or by Central or State Government authority or any administrative sub-division thereof.

86.1 The vendor shall take steps viz. mention relevant GSTIN of BPCL in GST invoices and returns, uploading invoice in GSTR 1, payment of the tax liability on the said invoices and filing of Returns etc. and comply with all the requirements of applicable laws including GST laws for the time being in force to enable the OWNER to avail tax credit/s including input tax credit.

Deferment of GST Amounts shall be done for those vendors who have got instances of open mismatches due to non-compliance. Open mismatches refer to cases whereby OWNER could not claim the GST Input Tax Credit in the month of payment of invoice due to non-compliance/ delayed compliance by the VENDOR. Accordingly, Over and above any payment term mentioned in the tender including that mentioned in the GPC/GCC, payment to VENDOR by OWNER for the basic amount (i.e. amount excluding GST) shall be made as mentioned in GPC/GCC or as mentioned anywhere else in the tender as applicable. However, GST amount of the Invoices shall be paid only after the amount gets reflected in the return (GSTR-1 Return of outward supplies/GSTR-3B) submitted by the vendor on GSTIN portal (GSTR 2B of OWNER) to the satisfaction of OWNER. Till such time GST amount with correct details is reflected in GSTIN portal to satisfaction of OWNER, amount shall be withheld by OWNER.

Over and above, VENDOR is also required to issue e-invoice if the same is applicable to the OWNER. In absence of GST e-invoice, any loss of Input Tax Credit to the OWNER shall be indemnified by the VENDOR.
Deferment of GST amounts to the vendors are subject to compliance of any applicable Act.

86.2 In case of vendors for whom deferment of GST amounts were not done, any loss or non-availability of input tax credit by the OWNER due to non- compliance of applicable tax law including but not limited to GST laws in force or otherwise, on the part of VENDOR, an amount equivalent to any tax liability accruing to the OWNER and/or to the extent of any loss accrued to the OWNER due to the non-availability of input tax credit or any liability accrued to the OWNER shall either stand cancelled or deducted from the payment due to the VENDOR or shall be reimbursed by the VENDOR as the case may be till such default is either rectified or made good by the VENDOR and the OWNER is satisfied that it is in a position to claim valid input tax credit within the timelines as per applicable laws.

86.3 Any cost, liability, dues, penalty, fees, interest as the case may be which accrues to the OWNER at any point of time on account of non-compliance of applicable tax laws or rules or regulations thereof or otherwise due to default on the part of VENDOR shall be borne by the VENDOR. An amount equivalent to such cost, liability, dues, penalty, fees, and interest as the case may be shall be reimbursed by the VENDOR within 30 days. Any GST as may be applicable on such recovery of amount shall also be borne by VENDOR and same shall be collected by the OWNER.

87 INSURANCE:

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

i) Employees State Insurance Act:

The Contractor agrees to and does hereby accept full and exclusive liability for the compliance with all obligations imposed by the Employees State Insurance Act, 1948, and the 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 Employee State Act, 1948 and also from all claims suits or proceedings that may be brought against the Owner arising under, growing out of or by reason of the work provided for by this contract whether brought by employees of the contractor, by third parties or by Central or State Government authority or any political sub-division thereof.

The contractor agrees to filing, with the Employees State Insurance Corporation, the Declaration Forms and all forms which may be required in respect of the contractor's or sub-contractor's employees whose aggregate remuneration as fixed by the concerned authorities and who are employed in the work provided for or those covered

by ESI Act under any amendment to the Act from time to time. The contractor shall deduct and secure the agreement of the sub-contractor to deduct the employee's contribution as per the first schedule of the Employee State Insurance Act from wages and affix the Employee's contribution Cards at Wages payment intervals. The contractor shall remit and secure the agreement of the sub-contractor to remit to the authorized bank, Employee's State Insurance Corporation Account, the Employee's contribution as required by the Act. The contractor agrees to maintain all Cards and records as required under the Actin respect of employees and the payments and the contractor shall secure the agreement of the subcontractor to maintain such records. Any expenses incurred for the contribution, making contribution or maintaining records shall be to the contractor's or sub-contractor's account.

The Owner shall retain such sum as may necessary, from the total 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 Compensation and Employee's Liability Insurance:

Insurance shall be effected for all the Contractor's employees engaged in the performs of this contract, if any of the work is sublet, the contractor shall require the sub-contractor to provide workman's compensation and employer's liability Insurance for the latter's employees if such employees are not covered under the contractors insurance.

iii) Any other Insurance Required Under Law or Regulations or by Owner:

Owner shall cover Project Material and Equipments under and over all Marine-cum-Erection Insurance Policy. Contractor shall carry and maintain any and all other insurance which be required under any law or regulation from time to time. He shall also carry and main any other insurance which may be required by the Owner.

iv) Automobile Liability Insurance:

Contractor shall take out an Automobile Liability Insurance to cover all risks to Owner for each of his vehicles plying on works of this contract and these insurance shall be valid for the total contract period. No extra payments 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 toss result from unauthorised use of the vehicle.

88. DAMAGE TO PROPERTY:

i) Contractor shall be responsible for making good, to the satisfaction of the Owner any loss of and any damage to all structures and properties belonging to the Owner or being executed or procured or being procured by the Owner or of other agencies within the premise all the work of the Owner, if such loss or damage is due to fault and/or the negligence willful acts or omission of contractor, his employees, agents,representative or \ sub-contractor.

ii) The contractor shall indemnify and keep the 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 results from the fault and/or negligence or willful acts or omission of contractor, his employees, agents, representatives or sub-contractors.

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89 LABOUR LAWS:

i) No labour below the age of eighteen years shall be employed on the work.

ii) The contractor shall not pay less than what is provided under the Minimum Wages Act for the applicable trade or category of workman to the worker engaged by him on the work and also ensure that any sub-contractors engaged by him also pay not below the applicable minimum wages under the Act and hold the company, indemnified in respect of any claims that may arise in respect or non-compliance with this requirements.

iii) The contractor shall observe all the formalities required under the provisions of the contract labour (Regulation and abolition) Act 1970 and the rules made thereunder and as may be amended from time to time. 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 him self registered under the Act. He shall produce the certificate of registration granted by the Govt. authority under the Act to the company before commencement of work. The company recognises 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 at least at rates equal to or better than wages provided for under the Minimum Wages Act.

iv) The Contractor will comply with the provisions of the employee's Provident Fund Act and the Family Pension Fund Act as may be applicable and as amended from time to time. Contractor shall obtain their own provident fund account number. Offer of the contractor who does not have provident fund account will be liable for rejection.

v) The Contractor will comply with the provisions of the Payment of Gratuity Act 1972 as may be applicable and as amended from time to time.

90 IMPLEMENTATION OF APPRENTICES ACT 1961:

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

91 CONTRACTOR TO INDEMNIFY THEOWNER:

i) The contractor shall indemnity the owner and every member, officer and employee of the Owner, also the Engineer-in-Charge and his staff against all actions, proceedings, claims, demands, costs, and expenses whatsoever arising out of or in connection with the matters referred to in clause 86 and all actions/ proceedings, claims, demands, costs and expenses which may be made against the Owner for or in respect of or arising out of any failure by the contractor in the performance of his obligations under the contract documents. The 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 or injury to any workmen or other person in the employment of the contractor or his sub-contractor and contractor shall indemnify and keep indemnified the Owner against all such damages and compensations and against all claims, damage, proceedings, costs, charges and expenses whatsoever, thereof or in relation thereto.

ii) <u>Payment of Claims and Damages:</u>

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

In every case to which by virtue of the provisions of Section 12, sub-section (I) of workmen's compensation Act 1923 or other applicable provisions of workmen's Compensation Act any other Act, the Owner is obliged to pay compensation to a workmen employed by contractor in execution of the works, the Owner will recover from the 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 security deposit or from any sum due to the contractor whether under the contract or otherwise. The Owner shall not be bound to contest any clime made under Section

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12, sub-section (I) of the said Act except on the written request of contractor and upon his giving to the Owner full security for all costs for which the Owner might become liable on consequence of contesting such claims.

iii) Employment Liability:

a) The contractor shall be solely and exclusively responsible for engaging or 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 right to make such payments directly, to such employee or sub-contractor of the contractor and recover the amount in full from the bills of Contractor, and the 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.

b) The Contractor shall advise in writing to all of his employees and the employees of his 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 owner.

92 (a) HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS:

In respect of all labour directly employed in the works for performance of the contractor's par this agreement, the contractor shall comply with or cause to be complied with all the rules and regulations of the local sanitary and other authorities or as framed by the Owner from time to time for the protection of health and sanitary arrangements for all workers.

(b) MEDICAL FITNESS CERTIFICATION :

Contractor shall follow guidelines for medical fitness certification of workers employed for working at height more than 30 metres using temporary structures.

93 SAFETY REGULATIONS:

i) In respect of all labour, directly or indirectly employed In the work for the performance of contractor's part of this agreement, the contractor shall at his own expenses arrange for all safety provisions as per safety codes of C.P.W.D. Indian Standard Institution, the Electricity Act, The Mines Act and any such other acts as applicable.

ii) The Contractor shall ensure that he, his sub-contractor and his, or their personnel or representatives shall comply with all Fire / Safety regulations issued from time to time by the Company or otherwise howsoever and should any injury resulting in death or not or loss / or damage due to Fire to any property or a portion thereof, occurred as a result of failure to comply with such regulations, the contractor shall be held responsible for the consequences thereof and shall keep the company harmless and indemnified.

94 DISPUTE RESOLUTION:

i) In the event of a dispute arising out of or in connection with this contract, including any question regarding its existence, validity or termination, the parties shall first seek settlement of that dispute by mediation in accordance with BPCL Mediation Scheme, 2025. The venue of mediation proceedings shall be at _____(Region/HQ from where the tender has been floated). BPCL Mediation Scheme 2025 can be accessed at https://www.bharatpetroleum.in/images/files/bpcl-mediation-scheme-2025.pdf

ii) If the dispute is not settled by mediation in terms of BPCL Mediation Scheme, 2025, then the dispute shall be referred for adjudication through a court of competent jurisdiction in India.

iii) The governing law of the contract shall be the substantive laws of India.

iv) Neither party shall be entitled for any pre-filing interest, i.e., from the date of cause of action till the date of filing of civil suit. Parties agree that any claim for any such interest shall not be considered and shall be void. The Civil Court/Commercial Court shall have no right to grant any pre-filing interest to either of the parties.

v) In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/Port Trusts inter se and also

between CPSEs and Government Departments/Organisations (excluding disputes relating to Income Tax, Customs & Excise Departments*), such dispute or difference shall be taken up by either party for its resolution through AMRCD as mentioned in DPE OM no. 05/0003/2019-FTS-10937 dated 14th December, 2022 and the decision of AMRCD on the said dispute will be binding on both the parties.

(* The exclusion would also include disputes concerning GST, State level Sales Tax / VAT etc; though not mentioned explicitly).

95 JURISDICTION:

The contractor shall be governed by the Laws in force in INDIA. The contractor hereby submits to the jurisdiction of the Courts situated at Mumbai/(Ernakulam-in the case of Kochi Refinery), for the purpose of actions and proceedings arising out of the contract and the courts at Mumbai/(Ernakulam-in the case of Kochi Refinery), only will have jurisdiction to hear and decide such actions and proceedings.

96 ORDER OF PRECEDENCE FOR WORKS / SERVICES CONTRACTS:

1. Contract Agreement (in GCC)
2. Detailed letter of Acceptance along with its enclosures
3. Letter of Award / Fax of Acceptance
4. Job Specifications (specific to particular job only)
5. Drawings
6. Special Conditions of Contract (SCC)
7. Technical Specifications
8. Instructions to Bidders
9. General Conditions of Contract (GCC)
10. Other Documents

Additionally, any variation or amendment / change order issued after signing of formal contract shall take precedence over respective clauses of the formal contract and its Annexures.

97 LIMITATION OF LIABILITY

The aggregate total liability of the Contractor to Owner 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. Neither Party shall be liable to the other Party for any kind of indirect or consequential loss or damage like, loss of use, loss of profit, loss of production or business interruption which is connected with any claim arising under the Contract.

98 POLICE VERIFICATION OF CONTRACT STAFF AND TRANSPORT CREW AT LOCATION:

The Contract staff should submit the following documents for enabling them to enter the location:
i) Police verification certificate issued by the police (PVC)
ii) Photocopy of Aadhaar Card (Original to be cross checked)
iii) Assurance certificate from the Vendor / Contractor /transporter

99 NUISANCE:

The contractor shall not at any time do, cause or permit any nuisance on site or do anything which shall cause unnecessary disturbance or inconvenience to Corporation, tenants or occupiers of other properties near the site and to the general public.

100 BUILDING AND OTHER CONSTRUCTION WORKERS CESS:

i) Bidders to note that under Building and other Construction Workers Welfare Act (Re&CS) Act 1996, Cess is applicable to contracts executed outside Factory Area (e.g. construction of new industrial installation, office & residential buildings etc.) as per the provisions applicable under 'The Building and Other Construction Workers Welfare Cess Act 1996'.

ii) 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.

iii) 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.

iv) Cess, as per the prevailing rate (presently 1%), shall be deducted at source from bills of the contactors by the Engineer-in-Charge and remitted to the "Secretary, Building and other Construction Workers Welfare Board" of the concerned State.

v) The contactor shall be responsible to submit final assessment return of the Cess amount to the assessing officer after adjusting the Cess deducted at source.

SECTION - IX

MEMORANDUM OF AGREEMENT

An agreement made this_____day_____of_____20 between BHARAT PETROLEUM CORPORATION LIMITED a Company Incorporated in India and having its registered office at Ballard Estate, Mumbai, (herein after referred to as 'the Company' which expression shall include its heirs, legal representatives, successors and permitted assignees) of the one part, and

_____

_____

_____

_____

(herein after referred to as "The Contractor" which expression shall include its heirs, legal representatives, successors and permitted assignees) of the other part, whereby it is agreed:-

1. The Contractor shall carry out and complete the work as mentioned in the Purchase order/Contract No. dated , (hereinafter referred to as "the work") for the Company at its specified site to its complete satisfaction in accordance with the specifications, schedule of rates and plans attached as per Purchase order/Contract and with the instructions given from time to time, by the Company's authorized engineer under whose supervision the work shall be-executed. The parties hereto agree that this agreement shall be effective from the date of the aforesaid Purchase Order/Contract.

2. Inspection of site: The Contractor has been given an opportunity before or at the time of the entrusting of the work to him of making an inspection of the site to set at rest any doubt he may have had about the difficulties attending his offer, and any difficulties which may be met with by him in the course of the execution of the work shall neither relieve him from fulfilling the terms of this Agreement, nor entitled him to claim extra payment or an extension of the period stipulated for the completion of the work, except where it will be agreed by the Company's authorized Engineer that such difficulties could not have been foreseen.

3. Supply of Labour and Materials: The Contractor shall furnish all labour, materials, equipment or tools necessary for the construction of the work, except such materials, equipment or tools as will be supplied by the Company and are detailed in Purchase order/Contract. The contractor will assume full responsibility for the protection and safety of the work during its construction. The details and dimensions shown on the said plans referred to in the Purchase order/Contract shall be strictly adhered to by the contractor and no alterations shall be made therein unless previous sanction thereto has been given in writing by the Company.

   (a) The Contractor shall prepare detailed and shop drawings and any other data required.

   (b) All materials supplied by the Contractor shall be of the best quality. The Contractor shall at his own cost arrange for and/or carry out any test of materials, which the Company's authorized Engineer may require.

   (c) The Contractor shall at the request of the Company's authorized Engineer immediately dismiss from the work any person employed thereon who, in the opinion of the Company's authorized Engineer, is unsuitable or incompetent or who, has been guilty of misconduct, and such person shall not again be employed or allowed on the works without the permission of the Company, in writing.

4. E. & O. E. No advantage is to be taken either by the Company or the Contractor of any clerical error or mistake, which may occur in the specification, schedule of rates, plans, tender or any other papers supplied to or by the contractor in connection with the work.

5. Damage on account of Incomplete work: The Contractor shall commence the work and shall complete the work as mentioned in Purchase order/Contract failing which the Contractor shall pay or allow to the Company to recover as liquidated damages, at the rate of minimum 0.5% per week of delay or part there of up to a maximum of 5% of the total contract value, if Liquidated damages clause is made applicable in the contract. Such damages may be deducted by the Company from any amount due to the contractor; otherwise they shall be recoverable by lawful means.

6. a) Determination of the Agreement: The company shall, at any time, be entitled to determine and terminate the contract, if in the opinion of the company, 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,

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brought by the contractor and lying at the site, at current market rates as verified and approved by company'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 company to the contractor of such determination and termination and reasons therefore shall be the conclusive proof of the fact that the contract has been so determined and terminated by the company.

Should the contract be determined as above and the contractor claims payment to compensate expenditure incurred by him in the expectation of completing the work, the company 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 company's decision on the necessity and propriety of such expenditure shall be final and conclusive and binding on the contractor.

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 the above clauses of this article.

b) Termination/Offloading: The contractor fully understands that timely completion of the work as per the schedule is of paramount necessity as otherwise it would lead to adversely affecting the schedules of other works/project with resultant financial and other losses to the Company. In view of this, the contractor unconditionally agrees and binds himself to be liable for all the consequences for non-completion of the work within the stipulated time.

In case a situation is brought about by the contractor warranting termination/off-loading of the whole or any part of the work for any reason whatsoever, the Company shall have the liberty and right to entrust/engage/award the work so terminated off loaded at the risk and cost of the contractor to any other agency/contractor by adopting any mode of inviting tenders, i.e. open/limited/single party/negotiation basis etc. in order to ensure completion of the work as per the schedule or at the quickest possible time.

7. Defective Work / Materials: If the work done by the Contractor or any part there of shall be found defective in workmanship or by reason of bad or inferior materials used, then in such case he shall at his own risk and cost without delay, demolish all such defective work and rebuild or replace the same in a satisfactory manner. The Company may, if necessary, at the cost and risk of the Contractor, temporarily stop all other activities by the Contractor in connection with the work until such time as the defective work has been rebuilt or replaced at the Contractor's cost. In case of default on the part of the contractor to remove defectives work and rebuild or replace the same without delay and in a manner satisfactory to the Company, the Company shall be entitled to employ another Contractor or its own workman to carry out the removal and rebuilding or replacing at the risk and cost of the contractor.

8. Substitution of Contractor : If the Company finds it necessary to employ a person or persons for the purposes provided in clauses 6 (b) and 7 above, then the Company may deduct and retain from out of the sums due to the contractor all such amounts as they may require to pay or to reimburse themselves there from in respect of the costs and expenses which they have incurred in completing the work and or in removing defective work and rebuilding or replacing the same in a manner satisfactory to the Company and if such amounts be more than the sums due or thereafter becoming due to the Contractor, than the balance, shall be a debt recoverable from the Contractor by the Company. The Contractor shall not in any manner do or cause to be done any act, matter or things whatsoever to prevent the person or persons so employed by the Company from removing defective work and re-building or replacing the same in a manner satisfactory to the Company and/or from, completing the work in the manner aforesaid.

9. Removal of Material: On the Determination of the Agreement as referred to in Clause 6, the Contractor shall at his own risk and cost remove from site within Seven days all his materials, equipment and tools. It is agreed that in case of such determination the company shall be entitled to purchase from the Contractor such materials as will be approved by the Authorized Engineer of the Company at the prices then current. If the Contractor does not remove the other materials, equipment and tools which he has been asked to remove within the time prescribed as aforesaid, the Company may remove and sell the same holding the proceeds less the cost of storage, removal and sale to the credit of the Contractor. Should Company incur any loss in respect of the sale, it shall be entitled to recover same from the Contractor.

10. Inspection of work: Inspection will be made periodically during the progress of the work by the authorized Engineer of the Company and all work performed must be of acceptable quality of which the said Engineer-in-Charge will be the sole judge.

11. Supervision: The Contractor shall during the whole time the work is in progress, employ one or more competent and technical English speaking Supervisors acceptable to the Company's authorized Engineer, one of whom at least shall be in constant attendance at the site while persons are at work there. Any directions, explanations, instructions, or notices in connection with the work given by the Company's authorized Engineer to these Supervisors shall be deemed to have been given to the Contractor.

12. Payment: The Company, in consideration of the contractor carrying out and completing the said work at the Company's said site, to the satisfaction of the Company, shall pay the contractor as per the said schedule of Rates, subject to deductions, retentions and abatements, if any to be made therefrom in accordance with the provisions of this Agreement. During the progress of the work and provided the work is progressing according to the time-table laid down to the contractor, the contractor shall be entitled once a month to receive advance payment on the above mentioned sum proportionate to such part of the work as shall have been executed during the preceding month but only after such part of the work as has been executed has been inspected and approved by the Company's authorized Engineer. From such interim payments each time 10% will be withheld as Security deposit and this 10% will be paid to the Contractor after the defect liability period, provided that any defects appearing during that period are corrected by him. OR

    100% payment will be made on the basis of actual executed quantities after satisfactory completion and due certification by BPCL Engineer-in-charge. In lieu of 10% Retention money towards Security deposit, contractor shall submit bank guarantee / Insurance Surety Bond of equivalent amount of retention money (10% of contract value) before submission of 1st Running Account (RA) bill valid for defects liability period specified. Further, the Bank Guarantee / Insurance Surety Bond shall have a claim period of six months beyond the date of expiry, and the same shall be mentioned clearly in the Bank Guarantee / Insurance Surety Bond.

13. Defects after Completion: Any defects which may appear within the defect liability period specified shall, upon the directions in writing of the Company and within such reasonable time as shall be specified therein be amended and made good by the Contractor, at his own cost unless the Company shall decide that the Contractor will be paid for such amending and making good, and in case of default on the Contractor's part, the Company may amend and make good or have amended and made good such defects and all damages, losses and expenses consequent thereon, incidental to those shall be borne by the Contractor and such damages, losses and expenses shall be recoverable from him by the Company or may be deducted by the Company from any moneys due to or thereafter becoming due to the Contractor. Alternatively, the Company may, in lieu of such amending and making good by the Contractor elect to deduct from any moneys due or thereafter becoming due to the Contractor a sum to be determined by the Company sufficient to cover the cost of amending and making good such defects, and in the event of the amount withheld in accordance with Clause 12 being insufficient, recover the balance from the Contractor together with any expenses the Company may have incurred in connection with such recovery. Should any defective work have been done or bad inferior materials supplied by any Sub-Contractor employed on the work, has been approved by the Company as provided in Clause 15, the Contractor shall be liable to amend and make good in the same manner as if such work or materials had been done or supplied by the Contractor. The Contractor shall remain liable under this Clause notwithstanding the signing by the Company's authorized Engineer of any certificate or the passing of any account.

14. Alterations: The Company reserves the right at any time to alter any quantities of any item indicated in the Purchase order/Contract, in which case the total amount payable to the Contractor shall be less or higher, proportionate with the reduction or increase in quantity of such item, allowance for which will be made at the Contractor's agreed rates.

15. Subletting Agreement: The Contractor shall not sublet or assign the work or any part thereof to another party without the written consent of the company and no such subletting or assignment shall relieve the contractor from the full and entire responsibility of his obligation under this Agreement.

16. Cancellation: The Company shall at any and all times during the period stipulated for the work, has the right forthwith to cancel this agreement by giving written notice thereof to the Contractor and in such case the Contractor shall be paid for such part of the work as has been executed by him up to the date of cancellation, on the basis of schedule of rates as per Purchase order/Contract and shall be reimbursed by the Company for the cost and expenses incurred by him but which would now be wasted as a direct consequence of the cancellation of the Agreement.

17. Workmen's Compensation Liability: The Contractor shall hold the Company harmless and indemnified from and against all claims, costs and charges for which the Company shall be liable under the Workmen's Compensation Act, 1923 and any amendments thereof and the expenses to which it shall be put thereunder, both in respect of personal injuries (within the meaning of the said Act) to the employees and servants of the Contractor or Sub-Contractors, (if any), arising out of, or occasioned during the currency of this agreement through the acts or omissions, whether due to negligence or not of the Contractor, Sub-Contractor and/or Company and/or their respective servants and employees and also in respect of the personal injuries (within the meaning of the said Act) to the servants and employees of the Company arising out of, or occasioned through the acts and omissions whether due to negligence or not of the Contractor, Sub-Contractor and or their servants and employees in carrying out any of the provisions of this Agreement. This indemnity shall be in addition to and not in lieu of any indemnity to which the Company shall be entitled in law. The Contractor shall at his own expense effect and

maintain, until the completion of the work, with an approved office a Policy of Insurance in the joint names of the Company and the Contractor, against such risks and deposit such Policy or policies with the Company from time to time during the currency of this Agreement. The Contractor shall be responsible for anything not included in the Insurance Policies above referred to and also for all other damage to person or property arising out of or incidental to the negligent or defective carrying out of this agreement and shall keep the Company harmless and indemnified. He shall also indemnify the Company in respect of any costs, charges or expenses arising out of any claim or proceedings and also in respect of any award of compensation or damages arising therefrom. The Company shall be entitled to deduct the amount of any damages compensation costs, charges and expenses arising or accruing from or in respect of any such claim or damages from any sum or sums due or thereafter becoming due to the Contractor.

18. Safety Regulation: The Contractor shall ensure that he/his Sub-Contractor and his, or their personnel or representatives shall comply with all safety regulations issued from time to time by the Company or otherwise howsoever and should any injury resulting in death or not or damage to any property occur as result of failure to comply with such regulations the Contractor shall be held responsible for the consequences thereof, shall keep the Company harmless and indemnified.

19. Dispute Resolution:

19.1 In the event of a dispute arising out of or in connection with this contract, including any question regarding its existence, validity or termination, the parties shall first seek settlement of that dispute by mediation in accordance with BPCL Mediation Scheme, 2025. The venue of mediation proceedings shall be at _____(Region/HQ from where the tender has been floated). BPCL Mediation Scheme 2025 can be accessed at https://www.bharatpetroleum.in/images/files/bpcl-mediation-scheme-2025.pdf

19.2 If the dispute is not settled by mediation in terms of BPCL Mediation Scheme, 2025, then the dispute shall be referred for adjudication through a court of competent jurisdiction in India.

19.3 The governing law of the contract shall be the substantive laws of India.

19.4 Neither party shall be entitled for any pre-filing interest, i.e., from the date of cause of action till the date of filing of civil suit. Parties agree that any claim for any such interest shall not be considered and shall be void. The Civil Court/Commercial Court shall have no right to grant any pre-filing interest to either of the parties.

19.5 In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/Port Trusts inter se and also between CPSEs and Government Departments/Organisations (excluding disputes relating to Income Tax, Customs & Excise Departments*), such dispute or difference shall be taken up by either party for its resolution through AMRCD as mentioned in DPE OM no. 05/0003/2019-FTS-10937 dated 14th December, 2022 and the decision of AMRCD on the said dispute will be binding on both the parties.

(* The exclusion would also include disputes concerning GST, State level Sales Tax / VAT etc; though not mentioned explicitly)."

20. Jurisdiction:

The contractor shall be governed by the Laws in force in INDIA. The contractor hereby submits to the jurisdiction of the Courts situated at Mumbai/(Ernakulam-in the case of Kochi Refinery), for the purpose of actions and proceedings arising out of the contract and the courts at Mumbai/(Ernakulam-in the case of Kochi Refinery), only will have jurisdiction to hear and decide such actions and proceedings.

21. Minimum Wages:

The Contractor, his executors and administrators (and in the case of a Limited Company, its successors and assigns) shall hold the Company harmless and indemnified from and against all claims, costs and charges, for which the Company shall be liable under the Minimum Wages Act, 1948, the Contract Labour (Regulation and Abolition) Act, 1970 and any amendments or modifications thereof, and all expenses it shall be put thereunder through the acts or omissions whether willful or not on the part of the Contractor. This indemnity shall be in addition to and not in lieu of, any indemnity to which the Company shall be entitled in law.

22. Employees State Insurance: This Contractor hereby admits that he is fully aware of his responsibilities under the

Employees State Insurance Act, 1948, as an immediate employer of the employees engaged by him for the execution of this contract which he agrees to discharge. The Contractor acknowledge the statutory right of the company (as a Principle Employer) to recover the amount of the contributions, paid by it in the first instance in respect of the employees employed by or through him (the Contractor), as well as the employee's contribution, if any, either by deduction from any amount payable to him by the Company under any contract or as debt payable by him to the Company.

In witness where of the said contracting parties have set their hands.

Witness _____

For Bharat Petroleum Corporation Ltd.

_____

For Bharat Petroleum Corporation Ltd.

Witness _____

Contractor's witness - Signature

Name & Address:-

_____

Contractor's Signature

Name & Address:-

PROFORMA OF BANK GUARANTEE

(On non-judicial paper of appropriate value)

FOR EARNEST MONEY / SECURITY DEPOSIT TOWARDS PERFORMANCE

To

Bharat Petroleum Corporation Ltd.

Dear Sirs,

M/s._____have taken tender for the work_____CRFQ No/PO No

_____for Bharat Petroleum Corporation Ltd.

The tender Conditions of Contract provide that the Contractor shall pay a sum of Rs._____ (Rupees_____) as earnest money/security deposit in the form therein mentioned. The form of payment of earnest money/security deposit includes guarantee executed by Scheduled Bank, undertaking full responsibility to indemnify Bharat Petroleum Corporation Ltd. in case of default.

The said_____have 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 conditions of the tender or in payment of any money payable to Bharat Petroleum Corporation Ltd. We shall on demand pay to you in such matter as to you may direct the said amount of Rupees_____only or such portion thereof not exceeding the said sum as you may from time to time require.

2. You will have the full liberty without reference to us and without effecting this guarantee postpones 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 for bear from endorsing any power of rights or by reason of time being given to the 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 change of constitution or insolvency of the said_____but shall in all respects and for all purposes be binding operative units 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 guarantees shall remain in force until_____unless a suit or action to enforce a claim under_____Guarantee is filed against us within six months from _____(which is date of expiry of guarantee) all our rights under the said guarantee shall be forfeited and shall be relieved 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.

Proforma of Insurance Surety Bond towards Bid Security (EMD) / Performance Security

[To be stamped in accordance with Stamp Act of India]

Insurance Surety Bond No. Date

To

[Bharat Petroleum Corporation Limited]

Dear Sirs,

In accordance with Invitation for Bids under your Tender No. & date……, M/s.....[Bidder's Name] ..... having its Registered / Head Office at ..... (hereinafter called the 'Bidder') wish to participate / have been awarded [as the case may be] in the said tender for ..... [Procurement description / Tender Title].

As an irrevocable Insurance Surety Bond against Bid Security (EMD) / Performance Security [as the case may be] for an amount of ..... [EMD / Performance Security amount] and remain in full force for a period of …… (days) i.e. up to [Validity Date] from the Bid Due Date and with an additional claim period of ……(days) i.e. up to [Claim Period Validity Date] required to be submitted by the Bidder as a condition precedent for participation in the said bid / award of contract [as the case may be] which amount is liable to be forfeited on the happening of any contingencies as mentioned under the Bidding Documents / Contract / LoA.

We, the ..... [Name of the Insurer] registered under IRDAI having our Head Office at .....[Address of the Insurer] guarantee and undertake to pay immediately on demand by Bharat Petroleum Corporation Limited (hereinafter called the 'Beneficiary') the amount of ..... [EMD / Performance Security amount] without any reservation, protest, demand and recourse. Any such demand made by the Beneficiary shall be conclusive and binding on us irrespective of any dispute or difference raised by the Bidder and / or any right / remedy available to the bidder in terms thereof.

This Insurance Surety Bond shall be unconditional as well as irrevocable and shall remain valid up to ..... [Claim date]. If any further extension of this Insurance Surety Bond is required, the same shall be extended to such required period on receiving instructions from M/s ..... [Bidder's Name] on whose behalf this Insurance Surety Bond is issued.

The Insurer declares that it has power to issue this Surety Bond and discharge the obligations contemplated herein, the undersigned is duly authorised and has full power to execute this Surety Bond for and on behalf of the Insurer.

The Surety Bond shall not be affected by any change in the constitution or winding up of the Bidder or the Insurer or any absorption, merger or amalgamation of the Bidder or the Insurer with any other person.

In witness where of the Insurer, through its authorised officer, has set its hand and stamp on this.....day of.....20.....at.....

.....
(Signature)
.....
(Name)
.....
(Designation with Insurer Stamp)

Contact Details & Address of Surety Insurer for verification:

Name (Official): ……

Branch Address:……

Telephone No.:……

Mobile No:……

E-mail:……

TAX RESIDENCY CERTIFICATE

TRC obtained by the Non-resident from Government of foreign country shall contain the following particulars:

a.Name of the assessee
ii. Status (individual, company, firm, etc.) of the assessee
iii. Nationality (in case of individual)
iv. Country or specified territory of incorporation or registration (in case of others)
v. Assessee's tax identification number in the country or specified territory of residence or in case of no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory
vi. Residential status for the purpose of Tax
vii. Period for which the certificate is applicable
viii. Address of the applicant for the period for which the certificate is applicable

FORM NO. 10 F

[See sub-rule (1) of rule 21AB of the Income-tax Act, 1961]
Information to be provided under sub-section (5) of section 90 or sub-section (5) of section 90A of the Income-tax Act, 1961

1. I_____*son/daughter of Shri_____in the capacity of_____(designation)do provide the following information, relevant to the previous year_____,*in my case/in the case of_____for the purposes of sub-section (5) of *section 90/section 90A:-

Sl. No.	Nature of information		Details #
(i)	Status (individual, company, firm etc.) of the assessee	:	
(ii)	Permanent Account Number (PAN) of the assessee if allotted :	:	
(iii)	Nationality (in the case of an individual) or Country or specified territory of incorporation or registration (in the case of others)	:	
(iv)	Assessee's tax identification number in the country or specified territory of residence and if there is no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory of which the assessee claims to be a resident	:	
(v)	Period for which the residential status as mentioned in the certificate referred to in sub-section (4) of section 90 or sub-section (4)of section 90A is applicable	:	
(vi)	Address of the assessee in the country or territory outside India during the period for which the certificate, mentioned in (v) above, is applicable	:	

2. I have obtained a certificate referred to in sub-section (4) of section 90 or sub-section (4) of section 90A from the Government of _____(name of country or specified territory outside India).

Signature:_____
Name:_____
Address:_____
Permanent Account Number :_____

Verification

I_____do hereby declare that to the best of my knowledge and belief what is stated above is correct, complete and is truly stated.

Verified today the_____day of _____

_____
Signature of the person providing the information

Place:_____

Notes:
1. * Delete whichever is not applicable.
2. #Write N.A. if the relevant information forms part of the certificate referred to in sub-section (4) of section 90 or sub-section (4) of section 90A.".

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BHARAT PETROLEUM CORPORATION LTD

ACKNOWLEDGEMENT

We, M/s._____having office at_____received the copy of GENERAL CONDITIONS OF CONTRACT and confirm our acceptance to all the terms and conditions as mentioned herein in this General Conditions of Contract and we are hereby returning this copy of Acknowledgement duly signed.

For & on behalf of M/s._____

Signature :
Name : _____

Designation : _____

(Seal / Stamp)

Place :

Date :

SPECIAL CONDITIONS OF CONTRACT

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1.0 INTRODUCTION

1.1 Special Conditions of Contract shall be read in conjunction with the General Conditions of Contract, Schedule of Rates/Prices, specifications of work, drawings and any other document forming part of this contract wherever the context so requires.

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 complimentary 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 GCC 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 override the provision(s) of GCC only to the extent that such repugnancy of variations in the Special Conditions of Contract are not possible of being reconciled with the provisions of GCC. Wherever it is stated in this Bidding Document that a supply is to be made or a work is to be carried out, it shall be understood that the same shall be made/carried out by the CONTRACTOR at his own cost, unless a different intention is specifically and expressly stated herein or otherwise explicit from the context. Contract Price shall be deemed to have included such cost.

1.4 The materials, design and workmanship shall satisfy the applicable relevant Indian Standards, the job specifications contained herein and codes referred. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied. In the absence of any Standard/ Specifications/Codes of practice for detailed specifications covering any part of the work covered in this bidding document, the instructions/directions of EIL will be binding upon the CONTRACTOR.

1.5 It will be the 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 which the conflict exists.

1.6 Order of precedence

The documents forming the Contract are to be taken as mutually explanatory of one another. If there is an ambiguity or discrepancy in the Term & Conditions defined in the various documents, the order of Precedence shall be as per clause no. 96 of GCC.

A variation or amendment issued after the execution of the formal contract shall take precedence over respective clauses of the formal contract and its Annexure.

2.0 LOCATION OF SITE

The Site is located at BHARAT PETROLEUM CORPORATION LTD., KOCHI REFINERY, AMBALAMUGAL in KERALA state.

3.0 LAND, POWER, WATER AND OTHER FACILITIES

3.1 Construction Water and Construction Power supply shall be as per Clause Nos. 2.3 of General Conditions of Contract (GCC) modified upto the extent as detailed below:

3.1.1. Construction Water

Owner shall provide construction water free of cost on a single point basis. Further distribution shall be in the scope of the contractor at his own cost. However, in case of interruption of water due to unforeseen reasons, contractor shall make alternate arrangement to meet the contingency. This cannot be considered as reasons for extension of completion time/extra claim.

Therefore, the CONTRACTOR shall, within the quoted price, make alternate arrangement to cope with such eventuality.

3.1.2. Construction Power

Construction power may be provided to the CONTRACTOR free of cost, from feeders of maximum capacity 400A, from power source identified by BPCL/EIL. Further distribution shall be in contractor scope at his own cost and responsibility. All the works related to laying of cable / distribution panel etc. for construction power shall be arranged by CONTRACTOR at his own cost.

Construction power will be made available to contractor subject to no restriction/disturbances in the main power system, and no extension of time or compensation shall be payable on this account. Therefore, the CONTRACTOR shall, within the quoted price, make alternate arrangement to cope with such eventuality. Additional power, if required, to meet the contractual requirements, shall be arranged by the CONTRACTOR at his own cost. Non-availability of power cannot be considered as reason for extension of completion time / extra claim.

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3.2 **Land For CONTRACTOR's Fabrication Yard and Storage Facility**

The land shall be allocated by Owner to the Contractor limited to the area required for setting up temporary site office/porta cabin, fabrication yard and temporary storage area (Approximately 1000 m2) without any cost to contractor.

Additional land (if required by Contractor) over and above the allocated land shall have to be arranged by the Contractor at their own cost.

No land shall be provided for accommodation purposes to the Contractor, or the purposes of any Contractor's personnel.

The Contractor shall remove all temporary buildings/ facilities etc. immediately after completion of works in all respects.

3.3 **Provision of Proper Warehousing**

In line with requirements specified in GCC and specifications, materials shall be properly stored by CONTRACTOR in his warehouse to enable easy traceability, handling and preservation with all materials having proper identification marks, colour coding etc. In case CONTRACTOR fails to follow the specified requirements, next payment due to him shall not be released till he complies with all the requirements to the satisfaction of Engineer-In-Charge.

4.0 TIME FOR COMPLETION

4.1 The work shall be executed strictly as per Time for Completion given in Invitation for Bids (IFB)/Letter Inviting Bids (LIB).

4.2 The Work shall be executed strictly as per time schedule given in **Annexure- I to SCC.** The time period of completion includes the time required for mobilisation as well as testing, rectifications, if any, retesting, commissioning and performance guarantee test runs, if any, and completion in all respects to the satisfaction of Engineer-In-Charge.

4.3 A joint programme of execution of work will be prepared by the Engineer-in-Charge/EIL and Contractor. This programme will take into account the time of completion mentioned above.

4.4 Monthly / Weekly execution programme will be drawn up by the Engineer-in-Charge/EIL jointly with the Contractor based on priorities and the joint programme of execution as referred to above. The Contractor shall scrupulously adhere to the Targets/Programmes by deploying adequate personnel, Construction Equipment, Tools and Tackles and also by timely supply of required materials coming within his scope of supply as per Contract. In all matters concerning the extent of target set out in the weekly/monthly programme and the degree of achievement, the decision of the Engineer-in-Charge will be final and binding on the Contractor.

4.5 Contractor shall give every day category-wise labour, Manpower and equipment deployment report along with the progress of work done on previous day in the format prescribed by the Engineer-in-Charge.

4.6 The Contractor shall submit fortnightly report covering all major activities indicating schedule / actual progress, slippages & its reasons and catch-up plan.

4.7 Fronts (i.e., Drawing front / Physical front (Corresponding to drawing)) shall be released to the Contractor as per **ANNEXURE – I TO SCC**.

4.8 Extension in time of completion due to delay in release of work fronts to the Contractor shall be as per **ANNEXURE – I TO SCC**. However, Time extension due to non-availability of drawing and/or physical front shall be considered only if the progress of work is corresponding to the Work fronts released.

5.0 SCOPE OF WORK

5.1 The scope of work in general includes scope of work specified in various Technical Specifications provided in Technical portion of the bidding document and Schedule of Rates (SOR) enclosed in 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.

5.2 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.

5.3 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/ informed from the content of Bidding Document, the cost for carrying out such activity of work shall be deemed to be included

6.0 SCOPE OF SUPPLY

6.1 The scope of supply is as mentioned in Job Specifications/ Technical Specifications, Schedule of Rates etc. of Bidding Document. All materials, equipments, labour & consumables required for successful completion of work as per the description of item in Schedule of Rates shall be supplied by the Contractor and the cost of such supply shall be deemed to be included in the quoted rates without any additional liability on the part of Owner except for the material specifically covered under Owner's Scope of Supply.

7.0 TERMS OF PAYMENT

7.1 The Terms of Payment for various items of Schedule of Rates shall be as per enclosed **ANNEXURE-II to SCC**.

7.2 The relevant provisions for Payment applicable for this Tender is specified in Bid Data Sheet (BDS) enclosed elsewhere in the Bidding Document.

7.3 Mobilization Advance and Secured Advance is not applicable for works covered under this Tender.

7.4 For all payment purposes, measurement shall be as set out in **ANNEXURE-III to SCC**.

7.5 Invoice Instructions:

Contractor shall submit the following documents along with the monthly invoices:

7.5.1 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 BPCL, KR ESI/PF SECTION AND A COPY TO EIL/BPCL every month before renewal of their ENTRY pass.

7.5.2 Undertaking by the Contractor regarding compliance of all statutes.

7.5.3 Certificate by the Contractor stating labour have been paid not less than minimum wages (as applicable).

7.6 75% of the basic amount of the Running Account bill may be released as down payment (interest free without BG) within 15 calendar days of receipt of Proforma invoice as advised by BPCL EIC on recommendation of PMC/EPCM consultant. RA bills payment (After applicable deductions etc) shall be carried out within 30 days from the date of release of down payment.

8.0 *TAXES AND DUTIES*

Provisions of Taxes and Duties of GCC is modified as per **Appendix-A** to SCC.

9.0 FIRM PRICES

The quoted price shall remain firm and fixed and valid until completion of the contract and shall not be subject to escalation for any reason whatsoever, except as specified below:

9.1 **No Price Variation is applicable for Subject Tender.**

9.2 **Statutory Variation in Taxes and Duties**

For statutory variation in Taxes and Duties, Refer **Appendix-A** to SCC

10.0 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.

11.0 UNDERGROUND AND OVERHEAD STRUCTURES

The CONTRACTOR will familiarise himself with and obtain information and details from Owner 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 Owner from and against any destruction thereof or damages thereto.

12.0 PROTECTION OF EXISTING FACILITIES

12.1 CONTRACTOR shall obtain all safety clearance (viz. Excavation, Hot/ Cold work permit) from Owner, 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.

12.2 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.

12.3 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 EIL and Owner/concerned authority.

12.4 CONTRACTOR shall take all precautions to ensure that no damage is caused to the existing pipelines, cables etc. during construction. Valve cabin of existing pipelines, other existing structures, existing stone pitching and other stabilisation measures along the track route

damaged/disturbed during construction shall be repaired and restored to their original condition by CONTRACTOR after completion of construction to the complete satisfaction of Owner/ EIL. No separate payment for restoration works shall be made to the contractor.

12.5 CONTRACTOR shall in consultation with Owner/ EIL and the concerned authorities, take adequate measures for strengthening the existing electric poles, telephone poles etc. in the proximity of the pipeline / cable alignment. CONTRACTOR shall take adequate protective measures to prevent damage to these facilities during construction. CONTRACTOR shall have to adopt such method of construction as will be suitable for working in these areas using the limited space available and without causing any damage to these facilities. Contractor shall be deemed to have taken cognizance of all such constraints, etc. while working in this area and Contractor shall not be entitled to any extra claim at a later stage.

13.0 CHECKING OF LEVELS

13.1 The Contractor shall be responsible for checking levels, orientation plan of all foundations, foundation bolts, etc., well in advance of taking up the actual erection work and bring to the notice of Engineer-in-Charge discrepancies, if any. In case of minor variations in levels etc. the Contractor shall carry out the necessary rectifications to the foundations within his quoted price.

13.2 The Contractor shall also be responsible for checking with templates, wherever necessary, the disposition of foundation bolts with the corresponding bases of structure and shall effect rectifications, as directed, within his quoted rate.

14.0 MINIMUM WAGES

14.1 There exists a Memorandum of Understanding entered into between the Management of Contractors represented by Regional Contractors Association and BPCL-Kochi Refinery Contractors Association their workmen represented by (1) General & Constructions Workers Union (CITU) and (2) Cochin Refineries General Workers Union (INTUC) on …. Over the charter of demands as part of Long Terms Settlement of Contract Workers in BPCL Kochi Refinery.

Contractors must abide by all agreements/MOUs both currently in effect and those to be agreed upon during the contract period, incorporating these terms within their quoted prices without imposing any additional financial burden on BPCL.

15.0 BUILDING AND OTHER CONSTRUCTION WORKERS CESS (BOCW)

BOCW Cess shall be applicable as per Clause No. 100 of GCC.

16.0 ESI/PF.

16.1 The Contractor should submit copy of Provident Fund (PF)/ Employee State Insurance Corporation (ESIC) registration certificate before commencing work.

16.2 The contractor shall enroll his employees to be deployed, under Employees State Insurance (ESI) and Employees Provident Fund (EPF) Schemes. The contractor is required to produce the original Register of Wages-cum-Muster Roll with the signature of workmen, duly certified by the Engineer-in-Charge witnessing payment of wages.

16.3 The contractor shall comply with the statutory obligations under the PF and ESI Act. If there is any default on the part of the contractor in this regard, payment of bills will be kept in abeyance till clearance of PF and / or ESI dues or the said dues will be recovered from the bills and paid to the authorities concerned.

16.4 The contractor should cover employee under his own ESI & EPF Codes and submit all relevant

documents. Ie., copy of ECR, PF payment receipt, challan & ESI challan and history as well as payment of salary in bank account passbook in each month during the period of work. . The contractor shall also furnish copy of the Return of Contribution for the relevant period to prove that his employees are covered under the Schemes.

16.5 In the case of employees who are getting above ESI wage ceiling, the contractor at its own cost shall take necessary insurance cover in respect of the aforesaid services,, and shall comply with statutory provisions of Workmen's compensation Act-1923. Contractors seeking exemption of such workers from coverage of ESI/EPF Schemes shall submit copy of payment of salary in bank account passbook of respective contract worker(s) during enrolment while renewing their passes, failing which such passes will not be renewed.

16.6 The contractor shall observe all the formalities required under the provisions of the contract labour (Regulation and abolition) Act 1970/ Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979 and the rules made thereunder and as may be amended from time to time. He shall pay the required deposit under the Act and produce the certificate of registration before commencement of work.

16.7 Contractor shall comply with statutory provisions of Employees State insurance Act 1948, Workmen's compensation Act-1923, The employees provident fund (and Misc. Provisions) Act-1952, The Minimum Wages Act—1948, Contract Labour (Regulation & Abolition) Act, 1970 & Rules 1971 / Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979/ any other rule/ regulations and/ or statues, that may be applicable. In case of Contractor's failure to fulfill any of the obligations hereunder and / or under the said Acts, rules/regulations and/or any bye- laws or rules framed under / or any of these, BPCL shall be entitled to recover any of such losses or expenses from the contractor's monthly payments.

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 the 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 unless NOC to this effect is obtained from present employer, but shall make maximum use of local labour available.

18.0 LABOUR

18.1 The Contractor shall make his own arrangements for the engagement of all labour for doing the work at site or in respect of or in connection with the execution of work as also for the transport, housing, feeding and payment thereof.

18.2 The Contractor shall at all times during the continuance of the contract comply fully with all existing Acts, Regulations and bye laws including all statutory amendments and re-enactment of State or Central Government and other local authorities and any other enactments and acts that may be passed in future either by the State or the Central Government or local authority, including Indian Workmen's Compensation Act., Contract Labour (Regulation and Abolition) Act, 1970 and Equal Remuneration Act, 1976, Factories Act, Minimum Wages Act, Provident Fund Act, etc., and sanitary arrangement for the said Act. Health and Sanitary Arrangements for workmen, Insurance and other benefits etc., and shall indemnify and keep the Owner/Engineer-in-Charge indemnified in case any proceedings are taken or commenced by any authority against the Owner/Engineer-in-Charge for any contravention of any of the laws, bye laws or scheme by the Contractor. If as a result of Contractor's failure, negligence, omission, default or non-observance of any provisions of any laws, the Owner/Engineer-in-Charge is called upon by any authority to pay or reimburse or required to pay or reimburse any amount, the Owner/Engineer-in-Charge shall be entitled to deduct the same from any money due or that may become due to the Contractor under this contract or any other contract or otherwise recover from the Contractor any sums which the Owner/Engineer-in-Charge is required or called upon

to pay or reimburse on behalf of the Contractor. All registration and statutory inspection fees in respect of his work pursuant to the contract shall be paid by the Contractor.

18.3 The Contractor shall pay the labourers engaged by him on the work not less than a fair wage, which expression shall mean, whether for time or piece work, rates of wages as may be fixed by the Govt. Of Kerala as fair wages or those notified under the Minimum Wages Act **and subsequent wages fixed during MOU with Contractor and Labour union working at Kochi Refinery** payable to the different categories of labourers

18.4 The Contractor shall notwithstanding the provisions of any contract to the contrary, cause to be paid a fair wage to the labourers indirectly engaged by sub-Contractors in connection with the said works as if the labourer had been directly employed by him.

18.5 The Contractor shall maintain records of wages and other remuneration paid to his employees in such form as may be convenient and to the satisfaction of the Owner/Engineer-in-Charge and the Conciliation Officer (Central), Ministry of Labour, Government of India, or such other authorised person appointed by Central or State Government and the same shall interalia include the following particulars of each worker:

i) Name, works number and grade.
ii) Rate of daily or monthly wage.
iii) Nature of work on which employed.
iv) Total number of days worked during each wage period.
v) Total amount payable for the work during each wage period.
vi) All deductions made from the wage with details in each case of the ground for which the deduction is made.
vii) Wage actually paid for each wage period.

18.6 The Contractor shall comply with all the precautions as required for the safety of the workmen by I.L.O. convention (No. 62) as far as they are applicable to the contract. The Contractor shall provide all necessary safety appliances e.g., safety shoes, hand gloves, full body harness, goggles, helmets, masks, etc.(as applicable) to the workmen and the staff.

18.7 LABOUR COLONY: Contractor shall arrange land for Labour colony at his own cost outside the refinery complex and project area

18.8 Contractor shall provide an emergency vehicle along with Driver for the entire duration of Construction activities at Site.

19.0 FUEL REQUIREMENT OF WORKERS

19.1 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.

20.0 RESPONSIBILITY OF CONTRACTOR

20.1 It shall be the responsibility of the CONTRACTOR to obtain the approval for any revision and/or modifications decided by the CONTRACTOR from the OWNER/ Engineer-in-Charge before implementation. Also such revisions and/ or modifications if accepted/ approved by the OWNER / Engineer-in-Charge shall be carried out at no extra cost to the OWNER. All expenses towards mobilisation at site and demobilisation including bringing in equipment, work force, materials, dismantling the equipment, clearing the site etc. shall be deemed to be included in the prices quoted and no separate payments on account of such expenses shall be entertained.

20.2 It shall be responsibility of the CONTRACTOR to provide, operate and maintain all necessary construction equipment, steel scaffoldings and safety gadgets, cranes/ derrick and other lifting tackles, tools and appliances to perform the work in a workman like and efficient manner and complete all the jobs as per time schedules without any extra cost to the OWNER.

20.3 Preparing approaches and working area for the movement and operation of the cranes/ derrick,

levelling the areas for assembly and erection shall also be responsibility of the CONTRACTOR. The CONTRACTOR shall acquaint himself with access availability facilities, such as railway siding, local labour etc., to provide suitable allowances in his quotation. The CONTRACTOR may have to build temporary access roads to aid his own work, which shall also be taken care of while quoting for the work.

20.4 The CONTRACTOR shall be responsible for procurement and supply in sequence and at the appropriate time of all equipments/ materials and consumables and his rates for execution of work will include supply of all these items, other than specifically mentioned in the Owner's scope of supply.

20.5 The contractor shall make all provisions for monsoon protection cover to ensure that there shall not be any stoppage/ hindrance in working during monsoon season.

20.6 The CONTRACTOR shall remove all temporary buildings / facilities etc. before leaving the site after completion of works in all respect.

21.0 SITE ORGANISATION

21.1 The Contractor shall without prejudice to his overall responsibilities and liabilities to provide adequate qualified and skilled personnel on the work as per **Annexure-V to SCC** and shall deploy site organization and augment the same as decided by the Engineer-in-Charge depending on the exigencies of work. Qualification and Experience of key construction personnel shall be as per document no. 7-82-0003 (enclosed as **Annexure-VI to SCC**). In addition to this, Contractor shall deploy Safety Supervisors to ensure safer working conditions at site. In case where the works are Subcontracted by the main Contractors , Safety Supervisors are to be provided by the main Contractor.

22.0 QUALITY MANAGEMENT SYSTEM

22.1 The Contractor shall adhere to the quality assurance system as per EIL Specification No. **6-78-0001** 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.

22.2 The CONTRACTOR shall establish document and maintain an effective quality assurance system as outlined in recognised codes.

23.0 COORDINATION WITH OTHER AGENCIES

23.1 Contractor shall be responsible for proper coordination with other agencies operating at the site of work so that work may be carried out concurrently, without any hindrance to others. The Engineer-in-Charge shall resolve disputes, if any, in this regard, and his decision shall be final and binding on the Contractor.

23.2 If and when required for the coordination of the works with other agencies involved at site, the Contractor shall within the scope of work, re-route and/or prepare approaches and working areas as may be necessary.

24.0 CONSTRUCTION

24.1 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.

24.2 Various procedures and methods to be adopted by CONTRACTOR during the construction as required in the respective specifications shall be submitted to OWNER in due time and well in advance of the specific work for approval.

24.3 The CONTRACTOR shall carry out required supervision as per Quality Assurance Plan and furnish all assistance required by the OWNER/EIL in carrying out inspection work. The OWNER/EIL will have authorised representatives present who shall have free access to the work at all times. If an OWNER's/EIL'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

25.0 DRAWINGS

25.1 Drawings accompanying the Bidding Document, if any, are indicative of scope of work and issued for bidding purpose only. Purpose of these drawings is to enable the bidder to make an offer in line with the requirements of bidding document. However, no extra claim whatsoever shall be entertained for any variation in the "Approved for Construction" and "Bidding Document Drawings" regarding any changes/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 programme evolved after the award of work and also based on construction progress achieved.

25.2 Detailed working drawings on the basis of which actual execution of the works is to proceed, will be furnished from time to time during the progress of the work. The contractor shall be deemed to have gone through the drawings and bring to the notice of the Engineer-in-Charge discrepancies if any, therein before actually carrying out the work.

25.3 Copies of all detailed working drawings relating to the works shall be kept at the Contractor's office on the site and shall be made available to the Engineer-in-Charge at any time during execution of the contract. The drawings and other documents issued by the Owner shall be returned to the Owner on completion of the works.

26.0 MAKE OF MATERIALS

26.1 All equipment and materials to be supplied under this Contract shall be from approved vendors as indicated in the Technical Volume of the Bidding Document.

26.2 Where the makes of materials are not indicated in the Bidding Document, the CONTRACTOR shall furnish details of proposed makes for supplies and supply the same after obtaining the OWNER's/Engineer-In-Charge's approval.

26.3 VENDOR LIST FOR CEMENT AND STEEL

The Contractor shall purchase TMT Bars, Structural Steel and Cement as per the provisions defined in **ANNEXURE-XII of SCC**.

27.0 SITE CLEANING

27.1 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.

27.2 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 by the CONTRACTOR at his cost, to the satisfaction of the Engineer-in-Charge, failing which the same shall be rectified/restored at the risk and cost of CONTRACTOR by Engineer-In-Charge, whose decision shall be final and binding upon the CONTRACTOR.

27.3 The CONTRACTOR shall be the custodian of the dismantled materials till the OWNER / Engineer-in-Charge takes charge thereof.

27.4 The CONTRACTOR shall dispose off the unserviceable materials, debris etc. to any area within premises/ other area as directed by the Engineer-in-Charge.

27.5 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.

27.6 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.

28.0 CLEARANCE OF SITE ON COMPLETION

28.1 Upon the issue of the taking-over certificate the Contractor shall clear away and remove from the part of the site to which such taking-over certificate relates all Contractors equipment, surplus material, rubbish and temporary work of every kind and leave such part of the site and works clean and in a workmanlike condition to the satisfaction of the Engineer-in-Charge. Provided that the Contractor shall be entitled to retain on site, until the end of the defects liability period, such materials, Contractors equipment and temporary works as are required by him for the purpose of fulfilling his obligations during the defects liability period.

29.0 MECHANISATION OF CONSTRUCTION ACTIVITIES AND MOBILISATION OF CONSTRUCTION EQUIPMENT

29.1 MECHANISATION OF CONSTRUCTION ACTIVITIES

29.1.1 The Contractor shall mechanise the construction activities to the maximum extent by deploying all necessary construction equipment/ machinery in adequate numbers and capacities.

29.1.2 For speedy execution of work, Contractor shall also ensure use of computer software for at least the following:

(i) Billing
(ii) Planning & Scheduling
(iii) Progress Reporting
(iv) Material Control & Warehousing
(v) Safety Records
(vi) Resource Deployment
(vii) Communication

29.1.3 Contractor further agrees that Contract price is inclusive of all the associated costs, which he may incur for actual mobilization, required in respect of use of mechanized construction techniques and Owner/EIL in this regard shall entertain no claim whatsoever.

29.1.4 MOBILISATION OF CONSTRUCTION EQUIPMENTS

The Contractor shall without prejudice to his responsibilities to execute and complete the work as per the specifications and time for completion, progressively deploy Key construction equipment and further augment the same depending on the exigencies of work as per **Annexure-VIII to SCC** and as decided by the Engineer-in-Charge so as to suit the construction schedule within scheduled completion date without any additional cost to Owner/EIL.

Modular concepts & prefabrication & pre-cast methods to the extent the same adds value in terms of quality, safety & cost effectiveness & other techniques for fast tracking the implementation during construction shall be adopted with the approval of Engineer-in Charge

29.1.5 CALIBRATION REQUIREMENTS OF MONITORING AND MEASURING DEVICES AT CONSTRUCTION SITE

Calibration Requirements of Monitoring and Measuring Devices at Construction Site shall be as per document no. 7-82-0002 (enclosed herewith as **ANNEXURE-IX of SCC**).

29.1.6 Work in Monsoon Season

In addition to the Section No. V - 48 of General Conditions of Contract, CONTRACTOR shall submit within 15 days of award of work, to the Engineer-in Charge / OWNER, his contingency plan for work during monsoon clearly stating their methodology/ strategy to progress uninterruptedly during monsoon mentioning the deployment of resources viz, numbers, capacity, category of equipment and manpower on a weekly basis for approval. During monsoon

and other periods, it shall be the responsibility of the BIDDER to keep the construction work site free from water at his own cost by deploying suitable dewatering pumps.

CONTRACTOR shall make adequate arrangements for uninterrupted working during monsoon season at site. The CONTRACTOR shall make all provisions for monsoon protection cover to ensure that there shall not be any stoppage/ hindrance in working during monsoon season.

Contractor cannot claim any additional time or cost due to monsoon period during the execution of the contract.

30.0 CONDITIONS FOR ISSUE AND RECONCILIATION OF FREE ISSUE MATERIALS

30.1 Free Issue Materials (FIM), if any, shall be issued as per terms and conditions set forth in the General Conditions of Contract (GCC) from Owner's stores or other issue points of EIL/BPCL

30.2 Every month, Contractor shall submit an account for all materials issued by Owner's 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's.

30.3 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.

30.4 The conditions for issue of materials by Owner's and reconciliation of such materials shall be as per specification No. 7-82-0001 attached herewith as **Annexure-X** to these Special Conditions of Contract. This shall not be applicable for the materials supplied by Contractor.

30.5 Contractor shall arrange to handover piping and cables scrap arising out of civil, structural, mechanical piping and electrical & instrumentation works to OWNER at OWNER's scrap yard. The scrap shall be put in OWNER designated scrap yard properly segregated and weighed. Contractor shall refer Annexure-X to SCC for definition of Scrap **(applicable for Free Issue Materials only)**

31.0 DISPOSAL OF SURPLUS MATERIALS (INCLUDING SCRAP AND DEBRIS) BY CONTRACTOR

31.1 FOR MATERIALS SUPPLIED BY CONTRACTOR:

a) The surplus materials supplied by Contractor and paid by BPCL shall be handed over by the Contractor to BPCL in their storage yard/designated area.

b) Contractor shall be allowed to take back the extra/surplus material brought to site which has not been billed to and paid by BPCL.

c) All scrap generated out of Construction works shall be handled as per clause no. 83.3a) of GCC. Contractor shall refer Annexure-X to SCC for definition of Scrap.

31.2 The Contractor shall not dump any material in the vicinity of the existing facilities of the BPCL or the facilities which are being installed under the Contract. Contractor shall dispose the scrap & waste at a place and lead to be identified by EIL/ BPCL. Construction waste, surplus earth shall be disposed outside the refinery at a safe / undisputed place. Arrangement for land for disposal of surplus earth and waste shall be in contractor's scope. Contractor to take necessary approvals from the local and statutory authorities for such disposal. All dismantled pipes and steel material shall be transported to EIL/ BPCL stores complex after weighing the same through EIL/BPCL Weigh Bridge by Contractor.

31.3 HOUSEKEEPING & SCRAP MANAGEMENT

The contractor shall maintain good housekeeping on day to day basis at the site/fabrication yard. All construction material brought by the contractor (like sand, coarse aggregate, shuttering material, scaffolding pipes etc.), steel scrap (like structural steel, reinforcement steel etc.) &

other debris (like earth, shrubs, rubbish etc.) generated at site shall be stacked neatly in well defined spaces at no extra cost. Additional manpower as & when required for housekeeping shall be arranged by contractor immediately as per direction of Engineer-in- charge.

Cart away all the debris generated from the work outside the Refinery at his own cost and dispose it keeping BPCL indemnified of any liability and without giving rise to any complaints from local, municipal and government authorities. Metal scrap or any other scrap including wooden material shall be disposed at designated location at his own cost as indicated by the Engineer in Charge.

All moveable, salvageable, serviceable material shall be dismantled carefully and transported/ stored within refinery premises/scrap yard as directed by Engineer in charge.

In case the contractor fails to maintain the housekeeping at work site / fabrication yard / office space, the same shall be carried out by EIL/BPCL by deploying other agencies at risk and cost of the contractor. In addition of the same a financial penalty as per financial deterrent for violation of HSE norms against poor housekeeping will be imposed on the contractor. The financial implication of above, if any should be taken care in the quoted rate and no separate claim shall be entertained on this account.

The final bill of the contractor shall be linked with the area cleaning in all respects including disposal of debris/scrap etc. to the entire satisfaction of Engineer in charge.

31.4 HANDLING OF SURPLUS MATERIALS (FREE ISSUE AND CONTRACTOR SUPPLIED):

For surplus materials/ scrap materials generated by Contractor, after the completion of the Contract , the following shall govern:

a) An inventory shall be made by the Contractor of all left over/ surplus materials including but not limited to scrap, wastages and unserviceable material supplied and/ or remaining at the project site in possession of the Contractor, upon completion of the contract.

b) Any project left over items, which are no longer required for project and which has insignificant residual value, should be suitably disposed of or be destroyed off by the Contractor, with prior approval of Owner/EIL.

c) If the project left over/ surplus materials are not removed by the Contractor from the Project site, within a period of 2 (two) months after due intimation by Owner/Owner's representative/EIL to Contractor to do so, Owner/EIL shall be free to dispose these left over/ surplus project materials at its sole discretion without any recourse available to the Contractor. Notwithstanding the same, value realized from disposal of project left over/surplus project materials not so removed by Contractor shall be retained by the Owner and Contractor shall not raise any claim in any manner whatsoever for the value so realized by Owner.

d) For the materials as detailed in clause 31.1 b) above, necessary approval from BPCL/EIL will be taken by the Contractor for taking out the leftover/ surplus materials from project site after obtaining due recommendation from the BPCL/EIL.

32.0 ENTRY PASSES, GATE PASSES AND WORK PERMITS

32.1 The works under this contract are to be carried out in areas within the existing Refinery, adjacent or adjoining to an existing operating Refinery. As such, the CONTRACTOR and its SUB-CONTRACTOR and their employees and agents are required to abide by safety and security regulations of the OWNER in force from time to time.

32.2 WORKING HOURS

Contractor shall follow central/ BPCL enactment for working hours and shall obtain due permissions from Owner/ EIL under such enactment wherever required. Contractor shall solely

be responsible for any infringements and consequential penalties or payments. The working in operational area shall be allowed between sunrises to sunset hours. Hot / cold work permits against specific safety conditions shall be required to be obtained by Contractor in advance as per guidelines of BPCL work permit system. Contractor may be allowed to work for 24 hours to meet project schedule. All necessary arrangements including lighting for working during night shall be in contractor's scope of work.

Normally Contractor shall be allowed to work on 6 days a week. For carrying out work beyond working hours; and on Sunday and holidays, Contractor shall approach the Engineer- In-charge or his authorized representative and obtain his prior written permission and permits.

It shall be clearly understood that such overtime working of Contractor's personnel and equipment deployment therefore shall solely be to the cost and account of Contractor and Owner/EIL shall in no way be responsible to compensate him for the same. No extra claim shall be entertained by Company on any account.

Contractor shall be ready to arrange for additional manpower and machinery for the work in late evenings / night hours if required and ordered by Owner/EIL for completion of work as per the permissions given by Plant authorities.

32.3 IDENTITY CARDS

32.3.1 Contractor shall ensure that the proper identification card are issued by Contractor or its Sub-Contractor to their employees/ workers to be deputed by him for the work, duly signed by the Contractor or an authorized person on behalf of the Contractor.

32.4 ENTRY PASSES

32.4.1 The CONTRACTOR has to apply for photo Entry Passes for its workers and staff and the workers and staff of its SUB-CONTRACTOR in a prescribed proforma provided by the OWNER. The Application shall be accompanied by a Statement and Declaration in the form prescribed by the OWNER signed by the employees for whom the Entry Passes are sought and confirmed by the employer. The photo Entry Passes shall be issued by the OWNER and same needs to be renewed on monthly basis & will be extendable upon application of the CONTRACTOR. Necessary administration charges for above as applicable to be absorbed by the CONTRACTOR.

32.4.2 Unutilized / expired Entry Passes/ Identity Cards shall have to be immediately surrendered to the OWNER.

32.4.3 In case of the loss of an Entry Pass/Identity Card the CONTRACTOR shall immediately lodge an FIR with the local police station and inform the Engineer-in-Charge of the loss and shall pay a charge as per BPCL guidelines against Entry Pass / Identity Card lost. The CONTRACTOR is required to keep an account and track of all Entry Passes issued and surrendered.

32.4.4 Employees of the CONTRACTOR or SUB-CONTRACTOR while working inside the Plant should always display gate Passes/Identity Cards issued by the Security Section. Entry inside BPCL Refinery premises is allowed only with all necessary PPE's required for execution of works at site.

32.4.5 It shall be the responsibility of the Contractor to fully comply with the following Security Provisions:

(i) Entry/Access to any field / facility is governed by rules & regulations formulated from time to time by the Government of India and / or its concerned departments / agencies, which are binding on the EIL/ BPCL and Contractors, etc. All such rules and regulations (including amendments if any) are to be complied without any time and cost impact to the EIL/ BPCL. The present requirements in this regard are as follows:

For all the personnel (Indian/Foreigners) of Contractor and/or their subcontractors (of Contractor), the Procedure for security clearance as listed below will have to be strictly followed/complied with before entering the Work Site. Any subsequent changes/modifications as may be issued from time to time in this regard shall also have to be duly complied without any time and cost impact to the EIL/ BPCL.

BPCL Security Section has right to deny permission to any person to go to the Site in case either the required procedures are not complied with or any person comes without stipulated advance notice, and in that case the EIL/ BPCL will not be liable for any cost and time impact.

Duty/ Entry Passes for all the personnel are to be obtained well in advance from the Security Section of the EIL/ BPCL after providing the prescribed Declaration Forms along with 2 stamp size photographs in respect of each person.

(a) Indian nationals: Before mobilising/ deputing Contractor's persons (Indian nationals) at Site and/or its subcontractor/ vendor representative (of Contractor), etc. Contractor will submit minimum 2 weeks in advance a complete list of the persons along with necessary police verification to enable BPCL's Security Section to issue necessary non employee duty (NED) passes without which no person of Contractor/subcontractor or vendor (of Contractor) is allowed to proceed to Site.

(b) For Foreign nationals : At least 4 weeks in advance the Contractor will submit for obtaining necessary clearances from Ministry of Home Affairs (MHA) etc. a list of all foreign nationals required to be mobilised to site. Following information shall be provided:

i. Full Name
ii. Passport No. date and place of issue
iii. Nationality
iv. Date of Birth
v. Parentage
vi. Present Address
vii. Permanent Address
viii. Validity of the passport
ix. Details of the visa
x. Date visited India last
xi. Purpose
xii. Duration of the last visit and
xiii. Occupation.

Contractor is to ensure that only such expatriates who are having valid passports and valid business visas are deployed for work under the Contract. Expatriates having Tourists visas are not permitted to work at site.

Contractor's personnel (crew/workers) should not be in possession of any personal camera/photography materials, Arms/ ammunition, liquor, prohibited drugs etc.

All duty/ entry passes issued for the Construction activities should be surrendered to security section of the BPCL promptly after construction activities are over in a particular working season.

Contractor is to ensure that all the personnel engaged by them abide by the Security & Discipline Rules prescribed from time to time by the Security Section of the EIL/ BPCL.

(ii) The schedule(s) prescribed in the foregoing paras for advance submission of details regarding personnel clearance is indicative only as the clearances are to be accorded by the concerned departments of the Govt. of India. Hence EIL / BPCL will not be liable for any time & cost impact due to any delays on this account or due to change of procedures etc. in this regard.

32.5 Gate Passes

32.5.1 To bring materials, equipment, tools and tackle and other things inside the Refinery for construction work, the CONTRACTOR has to produce proper documents of title or authority relative there to for inspection by personnel of the OWNER at gate. These shall be checked thoroughly by personnel of the OWNER at the Gate and recorded in their Register before permitting the same to be brought inside the Refinery limits. It is the responsibility of CONTRACTOR to see that the entry is duly recorded in the Register with proper Entry Number, date and signature of authorized representative of OWNER and that the supporting challans/

documents are stamped and signed by personnel of OWNER at the gate at the time of entry.

32.6 WORK PERMIT

32.6.1 In order to keep the OWNER informed of the various jobs being undertaken within the Refinery, adjacent or adjoining to existing Refinery and to enable the OWNER to regulate the same to ensure the observance of safety regulations relative thereto. When work is to be carried out in hazardous areas, a Hot Work Permit is to be obtained by the CONTRACTOR from the OWNER before start of work on jobs which are capable of generating a flame, spark or heat e.g. gas cutting, grinding, welding, use of any electrical, diesel, petrol or battery operated prime mover, machine, tool or equipment or generator set, mixer machine, drilling machine; pump, crane, fork lift or hand truck or trailer or chipping or breaking of rocks or concrete or hacksaw cutting and drilling. Similarly the CONTRACTOR is to obtain a Cold Work Permit from the OWNER for jobs which do not come under the category of hot work and in respect of which there is no risk of fire e.g. transportation, backfilling of ordinary soil by manual process, pile testing, hydrotesting, shuttering, fixing of reinforcement, hand mixed concreting, plastering and brick work.

32.6.2 Depending on the nature of the work and the equipment and tools involved the CONTRACTOR shall apply for Cold/Hot Permit in a prescribed format at least 7 (seven) days before the work is planned to start. No Work Permit shall be issued by OWNER unless proper arrangement is made by the CONTRACTOR to ensure safe performance of the work inside the Refinery limit. Job-wise and area wise permits shall be issued to the CONTRACTOR and for work against each permit the CONTRACTOR shall post at site at least one Construction Supervisor and one Safety Supervisor of required level to ensure the due observance of all safety requirements. Proper barricading as per BPCL requirement shall be installed by Contractor.

32.6.3 For working outside operational area and outside KR operational boundary limit ; but within BPCL allocated area / project premises ; Contractor and its sub contractor to follow work permit system as mentioned in EIL HSE guidelines (6-82-001, Rev-2) . the CONTRACTOR shall keep EIL/BPCL informed at least 7 (seven) days before the work is planned to start. Work Permit may be confiscate by EIL/OWNER if proper arrangement are not made by the CONTRACTOR to ensure safe performance of the work . Job-wise and area wise permits shall be issued to the CONTRACTOR and for work against each permit the CONTRACTOR shall post at site at least one Construction Supervisor and one Safety Supervisor of required level to ensure the due observance of all safety requirements. Proper barricading as per BPCL requirement shall be installed by Contractor.

32.6.4 **Vehicle Permit**

32.6.5 Permits are to be obtained separately for entry/use of vehicles / trailers and other mobile equipment inside the Refinery limits/project area. All the vehicles of CONTRACTOR should have a valid PUC certificates. The following requirements are to be met to obtain vehicle permit:

a. Vehicle/Equipment shall be in good condition and fitted with spark arrestor.

b. Vehicles should carry, wherever applicable, Valid Road tax certificate and fitness certificate from the competent authority and insurance policy.

c. Valid operating/driving license of driver/operator.

d. Type of vehicle which is allowed inside the plant shall be as per the directions given by OWNER.

32.7 Validity of the Permit

a. Any Hot or Cold Work Permit issued is issued as per BPCL Project /Operation shift rotation for operational area of KR.

b. Thereafter clearance must be renewed for each shift (Morning & Evening) by the shift in-charge/ shift representative of the OWNER.

c. The cold work permit for defined project areas may be renewed for a maximum period of one week from the date of issue and if extension is required, the CONTRACTOR has to apply for a fresh permit.

32.8 Safety Regulations

32.8.1 Regarding Work Permit

a. The work shall be carried out inside the Refinery limits to conform to the OWNER'S safety section and in accordance with any instructions of Engineer-in-Charge issued from time to time. Sometimes working hours may be drastically reduced or increased to satisfy safety requirements and the CONTRACTOR shall meet these requirements without any time and cost implications. No claim for idling of machinery, plant, manpower or equipment shall be entertained for reason of delay in the issue of a Work Permit and it shall be the exclusive responsibility Of the CONTRACTOR to apply for, pursue and obtain the requisite Work Permit(s) well in advance of the relative requirement(s).

b. The CONTRACTOR shall abide by all safety regulations of the plant and ensure that safety equipment for specific jobs as stipulated in the Factories Act Safety Handbook is issued to all employees during the execution of work, failing which all the works at site shall be suspended.

32.9 Regarding Hot Work

a) When doing hot work inside the plant the CONTRACTOR must ensure that the fire hose is hooked up with a fire water system and extended to the work spot. In addition, at least one fire extinguisher must be kept near the working spot .The area around and below the place of hot work must be adequately protected from sparks and hot metals by a booth made of asbestos, cloth/sheet and by wetting with water. In addition, depending on the location and hazard of the work, the CONTRACTOR shall at its own cost arrange sufficient number of additional fire hoses and such firefighting equipment of approved quality as may be required at his own cost to carry out hot job inside the plant.

b) Welding & electrical cables should be of approved quality and no jointing or loose connection shall be permitted.

c) At the end of the working day the CONTRACTOR must inform the electrical section to switch off power at sub-station end.

d) The CONTRACTOR must provide cotton clothes, safety shoe, safety helmet, safety belt, and hand gloves of approved quality to his workers to meet the safety requirement of various jobs to be carried out inside the Plant.

33.0 CONTRACT PERFORMANCE GUARANTEE / SECURITY DEPOSIT

Provisions of Contract Performance Guarantee shall be as per Clause No. 18 of GCC. Format of Bank Guarantee shall be as per GCC. The list of acceptable banks for BG submission is attached as **Annexure XVI** to SCC.

34.0 REQUIREMENTS FOR DOCUMENTATION

34.1 The Contractor shall adhere to the requirements for Documentation as per Specification no. 6-78-002 attached as **Annexure- XI** to Special Conditions of Contract.

34.2 Record Maintenance which are essential as part of CTE requirements are as per following:

- Daily Progress Report
- Maintenance of Hindrance Register

- Cement Consumption Register
- Pile Bore Logs
- Pour cards
- Gate Passes for Steel & Other material entry
- Scrap Reconciliation report
- Survey Field Note Books certification
- Maintenance & Certification of Cube test reports
- Safety Register
- Measurement Book
- Lab Test reports
- Drawings Control register
- Deviation Permits / Cost Benefit calculation, review of contractor documents & recommendation
- Seigniorage records maintenance, reconciliation, Follow up with contractors for MRC, etc.
- Bar Bending Schedule
  - Daily Attendance Register
  - Records of payments of ESI, EPF, Insurance, etc.
  - Details of Safe Manhours "

35.0 ELECTRICAL WORKS

35.1 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 shall be conducted.

35.2 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.

35.3 The CONTRACTOR or its nominated Sub-Contractor(s), as the case may be, shall have a valid electrical contractor's license from Kerala Licensing Authority for executing Electrical works in the state of Kerala. 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.

36.0 STATUTORY APPROVALS

36.1 Unless otherwise specified in the Bidding Document, it shall be the CONTRACTOR'S sole responsibility to obtain all approvals from any authority (except for environment clearance) required under any statute, rule or regulation of the Central or State Government concerned for the performance of the contract and/or the contractual work. The application on behalf of the OWNER for submission to relevant authorities alongwith copies of required certificates complete in all respects shall be prepared and submitted by the CONTRACTOR well ahead of time so that the actual construction/commissioning of the works is not delayed for want of the approval/inspection by the concerned authorities. The CONTRACTOR shall arrange for the inspection of the works by the authorities and will undertake necessary coordination and liaison required and shall not be entitled to any extension of time for any delay in obtaining such

approvals.

36.2 Statutory fees, if any, paid for all such inspections and approvals shall be reimbursed at actuals to the CONTRACTOR by the OWNER on production of documentary evidence.

36.3 Any deficiency (ies) as pointed out by any such authority shall be rectified by the CONTRACTOR within the scope of relative supply and/or work at no extra cost to the OWNER. The inspection and acceptance of the work by such authorities shall, however, not absolve the CONTRACTOR from any of its responsibilities under this contract.

37.0 Facilities for Workmen:

37.1 The Contractor shall make his own arrangements for the engagement of all workmen, local or otherwise, and for their transport, housing, feeding and payment.

37.2 The Contractor shall provide at Site adequate supply of drinking water and other water for use at Site.

37.3 CONTRACTOR to arrange adequate number of e-toilets both inside and outside the Refinery on the basis of factories act requirement.

37.4 If any illness of an epidemic nature breaks out, the Contractor shall comply with and carry out whatever regulations, orders and requirements that are imposed by the Government or the local medical or sanitary authorities for the purpose of promptly dealing with and overcoming it.

37.5 The Contractor shall at all times take all reasonable precautions to prevent any unlawful riotous or disorderly conduct by or amongst the persons deployed for the works at site and for the preservation of peace and the protection of persons and property in the neighbour-hood of the work.

38.0 FURTHER SUB-CONTRACTING

38.1 **Provisions for further Sub-Contracting shall be as per Clause no. 35 of GCC.**

If the CONTRACTOR is required to engage a Sub-Contractor for any part of work, then such Sub-Contractors shall have prior proven experience of similar work and shall require specific approval by EIL/OWNER after award of work. Contractor will submit to Owner/EIL for approval the details of nominated Contractors as per **ANNEXURE- XIII of 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.

39.0 ADDITIONAL WORKS/EXTRA WORKS

39.1 OWNER 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.

40.0 INSURANCE

Insurance shall be as per clause no. 87 of GCC.

40.1.1 **Contractor shall ensure that all its personnel deployed under this contract have obtained additional insurance coverage under the Pradhan Mantri Suraksha Bima Yojna (PMSBY) and Pradhan Mantri Jeevan Jyoti Bima Yojna (PMJJBY) through the participating banks and submit the proof of such insurance coverage to the satisfaction of Owner. The cost of the insurance premium amount for both the above schemes shall be borne by the contractor giving evidence / proof to EIL/BPCL 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.

41.0 GOVERNMENT OF INDIA NOT LIABLE

It is expressly understood and agreed by and between the Contractor and the OWNER that the OWNER is entering into this agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that the Government of India is not a party to this agreement and has no liabilities, obligations or rights there under. It is expressly understood and agreed that the OWNER is an independent legal entity with power and authority to enter into contract, solely in its own behalf under the applicable laws of India and general principal of Contract Law. The Contractor expressly agrees, acknowledges, and understands that the OWNER / EIL are not an agent, representative or delegate of Govt. of India. It is further understood and agreed that the Govt. of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the contract. Accordingly, contractor hereby expressly waives, releases and foregoes any and all actions or claims including cross claims, impleader claims or counter claim against the Govt. of India arising out of this contract and covenants not to sue to Govt. of India as to any manner, claim, and cause of action or thing whatsoever arising of or under this agreement.

42.0 WATER FILLING & WATER DISPOSAL

42.1 The details proposed for hydrostatic testing shall be furnished by the Contractor for review/approval of Engineer-in-charge on award of contract, taking into account the completion schedule. The necessary piping, pumps etc. shall be provided by the Contractor. The final disposal of water after testing shall also be Contractor's responsibility. Suitable drains shall be provided for this purpose as directed by the Engineer-in-Charge. All necessary blind flanges, bolts, nuts etc. for testing shall be supplied by Contractor within his quoted price.

42.2 The final disposal of water after hydrostatic testing shall be the Contractor's responsibility. Suitable drains for this purpose shall be provided by the Contractor as directed by Engineer-in-Charge. Water required for hydro testing shall be arranged by the Contractor and cost of the same shall be deemed to be inclusive in the quoted rates.

43.0 GENERAL REQUIREMENTS FOR RADIOGRAPHY & OTHER NDT FOR MECHANICAL / COMPOSITE ITEM RATE CONTRACTS

43.1 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.

43.2 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.

43.3 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.

43.4 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 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 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 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.

44.0 OTHER REQUIREMENTS

44.1 The Contractor shall not use or occupy any part of the Works unless its use or occupation has been agreed to by the EIL/BPCL in writing.

44.2 Hydrocarbons (other than lubricating oils and the like) shall not be introduced to the Work until Contractor has received EIL approval in writing to do so.

44.3 EIL / Owner (BPCL) shall have the right to instruct the work at site / fabrication yard at site and shall be entitled to ascertain whether the work is carried out in accordance with the requirements of the contract, including the right to inspect the work at all stages of its performance.

45.0 GENERAL GUIDELINES DURING AND BEFORE ERECTION

45.1 CONTRACTOR to study the equipment layout and his scope of work carefully and accordingly workout the erection sequence and execution methodology of various equipments, piping, structural and other facilities in the scope.

45.2 Orientation of all foundation, elevations, lengths and disposition of anchor bolts and diameter of holes in the supports saddles shall be checked by contractor, well in advance. Minor rectifications including chipping of foundations as the case may be shall be carried out at no extra cost by the Contractor after obtaining prior approval of the Engineer-in-charge. The Contractor shall also be provided with the necessary structural drawings and piping layouts etc. wherever required for reference. If a structural member needs to be dismantled, to facilitate the equipment erection, same shall be done by the Contractor after ensuring proper stability of main structure with prior permission of Engineer-in-charge. All such dismantled members shall be put in position back after the completion of equipment erection to satisfaction of Engineer-in-charge.

45.3 CONTRACTOR to note that work of other agencies will not be kept under hold for the purpose of release of work front for equipment erection and other works in CONTRACTOR's scope.

45.4 A well planned and feasible erection sequence shall be developed by the CONTRACTOR in such a way that it results into NO HOLD on nearby equipments foundations/civil and structural works or erection of any facility. CONTRACTOR will identify and indicate clearly the detailed erection sequence of various equipments for review / approval of OWNER/ EIL on award of contract.

45.5 The CONTRACTOR shall be responsible for organizing the lifting of the equipment in proper sequence so that orderly progress of the work is ensured and access routes for erecting the other equipments/facilities are kept open.

45.6 CONTRACTOR to mobilize Cranes and other resources, as required, to meet the sequence/ schedule of completion at no extra cost to OWNER.

45.7 The CONTRACTOR on award of contract will furnish, the make and model of cranes proposed to be mobilized by him at site to work as main crane and trailing cranes. Erection of equipments by any other means other than cranes is not acceptable. Further, the Erection schemes proposing erection by Tandem lift method, Derrick arrangement, Strand Jack method and guy type crawler crane shall not be considered for any equipment.

45.8 Detailed erection scheme for all critical equipments will be developed and submitted by the CONTRACTOR on award of work for approval of Engineer-in-charge at site. All the Cranes and lifting tackles are subjected to load testing by authorised testing and certification agency at site / should have valid load test certificates. For the purpose of load testing of cranes, the CONTRACTOR will submit a "Procedure for Load Testing of Cranes" to the Engineer-in-Charge. The actual load testing shall be carried out in accordance with the procedure, as approved by the Engineer-in-Charge. The CONTRACTOR at no extra cost to OWNER will arrange required loads for load testing purpose.

45.9 All lifting tackles to be used during erection shall be appropriately labelled/ stamped for their safe working loads. The safe working loads mentioned on labels/ stamping on lifting tackles will be as per the latest test certificates, which will be made available by CONTRACTOR (in original) before actual use of such lifting tackles at site.

46.0 TESTS, INSPECTION AND COMPLETION

46.1 Tests and Inspection

46.1.1. The CONTRACTOR shall carry out the various tests as enumerated in the technical specifications of this Bidding Document and technical documents that will be furnished to him during the performance of the work at no extra cost to Owner.

46.1.2. All the tests either on the field or at outside laboratories concerning the execution of the work and supply of materials by the CONTRACTOR shall be carried out by CONTRACTOR at his cost.

46.1.3. The work is subject to inspection at all times by the EIL. 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 bidding document, the technical documents that will be furnished to him during performance of work and the relevant codes of practice.

46.1.4. The CONTRACTOR shall provide for purposes of inspection access ladders, lighting equipment for testing, necessary instruments etc. at his own cost, low voltage lighting equipment for tray fixing and inspection work.

46.1.5. Compressed air for carrying out works shall be arranged by the CONTRACTOR at his own cost.

46.1.6. For material supplied by Owner, CONTRACTOR shall carry out the tests, if required by EIL, and the cost of such tests shall be reimbursed by Owner at actual to the CONTRACTOR on production of documentary evidence.

46.1.7. All results of inspection and tests will be recorded in the inspection reports, proforma of which will be approved by EIL. These reports shall form part of the completion documents. Any work not conforming to execution drawings, specifications or codes shall be rejected and the CONTRACTOR shall carry out the rectifications at his own cost.

46.2 Final Inspection

46.2.1. 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 defect is noticed, the CONTRACTOR will be notified by EIL and he shall make good the defects with utmost speed. If however the CONTRACTOR fails to attend to these defects within a reasonable time

(time period shall be fixed by EIL) then OWNER/EIL may have defects rectified at CONTRACTOR's cost.

46.3 Inspection of Supply Items

46.3.1. All inspection and tests on bought out items shall be made as required by specifications forming part of this contract. Various stages of inspection and testing shall be identified after receipt of Quality Assurance Programme from the CONTRACTOR/ manufacturer.

46.3.2. Inspection calls shall be given for association of Owner/EIL as per mutually agreed programme in prescribed proforma with 15 days margin, giving details of equipment and attaching relevant test certificates and internal inspection report of the CONTRACTOR. All drawings, general arrangement and other contract drawings, specifications, catalogues etc. pertaining to equipment offered for inspection shall be got approved by Owner /EIL and copies shall be made available to Owner /EIL before hand for undertaking inspection.

46.3.3. The CONTRACTOR shall ensure full and free access to the inspection engineer of Owner/EIL at the CONTRACTOR's or their sub-Contractor's premises at any time during contract period to facilitate him to carry out inspection and testing assignments.

46.3.4. The CONTRACTOR/sub-contractor shall provide all instruments, tools, necessary testing and other inspection facilities to inspection engineer of Owner /EIL free of cost for carrying out inspection.

46.3.5. Where facilities for testing do not exist in the CONTRACTOR's/ sub-contractor's laboratories, samples and test pieces shall be drawn by the CONTRACTOR/sub-contractor in presence of Inspection Engineer of Owner /EIL and duly sealed by the later and sent for tests in Government approved/ NABL accredited test house or any other testing laboratories approved by the Inspection Engineer at the CONTRACTOR's cost.

46.3.6. The CONTRACTOR shall comply with the instructions of the Inspection Engineer fully and with promptitude.

46.3.7. The CONTRACTOR shall ensure that the equipment/assemblies/component of the plant and equipment required to be inspected are not assembled or despatched before inspection.

46.3.8. The CONTRACTOR shall not offer equipment for inspection in painted conditions unless otherwise agreed in writing with Owner /EIL.

46.3.9. The CONTRACTOR shall ensure that the parts once rejected by the inspection engineer are not used in the manufacture of the plant and equipment. Where parts rejected by the inspection engineer have been rectified or altered, such parts shall be segregated for separate inspection and approval, before being used in the work.

46.3.10. On satisfactory completion of final inspection and testing, all accepted plant and equipment shall be stamped suitably and inspection certificate shall be stamped suitably and inspection certificate shall be issued in requisite copies for all accepted items. For stage inspection and for rejected items, only inspection memo shall be issued indicating therein the details of observations and remarks.

46.3.11. If Owner or its representative fails to inspect with 30 days after receipt of inspection notice, the CONTRACTOR may despatch material on specific approval of Owner.

46.4 All inspections and tests shall be made as required by the specifications forming part of this contract. CONTRACTOR shall advise EIL in writing at least fifteen days in advance of the date of final inspection/tests. Manufacturers inspection or testing certificates for equipment and materials supplied may be considered for acceptance, at the discretion of EIL. All costs towards

testing etc. shall be borne by the CONTRACTOR within their quoted rates.

47.0 COMPUTERISED CONTRACTOR'S BILLING SYSTEM

Without prejudice to stipulation in General Conditions of Contract, CONTRACTOR should follow following billing system:

47.1 The bills will be prepared by the CONTRACTOR on their own PCs as per the standard formats and codification scheme proposed by Owner/EIL. 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/EIL 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.

47.2 Owner/EIL will utilise these data for processing and verification of the CONTRACTOR's bill.

48.0 ROUNDING OFF

All payments to and recoveries from the CONTRACTOR shall be rounded off to the nearest rupee. Wherever the amount to be paid/recovered consists of a fraction of a rupee (paise), the amount shall be rounded off to the next higher rupee if the fraction consists of 50 (fifty) paise or more and if the fraction of a rupee is less than 50 (fifty) paise, the same shall be ignored.

49.0 STATEMENT OF FINAL BILLS-ISSUE OF NO DEMAND CERTIFICATE

49.1 The final bill of CONTRACTOR shall be accompanied by check list for processing the bill and no-demand certificate from the following departments of Owner:

a) Administration & Personnel department regarding vacation of land, recovery of rents , cancellation of gate pass ,etc.

b) Fire and Safety Officer and Security Deptt. of Owner regarding closure of all safety deviation and penalties ; if any.

c) Maintenance Departments regarding recoveries for hire charges of equipment, water and electricity charges etc. if any.

49.2 The Contractor shall obtain such no-demand certificates from the concerned authorities of Owner and furnish the same to EIL.

50.0 ARBITRATION- DELETED

51.0 REQUIREMENT OF EMPLOYMENT VISA FOR FOREIGN NATIONALS

51.1 All foreign nationals coming to India 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 India on contract or employment basis at a senior level, skilled position such as technical expert, senior executive or in managerial position etc.

ii) Request for Employment Visa for jobs for which large number of qualified Indians are available, is not considered.

iii) 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 India during execution of the Contract.

52.0 HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT

52.1 HSE Compliance

52.1.1 Safety is to be given prime importance. During construction, Contractor shall strictly follow the safety procedures, precautions & norms as per SAFETY CODE, specifications on Health, Safety and Environment (HSE) Management (enclosed as **ANNEXURE-XIV**) and requirement of OISD-192, OISD-206 & OISD-207 (enclosed as **Annexure-XV**).

52.1.2 The Contractor shall also be responsible to comply with code requirements of International Standard Organization (ISO), Occupational Safety & Health Administration (OSHA), ISO-14000 series, American Petroleum Institute (API) RP and other relevant international practices. In case of conflict between the requirements of the various specifications and/or the requirements specified in the bid document, the more stringent requirement shall be followed.

52.1.3 In case of noncompliance, Engineer-In-Charge shall give notice to the Contractor. In case of repeated failure of the Contractor, Engineer- In- Charge is free to take actions such as withholding of bills, heavy penalty etc. The quantum of such actions will be decided by the Engineer- In- Charge, considering the contract conditions. For imposition of Penalties ; if required ; Safety & Security Regulations of BPCL Kochi Refinery will be applicable while working in operational areas & inside Kochi Refinery premises and for other areas including project area , penalty clauses of EIL standard & Safety Management at HSE site will be applicable.

52.1.4 The Contractor shall establish document and maintain an effective Health, Safety and Environment (HSE) management system. After the award of the contract, detailed Health, Safety and Environment (HSE) programme to be followed for execution of contract under various divisions of works will be mutually discussed and agreed to.

The Contractor should be required to:

- Have in place a Safety Management System, approved by a recognized, approved authority.
- Prepare a project-specific Safety Plan for each Site
- Implement the Safety Plans.
- Ditto the above for Environmental Management

52.1.5 In case, Contractor fails to follow the instructions of Engineer-in-charge with respect to above clauses, next payment due to him shall not be released unless until he complies with the instructions to the full satisfaction of Engineer-in-charge.

52.2 SAFETY/FIRE PROTECTION

52.2.1 Contractor shall take all necessary measures to protect the work and Workmen against accidents and occupational disease. They shall observe and comply with all Governmental safety regulations as well as EIL's/ BPCL's and accepted industry safety practices as required

for this work.

52.2.2 The Contractor will be required to demonstrate that:

i. the management systems and the installation are adequate to ensure that the design and the operation of the installation and the equipment are safe;
ii. the potential hazards of the installation and the risks to personnel and environment have been identified and appropriate controls provided;
iii. adequate provision is made for ensuring, in the event of a major emergency affecting the installation, the safe evacuation and rescue of personnel and
iv. the statutory and Company requirements relating to safety and pollution control measures are complied with.

52.2.3 Contractor shall conduct a Safety Studies Methodology which shall be completed and submitted to Company. Further, the Contractor shall implement the findings of the Safety Studies without impact on Schedule or Contract Price.

52.3 **Rules And Regulations**

Contractor shall observe national and local laws, ordinances, rules and regulations pertaining to the Works and shall be responsible for extra costs arising from violations of same.

The Contractor shall not do any exploratory excavations, including drilling/boreholes, without the previous written permission of the EIL/BPCL Representative.

52.4 **Watching and Lighting**

The Contractor shall, in connection with the Works provide and maintain at his own cost all lights, guards, fencing and watching when and where necessary or required by the EIL/ BPCL for the protection of the Works or for the safety and convenience of the Public or others.

52.5 **Safety Audits:**

52.5.1 Contractor shall within 30 days of commencement of Contract and also once every three months thereafter submit a safety report.

52.5.2 In the event of any accident or dangerous occurrence the Contractor shall forthwith send a notice of accident in the proforma (to be provided by EIL/ BPCL).

Contractor shall maintain a record of the relevant statutory and Company requirements relating to safety and pollution control measures and compliance.

The Contractor shall be responsible for following the proper procedures, as outlined below, in reporting accidents or incidence.

1) The EIL/ BPCL safety officer will be immediately notified by fastest means possible (Radio) of any accident which involves the following:

a) Death from any cause whatsoever.
b) A fractured skull, pelvis, arm, thigh or spine, forearm or leg.
c) A dislocated shoulder.
d) The amputation of an arm or hand, or of one or more fingers of the same hand, or of a leg or a foot.
e) The loss of sight of an eye.
f) Any other serious bodily injury, including internal bleeding or burns or asphyxia where such injury is likely to endanger life, cause permanent incapacity, or temporary incapacity of 5 days or more.

2) In case of death, the Contractor shall be responsible for immediately notifying the nearest Indian police so that they can make the proper investigation in accordance with the law.

3) Also in case of death, the Contractor shall immediately notify the Labor Officer of the Federal Ministry of the area in which the death occurred.

52.6 **Safety Procedure:**

Contractor should submit a safety procedure prior to start of the construction activities. The procedure should include the safety measures to be taken during construction work, fire fighting

/ safety equipment available which will be provided to terminal in case of any emergency, number of safety / fire officers and their role, periodical exercise on awareness of workers towards safety. Familiarization of workers with safety equipment, teams for fire fighting etc. In case of any emergency, Contractor should immediately mobilize all resources to combat the emergency and co-ordinate with BPCL/ EIL suitably.

Contractor should ensure that the contractor's supervisory personnel have undergone the approved basic training on fire fighting and Elementary First Aid before deployment and adequate number of trained personnel to be deployed at all times during execution at site.

In case of any accident at site causing injury to personnel, Contractor shall inform EIL/ BPCL immediately. Contractor shall also arrange for pickup and immediate medical attention for the injured personnel.

52.7 **Safety Audit By Company/Owner**:

52.8 EIL/ BPCL may conduct safety Audits at any stage of project execution and before taking over the facilities. The audit shall be based on a protocol that covers elements which can affect the safety during execution or the safe operation of the facilities in the contractor's scope of work. The protocol shall cover documentation, process hazard analysis, fire detection and suppression system, lifesaving appliances and escape routes, operating procedures, pre-startup safety review, safe work practices, safety and shut down devices, management of change, assurances of quality and mechanical integrity, emergency response control investigation of accidents, personnel protective equipments, audit team which could be conducted by the EIL/ BPCL's personnel or any agency appointed by the EIL/ BPCL for the purpose, accord full access to site and provide all relevant information, comply with the observations and recommendations of the audit.

53.0 TERMINATION

Termination shall be as per provisions of GCC**.**

54.0 DISTINCTION BETWEEN SUBSTRUCTURE AND SUPERSTRUCTURE

To distinguish between work in substructure and superstructures, the following criteria shall apply:

54.1 For all Equipment pedestals, pipe racks, other foundation and R.C.C. Structures, work done upto 300 mm level above Highest Pavement Point / Finished Floor Level will be taken as work in substructure and work above this level will be treated as work in superstructures and payments would be made accordingly.

54.2 For Buildings only, all works upto level corresponding to finished floor level (Ground Floor) shall be treated as `Work in substructure ' and all works above the finished floor level shall be treated as "Work in superstructure".

54.3 Irrespective of what has been stated above, all pavements, R.C.C. Retaining wall, all pipe sleepers and any similar item would be taken as work done in substructure irrespective of locations, nomenclature and levels given anywhere.

Where not specifically pointed out all works in Cellars/ sumps, Drains, Manholes, Tank Pads, Cable trenches, or such similar item would be taken as work in substructure.

55.0 PLANNING AND DESIGNING IN PURVIEW OF VULNERABILTY ATLAS OF INDIA

Vulnerability Atlas of India (VAI) is a comprehensive document which provides existing hazard scenario for the entire country and presents the digitized State/UT – wise hazard maps with respect to earthquakes, winds and floods for district-wise identification of vulnerable areas. It also includes additional digitized maps for thunderstorms, cyclones and landslides. The main purpose of this Atlas is its use for disaster preparedness and mitigation at policy planning and project formulation stage.

This Atlas is one of its kind single point source for the various stakeholders including policy makers, administrators, municipal commissioners, urban managers, engineers, architects, planners, public etc. to ascertain proneness of any city/location/site to multi-hazard which includes earthquakes, winds, floods, thunderstones, cyclones and landslides, while project formulation, approvals, and implementation of various urban housing, buildings and infrastructures schemes, this Atlas provides necessary information for risk analysis and hazard assessment.

The Vulnerability Atlas of India has been prepared by Building Material and Technology Promotion Council under Ministry of Housing and Urban Affairs, Government of India and available at their website ww.bmtpc.org.

It is mandatory for the bidders to refer Vulnerability Atlas of India for multi-hazard risk assessment and include the relevant hazard proneness specific to project location while planning and designing the project in terms of:

i Seismic zone (II to V) for earthquakes,
ii Wind velocity (Basic Wind Velocity: 55, 50, 47, 44,39 & 33 m/s)
iii Area liable to floods and Probable max. surge height
iv Thunderstorms history
v Number of cyclonic storms/severe cyclonic storms and max sustained wind specific to coastal region
vi Landslides incidences with Annual rainfall normal
vii District wise Probable Max. Precipitation

56.0 ABNORMALLY HIGH UNIT RATES (AHR ITEMS)- NOT APPLICABLE

~~Clause No. 65.0 of GCC is modified to the following extent:~~

~~In case of Tenders, containing multiple line-item rates where successful bidder is decided on overall L1 basis considering all line items together, individual line items with a difference of higher than 25% with the in-house estimated rates are considered as Abnormally High Rates (AHR) items. AHR items shall be negotiated before award of work based on the discretion of the Owner/ Consultant and accordingly bidder shall provide the analysis of rate quoted for AHR items to justify the reasonability, if requested by Owner/Consultant. Bidder shall confirm acceptance to the reduced item rate agreed during negotiation. Payment for AHR items shall be based on the agreed rates/terms as per negotiation.~~

~~Further, AHR items shall be identified at the time of award of work in order to restrict their plus and minus deviation during actual execution.~~

~~If L1/L2 parity is likely to be affected during execution of the contract, due to the variation in quantities of individual line items in contract based on site conditions, then the final payment shall be restricted to ensure that the overall total payment for the executed work does not alter the L1 position~~

TIME FOR COMPLETION

[ANNEXURE - I TO SPECIAL CONDITIONS OF CONTRACT]

TIME FOR COMPLETION

NAME OF WORK	TIME OF COMPLETION
WORKS: MISC. BUILDING WORKS **BIDDING DOCUMENT NO.: SS/ B895-999-CF-T-8202/1018**	**Time for completion of work** **10 (Ten) Months** from the date of issue of Letter of Acceptance (LOA).

Note:

1. The time for completion shall be reckoned from the date of issue of LOA.
2. The time indicated is for completing all the works in all respects as per scope of work, specifications, codes, drawings and instructions of Engineer-in-Charge.
3. It should be noted that the period of completion of all works given above includes time required for mobilisation at site, carrying out the works as per the requirements Contract Document, demobilisation, preparation of all reports in requisite quantities as mentioned in the Bidding document, rectifications, if any, rework etc. complete in all respects to the entire satisfaction of Engineer-in-Charge.
4. Fronts [i.e., drawing front / Physical front (Corresponding to drawing)] shall be released to the contractor as per enclosed sheets.

(SIGNATURE OF BIDDER)

FRONT AVAILABILITY

JOB SPECIFIC INFORMATION ON MAJOR FRONTS AND THEIR PROPOSED AVAILABILITY TO SUCCESSFUL BIDDER

	Drawing front	Physical front (Corresponding to drawing)	Remarks
On award of work	50% shall be released to Contractor on mobilization at site	30%	
At 25% of time period	75% (However, 100% drawing along with matching material for underground piping to be issued, if any)	50%	Time extension due to non-availability of Drawing and/or Physical front shall be considered only if the progress of work is corresponding to the work fronts released.
At 50% of time period	85%	65%	
At 75% of time period	100%	100%	

TERMS OF PAYMENT
[ANNEXURE - II TO SPECIAL CONDITIONS OF CONTRACT]

PAYMENT TERMS FOR TENDERING

ON ACCOUNT PAYMENTS

Progressive payments shall be released to Contractor against monthly running account bills duly certified by Engineer-in-charge after affecting the necessary deductions/recovery, if any. The basis for payment against various items shall be as follows:

S. NO.	NATURE OF WORK	PAYMENT TERMS
1.	**CIVIL**	
1.1	**Soil Investigation/ Geotechnical/ Topographical & route survey**	- 80% on completion of work on prorate basis as certified in monthly progress bill. - 15% on submission of Final Documentation / Reports in Code-1. - 05% on completion of all works in all respects and issuance of completion certificate.
1.2	**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.
1.3	**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.
1.4	**Sheet Piling**	**Case-I** **Installation of sheet pile with subsequent removal (Incase removal of pile is not possible, Case-II is applicable for payment terms)** - 05% on submission & approval of design - 25% on Design and supply of material at site - 50% on installation of sheet piling - 15% for subsequent removal of sheet piles - 05% on completion of all works in all respects and issuance of completion certificate. **Case-II** **Installation of sheet pile without removal** - 05% on submission & approval of design - 25% on Design and supply of material at site - 60% on installation of sheet piling - 05% on removal of waler beam - 05% on completion of all works in all respects and issuance of completion certificate.

1.5	**U/G PIPING** **Measurement in Running Meter**	**a. CARBON STEEL (PIPES/ PRE-COATED PIPES – FREE ISSUE)** - 20% on fabrication. - 30% on NDT, Pre-testing, tape coating. - 30% on laying in position, welding, NDT/Radiography etc. - 15% after flushing, hydro-testing and backfilling of trenches. - 05% on completion of all works in all respects and issuance of completion certificate. **b. CARBON STEEL (CEMENT LINED) (PIPES – FREE ISSUE)** - 20% on completion of Cement lining and receipt of lined pipe at site. - 15% on fabrication. - 25% on NDT, Pre-testing, tape coating. - 20% on laying in position, welding, NDT/Radiography etc. - 15% after flushing, hydro-testing and back filling of trenches. - 05% on completion of all works in all respects and issuance of completion certificate. **Note:** Contractor shall submit the Bank Guarantee for an equivalent amount of Free Issue Material taken outside the Project premises for cement lining purpose with validity till receipt of materials at Project premises plus 03 Months claim period. **c. CARBON STEEL (PIPES–SUPPLIED BY CONTRACTOR)** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 45% on receipt and acceptance of pipes at site. - 10% on fabrication. - 15 % on NDT, tape coating. - 10% on laying in position, welding, jointing, NDT/Radiography etc. - 10% after flushing, hydro-testing and back filling of trenches. - 05% on completion of all works in all respects and issuance of completion certificate. **d. CARBON STEEL (PRE-COATED PIPES – SUPPLIED BY CONTRACTOR).** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 55% on receipt and acceptance of pipes at site. - 10% on fabrication. - 05 % on NDT, tape coating. - 10% on laying in position, welding, jointing, NDT/Radiography etc. - 10% after flushing, hydro-testing and back filling of trenches.

		- 05% on completion of all works in all respects and issuance of completion certificate. **e. CARBON STEEL (CEMENT LINED) (PIPES – SUPPLIED BY CONTRACTOR).** - 05% on issuance of sub-order (for bare line pipes or cemented line pipes) and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 55% (##) on receipt and acceptance of Cement lined pipe at site. - 10% on fabrication. - 10% on NDT, tape coating. - 10% on laying in position, welding, jointing, NDT/Radiography etc. - 05% after flushing, hydro-testing and backfilling of trenches. - 05% on completion of all works in all respects and issuance of completion certificate. **## Further break up of payment schedule, if necessary, shall be recommended/ approved by Engineer-in-charge.**
1.6	**U/G PIPING** **Measurement in In-Dia & In-Meter**	**CARBON STEEL (PIPES/ PRE-COATED PIPES – FREE ISSUE)- Incase SOR items are in Inch-dia (fabrication) and Inch-meter (erection).** **Fabrication (ID)** - 65% on welding of joints. - 30% on radiography and other examinations, repair of welds, repeat radiography, extensions and penalty shots, if any, making the spools ready for erection. - 05% on completion of all works in all respects and issuance of completion certificate. **Erection (IM)** - 30% on pre-testing, tape coating of prefabricated pipes. - 45% on trenching, laying in position, field welding, jointing, NDT/radiography and ready for hydrotesting. - 20% on hydrotesting, drying (if applicable) and backfilling of trenches. - 05% on completion of all works in all respects and issuance of completion certificate.
1.7	**Specials / MITRES for U/G Piping**	- 85% after welding of joints & its acceptance. - 10% after completion of tests as per respective piping spec, wrapping/coating, painting (as applicable). - 05% on completion of all works in all respects and issuance of completion certificate.

2.	**CIVIL,STRUCTURAL AND ARCHITECTURAL WORKS**	
2.1	**Structural steel works**	**I. In case of Contractor supplied material.** a. FABRICATION AT SITE - 05% on finalization of quantities, plan and submission of approved fabrication drawings. - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 50 % on receipt and acceptance of material at site. - 20% on fabrication, surface preparation and application of primer coat. - 08% on erection. - 07% on alignment, bolting / welding, tightening, torquing, grouting etc. - 05% on completion of all works in all respects and issuance of completion certificate. b. FABRICATION AT YARD OUTSIDE PROJECT PREMISES - 05% on finalization of quantities, plan and submission of approved fabrication drawings. - 05% on issuance of sub-order and submission of equivalent rolling bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 50% on receipt and acceptance of material at contractor fabrication yard outside the Project premises against Rolling Bank Guarantee for an equivalent amount of materials at contractor's shop with a validity till receipt of materials at Project premises plus 03 Months claim period. - 20% on fabrication, surface preparation and application of primer and receipt of fabricated structures at site. - 08% on erection. - 07% on alignment, bolting / welding, tightening, torquing, grouting etc. - 05% on completion of all works in all respects and issuance of completion certificate. **II. At issue rates (Chargeable basis).** - 05% on finalization of quantity, plan and submission of fabrication drawings. - 50% on transportation of material from storage yard / stores points to fabrication yard and fabrication surface preparation and application of primer coat. - 30% on erection. - 10% on alignment, bolting / welding, tightening, torquing,

		grouting etc. - 05% on completion of all works in all respects and issuance of completion certificate. **III. Free Issue.** - 05% on finalization of quantity, plan and submission of fabrication drawings. - 50% on transportation from storage yard / stores points to fabrication yard, fabrication, surface preparation and application of primer coat. - 30% on erection. - 10% on alignment, bolting / welding, tightening, torquing, grouting etc. - 05% on completion of all works in all respects and issuance of completion certificate.
2.2	**Reinforcement steel**	- 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 65% on receipt and acceptance of material at site. - 25% on cutting, laying and acceptance thereof. - 05% on completion of all works in all respects and issuance of completion certificate.
2.3	**Precast concrete Item/ Block (Contractor supplied material)**	- 60% on completion of casting work duly certified by Engineer-in- charge. - 20% against erection. - 15% against alignment, leveling, grouting etc. - 05% on completion of all works in all respects and issuance of completion certificate.
2.4	**Precast concrete Item/ Block (Cement Free issue material)**	- 50% on completion of casting work duly certified by Engineer-in-charge. - 30% against erection. - 15% against alignment, leveling, grouting etc. - 05% on completion of all works in all respects and issuance of completion certificate.
2.5	**Structural Steel Painting Works**	- 95% (##) after completion of touch up/repair of primer and intermediate coat/coats and final coat. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further break up of payment schedule, if necessary, shall be recommended/ approved by Engineer-in-charge depending on number of intermediate coats.**
2.6	**Composite**	Composite items of Reinforced Cement Concrete (RCC) work inclusive of Excavation, shoring, strutting, Plane Cement Concrete (PCC), Centering and shuttering, back filling and disposal of surplus earth in

	items.	sub-structure: - 35% on completion of earth work in excavation, PCC centering & shuttering - 45% on completion of RCC - 15% on back filling and removal of surplus earth - 05% on completion of all works in all respects and issuance of completion certificate.
2.7	**Composite items.**	Composite items of RCC work in non-suspended slabs/pavement slabs including pedestals, ramps etc. - 40% on completion of sand filling, centering, shuttering and PCC - 55% on completion of RCC - 05% on completion of all works in all respects and issuance of completion certificate.
2.8	**Composite items.**	Brick works in sub-structure - 50% on completion of excavation and PCC and receipt of Bricks at site - 25% on completion of Brick works - 20% on completion of back filling and disposal of surplus earth - 05% on completion of all works in all respects and issuance of completion certificate
2.9	**Architectural works.**	**I. Steel/ Aluminium/ Glazed Glass/ PVC etc. Doors, Windows & Ventilators.** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 65% on receipt of material at site - 20% on Installation and acceptance - 05% on completion of all works in all respects and issuance of completion certificate. **II. Fire Door** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 05% on approval of Shop drawings. - 60% on receipt and acceptance of material including all accessories at site - 20% on Installation and acceptance - 05% on completion of all works in all respects and issuance of completion certificate. **III. Roofing** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 65% on receipt of material at site - 20% on Installation and acceptance

		- 05% on completion of all works in all respects and issuance of completion certificate.

	Architectural works.	**IV. False Ceiling, False flooring,** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 60% on receipt of material at site - 25% on Installation in position and acceptance - 05% on completion of all works in all respects and issuance of completion certificate. **V. Fire Proof Partition/ Aluminum Partition/ Gypsum Partition/ Toughened Glass Partition** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 60% on receipt and acceptance of material at site - 25% on Installation in position and acceptance - 05% on completion of all works in all respects and issuance of completion certificate. **VI. Cladding/ Facades etc.** - 05 % on submission & approval of design & drawings - 10% on issuance of sub-order & submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 60% on receipt and acceptance of material at site - 20% on Fixing/ Installation and acceptance - 05% on completion of all works in all respects and issuance of completion certificate **VII. Modular Furniture** - 10 % on approval of furniture drawings at least in Code II - 60% on receipt of material at site - 25% on Fixing/ Installation and acceptance - 05% on completion of all works in all respects and issuance of completion certificate. **VIII. Internal & External Paint of Building.** - 10% on application of putty/ primer /surface preparation etc. - 45 % (##) on Primer& intermediate coats. - 40% on Final coat. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further break up of payment schedule, if necessary, shall be recommended/ approved by Engineer-in-charge.** **IX. Waterproofing cum Over Deck Roof Insulation Works.** - 10% on surface preparation and application of primer. - 50% on intermediate coats / layers. - 35% on Final layer, testing etc. - 05% on completion of all works in all respects and issuance of completion certificate **X. Composite items of Partition works made with Glass Partition &**

	Architectural works.	**Gypsum Partition.** - 5% on approval of Shop Drawings - 35% on receipt and acceptance of material at site - 55% on Installation and acceptance. - 05% on completion of all works in all respects and issuance of completion certificate. **XI. Composite items of Acoustical Wall Paneling with fabric wrapped, Green Wall.** - 5% on approval of Shop Drawings - 35% on receipt and acceptance of material at site - 55% on Installation and acceptance - 05% on completion of all works in all respects and issuance of completion The above payment terms will be applicable for similar items in miscellaneous items. the decision of engineer-in-charge on identification of similar items shall be binding on the contractor.
2.10	**Platform, Ladder**	**I. In case of Contractor supplied material.** a. FABRICATION AT SITE - 50% on receipt and acceptance of material at site. - 30% on fabrication, surface preparation and application of primer. - 15% on erection, aligning and welding. - 05% on completion of all works in all respects and issuance of completion - certificate. b. FABRICATION AT YARD OUTSIDE PROJECT PREMISES / VENDOR'S SHOP - 50% on receipt and acceptance of material at contractor fabrication yard outside the Project premises against Rolling Bank Guarantee for an equivalent amount of materials at contractor shop with validity till receipt of materials at Project premises plus 03 Months claim period. - 30% on fabrication, surface preparation and application of primer and receipt of fabricated material at site. - 15% on erection, alignment, welding etc. - 05% on completion of all works in all respects and issuance of completion certificate. **II. At issue rates (Chargeable basis)** - 80% on transportation of material from storage yard / stores points to fabrication yard, fabrication, surface preparation and application of primer coat. - 15% on erection, alignment, welding etc. - 05% on completion of all works in all respects and issuance of completion certificate. **III. Free Issue**

		- 65% on transportation from storage yard / stores points to fabrication yard, fabrication, surface preparation and application of primer coat. - 30% on erection, alignment, welding etc. 05% on completion of all works in all respects and issuance of completion certificate.
2.11	**Hand Railing**	**I. In case of Contractor supplied material.** a. FABRICATION AT SITE - 50% on receipt and acceptance of material at site. - 20% on fabrication, surface preparation and application of primer and galvanizing (if applicable) - 15% on erection, aligning and welding. - 10% after completion of completion of final painting. - 05% on completion of all works in all respects and issuance of completion certificate. **II. At issue rates (Chargeable basis)** - 70% on transportation of material from storage yard / stores points to fabrication yard, fabrication, surface preparation and application of primer coat ,galvanizing and painting (if applicable) - 15% on erection, alignment, welding etc. - 10% after completion of completion of final painting. - 05% on completion of all works in all respects and issuance of completion certificate. **III. Free Issue** - 65% on transportation from storage yard / stores points to fabrication yard, fabrication, surface preparation and application of primer coat galvanizing and painting (if applicable) - 15% on erection, alignment, welding etc. - 15% after completion of completion of final painting. - 05% on completion of all works in all respects and issuance of completion certificate. **IV. Contractor supplied handrail (Handrail Fabricated outside refinery with raw material).** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 40% on receipt and acceptance of raw material at contractor fabrication yard outside the Project premises against Rolling Bank Guarantee for an equivalent amount of materials at contractor's shop with a validity till receipt of materials at Project premises plus 03 Months claim period. - 30% on receipt and acceptance of finished handrail at site.

	Hand Railing	- 15% on erection, aligning, welding and completion of final painting or touchup as applicable. - 05% on completion of all works in all respects and issuance of completion certificate. **V. Contractor supplied pre-fabricated handrail (Handrail in final condition ordered on sub-vendor).** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 70 % on receipt and acceptance of finished handrail at site. - 15 % on erection, aligning, welding and completion of final painting or touchup as applicable. - 05% on completion of all works in all respects and issuance of completion certificate.
2.12	**Gratings**	**I. Contractor supplied gratings (Grating Fabricated outside refinery with raw material).** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 40% on receipt and acceptance of raw material at contractor fabrication yard outside the Project premises against Rolling Bank Guarantee for an equivalent amount of materials at contractor's shop/ yard with validity till receipt of materials at Project premises plus 03 Months claim period. - 30% on receipt and acceptance of finished gratings at site. - 15% on erection, aligning, welding and completion of final painting or touchup as applicable. - 05% on completion of all works in all respects and issuance of completion certificate. **II. Contractor supplied gratings (Grating in final condition ordered on sub-vendor)** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 70 %on receipt and acceptance of finished gratings at site. - 15 %on erection, aligning, welding and completion of final painting or touchup as applicable. - 05% on completion of all works in all respects and issuance of completion certificate.
2.13	**Other Civil, Structural & Architectural works**	- 95% (##) on completion of work as certified in monthly progress bill. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further break up of payment schedule, if necessary, shall be recommended/ approved by Engineer-in-charge**.
3.	**MECHANICAL WORKS**	

3.1	**Above Ground Piping Works** **(Pipes*& Pipe Components*, Valves, Orifice plates - Free issue)**	**a.** **<u>Fabrication & Erection of Piping</u>** - 45% after fabrication including NDT, as applicable. - 30% after site erection, field welding, radiographic and other examination. - 10% after providing supports, alignment, providing vents, drains. - 08% after flushing, testing, draining and drying. - 02% after mechanical completion. - 05% on completion of all works in all respects and issuance of completion certificate. **b.** **<u>Erection of Valves, Orifice Plates</u>** - 85% after transportation and erection. - 08% after flushing and testing. - 02% after mechanical completion - 05% on completion of all works in all respects and issuance of completion certificate.
3.2	**Piping Works-** **Fabrication at site.** **(Pipe & Pipe Components, Valves - Supplied by Contractor)**	**a.** **Fabrication & Erection of Piping** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim - 45% after receipt and acceptance of material at site. - 20% on fabrication including NDT, as applicable. - 15% after site erection, field welding, radiographic and other examination. - 05% after providing supports, alignment, providing vents, drains - 03% after flushing, testing, draining and drying. - 02% after mechanical completion - 05% on completion of all works in all respects and issuance of completion certificate. **b.** **Erection of Valves** - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 60% after receipt and acceptance of material at site. - 15% after erection, welding, radiographic and other examination. - 08% after hydro-testing and final approval. - 02% after mechanical completion. - 05% on completion of all works in all respects and issuance of completion certificate.
3.3	**Piping Works-** **Fabrication at yard outside the**	**a.** **Fabrication & Erection of Piping** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period.

	Project premises. **(Pipe & Pipe Components, Valves – Supplied by Contractor)**	- 45% after receipt and acceptance of material at contractor fabrication yard outside the Project premises against Rolling Bank Guarantee for an equivalent amount of materials at contractor's shop with a validity till receipt of materials at Project premises plus 03 Months claim period. - 20% on fabrication including NDT, as applicable, and receipt of fabricated Piping at site. - 15% after site erection, field welding, radiographic and other examination. - 05% after providing supports, alignment, providing vents, drains - 03% after flushing, testing, draining and drying. - 02% after mechanical completion - 05% on completion of all works in all respects and issuance of completion certificate.
3.4	**Fabrication of respective piping items in Inch Dia.** **(Free issue materials)**	- 85% after welding of joints & its acceptance. - 08% after completion of tests as per respective piping spec. - 02% after mechanical completion - 05% on completion of all works in all respects and issuance of completion certificate.
3.5	**Erection of piping items to be paid in IM basis.** **(Fabricated in Inch. dia. as above)**	- 70% after site erection, field welding, radiographic and other examination. - 15% after providing support, alignment, providing vents, drains etc. - 08% after flushing, testing, draining and drying. - 02% after mechanical completion. - 05% on completion of all works in all respects and issuance of completion certificate.
3.6	**Specials/ MITRES for A/G piping**	- 85% after welding of joints & its acceptance. - 08% after completion of tests as per respective piping spec, application of shop primer etc. - 02% after mechanical completion - 05% on completion of all works in all respects and issuance of completion certificate.
3.7	**NDT (i.e Radiography, UT, MPT/ DPT etc.)**	- 95% on submission of reports and acceptance thereof. - 05% on completion of all works in all respects and issuance of completion certificate.
3.8	**Stress Relieving**	- 95% after successful completion of stress relieving. - 05% on completion of all works in all respects and issuance of completion certificate.
3.9		**a. Painting** - 30% on surface preparation and primer painting at shop / fabrication yard. - 65% (##) on completion of final painting. - 05% on completion of all works in all respects and issuance of completion

	Painting **Insulation Works**	certificate. **(##) Further break up of payment schedule, if necessary, shall be recommended / approved by Engineer-in-charge depending on number of intermediate coats.** **b. Insulation Works** - 50% (##) on supply and acceptance of material at site. - 25% after installation at site. - 20% on inspection after installation, its acceptance and removal of scaffolding, if any. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Payment shall be released on Prorata basis on supply & acceptance of major insulation material.**
3.10	**Equipment**	**a. Column, Vessels, Filters, Ejectors etc.** - 65% **{Note 1}** after transportation from stores / storage points to erection site and erection on foundation. - 25% after alignment and grouting. - 03% after cleaning, box up of manholes, providing all instruments/ auxiliary of fit ups and making ready for startup. 02% after mechanical completion - 05% on completion of all works in all respects and issuance of completion certificate. **{Note 1}:** For Heavy lift equipment's, this milestone payment shall be divided in two milestone payments in case of the item is on lump-sum basis: - 20% on mobilization of required capacity crane at site. - 45% after transportation from stores / storage points to erection site and erection on foundation. **b. Trays and Internals** - 95% after transportation from stores / storage points to erection site, cleaning, placing, bolting/welding, testing within equipment, testing and inspection. - 05% on completion of all works in all respects and issuance of completion certificate. **c. Heat Exchangers** - 65% after transportation from stores / storage points to erection site and erection. - 20% after alignment and grouting. - 08% after completion of flushing, draining, drying.

	Equipment	- 02% after mechanical completion - 05% on completion of all works in all respects and issuance of completion certificate. **d. Testing of Heat exchangers** - 70% after testing. - 23% after completion of flushing, draining, drying by compressed air. - 02% after mechanical completion - 05% after completion of all works in all respects and issuance of completion certificate. **e. Machineries (Compressors, Pumps & Misc.)** - 45% after transportation from stores / storage points to erection site and placing in position. - 30% after initial alignment, leveling and grouting. - 18% after final alignment, shaft alignment after pipe hook-up, dowelling, initial fill of lubricants, mounting of accessories and completion of piping. - 02% after mechanical completion. 05% on completion of all works in all respects and issuance of completion certificate. **f. EOT Crane (In case of Contractor supplied material).** - 05% on finalization of design, engineering and submission of approved drawings. - 50% on receipt and acceptance of material at site. - 30% on installation and completion of EOT crane including Structural, Mechanical, Electrical, instrumentation works. - 02% on receipt of spares at site. - 08 % on completion of testing& acceptance, commissioning. - 05% on completion of all works in all respects and issuance of completion certificate.
3.11	**HVAC, Clean Agent System (CAS), Cathodic Protection (CP), Electrical Heat Tracing System (EHTS)** **Lump Sum**	**HVAC, Clean Agent System (CAS), Cathodic Protection (CP), Electrical Heat Tracing System (EHTS) Lumpsum.** - 05% on finalization of design, engineering and submission of approved drawings. - 50% (##) on receipt and acceptance of material at site. - 30% (##) on installation - 02% on receipt of spares at site. - 08% on completion of testing& acceptance, commissioning. - 05% on completion of all works in all respects and issuance of completion

		certificate. **(##) Further billing break up, if necessary, shall be recommended/approved by Engineer-in-charge.**
3.12	**ELEVATOR PACKAGE**	**ELEVATOR PACKAGE** - 5% on issuance of suborder and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus three months of claim period. - 45% on receipt and acceptance of material at site - 15% after erection in M/c room, alignment of all equipment inside shaft including car body. - 15% on completion of installation including doors and other Electrical and Instrumentation work - 15% after testing and acceptance including load test - 05% on completion of all works in all respect and issuance of completion certificate.
4.	**ELECTRICAL WORK**	
4.1	**For Supply Items**	- 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 5% on vendor drawing submission as per DCI and approval - 80% on receipt and acceptance of material at site. - 05% on completion of all works in all respects and issuance of completion certificate.
4.2	**For Erection Items**	- 80% on completion of erection / installation. - 15% on testing and acceptance. - 05% on completion of all works in all respects and issuance of completion certificate.
4.3	**For Items involving both Supply & Erection**	- 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 05% on vendor drawing submission & approval - 55% on receipt and acceptance of material at site. - 20% after erection /installation. - 10% after testing and acceptance. - 05% on completion of all works in all respects and issuance of completion certificate.
5.	**INSTRUMENTATION**	
5.1	**For Supply Items**	- 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 05 % on vendor drawing submission as per DCI and drawing approval - 80 %on receipt and acceptance of material at site - 05% on completion of all works in all respects and issuance of completion certificate.

5.2	**For Erection/ Installation Items**	**a. Items not requiring loop checking.** - 85% on completion of erection / installation. - 10% on testing - 05% on completion of all works in all respects and issuance of completion certificate. **b. Items requiring loop checking.** - 80% on completion of erection/ installation. - 15% on testing and loop checking. - 05% on completion of all works in all respects and issuance of completion certificate.
5.3	**For Items with supply and erection / installation**	**a. Items not requiring loop checking** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 60% on receipt and acceptance of materials at site. - 30% on completion of erection / installation and testing. - 05% on completion of all works in all respects and issuance of completion certificate. **b. Items requiring loop checking** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 55% on receipt and acceptance of materials at site - 25% on completion of erection / installation. - 10% on testing and loop checking - 05% on completion of all works in all respects and issuance of completion certificate.
5.4	**Ducts, Trays and Other Fabricated Materials** **(Supply in Contractor's scope)**	- 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - 55% after receipt and acceptance of fabricated materials (Ducts / Trays) at site. - 25% after erection. - 05% after welding and final painting, if any - 05% on completion of all works in all respects and issuance of completion certificate.
5.5	**Calibrations Main Instruments**	- 80% after calibration. - 15% after completion of recalibration during loop test, if any - 05% on completion of all works in all respects and issuance of completion certificate.
5.6		**a. Package works (Design, Supply, Installation, testing & Commissioning like CCTV, fire alarm, access control works) Lumpsum.**

(a) (b)	**Package works (Design, Supply, Installation, testing & Commissioning like CCTV, fire alarm, access control works)** **Lumpsum**	- 05% on finalization of design, engineering and submission of approved drawings. - 60% (##) on supply and acceptance of material at site. - 20% (##) on installation and completion of Civil, Structural, Instrumentation works. - 02% on receipt of spares at site. - 08 % on completion of Testing & Commissioning. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further billing break up, if necessary, shall be recommended/ approved by Engineer-in-charge.**
	Package works (Design, Supply, Installation, testing & Commissioning like IT works, LAN system **Lumpsum**	**b. Package works (Design, Supply, Installation, testing & Commissioning like IT works, LAN system) Lumpsum.** - 05% on finalization of design, engineering and submission of approved drawings. - 65% (##) on supply and acceptance of all material at site. - 25% (##) on acceptance which includes installation, configuration, checking of technical and functional requirements. - 05% on completion of all works in all respects and issuance of completion certificate including migration (if applicable). **(##) Further billing breakup, if necessary, shall be recommended/ approved by Engineer-in-charge.**
5.7 (a)	**Package works (Supply, Installation, testing & Commissioning like CCTV works) Lumpsum**	**a. Package works (Supply, Installation, testing & Commissioning Like CCTV, fire alarm, access control works) Lumpsum.** - 60% (##) on receipt and acceptance of material at site. - 25% (##) on installation and completion of Civil, Structural, Mechanical, Electrical, instrumentation works. - 02% on receipt of spares at site. - 08% on completion of Testing & Commissioning. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further billing breakup, if necessary, shall be recommended/ approved by Engineer-in-charge.**
	Package works (Supply, Installation, testing &	**b. Package works (Supply, Installation, testing & Commissioning Like IT works, LAN system) Lumpsum.** - 65% (##) on supply and acceptance of all materials at site. - 30% (##) on Acceptance which includes installation, configuration, checking of technical and functional requirements. - 05% on completion of all works in all respects and issuance of completion certificate including migration (if applicable).

(b)	**Commissioning like IT works, LAN system** **Lumpsum**	**(##) Further billing breakup, if necessary, shall be recommended/ approved by Engineer-in-charge.**
6.	**TANKAGES**	**a. Free issue material** i. Design and plate work of floating roof for both, Open tank floating roof and Covered tank floating roof: - 05% on design of floating roof and approval of drawings. - 20% after fabrication. - 25% after erection. - 35% after welding, NDT / radiography and acceptance thereof. - 10% after testing. - 05% on completion of all works in all respects and issuance of completion certificate. ii. Plate work: - 05% on approval of fabrication drawings. - 20% after fabrication. - 25% after erection. - 35% after welding, NDT / radiography and acceptance thereof. - 10% after hydro-testing, disposal of water after hydro testing and cleaning of tank. - 05% on completion of all works in all respects and issuance of completion certificate. **b. Material supplied by Contractor** i Design and plate work of floating roof for both, Open tank floating roof and Covered tank floating roof - 05% on design of floating roof and approval of drawings. - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 35% on receipt and acceptance of material at site. - 10% after fabrication.

		- 15% after erection. - 20% after welding, NDT / radiography and acceptance thereof. - 05% after testing. - 05% on completion of all works in all respects and issuance of completion certificate. ii Plate work - 05% on approval of fabrication drawings. - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - *35%* on receipt and acceptance of material at site. - 10% after fabrication. - 15% after erection. - 20% after welding, NDT / radiography and acceptance thereof. - 05% after hydro-testing, disposal of water after hydro testing and cleaning of tank. - 05% on completion of all works in all respects and issuance of completion certificate. iii Floating roof seals - 05% on design and approval of drawings. - 45% on receipt and acceptance of material at site. - 35% on installation. - 10% on testing and acceptance. - 05% on completion of all works in all respects and issuance of completion certificate. iv Appurtenances, Mixers etc. - 65% after receipt and acceptance of material at site. - 20% after installation, providing reinforcement pads. - 10% after testing and acceptance. - 05% on completion of all works in all respects and issuance of completion certificate. v. Calibration - 95% on submission of duly approved calibration charts. - 05% on completion of all works in all respects and issuance of completion certificate.

		vi. Painting - 30% on surface preparation and primer application. - 65% (##) on completion of final painting. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further break up of payment schedule, if necessary, shall be recommended / approved by Engineer-in-charge depending on number of intermediate coats.** vii. Tanks pads (including anti-corrosive layers) - 65% on construction of tank pad. - 20% on completion of anti-corrosive layer. - 10% on repair of anti-corrosive layers (if any)/pitching works and after testing of tanks - 05% on completion of all works in all respects and issuance of completion certificate. viii. Cooling Water System / Foam system - 70% on supply and fabrication. - 15% on erection, welding and NDT/Radiography including supports. - 10% on Hydro testing. - 05% on completion of all works in all respects and issuance of completion certificate. ix. Insulation Works - 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 50% on supply and acceptance of material at site. - 15% after installation of material. - 20% on inspection after installation, its acceptance and removal of scaffolding, if any. - 05% on completion of all works in all respects and issuance of completion certificate.
7.	**SPHERES** **(LUMPSUM BASIS)**	**a. Design & Engineering Cost** - 50% on submission of drawings and engineering details. - 30% on approval under Code 2. - 15% on approval under Code 1. - 05% on completion of all works in all respects and issuance of completion certificate. **b. Supply Cost (Spheres)**

		Case-I: Shop Fabrication (Fabrication outside Project premises) & site Erection: - 05% on issuance of sub-order for plates and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of fabricated items at site. - 40% against receipt of materials on prorate basis at contractor's works on certification by EIL/TPIA and submission of Bank Guarantee for equivalent amount valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt of fabricated items at site. - 30% on fabrication of structural steel/ pressing/forming of petals and crown etc on prorate basis against certification by EIL/TPIA and submission of Bank Guarantee for equivalent amount valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt of fabricated items at site. - 10% on receipt and acceptance of fabricated items at site on pro rata basis. - 10% on erection, alignment, welding, grouting, NDT on prorate basis - 05% on completion of all works in all respects and issuance of completion certificate. **Case-II: Shop Fabrication-Nil, Total Fabrication & Erection at site:** - 05% on issuance of sub-order for Plate material and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - 50% on receipt and acceptance of material at site on prorate basis. - 30% on fabrication of structural steel/ pressing/forming of petals and crown etc on pro rata basis. - 10% on erection, alignment, welding, grouting, NDT on prorate basis. - 05% on completion of all works in all respects and issuance of completion certificate. **c. Site works cost (Site Erection):** - 80% on erection, alignment, welding/grouting, NDT on prorate basis. - 15% on cleaning, testing etc. - 05% on completion of all works in all respects and issuance of completion certificate. **d. For all other items: Procurement & Supply** - 85% on receipt of materials at Site / fabrication yard within Project premises. - 10% on fabrication and erection/installation, alignment and grouting as required including testing where involved and required. - 05% on completion of all works in all respects and issuance of completion certificate.

		Construction: **Appropriate terms of payment for various items of works (civil, structural, mechanical, electrical, instrumentation etc.) shall be selected from the payment terms specified for item rate tenders.**
8.	**MOUNDED BULLETS** **(LUMPSUM BASIS)**	**a. Design & Engineering cost.** - 50% on submission of drawings and design details. - 30% on approval under Code 2. - 15% on approval under Code 1. - 05% on completion of all works in all respects and issuance of completion certificate. **b. Supply Cost (Mounded Bullets)** **Case-I: Shop Fabrication (Fabrication outside Project premises) & site Erection:** - 05% on issuance of sub-order for plates and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of fabricated items at site. - 40% against receipt of materials on pro-rata basis at contractor's works on certification by EIL/TPIA and submission of Bank Guarantee for equivalent amount valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt of fabricated items at site. - 30% on fabrication of shell / Dished Ends etc. on prorate basis against certification by EIL/TPIA and submission of Bank Guarantee for equivalent amount valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt of fabricated items at site. - 10% on receipt and acceptance of fabricated items at site on prorate basis. - 10% on erection, alignment, welding, grouting, NDT on prorate basis - 05% on completion of all works in all respects and issuance of completion certificate. **Case-II: Shop Fabrication-Nil, Total Fabrication & Erection at site:** - 05% on issuance of sub-order for Plate material and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - 50% on receipt and acceptance of material at site on pro rata basis. - 30% on fabrication of shell / Dished Ends etc. on pro rata basis. - 10% on erection, alignment, welding, grouting, NDT on prorate basis.

		05% on completion of all works in all respects and issuance of completion certificate. **c. Site works cost (Site Erection):** - 80% on erection, alignment, welding, NDT on prorate basis. - 15% on cleaning, testing etc. - 05% on completion of all works in all respects and issuance of completion certificate. **d. For all other items: Procurement & Supply** - 85% on receipt of materials at Site / fabrication yard within Project premises. - 10% on fabrication and erection/ installation, alignment and grouting as required including testing where involved and required. - 05% on completion of all works in all respects and issuance of completion certificate. **Construction:** **Appropriate terms of payment for various items of works (civil, structural, mechanical, electrical, instrumentation etc.) shall be selected from the payment terms specified for item rate tenders.**
9.	**DWST (Double Wall Storage Tank)** **(LUMPSUM BASIS)**	**DWST (Double Wall Storage Tank) (LUMPSUM BASIS)** **a. Design & Engineering Cost** - 50% on submission of drawings and engineering details. - 30% on approval under Code 2. - 15% on approval under Code 1. - 05% on completion of all works in all respects and issuance of completion certificate. **b. Supply Cost (Double wall storage tank)** **Case-I: Shop Fabrication (Fabrication outside Project premises) & site Erection:** - 05% on issuance of sub-order for plates and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of fabricated items at site. - 40% against receipt of materials on prorate basis at contractor's works on certification by EIL/TPIA and submission of Bank Guarantee for equivalent amount valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt of fabricated items at site. - 30% on fabrication of structural steel, shell, roof and bottom plate etc on prorate basis against certification by EIL/TPIA and submission of Bank Guarantee for equivalent amount valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt of fabricated items

		at site. - 10% on receipt and acceptance of fabricated items at site on pro rata basis. - 10% on erection, alignment, welding, grouting, NDT on prorate basis - 05% on completion of all works in all respects and issuance of completion certificate. **Case-II: Shop Fabrication-Nil, Total Fabrication & Erection at site:** - 05% on issuance of sub-order for Plate material and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - 50% on receipt and acceptance of material at site on prorate basis. - 30% on fabrication of structural steel, shell, roof and bottom plate etc. on pro rata basis. - 10% on erection, alignment, welding, grouting, NDT on prorate basis. - 05% on completion of all works in all respects and issuance of completion certificate. **c. Site works cost (Site Erection):** - 80% on erection, alignment, welding/grouting, NDT on prorate basis. - 15% on cleaning, testing etc. - 05% on completion of all works in all respects and issuance of completion certificate. **d. For all other items: Procurement & Supply** - 85% on receipt of materials at Site / fabrication yard within Project premises. - 10% on fabrication and erection/ installation, alignment and grouting as required including testing where involved and required. - 05% on completion of all works in all respects and issuance of completion certificate. **Construction:** Appropriate terms of payment for various items of works (civil, structural, mechanical, electrical, instrumentation etc.) shall be selected from the payment terms specified for item rate tenders.
9.	**HEATERS**	
9.1	**Steel Works**	**a. In case of Contractor's supplied materials:** i. FABRICATION AT SITE - 05% on finalization of quantities, plan and submission of approved fabrication

		drawings. - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - 35% on receipt and acceptance of material at site. - 20% on fabrication, surface preparation and application of primer coat. - 25% on erection, alignment, welding, grouting etc. - 05% on completion of Final painting. - 05% on completion of all works in all respects and issuance of completion certificate. ii. FABRICATION AT YARD OUTSIDE PROJECT PREMISES - 05% on finalization of quantities, plan and submission of approved fabrication drawings. - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of fabricated items at site. - 35% on receipt and acceptance of material at contractor fabrication yard outside the Project premises against Rolling Bank Guarantee for an equivalent amount of materials at contractor's shop with a validity till receipt of materials at Project premises plus 03 Months claim period. - 20% on fabrication, surface preparation and application of primer and receipt of fabricated items at site. - 25% on erection, alignment, welding & grouting etc. - 05% on completion of Final painting. - 05% on completion of all works in all respects and issuance of completion certificate. **b. At issue rates (chargeable basis):** - 05% on finalization of quantity, plan and submission of fabrication drawings. - 70% on transportation of material to site, fabrication, surface preparation and application of shop primer. - 15% on erection, alignment, welding/grouting etc. - 05% on completion of Final painting. - 05% on completion of all works in all respects and issuance of completion certificate. **c. Free Issue:** - 05% on finalization of quantity, plan and submission of fabrication drawings. - 45% on transportation of material to site, fabrication, surface preparation and application of shop primer. - 35% on erection, alignment, welding/grouting etc.

		- 10% on completion of Final painting. - 05% on completion of all works in all respects and issuance of completion certificate.
9.2	**Coils**	**a. In case of Contractor supplied materials:** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - 45% after receipt and acceptance of material at site. - 25% after fabrication, welding & NDT /radiography. - 05% after erection. - 10% after field welding is completed (including NDT/radiography and PWHT). - 05% after hydro-testing. - 05% on completion of all works in all respects and issuance of completion certificate. **b. i. In case of Owner supplied free issue material** - 60% after fabrication, welding, NDT / radiography. - 10% after erection. - 15% after field welding is completed (including NDT/radiography and PWHT) - 10% after hydro-testing. - 05% on completion of all works in all respects and issuance of completion certificate. **ii. Fabrication at Yard outside Project Premises.** - 05% on finalization of quantities, plan and submission of approved fabrication drawings. - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of fabricated items at site. - 35%on receipt and acceptance of material at contractor fabrication yard outside the Project premises against Rolling Bank Guarantee for an equivalent amount of materials at contractor's shop with a validity till receipt of materials at Project premises plus 03 Months claim period. - 20% on fabrication, surface preparation and application of primer and receipt of fabricated items at site. - 20% on erection, alignment, welding & grouting etc. - 05% on completion of Final painting. - 05% after Hydrotesting.

		- 05% on completion of all works in all respects and issuance of completion certificate.
9.3	**Burners**	**a. In case of Contractor supplied material** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - 65% after receipt and acceptance of material at site. - 25% after erection & alignment in position at site. - 05% on completion of all works in all respects and issuance of completion certificate. **b. In case of Owner supplied free issue material** - 95% after erection & alignment in position at site. - 05% on completion of all works in all respects and issuance of completion certificate.
9.4	**Air pre-heaters**	**a. In case of Owner supplied material as free issue** - 50% after erection. - 45% after alignment, testing etc. - 05% on completion of all works in all respects and issuance of completion certificate. **b. In case of Contractor supplied material** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - 65 % after receipt and acceptance of material at site. - 15 % after erection. - 10% after alignment, testing etc. 05% on completion of all works in all respects and issuance of completion certificate.
9.5	**ID/FD Fans**	**a. In case of Owner supplied material as free issue** - 45% after transportation from stores / storage points to erection site and placing in position. - 30% after initial alignment, leveling and grouting. - 20% after final alignment and mounting of accessories etc. - 05% on completion of all works in all respects and issuance of completion certificate. **b. In case of Contractor's supplied material** - 05% on issuance of sub-order and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - *45*% after receipt and acceptance of material at site. - 20% after transportation from stores / storage points to erection site and placing in position.

		- 15% after initial alignment, leveling and grouting. - 10% after final alignment and mounting of accessories etc. - 05% on completion of all works in all respects and issuance of completion certificate.
9.6	**Insulation Works**	- 10% on issuance of sub-order and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period - 50% on supply and acceptance of material at site. - 15% after installation of material. - 20% on inspection after installation, its acceptance and removal of scaffolding, if any. - 05% on completion of all works in all respects and issuance of completion certificate.
9.7	**Refractory Works**	- 10% on issuance of sub-order and submission of equivalent bank guarantee valid till completion period plus three months claim period. However, the bank guarantee shall be released after receipt and acceptance of material at site. - 40% on receipt and acceptance of materials at site. - 30% on installation. - 15% on initial dry out and acceptance. - 05% on completion of all works in all respects and issuance of completion certificate
9.8	**Painting Works**	- 30% on surface preparation and primer application. - 65% (##) on final painting. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further break up of payment schedule, if necessary, shall be recommended/ approved by Engineer-in-charge depending on number of intermediate coats.**
9.9	**Miscellaneous Works**	- 95% (##) on completion of work on pro-rata basis as certified in monthly progress bill. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further break up of payment schedule, if necessary, shall be recommended/ approved by Engineer-in-charge.**
10.	**Laying of Pipeline and Associated Works (On Shore)**	
10.1	**Laying of Pipeline and Associated Works (On Shore)**	**a. PIPELINE LAYING:** **Free issue:** - 5% on completion of site development, stacking, clearing and grading of ROU etc. - 10% on completion of trenching by excavation/ blasting. - 5% on completion of stringing. - 15% on completion of Fabrication, Alignment, Field Welding. - 5% on completion of Radiography, NDT. - 5% on completion of Joint Coating.

		- 10% on completion of Lowering, laying of HDPE duct - 05% on completion of Tie-ins - 10% on completion of Backfilling. - 10% on completion of hydrotesting - 05% on dewatering, swabbing, magnetic cleaning plus electronic geometry pigging. - 10% on completion of restoration and marker installation etc. - 05% on completion of all works in all respects and issuance of completion certificate. The above payments shall be made subject to the following: a. For the purpose of payments of 10% on account of lowering and laying of HDPE duct, 05% on account of tie- ins and 10% on account of back filling, a minimum continuous stretch of 10 KMs or 5% of spread length whichever is lower, will be considered except for discontinuities on account of listed crossings. ii (i) is not applicable in case of city areas and where continuous ROU stretch is not released. iii. For discontinuity on account of major crossings specified in SOR (being paid separately as SOR item) crossing length shall not be taken into account for (i) and (ii) above for payment purposes. iv. All crossings, i.e, Creek, Railway, Road, Horizontal Directional Drilling and River crossings which are not separately listed in SOR items shall be paid on the basis of linear pipeline length laid. **b. OPTICAL FIBRE CABLE / HDPE (Supply)** - 10% on issuance of sub-order against submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months claim period. - *75* % on receipt and acceptance of material at Project site / yard. - 10 % on Testing after laying as per specification. - 05% on completion of all works in all respects and issuance of completion certificate. **c. Installation of OFC** - 55 % on completion of laying / blowing of OFC through HDPE duct laid in the same Pipeline Trench. - 20 % on Supply & Erection of Jointing Pit, Jointing of OFC as per Specification. - 20% on OFC Testing as per specification. - 05% on completion of all works in all respects and issuance of completion certificate. **d. HDD WORKS**

		- 10 % on carrying out Geotechnical Survey and design Approval. - 25% on string preparation, NDT clearance, pre testing and Joint coating. - 10% on pilot hole drilling. - 35 % on reaming and Pulling of string. - 10% on Post testing, Tie in and backfilling. - 05% on Restoration including bentonite disposal and obtaining NOC - 05% on completion of all works in all respects and issuance of completion certificate. **e. MICROTUNELLING WORKS** Micro-tunneling and Pipeline installation along with associated works - 05% on submission and approval of drawings - 05% on all type of pre-construction survey required for Design & calculation. - 15% on construction of launching and receiving shaft. - 10% on Mobilization and placement of Micro-tunneling equipment along with all the accessories and consumables at site. - 35% on Supply and Installation of Jacking Pipe at site location. - 05% on Carrier Pipe pre-installation hydro testing / repair. - 08 % on Installation of carrier pipeline & HDPE ducts, MMO wire anode carrying ducts for CP, including provision of supports inside jacking pipe. - 07% on Blowing of OFC, gauging of pipeline, NDT, Post installation hydro-testing, dewatering and swabbing. - 05% on capping of jacking pipe, backfilling, final Clean-up & restoration (complete in all respect), disposal of drilling fluid and waste etc. and acceptance of the system by Owner. - 05% on completion of all works in all respects and issuance of completion certificate. **f. STATION WORKS (Receipt / Dispatch terminals):** Appropriate terms of payment for various items of works (civil, structural, mechanical, electrical, instrumentation etc.) shall be selected from the payment terms specified for item rate tenders. **g. TEMPORARY CATHODIC PROTECTION/ PERMANENT CATHODIC PROTECTION WORKS** The payment for Temporary Cathodic Protection System shall be made based on the actual measurement of Pipeline in KM protected. The lump sum price for Temporary & Permanent Cathodic Protection system shall be considered and payable on prorate basis as per the following break-up - 05% on approval of design Document. - 05% on issuance of sub-order against submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 03 Months

		claim period. - 40% on receipt and acceptance of material at sites. - 20 % on installation of the system progressively. - 25 % on testing and commissioning of CP system. - 05% on completion of all works in all respects and issuance of completion certificate. Note: Payment against testing and commissioning in case of Permanent Cathodic Protection shall include Post commissioning survey (DCVG/ CAT/ CIPL – as applicable) and interference mitigation.
10.2	**SUBMARINE PIPE LINE LAYING WORK** **(FREE ISSUE MATERIAL)**	Payment terms for pipeline laying are basic guidelines for payment of pipeline laying work. The payment terms need to be suitably modified, if required, depending on work and quantum of work in consultation with Project Manager and GM (C&P): **a. Submarine Pipeline laying on pro-rata basis.** - 05% on completion of pre-construction survey. - 20% on mobilization of Lay-barge and other equipment. - 10% on Receiving, Taking over & Transportation of Coated Line Pipes to Installation site. - 50% on completion of repairs, welding, radiography, NDT, Installation including Trenching, Dredging and backfilling etc. - 05% on completion of hydro testing. - 05% on submission of As Built drawings & all other drawings/ documents. - 05% on completion of all works in all respects and issuance of completion certificate **b. Installation of SPM & PLEM System** - 05% on completion of pre-construction survey. - 20% on mobilization of Lay-barge and other equipments. - 10% on Receiving, Taking over SPM & PLEM etc. - 55% on completion of Installation and Testing. - 05% on submission of As Built drawings & all other drawings/ documents. - 05% on completion of all works in all respects and issuance of completion certificate **c. Pre-Commissioning & Commissioning Assistance.** - 50 % on Flood, Clean, Gauge & Hydro Test of Pipeline. - 30% on after completion of Pre-Commissioning, Integration and acceptance of the SPM system in all respects - 15% on completion of commissioning Assistance. - 05% on completion of all works in all respects and issuance of completion certificate.
10.3	**COATING AND TRANSPORTATION OF COATED PIPES**	- 10% after bare pipes are lifted by coating agency from pipe supplier yard. - 65 % prorate payment along with taxes & duties after coating and acceptance - 20% on receipt of coated pipes at dumpsite including repair charges and transportation charges for coated pipes. - 05% on completion of all works in all respects and issuance of completion certificate.

10.4	**DUMPSITE DEVELPMENT**	- 10% on production of land lease agreement copy - 85% payment after development of dumpsite for receipt of pipes as per specifications. - 05% on completion of all works in all respects and issuance of completion certificate.
10.5	**DUMPSITE MANAGEMENT**	- 85% on completion of work on pro-rata basis as certified in monthly progress bill. - 10% on restoration and obtaining NOC from land owner. - 05% on completion of all works in all respects and issuance of completion certificate.
11.	**MATERIAL HANDLING**	a. As soon as any consignment against a Bill of Lading /AWB is delivered at Project site in full, contractor shall submit his bills in triplicate as per Schedule of Price to Officer-in-Charge. b. If any of the consignments are required to be stored in contractor's godown by EIL / Owner, contractor may raise part bills for the services completed. Note: Further break-up of Lumpsum Prices, if deemed necessary for any progressive payment of individual item may be mutually arrived at between Engineer-in-Charge and the Contractor.
12.	**Miscellaneous Works**	- 95% (##) on completion of work as certified in monthly progress bill. - 05% on completion of all works in all respects and issuance of completion certificate. **(##) Further break up of payment schedule, if necessary, shall be recommended/ approved by Engineer-in-charge.**
13.	**For Lumpsum Rate Item (Not covered above)**	- 95% on completion of total work in all respects. (For all lumpsum item included in Schedule of Rate, Contractor shall furnish price breakup for quoted lumpsum prices for the approval of Engineer-in-Charge. Progressive payment for such items shall be made accordingly. In this regard decision of Engineer-in- Charge shall be final and binding to the Contractor). - 05% on completion of all works in all respects and issuance of completion certificate.
14.	**PEB Buildings (Without Civil Foundation)**	**<u>PEB Buildings (Without Civil Foundation)</u>** - 05% on approval of design, detailed engineering and preparation of drawings & documents and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 3 months claim period. - 65% (##) on receipt and acceptance of pre-fabricated & pre-engineered structures / members with application of primer & painting at project premises. - 25% (##) on erection, alignment, welding, bolting, grouting etc. - 05% on completion of works in all respect and issuance of completion certificate. **(##) Further billing break up if necessary, shall be recommended/ approved by Engineer-in-charge.**
15.		**<u>PEB Buildings (With Civil Foundation).</u>**

	PEB Buildings (With Civil Foundation)	- 05% on approval of design, detailed engineering and preparation of drawings & documents and submission of equivalent bank guarantee valid till receipt and acceptance of material at site plus 3 months claim period. - 45% (##) on receipt and acceptance of pre-fabricated & pre-engineered structures / members with application of primer & painting at project premises. - 45% (##) on Civil Works erection, alignment, welding, bolting, grouting etc. - 05% on completion of works in all respect and issuance of completion certificate. **(##) Further billing breakup if necessary, shall be recommended/ approved by Engineer-in-charge.**
16.	**Marine Cum Erection All Risk Insurance:**	**Marine Cum Erection All Risk Insurance:** Progressive payments shall be released to contractor against running account bills duly certified by Engineer in-charge after affecting the necessary deductions/ recovery, if any . The basis for payment against various items shall be as follows: **a. Premium for Marine Insurance :** 100% upfront premium of premium against Marine insurance coverage after award of work and within a week of receiving the Proforma Premium invoice. The contractor shall submit the tax invoice and proof of payment of GST at the earliest but not later than 3 months of realization of payment. **b. Premium against Erection All Risk (EAR) Cover :** • Premiums are to be released in installment on quarterly basis. • First premium shall be 5 % of the total Premium plus (95% of total premium /No of installments) within a week of receiving of invoice • Subsequent premium shall be of 95% of total Premium /No of installments and payable within due date of payment as specified in the policy. • The last premium shall be released at least six months before expiry of the policy. No of Installment= [1+{Period in months-6} /3] The contractor shall submit the tax invoice and proof of payment of GST at the earliest but not later than 3 months of realization of payment.
17.	**Third Party Inspection services :**	**Third Party Inspection services:** Progressive payments shall be released to contractor against running account bills duly certified by Engineer in-charge after affecting the necessary deductions/recovery, if any a. **Third Party Inspection services for inspection of equipment and materials including package items (Wherein flat percentage rate have been specified):** • Inspection services for the PO item: 90% shall be paid along with IRN of the respective PO item in complete status on prorate basis • 10% shall be paid along with issue of completeness certificate for final documentation as per VDR and on receipt and acceptance of all

		materials at site. **b. Third Party Inspection services for inspection of equipment and materials including package items based on man-day rate:** • 90% against submission of monthly bills and time sheet certified by the engineer in-charge • 10% shall be paid along with issue of completeness certificate for final documentation as per VDR and on receipt and acceptance of all materials at site. **c. For other services like attending monthly review meetings based on Man day rate 100% against submission of monthly bills and time sheet certified by the engineer in-charge.**

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. Completion certificate is the certificate issued after attending the defects prior to taking over as specified in the General Conditions of Contract.
5. Part completion certificate whenever essential (in case of job in multi units, offloading case etc.) shall be issued with due concurrence from competent authorities to facilitate release of Final payment.
6. Where ever 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.
7. 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-Charge 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.
8. **Mobilization Advance : Not Applicable.**
9. **Secured Advance : Not Applicable.**

MEASUREMENT OF WORK
[ANNEXURE - III TO SPECIAL CONDITIONS OF CONTRACT]

MODE OF MEASUREMENT

1. GENERAL

The mode of measurement shall be as per the details mentioned in this Annexure.

1.1 In case of discrepancy between measurement of work specified in this Annexure, Standard Specification/ Job Specification, Schedule of Price/Rates etc., precedence shall be given in following order :

1.2 Measurement of works as per this Annexure of SCC.

1.3 Measurement of works as mentioned in Standard Specification/Job Specification.

1.4 Measurement of works in accordance with item description of relevant item mentioned in Schedule of Rates.

1.5 In case the clarity is not in the above documents, then it shall be as per BIS and if it does not exist in BIS also, then Measurement of works shall be as decided by Engineer-in-Charge.

1.6 Payment will be made on the basis of joint measurements taken by Sub-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.

1.7 Wherever work is executed based on instructions of Engineer-in-Charge or details are not adequate in the drawings, Sub-contractor shall take physical measurements in the presence of Engineer-in-Charge.

1.8 Measurements will be made on the basis of following units indicated in unit column of schedule of rates.

Weights	MT or Kg
Length	M (Metre)/ CM (Centimetre)/ MM (Millimetre)
Number	No.
Volume	Cu.M
Area	Sq.M

1.9 Welds, bolts, nuts, washers etc. shall not be measured. No payment for temporary works connected with this Contract or for items such as weld, shims, packing plates etc. shall be made by Owner. Cost of above items shall be included in the unit rates quoted.

1.10 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.

2. GENERAL CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS

The measurement of works as mentioned in the relevant Technical/Standard Specification shall be followed.

3. PIPING AND RELATED WORK

3.1 PIPING

a) Payment will be made based on linear measurement as per execution drawings.

b) 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, inline filters, desuperheaters etc. Length of all types of valves (except socket weld and screwed valves upto 1.5" size) 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.

c) The socket weld fittings shall be supplied to the sub-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 sub-contractor at no additional cost and his rates for piping of size 1-1/2" and below shall be inclusive of this work.

d) The forged tees shall be supplied to the sub-contractor as per the requirement 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.

e) 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 & erected by the sub-contractor within his quoted rates for piping. However, vents and drains required temporarily for flushing and testing shall be provided by the sub-contractor at their cost.

f) Fabrication of spool pieces for temporary use to aid Sub-contractor's work such as fabrication, erection, flushing and testing of piping etc. shall be done by Sub-contractor at his cost as part of piping work and no separate payment shall be made for the same.

g) 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.

h) As regards safety valves, size of valves will be identified by inlet pipe size.

i) Reducers will be paid alongwith piping of larger dia- meter except in the case of funnels where they are welded only to the smaller diameter pipe, for which payment will be made alongwith piping of such smaller dia.

j) All piping attachments such as couplings, orifice plates, steam traps, strainers, earthing lugs etc. shall be provided by the Sub-contractor as part of piping erection work and no separate payment will be made for the same.

3.2 Piping Works

Measurement of above ground and underground piping shall be done in the following manner:

3.2.1 Fabrication of Piping

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 SW/BUTT-welding e.g. GTAW, SMAW.

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.).

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

Fillet Welds
Upto 1-1/2" NB
2" to 6" NB
8"to14"NB
16" to 24" NB
26" to 36" NB
38" to 48" NB
50" to 60" NB
Above 60" NB

Total welding for slip on flanges shall be accounted as one single joint per flange.
Seal welds, wherever required shall not be counted under weld joints.

No separate payment shall be made for welding involved in pipe supports.

Branch welds shall be considered under butt welds

3.2.2 Erection of Piping

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.

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

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.

3.2.3 REMARKS**:**

Measurement of following flanged/ screwed items shall be in linear Running meter basis/Lumpsum basis, as applicable:

i) Clad steel piping

ii) Cement lined piping

iii) Rubber lined piping

iv) Teflon lined piping

v) Plastic piping (HDPE etc.)

vi) Galvanised piping

vii) Jacketed piping

viii) Steam Tracers

ix) Tubing

Measurement of following items shall be on number basis:

- Piping Specials like Mitres & Fabricated Reducers
- Reinforcement pads

3.3 Fabrication of Specials

For fabrication of mitre bends and reducers (concentric & eccentric) from the pipes/ Steel plates/ fabricated pipes to be supplied by Owner free of cost, payment will be made on numbers of such

specials at the rates given separately in Schedule of Rates. The unit rate shall be inclusive of tests such as DP/ MP as mentioned in item description of an item. However, the erection of mitre bends and reducers shall be part of piping erection work and the rates for piping will be inclusive of this work.

3.4 Valves

All types of valves such as gate/ globe / check / plug / needle/ ball/ control/ safety valves/ Gate Valves/ Butterfly valves etc. will be measured and paid on number basis at the rates given in the Schedule of Rates. Dismantling and re-erection of the valves required for the purpose of testing, calibration etc. shall not be considered for measurement as same are to be carried out by the sub-contractor within his quoted rates. The length of such valves along with companion flanges shall be excluded from piping length.

3.5 Fabrication of Supports

Measurement and payment of fabrication of pipe supports shall be on weight basis.

Bolts, nuts and washers including U-bolt will be supplied by sub-contractor. Weight of bolts, nuts and U-bolts etc. shall not be added to the weight of pipe support for payment purpose. Spring supports, if any, shall be supplied by Owner as Free Issue.

Erection of all types of supports, including grouting of supports, if required, shall be carried out by the Sub-contractor as part of piping work and no separate measurement & payment will be made for it. However, for erection of pre-issued support assemblies like spring, strut, snubber etc., payment shall be done separately.

3.6 Post Weld Heat Treatment (Stress Relieving)

Measurement and payment for post weld heat treatment shall be on the basis of per circumferential joint for different diameters of pipes as per the rates quoted. Repeat post weld heat treatment for repaired joints or otherwise due to Sub-contractor's fault will be carried out at Sub-contractor's cost. In case of attachment welding (of support to piping) undergoing PWHT, the weld length shall be considered for payment on the basis of equivalent circumferential weld joint.

3.7 Radiography/ Dye-Penetrate (DP) Test / Magnetic Particle (MP) Test

Measurement and payment for radiography shall be made on the basis of circumferential joints for different pipe diameter. Repeat radiography due to defective films or on repaired joint due to Sub-contractor's fault or for additional radiography necessitated due to poor performance of Sub-contractor's welder will be done at Sub-contractor's cost.

Measurement and payment for magnetic particle and dye penetrate test will be on the basis of weld length tested/ circumferential weld joints as mentioned in schedule of rates.

The cost of DP/MP test included in item description of piping items such as Fabrication of Specials, Reinforcement Pads etc. shall be included in the quoted unit rate and no additional payment for such DP/MP test for such items shall be made. Payment for DP/MP test shall be made only for such items where DP/MP test is not included in item description.

The cost for performing Positive Materials Identification (PMI) using alloy analysers including hiring of such equipment and mobilisation of the same to site shall be included in the unit rate for all such items of piping where PMI is specified in the item description.

4. PAINTING ON EQUIPMENTS/ PIPING/ STRUCTURAL STEEL ETC.

4.1 Painting on Equipments

For columns, vessels, reactors, Exchangers, furnaces, ejectors etc., measurement shall be on square meter basis taken over the painted surface.

For equipment numbering, name, lettering and stencilling (only for Pressure Vessels) separate payment for letter shall be made as per the rates mentioned in Schedule of Rates.

For pumps, motors and compressors measurement shall be made on number basis.

4.2 Painting on Piping, Specials and Fittings

Payment will be made on linear measurement in 'Meters' corrected to the nearest centimetre.

Piping shall be measured along the centre line through all types of fittings and flanges.

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 which shall be paid separately on number basis.

There will be no separate measurements of the colour bands/ identification signs (line numbering), flow direction etc. on uninsulated and insulated piping, the rates of painting of linear length of piping shall be inclusive of cost of such works.

4.3 Painting on Steel Structure

Payment for steel structures shall be made on the basis of admissible weight of structure painted.

Welds, bolts, nuts, washers etc. shall not be measured and paid as rates for painting of structure are inclusive of painting of such items.

5. THERMAL INSULATION WORKS

The mode of measurement shall be as per the details mentioned in this Annexure.

In case of discrepancy between measurement of work, specified in this Annexure. Standard Specification/Job Specification, Schedule of Price/Rates etc., precedence shall be given in following order :

- Measurement of works as per this Annexure of SCC.
- Measurement of works as mentioned in Standard Specifications/Job Specification.
- Measurement of works in accordance with item description of relevant item mentioned in Schedule of Rates.

In case the clarity is not in the above documents, then it shall be as per BIS and if it does not exist in BIS also, then Measurement of works shall be as decided by Engineer-in-Charge.

Payment will be made on the basis of joint measurements taken by Contractor and certified by Engineer-in-Change. Measurement shall be based on "Approved for Construction" drawings, to the extent that the work conforms to the drawings and details are adequate.

Wherever work is executed based on instructions of Engineers-in-Charge or details are not adequate in the drawings, Contractor shall take physical measurements in the presence of Engineer-in-Charge.

Welds, bolts, nuts, washers etc, shall not be measured. No payment for temporary works connected with this Contract or for items such as weld, shims, packing plates etc, shall be made by OWNER. Cost of above items shall be included in the unit rates quoted.

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.

Piping

Measurement of piping shall be taken/considered along Curvilinear centre lines of pipe insulated and through all fittings which are insulated but excluding valves, instruments and fittings which are insulated measurements shall be considered as under :

a) For all types of valves, including control valves on which removable box has been provided: payment shall be made per number. This shall be including mating flanges on both side and proper body of valves/control valves.

b) For all type of flange assembly including orifice plate, payment shall be made on number basis.

c) For bends, additional measurement equivalent to single length of curvilinear centre lines of bends shall be added to the respective size of piping.

d) Reducers will be considered with larger diameter.

e) 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.

f) 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 300mm the same will be paid as per piping measurement in respective sizes.

g) For all fittings measurement along curvature centre line shall be considered.

h) Steam/Refrigerant traced lines and untraced pipelines shall be normally specified and measure separately Steam/Refrigerant traced lines shall also be normally specified and measured separately, according to the number of tracers.

i) For steam/Refrigerant 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.

j) For all fittings measurement along curvature centre line shall be considered.

NOTE :

All other mode of measurement not covered in above clauses shall be measured in accordance with relevant BIS codes/Schedule of Rates/Specifications etc. and/or as decided by Engineers-in-Charge. The above measurement of works shall not be applicable for lumpsum items of SOR.

ANNEXURE-IV TO SPECIAL CONDITIONS OF CONTRACT

PRICE VARIATION: NOT APPLICABLE

KEY CONSTRUCTION MANPOWER TO BE DEPLOYED BY THE CONTRACTOR DURING EXECUTION

[ANNEXURE - V TO SPECIAL CONDITIONS OF CONTRACT]

KEY CONSTRUCTION MANPOWER TO BE DEPLOYED BY THE CONTRACTOR DURING EXECUTION FOR MISC. BUILDING WORKS FOR PP PROJECT AT BPCL KOCHI REFINERY OF M/s BPCL

(TENDER NO. B895-999-81-46-CF-T-8202)

S. NO.	DESCRIPTION	NOS.
1.	RCM	1
2.	LEAD DISCIPLINE ENGINEER - CIVIL & STRUCTURAL - ELECTRICAL	 1 1
3.	LEAD QA/QC ENGINEER	1
4.	LEAD PLANNING ENGINEER	1
5.	SAFETY OFFICER & OTHER SAFETY PERSONNEL	AS PER HSE SPEC (6-82-0001)
6.	QUANTITY SURVEYOR	1
7.	DISCIPLINE ENGINEERS+ SUPERVISORS - MECHANICAL - CIVIL / STRUCTURAL - ELECTRICAL - PLANNING ENGINEER -STORE OFFICER/KEEPER -LICENCED ELECTRICIAN - SURVEYOR - LAB TECHNICIAN	 1+1 2+4 1+1 1+0 1+0 0+2 1+0 0+1

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)

(ANNEXURE-VI TO SPECIAL CONDITIONS OF CONTRACT)

QUALIFICATION & EXPERIENCE REQUIREMENT OF KEY CONSTRUCTION PERSONNEL AND PENALTY FOR THEIR NON-MOBILIZATION

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	
2	25.07.2025	Revised & Updated	DK	SBB	KS	MN
1	01.07.2020	Revised & Updated	DG	RK	AKK	SKS
0	12.06.2015	Doc. No. 9-1940-0001 Rev 1 has been revised and issued as Standard	DJ	RK	MD	SC

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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

Construction Standards Committee

Convenor : Sh. K. Swaminathan HOD (Construction)

Members :
Sh. DSN Murthy, ED (Projects)
Sh. Udayan Chakravarty, CGM (Piping)
Sh. SB Burman, Sr. GM (Construction)
Sh. Abhijit Chakraborty, GM (Construction)
Sh. Pankaj Kumar Rai, DGM (Construction)
Sh. S. Padmanathan, DGM (SCM)
Sh. Dhananjay, AGM (Construction)

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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:			
	Awarded value (Rs) →	< 10 Cr. Works	10 - 50 Cr. Works	> 50 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:			
	Awarded value (Rs) →	≤ 10 Cr. Works	10-50 Cr. Works	> 50 Cr. Works
	Degree holders	3 yrs	5 yrs	10 yrs
	Diploma holders	5 yrs	8 yrs	13 yrs
Lead Welding/ NDT Engineer	Degree or Diploma in Mechanical Engineering/ Metallurgy with the minimum following experience in Welding & NDT (Non-Destructive Testing) and possessing valid Level-II certificate in the relevant NDT methodology (RT/UT)			
	Awarded value (Rs) →	≤ 10 Cr. Works	10-50 Cr. Works	> 50 Cr. Works
	Degree holders	3 yrs	5 yrs	10 yrs
	Diploma holders	5 yrs	8 yrs	13 yrs
Lead QA/QC Engineer	Degree or Diploma in Engineering with following experience (refer Note 1 also) :			
	Awarded value (Rs) →	≤ 10 Cr. Works	10-50 Cr. Works	> 50 Cr. Works
	Degree holders	3 yrs of construction experience of which minimum 1 years in QA/QC	5 yrs of construction experience of which minimum 2 years in QA/QC	10 yrs of construction experience of which minimum 3 years in QA/QC
	Diploma holders	5 yrs of construction experience of which minimum 3 years in QA/QC	8 yrs of construction experience of which minimum 5 years in QA/QC	13 yrs of construction experience of which minimum 6 years in QA/QC
Lead Planning Engineer	Degree or Diploma in Engineering with following experience in Planning & Scheduling			
	Awarded value (Rs) →	≤ 10 Cr. Works	10-50 Cr. Works	> 50 Cr. Works
	Degree holders	3 yrs	5 yrs	8 yrs
	Diploma holders	5 yrs	8 yrs	13 yrs
Safety Officer/ Supervisor	As per HSE Specification enclosed elsewhere in the bidding document.			

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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:			
	Awarded value (Rs) →	≤ 10 Cr. Works	10-50 Cr. Works	> 50 Cr. Works
	Experience	3 years	5 yrs.	10 yrs.
Quantity Surveyor	Degree or Diploma in Engineering with minimum following experience in quantity estimation, field measurement, bill preparation etc. in Construction field:			
	Awarded value (Rs) →	≤ 10 Cr. Works	10-50 Cr. Works	> 50 Cr. Works
	Degree holders	2 yrs	3 yrs	5 yrs
	Diploma holders	4 yrs	6 yrs	8 yrs
Discipline Engineer	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)

1. For Civil & Structural, Mechanical, Composite, EPC or EPCC Contracts of value more than Rupees 50 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.

PENALTY FOR NON - MOBILIZATION OF KEY CONSTRUCTION PERSONNEL

Penalty for non-mobilization per day per person after the contractual mobilization period / mobilization schedule agreed during Kick off meeting / jointly agreed between contractor and PMC / Owner based on front availability etc.

- Rs. 10000/- for Resident Construction Manager/ Resident Engineer/ Site-in-Charge.
- Rs. 5000/- for Lead QA/QC Engineer, Lead Planning Engineer, Warehouse In-charge, Lead Discipline Engineers, 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) Mobilized personnel shall not be demobilized 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 2% of the awarded contract value.

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ANNEXURE-VII TO SPECIAL CONDITIONS OF CONTRACT

SPECIFICATION FOR QUALITY MANAGEMENT SYSTEM REQUIREMENTS FROM BIDDERS

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	
2	12.06.20	General Revision	QMS Standards Committee	QMS Standards Committee	SKB	SKS
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

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Abbreviations:

ISO	-	International Organization for Standardization
MR	-	Material Requisition
PO	-	Purchase Order
PR	-	Purchase Requisition
QMS	-	Quality Management System

QMS Standards Committee

Convener: Mr. S.K. Badlani

Members: Mr. Sanjay Mazumdar (Engg.)
Mr. R.K. Singh (SCM)
Mr. B. Biswas (SCM)
Mr. Ravindra Kumar (Const.)
Mr. Vinod Kumar (CQA)
Mr. Swapnil Vaishnav (Projects)

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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.

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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-ordering of outsourced items / sub-contracting / purchasing of services specified in MR / 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 in concurrence with EIL / Owner. 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.

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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 MR/ 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 equipment 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 equipment 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 approved ITPs or 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 actions shall be implemented by the BIDDER so that similar NCs including deficiencies do not recur. The BIDDER shall take appropriate actions to address the Risks and Opportunities in the project.

5.16 All deficiencies noticed and reported by EIL / Owner shall be analyzed by the BIDDER and appropriate corrective actions shall be implemented. BIDDER shall intimate EIL / Owner of all such corrective 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.

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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/ TPIA, as applicable.

- 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,
- 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.

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KEY CONSTRUCTION EQUIPMENTS TO BE MOBILIZED BY THE CONTRACTOR DURING EXECUTION

[ANNEXURE - VIII TO SPECIAL CONDITIONS OF CONTRACT]

KEY CONSTRUCTION EQUIPMENTS TO BE MOBILIZED BY THE CONTRACTOR DURING EXECUTION OF MISC. BUILDING WORKS FOR PP PROJECT AT BPCL KOCHI REFINERY OF M/s BPCL

(TENDER NO. B895-999-81-46-CF-T-8202)

SL. NO.	EQUIPMENT DESCRIPTION	CAPACITY	REQUIREMENT DURING CONSTN
1.	HYDRAILIC EXCAVATOR WITH REVERSE HORN AND REAR LIGHT/MIRROR WITH ROCK & CONCRETE BREAKING/CHISELLING ATTACHMENT	0.7-1.2 M3	1
2.	HYDRAULIC EXCAVATOR WITH REVERSE HORN AND REAR LIGHT/MIRROR WITH ROCK & CONCRETE BREAKING/CHISELLING ATTACHMENT	0.3 M3	2
3.	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	2
4.	TOOLS AND TACKLES REQUIRED FOR EXCAVATION IN HARD ROCK BY CONTROLLED BLASTING		AS REQUIRED
5.	CRANE	40-50 MT	AS REQUIRED
6.	CRANE	50-100 MT	AS REQUIRED
7.	HYDRAULIC/PNEUMATIC PILE HEAD BREAKER		3
8.	DUMPER		AS REQUIRED
9.	ROCK BODY DUMPER		AS REQUIRED
10.	TRACTOR TRAILER WITH HYDRAULIC UNLOADING FACILITY		AS REQUIRED
11.	TRAILER		1
12.	TOWER CRANE		AS REQUIRED
13.	BOOM LIFT		2
14.	BOOM PLACER		AS REQUIRED
15.	CONCRETE PUMP		AS REQUIRED
16.	VIBRO / ROAD ROLLER	8-10 TON	AS REQUIRED
17.	READY MIXED CONCRETE (RMC) PLANT/ SUPPLIER	30 M3/HR	1
18.	TRANSIT MIXER (IF NOT PROVIDED BY THE RMC SUPPLIER)	6 M3	AS REQUIRED
19.	MIXER MACHINE WITH WEIGH BATCHER		1
20.	PLATE COMPACTOR		2
21.	HAND VIBRO ROLLER		2
22.	NEEDLE VIBRATORS		4
23.	BAR CUTTING AND BENDING MACHINE		2
24.	WATER TANKERS		AS REQUIRED
25.	TOTAL STATION		1
26.	AUTO LEVEL		2
27.	WELDING MACHINE		4
28.	GRINDING MACHINE		4
29.	GAS CUTTING SET		6
30.	AIR COMPRESSOR		1
31.	BLAST CLEANING EQPT.		1
32.	DG SET	25-65 KVA	AS REQUIRED
33.	TOOLS AND TACKLES REQUIRED FOR PAINTING AS PER SOR		AS REQUIRED
34.	SPRAY PAINTING M/C (AIR LESS)		1
35.	PROFILE GUAGE		1
36.	HYGROMETER FOR HUMIDITY MEASUREMENT		1
37.	ELCO METER		1
38.	TOOLS AND TACKLES REQUIRED FOR DPT/MPT	SET	AS REQUIRED
39.	X RAY SOURCE FOR RADIOGRAPHY		AS REQUIRED

SL. NO.	EQUIPMENT DESCRIPTION	CAPACITY	REQUIREMENT DURING CONSTN
40.	HYDROTESTING / LEAK TESTING MACHINE SETUP		AS REQUIRED
41.	JACKHAMMER		2
42.	WATER FILLING PUMP (SUITABLE CAPACITY)		1
43.	DEWATERING PUMP (SUITABLE CAPACITY)		1
44.	TOOLS AND TACKLES REQUIRED FOR FIXING MECHANICAL ANCHOR FASTNER / CHEMICAL ANCHOR FASTNER		AS REQUIRED
45.	TOOLS AND TACKLES REQUIRED FOR CHEMICAL REBARING WORKS AS PER SOR		AS REQUIRED
46.	TOOLS AND TACKLES REQUIRED FOR SHORING AND STRUTTING AS PER SOR		AS REQUIRED
47.	TOOLS AND TACKLES REQUIRED FOR CENETRING & SHUTTERING WORKS AS PER SOR		AS REQUIRED
48.	TOOLS AND TACKLES REQUIRED FOR ROOFING AND CLADDING WORK AS PER SOR		AS REQUIRED
49.	TOOLS & TACKLES FOR FALSE FLOORING, FALSE CEILING, UNDER DECK INSULATION AND PARTITIONING AS PER SOR		AS REQUIRED
50.	TOOLS AND TACKLES REQUIRED FOR CARPENTRY WORKS AS PER SOR		AS REQUIRED
51.	TOOLS AND TACKLES REQUIRED FOR PLUMBING WORKS AS PER SOR		AS REQUIRED
52.	TOOLS AND TACKLES REQUIRED FOR EPOXY COATING WORKS AS PER SOR		AS REQUIRED
53.	TOOLS AND TACKLES REQUIRED FOR ANTITERMITE TREATMENT AS PER SOR		AS REQUIRED
54.	TOOLS AND TACKLES REQUIRED FOR JOINTING OF CPVC PIPE AS PER SOR		AS REQUIRED
55.	TOOLS AND TACKLES REQUIRED FOR ALUMINIUM WORKS AS PER SOR		AS REQUIRED
56.	TOOLS AND TACKLES REQUIRED FOR RCC CUTTING/CHIPPING WORKS AS PER SOR		AS REQUIRED
57.	TOOLS AND TACKLES REQUIRED FOR STAINLESS STEEL WORKS AS PER SOR		AS REQUIRED
58.	TOOLS AND TACKLES REQUIRED FOR STONE/ TILE WORKS AS PER SOR		AS REQUIRED
59.	TOOLS AND TACKLES REQUIRED FOR WATERPROOFING WORKS AS PER SOR		AS REQUIRED
60.	TOOLS AND TACKLES REQUIRED FOR AIR CONDITIONING WORKS AS PER SOR		AS REQUIRED
61.	TOOLS AND TACKLES REQUIRED FOR GI PIPING WORKS		AS REQUIRED
62.	TOOLS AND TACKLES REQUIRED FOR STRUCTURAL GLAZING WORKS		AS REQUIRED
63.	TOOLS AND TACKLES REQUIRED FOR ALUMINIUM COMPOSITE PANEL WORKS		AS REQUIRED
64.	3 TERMINAL EARTH TESTER		1
65.	DIGITAL MULTIMETER		1
66.	TONG TESTER	0-300 AMP	1
67.	EARTH DISCHARGE ROD		1
68.	LUX METER		1
69.	PANEL SHIFTING TROLLEY		AS REQUIRED
70.	LIVE CABLE DETECTOR		AS REQUIRED
71.	MANUAL/HYDRAULIC CRIMPING TOOL		1 SET EACH
72.	LEAKAGE CURRENT DETECTOR		1
73.	ROLLERS, MECHANSED CABLE PULLING		AS REQUIRED
74.	LIFTING JACK, SHAFT SUITABLE FOR CABLE DRUM LIFTING		AS REQUIRED
75.	ELECTRICIAN TOOL KIT		AS REQUIRED
76.	INSTRUMENTATION TOOL KIT		AS REQUIRED
77.	PORTABLE DRILL M/C & HOLE CUTTER		1
78.	INSULATION RESISTANCE MEGGER		AS REQUIRED
79.	LABORATORY EQPTS		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/capacities 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 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)

ANNEXURE-IX TO SPECIAL CONDITIONS OF CONTRACT

CALIBRATION REQUIREMENT OF MONITORING AND MEASURING DEVICES AT CONSTRUCTION SITE

निर्माण स्थलों पर निगरानी और मापने के उपकरणों की आंशांकन 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	
2	25.07.2025	Revised & Updated	DK	SBB	KS	MN
1	02.07.2020	Revised & Updated	DG	RK	AKK	SKS
0	28.04.2015	Doc. No. 9-1940-0030 Rev 0 has been issued as Standard	DJ	SNB	MD	SC

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Abbreviations:

BIS	:	Bureau of Indian Standard
NABL	:	National Accreditation Board for Testing and Calibration Laboratories
CEIL	:	Certification Engineers International Ltd.
LRS	:	Llyod's Register Group Limited
BV	:	Bureau Veritas
ABS	:	ABS Consultancy
DNV	:	Det Norske Veritas
IRS	:	Indian Registrar for Shipping
PMI	:	Positive Material Identification

Construction Standards Committee

Convenor : Sh. K. Swaminathan HOD (Construction)

Members : Sh. DSN Murthy, ED (Projects)
Sh. Udayan Chakravarty, CGM (Piping)
Sh. SB Burman, Sr. GM (Construction)
Sh. Abhijit Chakraborty, GM (Construction)
Sh. Pankaj Kumar Rai, DGM (Construction)
Sh. S. Padmanathan, DGM (SCM)
Sh. Dhananjay, AGM (Construction)

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1.0 SCOPE

The standard covers the calibration requirement of monitoring & measuring devices used by construction contractor during implementation of construction works under their scope.

2.0 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. (Refer Note).	Once in a year or project duration whichever is earlier.	Record to be maintained
A.2.	Level Instruments (Auto Level / Dumply Level)	To check by backsight / foresight readings, the temporary adjustments of level. (Refer Note).	Every use.	Record to be maintained
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. (Refer Note).	Once in a year or project duration whichever is earlier.	Record to be maintained
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 calibrating laboratories / agency. (Refer Note).	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.
B.5	Vicat Appratus	Calibration certificate from manufacturers or from calibrating laboratories / agency. (Refer Note).	As per manufacturer specification or once a year whichever is earlier.	Records to be maintained.

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Sl. No.	Description	Calibration requirements	Frequency	Remarks
C.	**Mechanical/ Electrical/Welding**			
C.1	Pressure gauges/ Pressure Safety valve/ Pressure relief valve	Calibration certificate from calibrating laboratories / agencies or calibrate by dead weight testers with standard weights or with master Gauge. (Refer Note)	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 calibrating laboratories / agency. Calibration certificate shall not be older than one month from the date of mobilization. (Refer Note).	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 calibrating laboratories / agency or calibration by zeep meter. (Refer Note).	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 various third-party inspection agency. Viz. CEIL, LRS, BV, ABS, DNV or IRS etc.	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 various third party inspection agency. Viz. CEIL, LRS, BV, ABS, DNV or IRS etc.	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 calibrating laboratories / agencies or the Manufacturer (Refer Note).	Once in Six Months or as per manufacturer's recommendation whichever is earlier.	Records to be maintained.

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Sl. No.	Description	Calibration requirements	Frequency	Remarks
C.12	HIPOT Kit, Multimeter/ Clampmeter, Ohmicron Kit, CT Analyser, CRM Kit, BDV Kit, Tachometer etc.	Calibration Certificate from calibrating laboratories / agencies (Refer Note).	Once in Six months.	Records to be maintained.
C.13	Temperature / Pressure recorders	Calibration from manufacturer or any calibrating laboratories / agency (Refer Note).	Once in Six months.	Records to be maintained
C.14	Temperature gauges	Calibration Certificate from calibrating laboratories / agencies (Refer Note).	Once in Six months.	To be discarded in case of damage or malfunctioning.
C.15	Thermocouples	Manufacturer's Certificate or Chemical Check	---	---
C.16	Vibration probes	Calibration from calibrating laboratories / agencies (Refer Note).	Once in a year.	To be discarded in case of damage or Malfunctioning.
C.17	Decibel-Meter	Calibration from calibrating laboratories / agencies (Refer Note).	Once in a year.	To be discarded in case of damage or Malfunctioning.
C.18	Manual Torque Wrench / Electric Torque Machine	Calibration from manufacturer or any calibrating laboratories / agency (Refer Note).	As per manufacturer's recommendation or once in a year whichever is earlier.	Records to be maintained
C.19	Mother Oven	Calibration from manufacturer or any calibrating laboratories / agency (Refer Note).	As per manufacturer's recommendation or once in a year whichever is earlier.	Records to be maintained.

Note: If an instrument is out of acceptance limit as per instrument data sheet, it has to be sent to manufacturers or their authorized agents (Calibrating laboratories/ agency) or to any other lab/ agency for recalibration/ rectification and certification. The calibrating laboratory/ agency shall be NABL accredited or any other lab accredited as per ISO/IEC:17025 by any of the National/ International accreditation body for relevant testing.

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ANNEXURE-X TO SPECIAL CONDITIONS OF CONTRACT

CONDITIONS FOR ISSUE AND RECONCILIATION OF MATERIALS

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	
3	30.04.2024	Revised & Updated	DK	AC	RKS	MN
2	12.03.2019	Revised & Updated	SKG	AP	AKK	RKT
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

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Abbreviations:

MS	:	Mild Steel
OFC	:	Optical Fibre Cable
OTDR	:	Optical Time Domain Report
FIM	:	Free Issue Material

Convenor: Sh. R K Singh, ED (Construction)

Members:
Sh. D S N Murthy, GGM (Projects)
Sh. Chinmoy Kapuria, CGM (SCM)
Sh. Udayan Chakravarty, CGM (Pi[illegible]ing)
Sh. Abhijit Chakraborty, GM (Construction)
Sh. Pankaj Kumar Rai, DGM (Construction)
Sh. Dhananjay, AGM (Construction)

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1.0 CONDITIONS FOR ISSUE OF MATERIALS

Whenever any material is issued as FIM by EIL/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.

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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

In all cases where cement is FIM and supplied by EIL/owner, following methodology shall be adopted for issue & reconciliation -

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 STEEL BARS / STRUCTURAL STEEL / PLATES

In all cases where Reinforcement Steel Bars/ Structural Steel/ Plates is FIM and supplied by EIL/owner, following methodology shall be adopted for issue & reconciliation -

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

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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

In all cases where Piping Materials e.g. Pipes and Pipe fittings are FIM and supplied by EIL/owner, following methodology shall be adopted for issue & reconciliation -

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.

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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/ INSTRUMENTS

In all cases where Equipments/ Instruments are FIM and supplied by EIL/owner, following methodology shall be adopted for issue & reconciliation -

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

In all cases where Cables are FIM and supplied by EIL/owner, following methodology shall be adopted for issue & appropriation /reconciliation -

~~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

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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

In all cases where Line Pipes are FIM and supplied by EIL/owner, following methodology shall be adopted for issue & appropriation /reconciliation -

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

In all cases where OFC is FIM and supplied by EIL/owner, following methodology shall be adopted for issue & appropriation /reconciliation -

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.

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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.

11.0 RECONCILLATION OF MATERIALS

While submission of RA Bills, Contractor shall submit material reconciliation report along with each RA bill.

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ANNEXURE-XI TO SPECIAL CONDITIONS OF CONTRACT

SPECIFICATION FOR DOCUMENTATION REQUIREMENTS FROM CONTRACTORS AND SPECIFICATION FOR DOCUMENTATION REQUIREMENTS FROM SUPPLIERS

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	
2	12.06..20	General Revision	QMS Standards Committee	QMS Standards Committee	SKB	SKS
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

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Abbreviations:

DCI	-	Document Control Index
FOA	-	Fax of Acceptance
IC	-	Inspection Certificate
IRN	-	Inspection Release Note
ITP	-	Inspection and Test Plan
LOA	-	Letter of Acceptance
QMS	-	Quality Management System
URL	-	Universal Resource Locator
V Portal	-	Vendor Portal

QMS Standards Committee

Convener: Mr. S.K. Badlani

Members:
Mr. Sanjay Mazumdar (Engg.)
Mr. R.K. Singh (SCM)
Mr. B. Biswas (SCM)
Mr. Ravindra Kumar (Const.)
Mr. Vinod Kumar (CQA)
Mr. Swapnil Vaishnav (Projects)

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4.0 DOCUMENTATION AND DATA REQUIREMENTS 4

Attachments

Format for completeness of Final Documentation : Format No. 3-78-0004

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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 has entered into a contract with 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 AND DATA REQUIREMENTS

4.1 Order Acknowledgement and Assigning Project Manager

After placement of order, Contractor shall acknowledge order through V-Portal within 7 days of receipt of FOA / PO. Contractor shall assign a Project Manager for that order though online portal and provide requisite details. Project Manager details shall include e-mail address, mailing address, mobile / 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.

4.2 Documents / Data to be submitted by the Contractor

4.2.1 The contractor shall submit the documents and data against the Tender / Contract as per the list specified in respective Tender / Contract.

4.2.2 Review of the contractor drawings / Documents 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 / inspection / 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 / inspection stage.

4.2.3 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):

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QMS	- 1 week
Document Control Index	- 2 weeks
Other Documents/Drawings	- As per approved Document Control Index

4.2.4 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.

4.3 Style and Formatting

4.3.1 All Documents shall be in ENGLISH language and in M.K.S System of units.

4.3.2 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

4.4 Review and Approval of Documents by Contractor

4.4.1 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 duly reviewed, approved and stamped by the contractor. Direct submission of sub- contractor's drawings without contractor's approval shall not be entertained.

4.5 Document Category

4.5.1 **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 Manufacturing / fabrication as per Tender/ Contract Requirement.
V	-	Void

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4.6 Methodology for Submission of Documents to EIL / Owner

4.6.1 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 Vendor Portal. 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.

4.6.2 Submission of Drawings / Documents / Data

Drawings / documents, data and DCI shall be uploaded on the EIL Vendor Portal. The detail guidelines for uploading documents on EIL Vendor Portal are available on following URL

http://edocx.eil.co.in/vportal

4.6.3 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.

4.6.4 Schedule and Progress Reporting

Contractor shall submit monthly progress report (MPR) and updated procurement, engineering and manufacturing status (schedule vs. actual) and highlight constraints, if any, along with action plan for mitigation, to the EIL / Owner by 1st week of every month. One month Look-ahead schedule including the mobilization plan 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.

4.6.5 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 / equipment 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.

4.6.6 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.

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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 / Equipment dispatch from contractor's / sub vendor's works shall not commence till above condition is met.

Note 1: Non fulfilling above requirement shall result into appropriate penalty or with- holding of payment as per conditions of Tender / Contract.

Note 2: For items where IRN/IC is issued by TPIA, supplier to ensure that following as a minimum must be mentioned by TPIA in IRN/IC

a) Tender document number
b) List of drawings / documents with EIL approval code
c) Tests witnessed, documents reviewed
d) Compliance statement by TPIA that product meets the requirement as specified in EIL standard specifications, Inspection Test Plan / QAP and approved documents.

4.6.7 **Pre Commissioning & Commissioning Activities Management System (PCAMS)**

Pre Commissioning & Commissioning activities management system software shall be followed for Mechanical completion, check listing of loops, punch points, hydro test and issue of Formats during the Pre Commissioning and Commissioning activities and the same can be accessed on following URL

https://pcams.eil.co.in/

4.7 Final Documentation

4.7.1 As built Drawings

Minor 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, as the case may be. 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.

4.7.2 As built Final Documents

As built final documents shall be submitted as listed in Tender / Contract

4.7.3 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.

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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.

4.7.4 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 soft copies of all the final drawings and documents in pen drive or any other specified medium with proper identification tag, 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 Vendor Portal and if applicable on Client Server also.

4.7.5 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 final document folder.

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COMPLETENESS OF FINAL DOCUMENTATION

Name of Supplier/Contractor	:	
Customer	:	
Project	:	
EIL's Job No.	:	
Purchase Order No./ Contract No.	:	
Purchase Requisition No./ Tender No.	:	Rev. No. :
Name of the Work/ Equipment	:	
Tag. No.	:	
Supplier's / Contractor's Works Order No.	:	

Certified that the Engineering Documents / Manufacturing & Test Certificates submitted by the supplier (as per Index sheet mentioned in Annexure-1) are complete in accordance with the Vendor Data Requirements of Purchase Requisition / Tender.

Signature	: …….	Signature	: …….
Date	: …….	Date	: …….
Name	: ……..	Name	: ……..
Designation	: ……	Designation	: ……
Department	: ……	Department	: ……
	Supplier / Contractor		EIL / TPIA

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Annexure-1

Final Documentation Index Sheet			
PR/PO/Tender No.		Rev. No.	
Serial No.	Document Title	Page/ Folder No.	No. of Pages

Signature	: …….	Signature	: …….
Date	: …….	Date	: …….
Name	: ……..	Name	: ……..
Designation	: ……	Designation	: ……
Department	: ……	Department	: ……

Supplier / Contractor

EIL / TPIA

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आपूर्तिकर्ताओं से प्रलेखन अपेक्षाओं हेतु विनिर्देश

SPECIFICATION FOR DOCUMENTATION REQUIREMENTS FROM SUPPLIERS

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committe Convener	Standards Bureau Chairman
					Approved by	
2	12.06.20	General Revision	QMS Standards Committee	QMS Standards Committee	SKB	SKS
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

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Abbreviations:

DCI	-	Document Control Index
eDMS	-	Electronic Document Management System
FOA	-	Fax of Acceptance
IC	-	Inspection Certificate
IRN	-	Inspection Release Note
ITP	-	Inspection and Test Plan
LOA	-	Letter of Acceptance
MR	-	Material Requisition
PO	-	Purchase Order
PR	-	Purchase Requisition
PVC	-	Polyvinyl Chloride
QAP	-	Quality Assurance Plan
QMS	-	Quality Management System
RPO	-	Regional Procurement Office
TPIA	-	Third Party Inspection Agency
URL	-	Universal Resource Locator
V-Portal	-	Vendor Portal

QMS Standards Committee

Convener: Mr. S.K. Badlani

Members:
Mr. Sanjay Mazumdar (Engg.)
Mr. R.K. Singh (SCM)
Mr. B. Biswas (SCM)
Mr. Ravindra Kumar (Const.)
Mr. Vinod Kumar (CQA)
Mr. Swapnil Vaishnav (Projects)

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Attachments

Format for completeness of Final Documentation : Format No. 3-78-0004

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1.0 SCOPE

This specification establishes the Documentation Requirements from Suppliers.

All documents / data against the PO / PR / MR shall be developed and submitted to EIL / Owner by the suppliers for review / records, in line with this specification.

2.0 DEFINITIONS

2.1 Supplier

For the purpose of this specification, the word "SUPPLIER" means the person(s), firm, company or organization who has entered into a contract with EIL / Owner for delivery of some products (including service). The word is considered synonymous to bidder, contractor 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 Order Acknowledgement and Assigning Project Manager

After placement of order, Supplier shall acknowledge order through V-Portal within 7 days of receipt of FOA / PO. Supplier shall assign a Project Manager for that order though online portal and provide requisite details. Project Manager details shall include e-mail address, mailing address, mobile/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.

4.2 Documents / Data to be submitted by the Supplier

4.2.1 The Supplier shall submit the documents and data against the PO / PR / MR as per the list given in respective PO / PR / MR.

4.2.2 Review of the supplier drawings / documents by EIL would be only to review the compatibility with basic designs and concepts and in no way absolve the supplier of his responsibility / contractual obligation to comply with PR requirements, applicable codes, specifications and statutory rules / regulations. Any error / deficiency noticed during any stage of manufacturing / execution / inspection/ installation shall be promptly corrected by the supplier without any time and cost implications, irrespective of comments on the same were received from EIL during the drawing review stage or not.

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4.2.3 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	- 1 week
Document Control Index	- 2 weeks
Other Documents / Drawings	- As per approved Document Control Index

4.2.4 Documents as specified in PO / PR / MR are minimum requirements. Supplier shall submit any other document / data required for completion of the job as per EIL / Owner instructions.

4.3 Style and Formatting

4.3.1 All Documents shall be in ENGLISH language and in M.K.S System of units.

4.3.2 Before forwarding the drawings and documents, contractor shall ensure that the following information are properly mentioned in each drawing:

Purchase Requisition Number
Name of Equipment / Package
Equipment / Package Tag No.
Name of Project
Client
Drawing / Document Title
Drawing / Document No.
Drawing / Document Revision No. and Date

4.4 Review and Approval of Documents by Supplier

4.4.1 The Drawing / Documents shall be reviewed, checked, approved and duly signed / stamped by supplier before submission. Revision number shall be changed during submission of the revised supplier documents and all revisions shall be highlighted by clouds. Whenever the supplier require any sub-supplier drawings to be reviewed by EIL, the same shall be submitted by the supplier duly reviewed, approved and stamped by the supplier. Direct submission of sub-supplier's drawings without contractor's / suppliers' approval shall not be entertained.

4.5 Document Category

4.5.1 **Review Category**

Following review codes shall be used for review of supplier Drawings / Documents:

Review Code 1	-	No comments. Proceed with Manufacture / Fabrication as per the document.
Review Code 2	-	Proceed with Manufacture / Fabrication 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 Manufacturing / Fabrication as per PR / Tender requirements.
V	-	Void

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4.6 Methodology for Submission of Documents to EIL/Owner

4.6.1 Document Control Index (DCI)

Supplier 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 Vendor Portal. 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.

4.6.2 Submission of Drawings / Documents / Data

Drawings / documents, data and DCI shall be uploaded on the EIL Vendor Portal as per approved DCI. The detailed guidelines for uploading documents on EIL Vendor Portal are available on following URL

http://edocx.eil.co.in/vportal

4.6.3 Statutory Approvals

Wherever approval by any statutory body is required to be taken by Supplier, the Supplier shall submit copy of approval by the authority to EIL.

4.6.4 Manufacturing Schedule

Supplier shall prepare manufacturing schedule for the order, with key milestone activities (such as document submission, sub ordering, manufacturing, Inspection, dispatches, etc) to meet delivery as per FOA / PO terms. Supplier shall submit manufacturing schedule to concerned Regional Procurement Office (RPO) of EIL / Owner for review within 2 weeks from date of FOA / PO.

4.6.5 Schedule and Progress Reporting

Supplier shall submit monthly progress (MPR) report and updated procurement, engineering, manufacturing status, Inspection and dispatch status (schedule vs. actual) and highlight constraints, if any, along with action plan for mitigation, to the concerned Regional Procurement Office (RPO) of EIL / Owner by 1st week of every month., First MPR 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 supplier shall furnish such reports promptly without any price implication. Format for progress report shall be submitted by the Supplier during kick off meeting or within 2 weeks of receiving FOA / LOA, whichever is earlier.

4.7 Inspection and Testing

4.7.1 Quality Assurance Plan / Inspection and Test Plan

If Inspection and test plans (ITP) are attached with MR / PR same shall be followed along with additional tests requirement (if any) mentioned in MR/ PR. However for cases wherein EIL Standard ITPs not available / have not been attached with MR / PR, Supplier shall submit within one week of receiving FOA / LOA, the Quality Assurance Plan for inspection & testing at various stages of production, quality control records for critical bought out items / materials and site assembly & testing as may be applicable to the specific order and obtain approval from concerned Regional procurement Office of EIL / third party inspection agency, as applicable.

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For Package equipment contracts, the supplier shall prepare a list of items / equipment and their inspection categorization plan for all items included in the scope of supply immediately after receipt of order and obtains 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.

4.7.2 **Inspection Requisition:**

Supplier shall perform internal inspection as per ITP/ approved QAP at their works based on approved documents / drawings. Upon satisfactory internal inspection, supplier shall raise inspection call to concerned Regional Procurement Office (RPO) of EIL / TPIA / Owner with advance notice as per contract along with Internal test reports.

All changes w.r.t. PR shall be recorded through agreed variations or Concessions & Deviations. Conflict, if any, between PR / Job specifications and approved drawings, shall be brought to the notice of EIL / owner by the supplier / contractor. Decision of EIL / owner will be binding on the supplier and to be complied without time and cost implications.

Identified bought out items/ raw material shall be procured under TPIA as per ITP.

4.7.3 **Inspection Release Note (IRN)/ Inspection Certificate (IC)**

IRN / IC shall be issued by EIL Inspector / third party inspection agency on successful inspection, review of test reports / certificates as per specifications & ITP / agreed quality plan (as applicable) and only after all the drawings / documents as per DCI are submitted and are accepted under review code-1 or code R. Supplier shall ensure that necessary documents / manufacturing and test certificates are made available to EIL / TPIA as and when desired.

Note 1: Non fulfilling above requirement shall result into appropriate penalty or with- holding of payment as per conditions of PO / PR / MR.

Note 2: For items where IRN/IC is issued by TPIA, supplier to ensure that following as a minimum must be mentioned by TPIA in IRN / IC

a) PR document number
b) List of drawings / documents with EIL approval code
c) Tests witnessed, documents reviewed
d) Compliance statement by TPIA that product meets the requirement as specified in EIL PR, standard specifications, Inspection Test Plan / QAP and approved documents.

4.8 Transportation Plan

Transportation Plan for Over Dimensional Consignments (ODC), if any, shall be submitted within 2 weeks of receiving FOA / LOA, for approval. Consignment with parameters greater than following shall be considered as over dimensional.

Dimensions: 4 meters width x 4 meters height x 20 meters length

Weight : 32 MT

Dimensions and weight provided above are inclusive of all nozzles, attachments, transportation saddles etc.

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Physical Rout survey for ODC movement shall be submitted to EIL within 8 weeks of receiving FOA / LOA.

4.9 Dispatch Details

Upon receipt of IRN / IC from EIL inspector / TPIA, supplier shall dispatch items within 2 days. Supplier shall submit dispatch details to concerned RPO of EIL / Owner within a day of dispatch. Dispatch details shall include Lorry Receipt (LR) number / Dispatch Number, Transporter Name, Date of dispatch, Packing list, Invoice copy etc.

4.10 Final Documentation

4.10.1 Supplier shall prepare final documents in line with VDR (Vendor Document Requirements) attached with PR/Tender. A copy of final document along with filled in Format for Completeness of Final Documentation (Format No. 3-78-0004) to be submitted to EIL Inspector / TPIA for review & approval within 2 weeks from dispatch. Upon receipt of EIL/TPIA endorsement on Completeness of Final Documents, supplier shall submit soft / hard copies of Final documents to EIL / Owner in requisite quantity as per PO / PR details, along with covering letter. A copy of covering letter to be submitted to the concerned Regional Procurement Office (RPO) of EIL/Owner.

4.10.2 **As Built Drawings**

Minor Shop changes made by Supplier 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 supplier. These 'As-built' drawings shall be reviewed and stamped by EIL Inspector / TPIA. Supplier shall prepare scanned images files of all marked – up 'As – built' drawings. Simultaneously Supplier shall incorporate the shop changes in the native soft files of the drawings also.

4.10.3 **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 number 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 clip. 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 supplier. 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 package Equipment Tag No. & Name, PO / Purchase Requisition No., Name of Project and Name of Customer. 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.

4.10.4 **Submission of Soft Copies**

Supplier 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, Supplier shall submit soft copies of all the final drawings and documents in pen drive or any other specified medium with proper identification tag, all text documents prepared on computer, scanned images of all important documents (not available

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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 Vendor Portal and if applicable on Client Server also.

4.10.5 **Completeness of Final Documentation**

Supplier shall get the completeness of final documentation verified by EIL / TPIA, as applicable, and attach the Format for Completeness of Final Documentation (Format No. 3-78-0004) duly signed by EIL Inspector or TPIA as applicable to the final document folder.

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COMPLETENESS OF FINAL DOCUMENTATION

Name of Supplier/Contractor	:	
Customer	:	
Project	:	
EIL's Job No.	:	
Purchase Order No./ Contract No.	:	
Purchase Requisition No./ Tender No.	:	Rev. No. :
Name of the Work/ Equipment	:	
Tag. No.	:	
Supplier's / Contractor's Works Order No.	:	

Certified that the Engineering Documents / Manufacturing & Test Certificates submitted by the supplier (as per Index sheet mentioned in Annexure-1) are complete in accordance with the Vendor Data Requirements of Purchase Requisition / Tender.

Signature	: …….	Signature	: …….
Date	: …….	Date	: …….
Name	: ……..	Name	: ……..
Designation	: ……	Designation	: ……
Department	: ……	Department	: ……
	Supplier / Contractor		EIL / TPIA

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Annexure-1

Final Documentation Index Sheet			
PR/PO/Tender No.		Rev. No.	
Serial No.	Document Title	Page/ Folder No.	No. of Pages

Signature	: …….	Signature	: …….
Date	: …….	Date	: …….
Name	: ……..	Name	: ……..
Designation	: ……	Designation	: ……
Department	: ……	Department	: ……

Supplier / Contractor

EIL / TPIA

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ANNEXURE-XII TO SCC

PROCUREMENT OF CEMENT AND STEEL BY CONTRACTOR

PROCUREMENT OF CEMENT AND STEEL BY CONTRACTOR

1.0 Contract Clause for acceptance of Structural Steel & TMT Bars

1.1 Steel manufactures having valid BIS certificate and listed in the BIS website as on date of procurement of steel shall be allowed for supply of steel (Structural steel and TMT bars) and contractor shall procure from them with prior intimation to Engineer-in-charge.

1.2 Tests after receipt of structural steel at site:

In addition to availability of valid BIS license and MTC, testing at site shall be conducted by the contractor as per following requirement:

- For each category / size of structural steel procured, one sample from every 50 MT or part thereof shall be drawn and tested in approved laboratory.
- The charges for such testing shall be borne by the contractor.

1.3 Tests after receipt of TMT bars at site:

In addition to availability of valid BIS license and MTC, testing at site in approved laboratory shall be conducted by the contractor as per the following requirement:

- Under 10 mm bars one sample (diameter wise) for each 25 MT (or part thereof) for consignment below 100 MT and one sample (diameter wise) each 40 MT for consignment above 100 MT shall be tested.
- For 10 mm to 16 mm bars, one sample (diameter wise) for each 35 MT (or part thereof) for consignment below 100 MT and one sample (diameter wise) for each 45 MT (or part thereof) for consignment above 100MT shall be tested.
- Over 16 mm bars one sample (diameter wise) for each 45 MT (or part thereof) for consignment below 100 MT and one sample (diameter wise) for each 50 MT (or part thereof) for consignment above 100 MT shall be tested.
- The charges for such testing shall be borne by the contractor.

2.0 Contract Clause for acceptance of Cement manufacturer

2.1 Cement manufacturers having valid BIS certificate and listed in the BIS website as on the 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.

2.2 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 subject 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.

FORMAT FOR APPROVAL OF SUB-CONTRACTOR

[ANNEXURE – XIII TO SPECIAL CONDITIONS OF CONTRACT]

ANNEXURE – XIII TO SCC

APPROVAL OF CONSTRUCTION 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:***	:	**------**
6.1	**Similar Work experience :**	:	
i)	**1 (One) Contract of 80% or 2 (two) contracts of 50% or 3 (Three) contracts of 40% each of estimated value of proposed work to be sub-contracted :**	:	
ii)	**Annual Turnover** average annual turnover not less than **30% of estimated value of proposed work to be sub-contracted** during the immediately preceding 3 (Three) financial years	:	
iii)	**Networth shall be positive as per the immediate preceding year's Audited financial results as per latest annual balance sheet/ Profit & loss account:**	:	**Not applicable**
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	:	

ii)	Average Annual Turnover during last 3(three) years (as evidenced by Balance Sheets)	:	
iii)	Networth as per latest annual balance sheet/ Profit & loss account	:	Not applicable
8	CRITERIA FOR QUALIFICATION OF SUB-CONTRACTOR	:	
i)	Sl.No. 7(i) >6 (i)	:	YES / NO
ii)	Sl.No. 7 (ii) >6 (ii)	:	YES / NO
iii)	Sl.No. 7 (iii) > 6.1 (iii)	:	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: Contractor to fill all the details in the above proforma. Further Contractor 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)

ANNEXURE-XIV TO SPECIAL CONDITIONS OF CONTRACT

1) SAFETY AND SECURITY REGULATIONS OF BPCL KOCHI REFINERY
2) STANDARD SPECIFICATION FOR HEALTH, SAFETY & ENVIRONMENTAL MANAGEMENT AT CONSTRUCTION SITES (DOC NO. 6-82-0001 REV-2)

LIST OF DOCUMENTS

1	SAFETY AND SECURITY REGULATIONS OF BPCL KR REV 09-11-2021
2	ROS-018 EDITION 2015 REV 00-2015 -FINAL-RELEASED
3	ROS-019 EDITION 2015 REV 00-2015 -FINAL-RELEASED
4	ROS-020 EDITION 2015 REV 00-2015 -FINAL-RELEASED
5	ROS-023 EDITION 2015 REV 00-2015 -FINAL-RELEASED

SAFETY AND SECURITY REGULATIONS OF BPCL KOCHI REFINERY

KR.HSE.CS.19.PO.CSCW

01-September-2020

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BHARAT PETROLEUM COPORATION LIMITED – KOCHI REFINERY
SAFETY AND SECURITY REGULATIONS

GENERAL

These safety regulations are applicable for performing any work within the Refinery, Jetty facilities, STF facilities, SPM facilities, Water Quarries, Water treatment facilities at Chullichira, Water pump house at Aluva, Cross country pipe lines, or any facilities belonging to BPCL-Kochi Refinery.

In respect of all Labor, directly or indirectly employed in work for the performance of Contractor's part of this Agreement, CONTRACTOR shall at his own expense arrange for all the safety provisions as per Indian Standards Institution, The Petroleum Act 1934, The Factories Act 1948,The Kerala Factories Rules 1957, The Gas Cylinder Rules 2016, The Indian Electricity Act, The Mine Act, OISD Guidelines on Safety (Safety practices during construction – OISD GDN192 and Contractor Safety, OISD GDN 207) and such other Acts, Rules and Regulations as applicable.

OBSERVANCE AND ADHERENCE TO SAFETY REGULATIONS OF BPCL – KR

Contractor shall also observe and abide by all safety regulations of BPCL- KR as given below:

1. CARRYING MATCH BOXES AND LIGHTERS / SMOKING

a) Carrying of match boxes, lighters, non-intrinsic safe mobile phones and torches, cordless phones, wearable electronic devices such as smart watches, e-bands etc within the refinery premises is not permitted.
b) Smoking, consumption of alcohol, intoxicating medicines or narcotics, chewing tobacco or tobacco products, is not permitted inside refinery premises.

2. SAFETY CLEARANCE PROCEDURE

Any work carried out within the refinery premises must be covered by a valid work permit/ Clearance certificate issued by the authorized person of the area involved. All the five types of Work Permits are currently in electronic format and print out of the same will be issued at site upon approval.

i) Cold work permit : A cold work permit shall be obtained from the area in charge prior to commencement of the jobs such as working on process machinery, blinding and de-blinding, opening and closing of flanges, hot bolting, inspection, painting, house-keeping and civil works with excavation up to 1.2 m etc.
ii) Hot work permit : A hot work permit must be obtained for the following type of jobs:
a) Any work involving open flames such as welding, gas cutting, soldering, grinding, burning, heating, use of petromax, etc.
b) Any work involving sparks/ heat generation such as soldering, chipping, grinding, drilling, power wire brushing, gunniting with machine, forging, stress relieving, etc.
c) Shot/ grit blasting
d) Use of gasoline, diesel or electric power driven engines and tools
e) Electrical flash units/flash bulbs for taking photographs
f) Entry of vehicles inside the battery limits of process area, within tank dykes and adjacent to pump houses, API separator and loading gantries
g) Entry of personnel into any confined space like process vessels, storage facility that has been in service, sewers, sumps, etc. as per ROS-018.
h) Vessel box up.
i) Entry into hazardous and potentially hazardous areas like floating roofs of storage tanks.
j) Bringing in explosive and flammable materials within Bharat Petroleum Corporation Limited – Kochi Refinery.
k) Working at height above 3 meters.
l) Earth work excavation beyond 1.2 meters depth as per ROS-019.
m) Radiography as per ROS-023.

All hot work permits shall be followed by a cold work permit /clearance certificate.

iii) Earth work permit: For carrying out excavation or digging anywhere in the refinery, an earth work permit has to be obtained from Electrical section of Power & Utilities department or Estates section of HR department as the case may be. A plot plan showing the location of excavation along with a13 point checklist in line with ROS-019 shall be attached with the permit. Administrative clearance shall be obtained from the

IS dept. and from the instrumentation section of the Maintenance dept. All earth work permit shall be followed by a hot work permit /clearance of cold work permit from the owner dept. as the case may be.

iv) Electrical permit / Electrical Energization and De-energization permit : For carrying out any work connected to Electrical power, which is having the potential to cause personnel injury, equipment damage and Electrical fire, Electrical permit is required. The permit will be issued by authorized person of Electrical section of Power & Utilities department or Estates section of HR department as the case may be to contractor having valid Electrical license. No work shall be performed on electrical equipment unless it is authorized by Engineer-In-Charge.

v) All conditions stipulated in the permit must be strictly complied with.

vi) BPCL-KR reserves the right to cancel a work permit without assigning reasons. When called upon to stop the work by any Refinery personnel, Contractor shall immediately cease to continue the work. Before commencement, fresh work permits must be obtained.

vii) The work permit shall be always available at site. In-case of absence of work permit, the printed and duly signed site reference copy of the e-work permit shall be available at the work site at all times.

3. USE OF REFINERY FACILITIES

Under no condition shall any CONTRACTOR'S personnel tamper with or use any property belonging to the BPCL-KR without obtaining prior sanction from the Engineer in charge/ authorized person of area concerned.

4. EMERGENCIES

The Contractor's personnel shall stop their work and proceed to a safe area in the event an emergency arises in the area they are working like in case of fire, oil spillage, power failure, gas leak, etc. Before recommencement of the work, they should obtain clearance of Engineer in charge/ authorized person of the area involved.

i) Identify the assembly point close to the location of the work.

ii) Location of (Manual Call Points) MCPs, Fire Water Hydrant, fire water monitor close to the area of work are to be known down the line prior to the commencement of the work.

iii) Be familiar with the sequence of fire siren.

5. TEMPORARY FIXTURES

i) Before erecting temporary shelter like sheds or tents anywhere within the BPCL-KR premises, permission from Safety Section must be obtained.

ii) Temporary fixtures like sheds, tents, etc. shall be erected in conformity with our safety standards. Sketch of standard temporary fixture is available with concerned Engineer-in-charge or Safety section.

iii) The list of materials stored in the shed shall be submitted to Safety section along with request for temporary shed.

iv) Name of the contractor, Shed number, validity of the shed and the name of the Engineer in charge shall be displayed at the entrance of the shed.

v) Safety slogan/ safety poster shall be displayed at the entrance of the shed.

vi) Temporary piping, connections and electrical wiring must be laid in such a manner that they may not, cause tripping or hitting hazard.

vii) If electrical supply is provided in the shed/office container

a) Electrical Safety clearance shall be obtained from Electrical Safety Officer for electrical wiring/fitting after obtaining shed approval from Safety section.

b) Suitable fire extinguisher shall be provided

vii) The shed has to be dismantled upon the instruction of Engineer in charge/ authorized person of the area at any point of time or after the completion of the job whichever is earlier.

viii) A communication of having demolished the temporary shed to reach Safety Office immediately.

6. COMPRESSED GAS CYLINDERS

Compressed gas cylinders shall be kept (both full & empty) in upright position. They must be firmly located on the ground on a sturdy stand and the cylinder should be chained to prevent accidental fall. All gas cylinders shall have guard caps and shall be moved from location to another location using trolleys.

Filled and empty cylinders should be stored separately and permission for the storage shall be taken from Safety section. They shall meet the requirements under the Gas cylinder Rules 2016 olour and all the gas cylinders shall be c coded as per IS 4379.1981. Valid test certificate for compressed gas cylinders shall be made available at site for verification by authorized person.

7. HOUSE KEEPING

Good housekeeping must be practiced by the CONTRACTOR'S personnel at all times while within the Plant. During and after completion of the work, they are to ensure that their work area is kept clean and tidy. Separate containers for collection and removal of waste, degradable as well as non-degradable waste should be provided by the contractors at their site and the waste so collected is to be removed to the designated areas. Materials and equipment should be stored in a safe and orderly manner so that they will not block exits to roads, buildings, aisles, passages and approach to firefighting equipment such as fire hydrants, fire hoses and fire extinguishers or areas where emergency safety showers, electrical switch panels, manual call points and switch rooms are located.

8. PERSONAL PROTECTIVE EQUIPMENT (PPE)

All the contract personnel entering Refinery shall wear safety helmet, safety goggle, safety shoes (or the required foot protective equipment like gum boots) and protective clothing such as boiler suit. In addition to the above requirement, any PPE which is required for the safe execution of job shall be provided by the Contractor and the requirement will be provided by the Engineer in charge/ authorized person of the area concerned or Safety section. **The PPEs provided by the contractor to his/her personnel shall meet the requirements as per ROS 17 of BPCL KR and ANSI/EU/IS standards.** However, in certain cases, personal protective equipment maintained by the BPCL-KR will be made available for exigency cases, such equipment shall be returned to the authorities in good condition.

9. CLOTHING

CONTRACTOR'S personnel shall not wear loose clothing while working at site. Usage of free flowing dresses like dhoti, Sari, loose shawl, etc. is not permitted at work site. Those workers who are engaged in hot work or in confined spaces shall wear dress made out of cotton material.

10. CONTRACTORS EQUIPMENT TAGGING AND MONITORING

All the tools and tackles, lifting machines, gas cylinders shall be got certified by the Engineer-In-Charge using the pre-use checklist available and get it tagged from Fire and Safety department. The tools and tackles, lifting machines, gas cylinders and other equipment's shall be inspected by the contract supervisor on a daily basis before the use. Once in every 6 months the equipment's shall be rechecked and get it tagged for its safe use, else the equipment will be considered to be not fit for use. Contractor Name, Equipment Identification No., Technical specification and manufacturer's details shall be printed on the equipment. Penalty as per BPCL KR financial deterrent clauses will be levied against use of such unsafe equipment.

11. UNSAFE PRACTICES

Any unsafe practices or disregard of normal safe working practices by CONTRACTOR'S personnel, when pointed out by BPCL-KR personnel shall be immediately corrected.
BPCL-KR also reserves the right to suspend/ reject any contract personnel involving violation of HSE norms.
Any contract personnel involved in violation of HSE norms will be charged with fine as indicated in the Financial Deterrent norms of BPCL. Financial Deterrent norms are attached as annexure 1 to Safety and Security Regulation of BPCL KR

12. PERSONAL CONDUCT

The following activities / behaviors on the part of Contractor's personnel are strictly forbidden:

a) Fooling on the work, mock fighting or fighting within the BPCL-KR premises.
b) Gambling within the BPCL-KR premises
c) Entering the refinery premises while in possession of any type of weapons.
d) Contractor's personnel shall not pick up quarrel or get into arguments with BPCL-KR/consultants'/ other contractor's personnel/ any other persons or act in any manner subversive of refinery discipline. In case of any misunderstanding, such problems should be referred to the concerned refinery personnel
e) Running in operating areas except in emergencies
f) Entering areas other than work site without permission.

13. MATERIAL HANDLING

13.1 Accidents occur in handling materials because of unsafe working practices such as lifting improperly, carrying too heavy a load and failure to use personnel protective equipment.

Following directives should be adhered to:

a) Before lifting and carrying objects, check and ascertain the weight and size the load. If necessary get help.
b) Survey that the route to be followed is free of obstructions
c) Lift and carry in the proper position. Lift material with your leg and not your back.
d) When two or more men must carry a single object must have good co-ordination.
e) Make sure that object carried does not hit anybody or fall on someone working below.
f) While using mechanical hoists and cranes, test hoists controls and brakes before starting the job.
g) Never carry load over men working nearby. Signal them out of the way.
h) Move the load on signal from one person only.
i) While handing unusually heavy loads like exchangers and drum, use extreme caution and follow work procedure as advised by Engineer-In-Charge or safety section.
j) For loads exceeding 10 T or lift exceeding 10 M, a lifting plan shall be submitted to the Engineer-in-Charge and get it approved prior to starting the work. A copy shall be submitted Safety section.

13.2 Following directives should be adhered to while operating cranes inside the Refinery.

a) Hydra cranes are banned in Refinery operating areas
b) The contractor shall arrange a banks man / signalman with the crane for safe working.
c) The operator/driver shall possess HMV driving license and BPCL-KR driving permit in original and the training certificate issued by the crane manufacturer while working/driving the same.
d) Cranes shall not be used for pulling loads anywhere or transporting materials/loads of any nature along the road.
e) Anchored loads shall not be tried for lifting
f) The cranes shall be in good condition. It shall have valid fitness certificate from statutory/competent authorities for the crane and associated lifting tackles. BPCL-KR has the right to witness tests and examine the cranes whenever required.
g) The contractor shall ensure effectively using the out riggers and shall consider the bearing strength of soil and gradient of the grade level.
h) The speed limit for cranes shall be 15 km per hour within the refinery.
i) The contractor/operator shall ensure load balancing and use of tag line to control unnecessary swing of loads.
j) Contractor shall not allow other people to remain inside the cabin during the course of its travel or during other operation (e.g. travel, lifting, lowering of load etc.)
k) The cranes and all types of vehicles shall be fitted with reverse horns.
l) Contractor shall not bypass safety switches/fittings such as hoist limit switch, boom limit switch, safe load indicator etc.

13.3 The crane, lifting tackles, slings, D shackles, etc. used for the work at site shall comply with the statutory requirement and shall accompany with valid test certificates duly approved by statutory authority. Copy of the test certificate shall be submitted to the Engineer-in-Charge before commencement of site work. Safe work load and copy of the test certificate shall be displayed on the crane. Load chart shall be always available inside the crane.

13.4 Handcart must be of good mechanical construction, sound material and adequate strength and must be declared safe to use by competent and authorized person. Display the name of the contractor who owns it. Record of all the hand carts should be properly maintained which shall include details of purchase, repairs carried out time to time by authorized person. Hand carts must not be used with defective wheels or other body parts. Defective hand carts should be discarded from the system and record of such discarded hand carts should be properly maintained in prescribed manner.

13.5 Over-hanging loads whether on the sides or at the rear of the hand cart or any vehicle is dangerous and particular care must be exercised.

13.6 Trained and experienced riggers only must carry out material handling.

14. OWNER'S EQUIPMENT, MACHINERY AND CONSTRUCTION AIDS

14.1 Use of Owner's Equipment

a) Owner's equipment must not be handled or tampered with by contractor's employees. Owner may grant permission to contractor to operate his equipment, if conditions so require. Contractor shall not use Owner's equipment and tools without obtaining permission from Owner's representative.
b) Contractors shall assume full responsibility for proper care of Owner's equipment and tools which are made available to them for the execution of their work and returning such equipment and tools in good working order. Owner will recover from Contractor(s), the full cost of repairs or replacement of equipment or tools in the event they suffer damage while in Contractor's custody.
c) Contractors are not permitted to make use of the Company's transport.

14.2 Tie-in to Owner's Equipment

Contractor shall not open or tie-in their work into Owner's existing pipeline or equipment including Owner's sewer systems, electric power circuits and other process equipment without specific approval by the Owner's representative.

14.3 Underground Pipes

When doing work in the refinery involving excavations, contractors must not damage or break into otherwise open any underground piping. Extreme care must be exercised in this respect when excavating with power driven equipment. If these are damaged inadvertently, notify the owner's representative immediately.
For all manual digging/excavation jobs, contractor shall ensure that the handle of the tools being used are made of non-conducting material

14.4 Electrical Cables

All underground electrical circuits within Owner's Refinery are identified by a layer of brick and sand above the cable. Under no circumstances shall any contractor remove brick and sand, nor excavate beneath brick and sand without valid permit, nor in any other way expose Owner's electric circuits without specific approval of the Owner's representative. In every case, when a contractor discovers brick and sand in the area of his excavation work, he must immediately stop any further excavating until he has contacted the Owner's representative and secured his specific approval for continuing the job. However care shall be exercised as directed in the excavation permit since cables not identified as above can be found at any place.

14.5 Construction Power

All the electrical installation for construction power to the contractor shall be complied with the guidelines in line with Indian Electricity Act 2003 and Central Electricity Authority (Measures related to Safety and Electric Supply) Regulations, 2010.

a) No electrical installation works shall be carried out except by an electrical contractor licensed by the licensing authority by State Government and under the direct supervision of a person holding a certificate of competency recognized by the State Government (CEA Regulations 29).
b) Earth Leakage Circuit Breaker (ELCB)/Residual Current Circuit Breaker (RCCB) of suitable rating shall be provided in the Electrical Distribution board of contractor's installation as per statutory requirement. The ELCB shall be checked once in a week for short term/shut down jobs, once in a fortnight for long term (3-6 months) job and ELCB/RCCB healthiness shall be recorded by contract supervisor/electrician posted at site.
c) Domestic type power boards, double adapters, 3 pin plug adapters and homemade power boards must not be used. All distribution boards and plug tops shall of industrial type only.
d) The installation of Diesel Generators shall be carried out by licensed electrician/agency based on rating as per the safety and statutory provisions. All such EDGs shall be offered for inspection and clearance by electrical safety section for operation.
e) All hand lamps shall be of 24 volts rating connected using 3 core flexible cables. The third core shall be used for earthing the hand lamp.
f) All Electrical DBs and switchboards shall be standard industrial type, identifiable with contractor's name displayed on it and cleared by electrical safety section for operation.
g) All the portable electrical power tools / equipment's shall be inspected and cleared at site for safe usage.

14.6 Mechanically propelled equipment such as welding machines and air compressors must have markings on its controls so that any person unfamiliar with the equipment will know exactly where and how to stop in the case of emergency. Contractors name shall be displayed on the equipments.

14.7 Gas cutting equipment

a) All gas cutting torches such as oxy-acetylene cutting torch shall be fitted with an approved flash back arrestor at both ends.
b) Two stage regulators with two gauges only must be used.
c) All the hoses used for connection shall be checked for its operability such as its operating pressure. Never connect a low pressure rated hose to a high pressure cylinder/ line.
d) Oxygen gas and other gas hoses should be without any joint. In the event joint becomes essential, only approved connector with jubilee clips must be used.
e) Oxygen must never be used as a substitute for compressed air nor must it be released in a confined space for any reason.
f) Oil or grease must not be allowed to come in contact with oxygen cylinders, regulators or hose.
g) Compressed gas cylinders must never be stored or placed near hot equipment or lines. They must be protected against high temperatures and contact with electrical circuits. They must also be protected from damage by passing or falling objects. When cylinders are not connected for use, safety caps must be in place.
h) Compressed gas cylinders must never be dropped or struck or permitted to strike each other violently. Damage to the cylinder or its valves could result in disastrous jet propulsion of the cylinders and may result in major accidents/fatalities. Compressed gas must be transported with the help of trolleys.
i) Flammable products like Acetylene / Bharat cutting gas should not be used in quantity more than 99 kg in your store or at site.
j) Acetylene / Bharat cutting gas, oxygen cylinders must not be taken inside closed vessels or on the tank roofs under any circumstances, neither may Acetylene / Bharat cutting gas torches connected with the cylinders or generators be left inside any vessel. Torches must always be taken outside the vessel for lighting and when not in use.

15. SCAFFOLDING

Scaffolding provided shall be of good materials and sound construction as per the standards. Scaffolding shall be erected in line with the "safety guideline for scaffold" provided by BPCL-KR. Contractor shall appoint a competent person who shall be a qualified scaffolder as per BS EN 12811 and BS EN 12810 – TG20:08 or OSHA: 29 CFR Part 1926, Subpart L. The scaffolding shall be certified 'fit for use' and "Ready for use scaffold" tag shall be provided at the scaffold by a competent scaffolding certifier and the same shall be verified by the Engineer-In-Charge. Any scaffolding which does not conform to the requirements as per BPCL-KR standard ROS 20 shall be immediately withdrawn from service, dismantled and re-erected such that the requirements are complied with.

16. MOTOR VEHICLE DRIVING

The CONTRACTOR shall ensure that all state traffic regulations are complied with while motor vehicles are being driven inside the refinery premises. Only diesel driven vehicles are permitted to ply inside Refinery. In addition, the following points are also outlined for compliance.

i) SPEED LIMIT
Speed limit within the refinery premises is 25 km/h for jeeps, cars, buses etc and 15 km/hr for trailers, cranes etc. In any case, vehicle drivers should take cognizance of road weather and vehicle condition and adjust their driving accordingly.

ii) PARKING
Park vehicles only in designated areas which is advised by Engineer-In-Charge. Vehicles must be parked in such a manner that they will not move while unattended. As a general rule, vehicles should not be parked at road bends, emergency parking areas, in front of fire equipment sheds and firefighting equipment thereby blocking access to them. Double side parking is prohibited on any road at any time.

iii) SAFETY FITTINGS
Vehicles driven inside the refinery premises should have effective brakes, horns, lights, mufflers, spark arrestor, good tyres, etc. and shall not be aged more than 05 years. All vehicles/ mobile lifting equipment shall be fitted with reverse horn. The exhaust pipe from the engine up to and including the muffler or silencer must not be perforated.

iv) SAFE LOAD / NUMBER OF PASSENGERS
Vehicle shall carry only the number of passengers or weight of load it is authorized to carry as per law. Loads carried in trucks shall be properly secured so that they will not accidentally fall off while vehicle is in motion. Do not travel by sitting on the load.

v) TRACTORS / GOODS VEHICLE
Tractors shall not be used for transporting personnel.

vi) Checking of overhead and side clearance
Vehicle drivers shall always check over-head and side clearance while driving vehicles.

vii) The Contractor shall obtain prior permission to operate vehicles inside the refinery premises.
For deploying vehicles inside BPCL-KR premises, the driver shall have a valid state driving license and they shall also undergo and pass the safety driving test conducted by BPCL – KR.

viii) Carrying persons on the platform of tipper lorry is prohibited.

ix) Standing on goods carrying vehicle is prohibited.

x) All the trucks, tippers shall be properly covered while transferring sand, gravel, Sulphur etc. in order to avoid spillage on roads.

xi) Goods shall not be protruded beyond the platform of the vehicles carrying goods.

xii) All vehicles used inside the Refinery premises by the contractor shall have a valid Registration certificate, fitness certificate, insurance and PUC Certificate.

17. FIRE PROTECTION EQUIPMENT

a) BPCL–KR will provide standby fire protection equipment wherever it is required. Fire & Safety department will inform the details of the operator of such standby fire protection equipment to the contractor's personnel who are working on such jobs. In the event of an accidental fire, it is expected of such personnel to make efforts to extinguish the fire with the standby equipment made available. If the fire situation cannot be controlled, then the CONTRACTOR'S personnel should immediately get in touch with any BPCL – KR' s personnel available. In all cases, accidental fire shall be reported to the Supervisor of the area concerned and Engineer-in-charge

b) Permission must be obtained prior to CONTRACTOR'S personnel drawing water from the refinery fire water loop. After the requirement of water is over, it shall be informed to the Fire station.

c) All efforts should be made by the CONTRACTOR'S personnel to prevent occurrence of any unwanted fire. Diesel driven engines, trucks, tractors, etc. shall not be filled with fuel while the engine is running.

d) Gasoline or naphtha shall not be used as a cleaning agent or solvent.

e) Written permission from Engineer-in-Charge shall be obtained for bringing diesel inside the refinery for the contract work.

18. REPORT ON ACCIDENTS

i) All injuries sustained by the Contractors' personnel and damages to vehicles and property shall be reported to the Engineer-in-Charge as well as to the Safety section during normal working hours and to the Deputy General Manager (Shift Administration) other than in normal working hours. The first information report (FIR) shall be submitted within 4 hours of the incident and a written report within 24 hours as provided in the annexure 2.

ii) Medical treatment for injured contractor's personnel will be entirely the responsibility of the Contractor. However, if required, emergency first aid treatment will be given at refinery's OHC.

iii) If any injured contract personnel is taking treatment from outside hospital, status of the injured personnel and the date of return to duty shall be informed to Engineer-in-Charge and Safety section.

iv) The contractor's personnel shall also report all near miss incidents at the work site to Engineer-in-Charge and Safety section.

v) Contractor must arrange to immediately investigate, properly document and report any injury, accident or near miss involving any of his employees and take follow up action.

vi) According to Factories Act and ESI regulations, any person sustaining any injury in the refinery and absenting himself from work for more than 48 hours, his accident report has to be sent to the respective government authorities. Therefore, the contractor shall inform the Engineer-in-Charge such matter immediately, who will direct him to Safety section for necessary action

19. WARNING NOTICES

Contractor shall provide various sign boards indicating Note, Caution, and Warning related to their work at the working site. These Signboards indicate:-

Note: Highlights on essential element of a procedure to assure corrections.

Caution: Indicates a procedure, practice, etc., which if not strictly observed, could result in damage or destruction of equipment.

Warning: Indicates a procedure, practice, etc., which could result in personal injury or loss of life if not followed correctly.
All are requested to follow the guidelines given in the signboards wherever it is installed.

20. HEALTH, SAFETY AND ENVIRONMENT TRAINING

GENERAL
The contract safety management system in refinery calls for Health, Safety and Environment (HSE) training to all connected with contract works viz., contractors, consultants, contract supervisors, contract workers, etc., who have to work inside the refinery. The contract safety management envisages HSE training as below:

a) Contractors/ Consultants

The Contractors/ Consultants or in the case of companies, the designated overall Manager-in-Charge of the job who have ultimate responsibility for their work in the Refinery shall attend one day HSE training. A HSE number will be issued on completion of the training which is required for the issue of Refinery entry pass.

b) Contract Supervisors

Three days job specific HSE training is compulsory for all contract supervisors. Job specific training includes general safety, confined space safety, working at height safety and electrical safety. At the end of the three days training, an examination is conducted and only those qualified will be issued a HSE number.

c) Contract Workers

All contract workers shall attend one day job specific HSE training and a written examination will be conducted at the end of the training. A HSE number will be issued for the qualified workers..

Training programme would be conducted regularly by HSE department at designated location and the schedule shall be notified well in advance. The HSE number issued will have a validity of two years from the date of qualifying. The HSE number will be different for each category viz. Contractor/Consultant, Contract supervisor and contract worker. For renewal of the HSE number, the contract personnel will have to go through the same process of training, as described above, and will be issued a new HSE number. HSE number will be compulsory for applying for security entry pass for all contract personnel working inside the Refinery.
All contract supervisors and workers who will have to attend the HSE training programme have to be authorized by the concerned departments of BPCL-KR.
The contractor shall prepare a consolidated list of those required to be trained and given entry passes for working within the Refinery in connection with the job awarded to him/them. The list shall be submitted to the Engineer-in-Charge for necessary recommendation for HSE training as above.

21. QUALIFICATION AND EXPERIENCE OF MANPOWER TO BE EMPLOYED

i) If a contractor is employing less than 30 employees, he shall designate one dedicated supervisor as a safety steward. For every 30 persons or more contractor shall appoint one qualified safety steward (Diploma in industrial safety or equivalent qualification such as NEBOSH etc). For more than one safety steward, one of them shall be appointed as Chief safety steward. In addition to above contractor shall also appoint one safety officer for every 100 workers. Safety officer shall have Diploma in Industrial Safety or any equivalent qualification from Government Recognized Institute and minimum 2 years of relevant industry experience. For more than one safety officer, one of them shall be appointed as Chief safety officer. In both the cases, the contractor must specify in writing the name of such persons to the Engineer-in-Charge.

ii) Contractors shall deploy only experienced and qualified supervisors and workmen, who are well conversant with the Safety Regulations in the Refinery.

iii) The minimum qualification requirements of supervisors for field jobs (other than office jobs, grass cutting, housekeeping, general cleaning jobs etc.) shall be:
   a) Diploma in relevant branch of engineering with 2 years of experience.
   b) 10^{th} + ITI in the relevant field with 05 years' experience.

iv) Also supervisors shall have sufficient knowledge of English language to understand Work permit system, work instructions, drawings and they should be able to assimilate the safety training inputs provided by the Refinery and successfully qualify in the tests.
v) Past experience must be for same type of job for which the supervisors would be engaged.
vi) Contractor's skilled workmen like riggers, scaffolders, welders, fitters, crane operators, other specialized equipment operators like hydro-jetting, shot blasting, use of jacks, diamond cutting etc must have sufficient past experience and skills on relevant jobs.
vii) All workmen shall be capable of following instructions and training.

22. REQUIREMENTS DURING SUBMISSION OF TENDER FOR THE PRE-JOB EVALUATION BASED ON SAFETY COMPETENCY

Contractor must submit along with his tender for the pre-job evaluation:-

i. Manpower data
ii. Tools and tackles
iii. Safety records for past 3 years
iv. High risk job executed in the past 3 years
v. Safety accreditations
vi. Safety practices

An evaluation committee will be evaluating the contractor based on their safety competency at the bidding stage and the job execution stage. A declaration as per Annexure 6 shall be made by the contractor and shall be submitted along with the final bill.

Compliance of BPCL – KR Health, Safety and Environment plans

The CONTRACTOR shall comply with the following Health, Safety and Environment Plans and also confirm his / its commitment to the same in the prescribed formats as per annexure 3:
a) Safety Action Plan
b) Housekeeping Plan
c) Environment Control Plan
d) Dust Control Plan and
e) Quality Assurance Plan
Quotation must clearly indicate the number of Supervisors and skilled or unskilled Workers, which will be deployed for the job, from time to time during execution of the Contract.
The above information will be taken into view during tender evaluation.

23. ROLES AND RESPONSIBILITIES OF CONTRACT PERSONNEL

Roles and responsibilities for contractor's management, contractor's supervisor/safety officer and contract worker as stipulated in OISD Guideline 207 are reproduced below. These guidelines shall be strictly followed

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 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.

iii) 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.

iv) To arrange for fire protection equipment as per the advice of owner.

v) 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.

vi) To comply with all the security arrangements of owner.

vii)To ensure that the plant and equipment used on-site by him / his employees is correctly registered, controlled and maintained in sound working condition.

viii) To ensure availability of First Aid boxes and First Aid trained attendant.

ix) To ensure that all incidents including near misses are reported to all concerned immediately.

x) The contractor shall provide the following documentation for the pre-job review meeting, as applicable:

   a) Documented Safety Plan for implementation, monitoring and reporting of Health, Safety and Environment (HSE) and implement the same after its approval.
   b) CVs of safety stewards and officers
   c) A list of portable equipment/tools that the contractor will be bringing on site including the intended service.
   d) Verification that portable equipment/tools meet integrity requirements
   e) Inspection records for lifting equipment such as cranes and forklifts.
   f) Verification that personnel lift equipment is being used as intended by the Manufacturer.
   g) Verification of electrical generating equipment integrity by a certified electrician.
   h) Verification that pressure equipment meets regulatory standards.
   i) Craft skills verification

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.

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.

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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 firefighting 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 conduct safety audit at least once in a week. Such documents are to be submitted to Engineer-in-Charge for his review and record and a copy shall be submitted to Safety Section.

xvii) Contractor's safety officer / Safety steward or the supervisor responsible for safety, shall maintain separate safety registers which will include

a. List of activities being carried out at site;
b. Safety Training details of all supervisors and workmen;
c. Safety competitions by the contractor;
d. Records of all accidents, first aid cases and near misses;
e. Records of unsafe acts and unsafe conditions reported by the contract workers;
f. Records of all PPE's being used at site;
g. Records of lifting tools and tackles including slings of all types and their inspection certificates;
h. Records of pressure vessels if any at his site;
i. Fitness certificate of all employees;
j. Tool box records;
k. Safe operating procedures prepared by the Contractor
l. Emergency mock drills conducted by the Contractor;
m. Records of all welding machines, gas cutting sets, compressors, generators, pressure regulators, portable power tools, hand tools and other tools and tackles etc.
n. Records of manpower employed including safety officers and their qualification.;
o. Copies of safety inspection and safety audit reports made by the Contractor safety supervisor as well as by the BPCL Kochi Refinery.
p. Hazard Identification and Risk Assessment shall be carried out for all jobs and shall be documented.

(The contractors whose safety records are not satisfactory will be viewed seriously and necessary action (viz. cancellation of Registration/Contracts) shall be taken against him.)

Contract worker

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

24. SPECIAL SAFETY CONDITIONS

i) All contractor personnel shall follow the safety guidelines of BPCL KR and applicable Refinery Operating Systems (ROS) for the safe execution of work.
ii) All supervisors of the job must be given safety training / demonstration with the help of BPCL-KR F&S section and should acquire knowledge of fire prevention and should be able to make use of fire extinguishers.
iii) No work shall be carried out in refinery premises without proper valid work permits.
iv) Contractor shall comply with all the conditions in the work permit issued by the owner for the specific job.
v) In the event of any contractor's employee spotting a fire in Refinery premises, he shall break the nearest MCP/ dial 101/1922 from the nearest telephone, identify himself and report location of fire. He shall wait until the fire message is repeated by the Fire Alarm Signaler and location confirmed.
vi) Electrical jobs shall be supervised only by licensed electrical supervisor. The electricians to be deployed on the job should have Wireman License issued by statutory authority.
vii) Monthly safety performance report as per annexure 4 shall be maintained by the contractor at their site and every month it shall be submitted to EIC and a copy to Safety section.
viii) Contractor's safety coordinator/ supervisor responsible for safety as the case may be shall conduct at his worksite and document formal safety inspections and audits at least once in a fortnight. Such documents are to be submitted to Engineer-in-Charge for his review and record.
ix) Contractor shall maintain a register to record name of the persons engaged at a particular site on a daily basis.
x) Contractor must ensure highest standard of housekeeping in his area of work on a day-to-day basis. An unsatisfactory housekeeping will earn negative rating, which will attract penal actions like cancellation of registration/contract.
xi) Contractors and supervisors must attend all scheduled safety meetings as would be intimated to him by the Engineer-in-Charge.
xii) Before starting work under any contract, the contractor must ensure that an approved Hazard Identification and Risk Assessment (HIRA), Job Safety Plan/Procedures / field practices as required over and above the safety permit conditions are obtained from Engineer-in-charge and the same shall be followed. He should also ensure that all supervisors and workers involved understand and follow these plan/procedures/field practices.
xiii) Contractor must ensure that in his work site :- (a) Appropriate display boards (size-1.5 x 2 ft) are put displaying signs for site safety, potential hazards and precautions required, and (b) Safety performance scoreboards are provided as per annexure 5.
xiv) Contractor shall put all efforts to deploy minimum manpower to execute the jobs in stipulated time by using modern techniques & mechanization.
xv) All personnel deployed by contractor for the job must have completed HSE training arranged by BPCL-KR HSE department.
xvi) Fitness certificate from BPCL-KR Medical Officer, with validity of 6 months, for the contract workers who are working at a height more than 30 meters using temporary structures, working in confined space and under water jobs shall be submitted to the concerned Engineer-in-Charge and Security department while taking entry pass. Pulmonary Function Test (PFT) shall be conducted for the contract workers who are working in coke handling facilities. And also it shall be endorsed in the entry pass for the workers have the Fitness certificate from BPCL-KR Medical Officer prior to entry.
xvii) Contractor supervisors and workers shall always carry their entry passes with them and it has to be produced on demand.
xviii) Contract personnel shall not use Plant areas, Pump houses, cable cellar rooms, substations, etc. for changing clothes, taking food, resting, etc. The contractors shall provide dedicated office for documentation work and rest/ change room facilities for the workers working under him.
xix) The contractor shall discuss the HSE Policy/ HSE management system with the Safety section prior to commencement of the work.
xx) Periodical medical examination shall be conducted once in 6 months for all workers employed. The contractor shall employ only medically fit personnel for any work and the medical fitness certificate from registered medical practitioner shall be submitted to Engineer-In-Charge before the start of work.

25. CONTRACT SPECIFIC SAFETY REQUIREMENTS

i) Hydro-jetting operation
   a) The operator engaged in hydro-jetting operation shall wear Dyneema Suit
   b) Standby personnel shall be available near the machine while the hydro-jetting operation is going on
   c) The nozzle of the hose shall be fitted with either foot operated or hand operated control mechanism
ii) Hose restraints / whip connectors shall be in place before charging any flexible hoses
iii) Do not store diesel in excess of permitted quantity. Do not fill diesel while the engine is running. Diesel drum shall be always kept on spill containment facility
iv) Torque tensioning methods shall be used for loosening and tightening of nuts and bolts. Hammering shall be avoided to the extent possible. Finger saver to be used wherever manual hammering jobs are involved
v) Lift assist slings (safe lift) shall be used for manually lifting materials

Compliance of BPCL – KR Health, Safety and Environment plans

The CONTRACTOR shall comply with the following Health, Safety and Environment Plans and also confirm his / its commitment to the same in the prescribed formats as per annexure 3:

a) Safety Action Plan
b) Housekeeping Plan
c) Environment Control Plan
d) Dust Control Plan and
e) Quality Assurance Plan

Quotation must clearly indicate the number of Supervisors and skilled or unskilled Workers, which will be deployed for the job, from time to time during execution of the Contract.
The above information will be taken into view during tender evaluation.

26. SPECIAL SAFETY FEATURES FOR THE VEHICLE TO RUN INSIDE REFINERY PREMISES

The contractor shall deploy only Diesel Engine driven vehicles inside refinery with the following special safety features:

a. In the electrical charging system only alternator shall be used and not dynamo.
b. High voltage head lamps with relays shall not be used, that is only direct connected lamp without booster /relay shall be used.
c. PESO approved exhaust flame / spark arrestor shall be provided.
d. Thermal insulation shall be provided on the exhaust manifold.
e. At the air intake, wire gauze type air filter shall be used i.e., paper filter shall not be used.
f. It is compulsory to wear safety belts in all motor vehicles. Hence, necessary safety belts shall be provided in all Taxi Jeeps running inside refinery also, at contractor's cost.

27. USE OF MOBILE PHONE/UHF OR VHF SETS/ WLL PHONES/ DRONES INSIDE REFINERY

Use of mobile phones/UHF or VHF sets/ WLL phones, cameras, smart devices and drones inside Refinery is strictly banned unless approved by Safety section. A permission from Safety section is required to use such facilities inside Refinery.

SECURITY REGULATIONS OF BPCL-KOCHI REFINERY

1. The CONTRACTOR shall record in a register the name and permanent address of the personnel /laborers detailed by him for the work, and the said register shall be kept at the Refinery Contract works entry gate/ Office. The Contractor shall arrange the PCC of all workers engaged by him in the Refinery. Security Procedures for engagement of Migrant workers shall be complied with.
2. The CONTRACTOR shall ensure that his personnel/ laborers display the badges/passes issued by the Security Section on their person while entering/ leaving the refinery premises as well as the work spot concerned.
3. The CONTRACTOR shall collect the said security badges/passes daily and reissue them next day morning to his personnel/ laborers, so that any unauthorized person may not impersonate and force illegal entry at any later stage for which act the responsibility will be entirely that of the CONTRACTOR.
4. The CONTRACTOR shall return all the said badges/passes to the Security Section immediately on termination of the contract work.
5. If the contract period/time. is extended, the CONTRACTOR shall get the badges/passes revalidated from the Security Section.
6. The passes are valid at the specified work sites only and the CONTRACTOR shall ensure that his personnel/laborers will not loiter at other areas.
7. The CONTRACTOR shall ensure that his personnel/ laborers shall enter/leave the refinery premises only through the authorized main gate as indicated.
8. The CONTRACTOR shall ensure that his personnel/ laborers are checked in/ out by his authorized representative for which he shall keep proper records at the Refinery main gate.
9. The contractor shall liable to pay to BPCL KR, the cost of badges, passes at the rate of Rs. 150/- each in case of failure to return the badges/passes and Rs.500/- in case of loss/damage of biometric cards. The contractor shall also render satisfactory explanation, if any passes are found missing /lost after having filed a complaint at the police station and acknowledge / receipt of complaint obtained
10. The CONTRACTOR shall engage that number of workers specified in the PO after having undergone HSSE, cleared ESI/PF, and obtained PCC, in possession of ID Proof etc as applicable. The contract workers shall also be enrolled under the Biometrics system before entry into the Refinery for work.
11. The CONTRACTOR shall ensure that he submits the list of workers working after office hours, on holidays, Sundays to the Security office /CISF before commencement of work.
12. The CONTRACTOR shall not park his contract vehicle in any area of the Refinery except during his routine work.
13. The CONTRACTOR shall, before commencement of the work every day, report to the Operating Shift Supervisor in- Charge of the concerned unit/area the number of personnel/ laborers to be employed by him for the day in the unit/area, and specify the job for which they have been brought into the unit/area.

This information will be furnished in the following format:

From :

Date.....

To : Area/Operating Shift Supervisor
Bharat Petroleum Corporation Limited – KR
Ambalamugal

Dear Sir,

Please be advised that I/we will be engaging today..... (No.) of persons for the following work:

Details of work

Purchase Order No.

Area

Thanking you

Yours faithfully

(to be submitted in duplicate) Sign. of Contractor

NOTE: CONTRACTOR'S PERSONNEL SHALL INCLUDE THE CONTRACTOR HIMSELF WHEREVER APPLICABLE

SECURITY FORMALITIES - FOR CONTRACT WORK IN BPCL – KR

1. The following are the Security formalities / procedures for obtaining security pass.
2. Letter of Request- On award of contract and obtaining the necessary job order/work order from concerned engineer/dept; the contractor should submit a letter/ request as to how many passes he requires to collect from the Security office. The letter/ request is to be addressed to the Chief Security Officer, BPCL-KR. In case of migrant workers the security procedure of the Refinery shall be complied with
3. Passes - Required nos. of Blank passes to be collected from the Office of the Chief Security Officer.
4. Two Passport size photograph to be brought by the contractor/contract workers and the same is to be affixed on the pass.
5. Documentation - Two notebooks to be maintained by the contractor for documentation – one notebook is required for recording all the addresses of contractor/contract workers. All entries of pass and subsequent renewals are to be recorded in this book. The other notebook is required for check in/check out of contractor/ contract workers.
6. OT List - The contractor will have to submit a list of workers working after 5pm on working days, on Holidays and on Sundays. This permit signed by the Sr. manager of the concerned dept. should reach the CSO office before 4 pm on working days and in case of Saturday, Sundays & Holidays the last working day previous to the Holiday/Saturday/Sunday.
7. Loss of pass - In case of loss of pass the contractor has to remit Rs.150/- per pass to the Finance department of BPCL - KR. Unused passes if any may also be returned at the close of the job. For Biometric cards Rs 500/- shall be recovered for damage/ loss of pass
8. Leaving the area of job without a reasonable cause is not permitted.
9. Contractor/Contractor - Supervisor/ Contract - worker should always carry with the pass and show on demand by authority.
10. Check-in/ check-out of the contract workers should be done by the contractor /Supervisor who should accompany the worker to the Security labor gate. In case the worker is not checked out by the Contractor/ Supervisor in time, further entry to the Refinery will be subject to clearance from CSO.
11. HSE Training/ Fire & Safety Training:-- HSE Training / Fire & Safety Training is mandatory. All contractors / contract workers should undergo-this training before commencement of their work. The Training is arranged by the refinery.
12. Security entry passes shall be issued only after having obtained the HSE Card, ESI/PF Clearance & Police Clearance Certificate from the respective police stations residing.
13. Violations of any of the security instructions will entail in cancellation of the pass.

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Annexure 1

BHARAT PETROLEUM CORPORATION LIMITED (BPCL), KOCHI

FINANCIAL DETERRENT FOR VIOLATION OF SAFETY NORMS BY CONTRACTORS (APPLICABLE TO ALL WORKS CARRIED OUT IN THE REFINERY BY CONTRACTORS) REV-2 NOVEMBER -2021

All contractors working inside Refinery have to strictly follow safety norms as per BPCL rules and regulations. Contractors who are violating safety norms will be penalized by the Executing /HSE department. Penalty amount and Reporting Authority for violation / non adherence of various safety norms is given below.

SL NO	VIOLATION OF HSE NORMS	PENALTY AMOUNT	REPORTING AUTHORITY
NON ADHERENCE OF WORK PERMIT CONDITIONS			
1	Working without proper Authorization / Permit (Cold work).	Rs.10,000/- per case & holiday listing of 3 years if repeated.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
2	Working without proper Authorisation/ work Permit (Hot work/Electrical/ Electrical Energisation or De-energisation/ Earth work).	Rs. 20,000/- per case and delisting / holiday listing of 3 years if repeated.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
3	Violation of any of the conditions specified in the permit/JSP/SOP etc.	Rs 5,000/- per permit.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
4	Use of mechanically propelled equipment/engine/ generator set etc. without spark arrestor / with faulty spark arrestor.	Rs. 5,000/- per equipment per occasion.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
5	Failure to remove combustible materials from hot work area.	Rs. 5,000/- Per occasion.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

6	Welding without earthing connection/ use of damaged electrical connections/ wires/ Unsafe welding/cutting practice.	Rs. 10,000/- Per occasion.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
7	Non-display of name board, warning boards or signs, caution boards, Scaffolding tags, not barricading the site, etc.	Rs 2,000/- per location where job is being executed. Penalty will be repeated if not rectified within 3 days.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
8	Failure to keep work permit/ site reference copy at site. Not attaching JSP/JSA/HIRA or any other required document along with the work permit.	Rs 2,500/- Per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
VIOLATION OBSERVED WHILE WORKING AT HEIGHT			
9	Working at height without safety belt. Arrangement as required i.e. Non-use of double lanyard safety belt/ Not hooking lanyard/ Use of damaged safety belt. Or any other unsafe practice.	Rs 10,000/- per Person per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
10	Throwing up/down any material from height or not making proper provision to bring down material safely from height/Unsafe handling methods/work practice.	Rs 5,000/- per person per Case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
11	Non usage of working platforms/scaffolds where required for safe working at height. substandard/unsafe platform or ladder/Use of Uncertified Scaffolding/ Any non-compliance to ROS 20 or safe guideline provided by BPCL KR.	Rs. 10,000/- per Case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

NON USE OF PERSONNEL PROTECTIVE EQUIPMENT			
12	For not using Non Respiratory Personal Protective Equipment or using damaged/non-standard PPEs (Helmet, goggles, gloves, safety belts, Boiler suit, Safety Shoes etc.).	Rs.5,000/- per person.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
13	For not using Respiratory - Personal Protective Equipment or using damaged or non-standard respiratory PPEs prescribed in Work permit/job safety plan.(B.A. set/ canister mask/B.A. compressor etc.).	Rs.25,000/- per person.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
VIOLATIONS OBSERVED IN ELECTRICAL WORK			
14	Unauthorized / untrained people entry into SRRs/electrical substations/Electrical rooms/Electrical facility or any other facility where electrical hazard likely to occur.	Rs 10,000 / per person per occasion.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
15	Non-use of ELCB or use of faulty ELCB , using poor joints of cable, using naked wire without top plug into the socket , laying wire/cables on the roads, carrying out electrical jobs by incompetent person/Any unsafe activity on electrical equipment.	Rs 10,000/- per Each case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
16	Non deployment and non-availability of Licensed electricians/Competent person for electrical job.	Rs. 10,000/- per each case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
VIOLATIONS IN EXCAVATION WORK			
17	Unsatisfactory fencing / barricading of excavated areas. Not providing proper shoring / strutting / proper slope. Not keeping the excavated earth at least 1.5M away from excavated area. Any unsafe activity during excavation.	Rs. 5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

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VIOLATIONS IN ROAD SAFETY			
18	Driving BPCL or Contractor's vehicle without license from transport authority and safety driving licence issued by BPCL HSE dept. or failure to keep State /BPCL Safety driving licence.	Rs. 5,000/- per case.	Any employees through Head of Dept (F&S)
19	Over speeding of vehicles, rash driving, wrong side parking, wrong side driving, not wearing safety belt or any other road safety violation.	Rs. 5,000/- per case.	Any employees through Head of Dept (F&S)
20	Driving trailer/Crane/fork lift above its speed limit fixed for BPCL-KR Refinery.	Rs. 5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
21	Not having or use of damaged headlights/ indicators/horns/ reverse horns/side mirrors/ guards and other fittings.	Rs. 3,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
22	Failure to display test certificates, SWL and any other required information on hydras/Cranes/forklift and other lifting machines.	Rs. 5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
23	Entry of contractor's vehicle in "No Entry/permitted Area" without proper authorization. .	Rs. 5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
24	Unauthorized parking of contractor's vehicles/cranes inside Refinery. Parking vehicles/cranes beyond the allotted time/date without parking permission after the completion of work.	Rs. 5,000/- per day.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
25	Riding on material handling or transferring vehicles such as Trolleys/ cranes/ mixer truck etc.	Rs. 2,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

26	Sitting or allowing sitting along with the drivers on fork lift /tractor etc. or unsafe action posing danger to life.	Rs. 2,000/- per case	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
27	Fuelling Compressor/DG/any other machine or equipment while it is in operation/Fuelling without grounding/ Unsafe act during fuelling.	Rs.5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
28	Vehicle Accident- i.e. overturning, falling in pits, damaging equipment/structure , hitting another vehicle, falling of load/material from vehicle and other vehicle related accidents due to unsafe act.	Rs 20000/- per case plus replacement/ repair charges incurred by KR for company owned material .	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
29	Not covering filled trucks/ tippers while transferring materials such as sand, gravel, sulphur etc. Spillage of material on roads due to unsafe driving or act.	Rs 3,000/- per case plus spillage removal cost incurred for BPCL.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
30	Use of mobile phones/UHF/any other device while driving.	Rs.3,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
31	Unauthorised parking i.e emergency parking area, road bents/curves, narrow roads or which obstructs fire truck movement/ parking vehicles on slopes without stoppers etc.	Rs. 5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
NON DEPLOYMENT OF REQUIRED MANPOWER			
32	Non-deployment of safety supervisor/ safety officer/rigger etc. responsible for safety at work site. Not attending safety meetings by the contractor or his representative/ safety officer.	Rs. 10,000/- per occasion.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates

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33	Failure to maintain safety register and records as stipulated in the tender conditions and statutes by Contractor, Safety Supervisor or Supervisor responsible for safety.	Rs. 10,000/- per each case	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
34	Failure to have weekly safety site inspection / audit and maintain record (by contractors themselves).	Rs. 10,000/- per each case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
35	Failure to conduct tool box meeting every day and maintain the records of the same.	Rs. 2,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
36	Failure to submit the monthly Safety performance report or any other safety records/report as demanded before the due date.	Rs- 5000/- per case and Rs-1000/day for further delay	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
VIOLATION OF STATUTORY REQUIREMENT			
37	Acting in contravention to any of the provision mentioned in Factories Act 1948/OSHC act 2020 and/or the rules framed there under including all amendments thereto.	Rs- 5000/- per each case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
38	Failure to maintain records as per Kerala Factories Rules mentioned below (Which ever applicable) Form No. 8– Report of Examination or test of pressure vessels or plant Form No. 11– Notice of periods of works for adult workers Form No. 12 – Register of adult workers Form No. 25 – Muster roll Form No. 27 – Certificate of fitness for employment in hazardous processes/ dangerous operation	Rs. 10000/- per occasion.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

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	Form No. 34 – Register of workers employed for work on or near moving machinery Form No. 41 – Report of Examination of Hoists and Lifts Form No. 42 – Certificate of fitness Form for temporary Sheds/Containers constructed by the contractor prescribed by HSE department.		
OCCURRENCES OF INDUSTRIAL ACCIDENTS			
39	Failure to furnish a first information report (FIR) as per prescribed Format within 4 hours of the incident to the EIC and HSE dept. .	Rs. 5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
40	Failure to arrange immediate investigation / evidences / Documents of the incident and furnish within 24 hours to BPCL Engineer-In- Charge and HSE dept.	Rs. 10,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
41	Failure to keep and maintain proper records of all incidents occurred at work site	Rs. 5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
42	Failure to report to BPCL EIC on the - job, medical Centre and area safety officer any injury to his Employees or any near miss or any hazardous/ dangerous incident at work site within the Refinery premises or hiding of any accident or near miss.	Rs. 10,000/- per case..	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
43	Negligence on contractor's part which has resulted in First aid injury. Minor injury.	Rs.5,000/- per case. Rs.10,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

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44	Negligence on contractor's part which has resulted in a Major Injury/Minor fire/Lost Time Injury. Fatality	Rs.10,00,000/- per person. Rs. 15,00,000/- per person.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
45	Negligence on contractors part which has resulted in Bursting of a plant used for containing or supplying steam under pressure greater than atmospheric pressure. Collapse or failure of a crane, derrick, winch, slings , hoist or other appliances used in raising or lowering persons or goods or any part thereof, or the overturning of a crane. Explosion, fire, bursting out, leakage or escape of any molten metal, or hot liquor or gas causing bodily injury to any person or damage to any room or place in which persons are employed. Explosion of any receiver or container. Collapse or subsidence of any floor, gallery, roof, chimney, wall, building or any other structure. Negligence on contractor's part which has resulted in Major Fire.	Rs 1, 00,000/- per case plus repair/replacement charges or any other charges incurred by BPCL.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
46	Negligence on contractor's part which has resulted in Minor Fire. Negligence on contractor's part which has resulted in Major Fire.	Rs-2 Lakh plus repair/replacement charges. Rs- 5 Lakh/case + repair/replacement charges.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
VIOLATION OF LABOUR LAWS			
47	Working beyond statutory limits by contractor's workers.	Rs. 5,000/- per person per day.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
48	Deployment of contractor's employees including supervisors without relevant competency for the safe execution of the job.	Rs. 20,000/- per person per day and holiday listing of contractor for 6 months if repeated.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates

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49	Deployment of contractor's employees including supervisors without undergoing their medical examination, by the authorized and competent medical practitioner Deployment of workers on high risk jobs like working in confined space, working at height, working under water, etc. without being examined and certified as medically fit.	Rs. 10,000/- per person.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
50	Non subjecting to periodic medical examination after every six months after deployment of workers including supervisors on the job by the certifying medical practitioner.	Rs. 10,000/- per person	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
51	Deployment of child or adolescent	Rs. 10,000/- per person.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
52	Use of untested and uncertified pressure vessel as per Statutes or company requirement.	Rs. 50,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
53	Use of untested and uncertified lifting tools/tackle or similar appliances as per statutes or company requirement.	Rs. 20,000/- per caae.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
VIOLATION IN MATERIAL HANDLING			
54	Improper material handling such as manually handling of heavy material when it requires using mechanical equipment /use of substandard/ defective material handling trolleys/ Hand cart and other unsafe act related to material handling.	Rs. 10.000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

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55	Utilization of hydra/back-hoe loader for material shifting. Use of crane/back loader or other machinery/vehicle other than intended purpose.	Rs. 25,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
56	Failure to conduct safety checks on equipment/ machine/vehicle /tool or other devices using the inspection checklist and not maintaining the record or not carrying the safety checks properly.	Rs. 5,000/- per item.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
57	Inadequate supervision at work site(absence of supervisor/designated employee as supervisor from site for more than 30 Minutes when work is in progress).	Rs. 10,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
58	Hooking of lifting tools like chain blocks, ropes, web slings or similar appliances to process or utility lines for supporting or lifting.	Rs. 10,000/- per Case	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
SAFETY PERFORMANCE DISPLAY BOARD			
59	Safety performance score board not displayed at site office inside Refinery.	Rs. 1,000/-per case per day.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
VIOLATIONS IN USE OF GAS CYLINDERS			
60	Unsafe handling of compressed gas cylinders such as no trolley or jubilee clips or double gauge regulator or flash back arrestor on both gas lines & both ends or damaged hoses or improper storage / handling or cylinders without caps when not in use and other unsafe practices associated with handling and transportation.	Rs. 5,000/- per item per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

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61	Storage of gas cylinders inside non ventilated/ closed containers or storage of gas cylinders without any permission/ failure to segregate the filled and empty gas cylinders or any unsafe storage.	Rs. 5,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
62	Use of domestic LPG for cutting purpose.	Rs. 5,000/- per occasion	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
VIOLATIONS DURING RADIOGRAPHY PROCESS			
63	Radiography without authorization/ Non barricading the area/without warning boards or signs during radiography/ Any violation to ROS23 or Radiography safety guideline provided by BPCL KR.	Rs. 10,000/- per occasion	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
64	Non announcement on PA system/ alerting people working in vicinity, before start of Radiography jobs.	Rs. 2,000/- per occasion	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
65	Not Keeping/having Documents regarding Radiography.	Rs. 5,000/- per each case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
MISCELLANEOUS			
66	Damage to fire hydrant & monitors, fire extinguishers any other BPCL property including non-return of extinguishers/ BA cylinders/ any other BPCL property.	Rs- 5,000/each case and Cost incurred by BPCL for repair/ replacement or purchase	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates

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67	Unauthorised usage of any BPCL store/ item/equipment.	Rs. 5,000/- per each case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
68	Improper /Poor House-keeping.	Rs. 10,000/- per each case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
69	Removal of grating/cover/lid on any opening in floor or vessel.	Rs. 10,000/- per each case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
70	Use of dangerous/unsafe portable tools /hand tools/machine without safety guard/ dead man switch or its operation by unskilled worker. Or any unsafe act during the usage of such tools or machinery.	Rs. 10,000/- per each case	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
71	Horseplay at work site.	Rs.5,000 /- per each case	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
72	Shifting of debris/wastes from one location to another without authorization / dumping debris/scraps at Unauthorized place.	Rs. 10000/- per case plus cost incurred for BPCL for removing the material	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
73	Unauthorized usage of mobile phones/Camera /drones in Refinery premises including other places owned by BPCL-KR.	Rs. 25,000/- per each case	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates
74	Carrying or use of prohibited material like match box, cigarette, tobacco, lighter and other ignitable materials.	Rs. 10,000/- per case.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P&U/Proj / P&CS/ AS), Section Head Estates

75	Carrying or working under the influence of alcohol or other intoxicating material like drugs, etc…	Rs 10,000/- per case	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
76	Abandoning of materials/ facilities belonging to the contractor such as vehicles/sheds/containers/DG and other machines.	Rs 1,00,000/- per case and cost incurred by BPCL for removing/ dismantling.	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
77	Construction of Unauthorised sheds/Containers/ DG sheds inside refinery.	Rs. 5,000/- per case	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
78	Any activity results in environmental impact or damage or threat.	Rs 1,00,000/- per case plus cost incurred for the rectification or reconciliation	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates
79	Any violation not covered above.	To be decided by BPCL	Engineer-in-charge, Officers of F&S, Head of Dept. (F&S/ Mfg/OM&S/Maint./E&C/P& U/Proj / P&CS/ AS), Section Head Estates

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Notes :

1. The above penalties will be applicable for all the contracts jobs carried out inside Refinery and covered by BPCL HSE norms / work permit system.
2. Site Engineers, Operations Officers, Safety Officers will report such violation through their Department Head /Engineer-in-charge (Reporting Authority) to the respective contracting department (CPO KR) for necessary action. Reporting Authority has been indicated against each violation.
3. On advice from Reporting Authority, respective contracting departments shall make the deductions from the next payment due to the contractor.
4. Person will be sent out from the Refinery in case of violations more than 3 times. For annual and other rate contracts POs awarded as part of rate contract shall also be considered for this.
5. In case of frequent penalties for a particular contractor, necessary action such as holiday listing / delisting will be taken.
6. In addition to the safety conditions mentioned in Special safety Conditions attached, contractors are required to adhere to the following additional safety requirement for which penalties are applicable as above for violation of these conditions:
    a. All contractors shall themselves arrange weekly safety site inspection / audit and monthly safety meeting and record should be maintained.
7. Implementation of above financial penalties for violation of HSE norms does not absolve contractors from their responsibilities to take at all times due and proper precautions to avoid injuries and accidents.
8. Contractors shall own the full responsibility for any accident and injury to any of the workers or to any person or persons or property arising due to violation of HSE norms by contractors even though financial penalty is not applied for such violation. Implementation of these financial penalties does not absolve Contractors from any of the responsibility as per General Contract Conditions (Latest Revision), General Terms and Conditions and Special Safety Conditions.
9. Contractors shall follow the safety guidelines and Safe Operating Procedures (SOPs) provided by BPCL KR in addition to Safety and Security Regulations of BPCL KR.

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Annexure 2

BHARAT PETROLEUM CORPORATION LIMITED - KOCHI REFINERY

REPORT OF INCIDENTS BY CONTRACTORS

Date :

Name of the contractor	
Vendor Code	
PO No	
Job/PO Name	
Tele-phone No	
Email ID	
Engineer-In-Charge	
Department	

Details of the incident						
Date and time of the incident						
Exact location of the incident						
No of persons injured						
No of persons killed						
Type of dangerous occurrence (see over leaf)						
Did it involve	a. Explosion		b. Fire		c. Emission of flammable exposure substance	

Brief description of the incident
Analysis of the incident
Root cause of the incident

Recommendation/ suggestions	
1	
2	
3	
4	

	Name and pass no of the person injured			Name and pass no of the person killed	
1			1		
2			2		
3			3		

Name and pass no of the witnesses		
1		
2		

Particulars of the injury		
1	Fatal (time and date of death)	
2	Non-fatal (if serious give extent of injury such as loss of limb/sight and hearing, fracture, permanent impairment, severe burns)	
3	State whether the injured person was disabled for more than 48 hours	
4	Location of the injury (i.e part of body such as right leg, left hand left eye etc)	
5	State what the injured person was doing the time of accident or dangerous occurrence	
6	Hour at which the injured persons started on the day of accident or dangerous occurrence	

_____ _____

(Name and signature of contractor) **(Name and signature of Engineer-In-Charge)**

Dangerous occurences

a Bursting of a plant used for containing or supplying steam under pressure greater than atmospheric pressure.

b Collapse or failure of a crane, derrick, winch, slings , hoist or other appliances used in raising or lowering persons or goods or any part thereof, or the overturning of a crane.

c Explosion, fire, bursting out, leakage or escape of any molten metal, or hot liquor or gas causing bodily injury to any person or damage to any room or place in which persons are employed.

d Explosion of any receiver or container.

e Collapse or subsidence of any floor, gallery, roof, chimney, wall, building or any other structure.

Annexure 3

SAFETY ACTION PLAN

All supervisors and contract workers shall attend safety course and obtain certification. Only safety trained workers will be deployed by me. All Personal Protective Equipment will be provided by me. We will strictly adhere to BPCL - KR safety rules and regulations. We will follow the e-work permit system of BPCL - KR. While working at height, safety belt will be used. While handling with chemicals proper precaution shall-be taken to avoid spillage or splash on body. Any incident/accident shall be reported to BPCL - KR authorities and documented properly. Any injury to the personnel employed by me for the job will be promptly reported to BPCL - KR medical centre. Fire extinguisher will be provided as specified in the permit. Proper enclosures will be prepared for welding. While entering column/vessel proper care will be taken by providing standby personnel outside. Only safe to use scaffolding will be used. Daily safety briefing will be given to the personnel employed by me. Safety supervisor shall be designated who will monitor safe working. I/We will employ only medically fit employees for the execution of the job.

HOUSEKEEPING PLAN

All equipment will be properly arranged and placed before start of work. A separate bin shall be provided for collecting waste generated by the personnel employed by me. i.e., canteen waste/gloves/cotton waste. All debris generated from plant will be collected and stored in BPCL - KR allocated space. Metallic debris will be carted way to warehouse and accounted for. Unused material will be deposited back to warehouse. Waste insulation material will be taken out of the site immediately. Spillage of oil, if any, will be cleaned immediately. Work area will be kept clean at all times. Contractor shed and surroundings, if allocated any, will be kept clean and no debris will be deposited on road. We will maintain approach way for movement of cranes etc.

ENVIRONMENT CONTROL PLAN

Proper care will be taken at site to avoid any oil leakage/seepage into the ground. In case of leakage while opening flange, the matter will be reported to BPCL - KR authorities. Debris generated like insulation, refractory, concrete etc. will be collected and stored in designated places as directed by BPCL - KR authorities. Welding machines used shall not emit smoke beyond the permissible level. Cleaning of work site will be carried out on a continuous basis. Proper breathing apparatus will be used wherever required.

DUST CONTROL PLAN

Work shall be carried out in a manner such that generation of dust is minimum. Loose dust/dirt debris will be collected in bags and dumped in designated areas. Work area will be barricaded, if required, to prevent dust inhalation. Dust mask will be used in dust prone areas.

QUALITY ASSURANCE PLAN

Welders will be qualified as per BPCL - KR inspection procedure. Only BPCL – KR qualified welders will be engaged for job. Proper electrodes as specified in action report/scope of work by BPCL - KR will only be used. Proper oven arrangement will be made for use of electrodes. All weld fitments will be offered to BPCL - KR. Weld joints wherever required will be offered to radiography. Minimum rejections/rework will be ensured. Condition of welding machine/generator will be excellent. Proper job sequence will be planned and followed. Experienced riggers will be deployed for all rigging jobs. Rigging will be aware of sign codes/ slings, chain blocks to be used. Fitters/fabricators will have relevant experience and able to understand drawings. All activities will be recorded and documented date wise. Grinders will use proper wheels and depending upon the surface conditions. All tools and tackles used will be of reputed make only. Modern and mechanized tools will be used wherever possible.

I/We are committed to all the above plans

Name and signature of the contractor :
PO No. :
PO Name :
Date :

Annexure 4

	BHARAT PETROLEUM CORPORATION LIMITED KOCHI REFINERY				
	CONTRACTORS MONTHLY SAFETY PERFORMANCE REPORT				
	File No.				
Name of the contractor		Vendor code			
PO name		PO No.			
Contract period		Date			
Sl No	Item	Description			
1	Number of supervisors				
2	Number of workers				
3	Number of qualified safety officers/safety stewards				
4	Health monitoring of employees	75%-100%		25%-50%	
		50%-75%		<25%	
5	Supply of quality of PPE	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
6	PPE usage by the workers	75%-100%		25%-50%	
		50%-75%		<25%	
7	Availability of HSE performance score board at site	Yes		No	
8	Availability of HIRA	Yes		No	
9	Standard of facilities provided for workers	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
10	Standard of housekeeping	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
11	Compliance to safety guidelines	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
12	Knowledge of Fire & Safety Protection System	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
13	Compliance of Work Permit System	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
14	Healthiness of Tools & Tackles	Excellent		Average	
		Very good		Satisfactory	

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		Good		Poor	
15	Familiarization with Emergency Actions	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
16	Maintenance of safety records/registers	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
		For the month		Cumulative	
17	Total LTI free man hours worked				
18	Total RLTI free man hours worked				
19	No of permits requested during the contract period				
20	No. of Toolbox talk conducted				
21	No. of safety violations				
24	No. of incidents/injuries occurred due to negligence				
25	No. of penalty levied				
26	No. of near-miss reported				
27	No. of safety suggestions given				
28	No. of unsafe condition reported				
29	No. of safety audits conducted				

Contractors safety performance	Excellent		Average	
	Very good		Satisfactory	
	Good		Poor	

_____	_____	_____
_____	_____	_____
(Name and signature of contractor)	(Name and signature of contractor Safety officer	(Name and signature of Engineer In Charge)

- **Lost Time Injury (LTI)** - Any work related injury which results in a person being unfit for work for a period of 24 hours or more immediately following the occurrence of the occupational injury.
- **Near Miss** - An event or chain of events that could have resulted in fatality, injury, illness and / or damage (loss) to assets, the environment, location's reputation or third parties. The situation was avoided or reduced by the circumstances at the time or under slightly different circumstances would have been more serious.
- **Reportable Lost Time Injury (RLTI)** - Any work related injury which results in a person being unfit for work for a period of 48 hours or more immediately following the occurrence of the occupational injury (as per the Indian Factories Act,1948) "The period of 48 hours" includes rest days, weekend days, leave days, public holidays or days after ceasing employment.

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Annexure 5

	BHARAT PETROLEUM CORPORATION LIMITED - KOCHI REFINERY		
	HSE PERFORMANCE SCORE BOARD		
		Month and Year	
		Date	
Name of the contractor			
Vendor code			
PO / Job No.			
PO / Job Name			
Sl No	Description	For the month	Cumulative
1	Manpower		
2	Total man-hours worked		
3	Lost time injury free man-hours		
4	No. of near-miss cases		
5	No. of unsafe acts		
6	No. of unsafe conditions		
7	No. of HSE inspection/audits		
8	No. of HSE awareness and training programmes		
9	First aid injury cases		
10	No. of Lost time injury		
11	No. of mockdrills		
12	Frequency rate		
13	Severity rate		
14	Incident rate		

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Annexure 6

BHARAT PETROLEUM CORPORATION LIMITED - KOCHI REFINERY

COMPLIANCE TO SAFETY REGULATIONS

(Declaration to be made by contractors and submitted along with bills)

Date :

Name of the contractor	
Vendor code	
PO No.	
PO Name	
Executing department	
Engineer-In-Charge	
Bill No.	
Bill Period	

1	Maximum number of workers employed on any day during the bill period		7	Number of toolbox talks conducted during the bill period	
2	Number of supervisors employed		8	Number of safety violations charged during the bill period	
3	Number of safety officers/stewards employed		9	Number of personal injury occurred	
4	Number of sheds constructed/retained and shed numbers assigned during the bill period		10	Whether all gas cylinders, pressure vessels, lifting tools and tackles etc having valid test certificates?	
5	Number of safety posters displayed at site during the bill period		11	Whether all safety records are maintained at site?	
6	Number of near-misses reported to Engineer-In-Charge				

We declare that we have complied with the various safety regulations of BPCL Kochi Refinery

Name and Signature of the contractor with seal

Name and Signature of the Engineer-In-Charge

Staff No of Engineer-In-Charge:

Comments by Engineer-In-Charge

Overall performance rating	Very good	
	Good	
	Satisfactory	
	Poor	

Comments

Annexure 7A

Bidder shall mark "Yes/No" towards confirmation to compliance for each point below of the Safety Competency Form and the same shall be submitted without fail along with the unpriced/technical part of their bid. Proof of the same as indicated below shall be submitted along with this declaration

SAFETY COMPETENCY FORM

Sl. No	Competency	Criteria	Competency Measure	Whether complied	Proof to be submitted
1	Manpower	Safety steward (1 for every 30 workers)	Diploma in Industrial safety or NEBOSH or equivalent qualification with min. One year experience.	Yes / No	Declaration with certificate copy
		Safety officer (1 for every 100 workers)	Diploma in Industrial safety or equivalent qualification from Govt. recognized institute with min. two years' experience.	Yes / No	Declaration with certificate copy
		Skilled workers such as scaffolders, welders, electricians, rigger, fitter, line men etc.	Experience - certified workers with min. 2 years of experience in relevant field.	Yes / No	Contractor Declaration
2	Tools and Tackles	All lifting tools and tackles	List of all tools and tackles	Yes / No	List of tools and tackles shall be submitted by the contractor with Equipment type, TPI validity, intended use
			Suitability for the intended work	Yes / No	List of tools and tackles shall be submitted by the contractor with Equipment type, TPI validity, intended use
			Make and age of tools and tackles	Yes / No	List of tools and tackles shall be submitted by the contractor with Equipment type, TPI validity, intended use
			Certified by competent authority	Yes / No	TPI certificate

3	Safety Records	Past Safety Records	Reportable incidents (Absence more than 48 hrs) in the past 3 years. No incident 2 or less more than 2	(Number)	Contractor Declaration
			Fatal accidents in the last 3 years. No fatality. 1 or more	(Number)	Contractor Declaration
			No. of safety violations charged in last 3 years.	(Number)	Contractor Declaration
4	High risk job	High risk jobs executed in last 3 years	Jobs involving working at height more than 30 meters	Yes / No	Work permit copy/ Approved JSP or any other safety plan
			Jobs involving working in confined space	Yes / No	Work permit copy/ Approved JSP or any other safety plan
			Any other critical jobs	Yes / No	Work permit copy/ Approved JSP or any other safety plan
5	Safety Accreditations	Safety Accreditations	ISO 9001	Yes / No	Certificate from accredited bodies
			ISO 14001	Yes / No	Certificate from accredited bodies
			ISO 45001 /OSHAS 18001	Yes / No	Certificate from accredited bodies
			Safety / excellency awards from other accredited institutions	Yes / No	Certificate copy
			Safety award for any employee from any firm during the execution of work	Yes / No	Certificate copy
6	Safety practices	Best safety practices employed at work site	HSE policy	Yes / No	Policy copy
			HSE manual	Yes / No	HSE manual copy
			Specialized safety training for the employees	Yes / No	Training certificate copy

Name of the bidder: Vendor code: Signature and stamp :

Annexure 7B

SAFETY COMPETENCY FORM

1. Name of the contractor
2. Vendor code
3. Date
4. RFQ/Tender No

1. Manpower

1.	Number of workers to be employed			
2	Number of safety stewards to be employed			
3	Number of safety officers to be employed			
Sl No	Name of the safety stewards	Emp./ Pass No	Qualification	Year of experience
1				
2				
3				
4				
5				
Sl No	Name of the safety officers	Emp./ Pass No	Qualification	Year of experience
1				
2				
3				
4				
5				

(Use additional sheets if required)

Note

- Safety stewards – Diploma in industrial safety/NEBOSH/equivalent qualification with min. one year experience
- Safety officers - Diploma in industrial safety /equivalent qualification from Govt. recognized institution with min. two years of experience.
- Copy of the degree and experience certificate shall be attached

Name and Signature of the contractor/Agency/Firm

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Sl No	Name of the worker	Emp./pass No	Skill category	Certificate /Welder /Electrical license No.	Year of experience
1					
2					
3					
4					
5					

(Use additional sheets if required)

Note
- Skilled workers such as scaffolders, welders, electricians, rigger, fitter, line men etc. with minimum 2 years' experience.
- Copy of the competency and experience certificate shall be attached

2. Tools & Tackles

Sl No	Type of tool	Intended use	Make	Date of purchase	TPI validity date (If applicable)
1					
2					
3					
4					
5					

(Use additional sheets if required)

Note
- Copy of the TPI certificate shall be attached (If applicable)

3. Safety Records

Sl No	Description	
1	Number of reportable incidents happened in the past 3 years (Absence more than 48 hrs)	
2	Number of fatal incidents happened in the past 3 years	
3	Number of safety violations charged in last 3 years	

Note The bidder shall submit a declaration in his letter head stating the number reportable/fatal accidents that happened for his employees for the last 3 years and number of safety violations charged in last 3 years.

Name and Signature of the contractor/Agency/Firm

4. High risk jobs executed

SL No	Item	Description of job (Location, date of work, purchase order etc. shall be mentioned)
1	Jobs involving working at height more than 30 meters in the past three years	
2	Jobs involving working in confined space / inert atmosphere in the past three years	
3	Any other critical jobs carried out in the past three years	

(Use additional sheets if required)

Note

- Critical jobs are those involving serious immediate safety threats to the workers as well as to the plant operation such as working in inert atmosphere, vessel or column replacement jobs involving large capacity cranes (>400T) etc. Decision regarding Job criticality will be under the discretion of evaluation committee.
- The bidder shall submit the copy of work permit of the job carried out along with the approved Job Safety Analysis prepared by the contractor.

Name and Signature of the contractor/Agency/Firm

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5. Safety accreditations

Sl No	Item	Year of Award	Expiry date	Agency
1	ISO 9001			
2	ISO 14001			
3	ISO 45001/OSHAS 18001			

Note
- Copy of the ISO certificate shall be attached

Safety / Excellency awards from other accredited institutions received by the contractor/ firm/agency in past 3 years

Sl No	Description of safety award	Position	Year of award	Award Institution
1				
2				
3				
4				
5				

(Use additional sheets if required)

Note
- The bidder shall submit a copy of safety excellency letter/certificate/award issued by other organizations, institutions etc.

Safety award for any employee from any firm during the execution of work in the past 3 years

Sl No	Name of the employee	Emp./Pass No.	Description of safety award	Year of award	Award Institution
1					
2					
3					
4					
5					

(Use additional sheets if required)

Note
- The bidder shall submit a copy of safety excellency letter/certificate/award or any appreciation letter issued by other organizations, institutions etc.

Name and Signature of the contractor/Agency/Firm

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6. Safety Practices

Sl No	Item	Document no.	Date of preparation
1	HSE policy		
2	HSE manual		

Note
- The bidder shall submit a copy of updated HSE policy for his firm/agency.
- The bidder shall submit a copy of approved HSE manual of his firm.

Specialized safety training for the employees conducted by the contractor/agency/firm

Sl No	Category of training	Training date	Training validity	Training agency	Number of people attended
1					
2					
3					
4					
5					

(Use additional sheets if required)

Note
- Specialized safety training includes confined space entry safety, first aid, trauma care, electrical safety, working at height, radiography etc.
- The bidder shall submit list of persons along with the certificate copy of the concerned training.

Name and Signature of the contractor/Agency/Firm with seal

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Remarks

Name & Signature

(Executing Dept.)

Name & Signature

(Safety Dept.)

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Annexure 8

BHARAT PETROLEUM CORPORATION LIMITED KOCHI REFINERY

CONTRACTORS SAFETY PERFORMANCE REPORT

File No.

Name of the contractor		Vendor code	
PO name		PO No.	
Contract period		Date	

(Please √ which ever applicable)

Sl No	Item	Description			
1	Number of supervisors				
2	Number of workers				
3	Number of qualified safety officers/safety stewards				
4	Health monitoring of employees	75%-100%		25%-50%	
		50%-75%		<25%	
5	Supply of quality of PPE	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
6	PPE usage by the workers	75%-100%		25%-50%	
		50%-75%		<25%	
7	Availability of HSE performance score board at site	Yes		No	
8	Availability of HIRA	Yes		No	
9	Standard of facilities provided for workers	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
10	Standard of housekeeping	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
11	Compliance to safety guidelines	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
12	Knowledge of Fire & Safety Protection System	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
13	Compliance of Work Permit System	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
14	Healthiness of Tools & Tackles	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
15	Familiarization with Emergency Actions	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
16	Maintenance of safety records/registers	Excellent		Average	
		Very good		Satisfactory	
		Good		Poor	
		For the month		Cumulative	
17	Total LTI free man hours worked				
18	No of permits requested during the contract period				
19	No. of Toolbox talk conducted				
20	No. of safety violations				
21	No. of incidents/injuries occurred due to negligence				
24	No. of penalty levied				
25	No. of near-miss reported				
26	No. of safety suggestions given				
27	No. of unsafe condition reported				
28	No. of safety audits conducted				

Contractors safety performance	Excellent		Average	
	Very good		Satisfactory	
	Good		Poor	

Name and signature of contractor

(Name and signature of contractor Safety officer

(Name and signature of Engineer In Charge)

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Refinery Operating System

ROS-018

Edition: 2015, Revision: 00/2015

SAFETY GUIDELINES FOR WORKING IN CONFINED SPACE

Kochi Refinery

This ROS outlines the safety guidelines for working in confined space and associated activities like identification of confined spaces and hazards, preparing entry into confined space including emergency preparedness.

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DOCUMENT RELEASE NOTE

Document Details

Document Name	:	Safety Guidelines for Working in Confined Space
Document No	:	ROS-018
Edition	:	2015
Revision	:	00/2015
Issue	:	Sept-2015

Reviewed by

HOD – F & S | HOD – Manufacturing | HOD – OM&S | HOD-P&U

HOD – Maintenance | HOD – E&C

Functional Head - Operations | Functional Head - Projects

Approved in : Refinery Council

RC Meeting Record Note : No...105..... dated..01-08-2015...

Approved By

Head of Kochi Refinery

Digitally controlled document and hence sign is not requird for pdf version of ROS. Signed Mastercopy is available with Custodian

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AMENDMENT SHEET

All amendments in this ROS shall be documented in the following table. The details of the amendment shall be elaborated in a separate document (Amendment Document) and shall be available with custodian.

Tracking ID	Section No	Amendment		Reason	Amendment Document No
		From	To		
ROS-018/15-01	All			Revised in Total	ROS018/AD-01

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PREFACE

Director (Refinery) of erstwhile Cochin Refineries Limited (CRL) appointed a committee in 1994 for devising a procedure of standard operations. The committee formulated a system named Refinery Operating System (ROS). A set of ROS was formulated and released by the committee. Over years, the ROS was evolved to a well-documented Refinery Operating System (ROS), which outlines the Management System Procedure for various business processes in the refinery. There were 90 approved ROS and 12 ROS under formulation before the current edition. Prior to 2015 edition, Project (Technical) department, which was earlier known as Corporate Planning, before organizational re-structuring in 2006, was the custodian of the ROS.

In 2014, General Manager (Operations) constituted a task force for a thorough revision of ROS in terms of the purpose, relevance, scope and work flow in the current business context vide office note KDD/03/09 dated 28-02-2014.

The task force reviewed the existing ROS47 and concluded that entire structure and contents required revision and was revised in line with ROS-001. The existing ROS was renamed as ROS-018 as per the new ROS index.

The previous version of this ROS was ROS-47 Rev0. The ROS is fully restructured to include all types of confined space with more stress on hazard identification, risk assessment and control measures.

The procedures / practices described in the ROS are not intended to supplant other practices / procedure that have proven satisfactory, nor is the ROS intended to discourage innovation and originality in the best practices in the refinery. Users of the ROS are reminded that no ROS is a substitute for the judgment of a responsible, qualified person.

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Task Force for ROS Edition-2015

The Task Force was constituted by Mr. Soman C. K., General Manager (Operations) in 2014 for revision of the existing Refinery Operating System.

Task Force

Sl. No.	Name	Designation
1.	Muralidharan V.	Manager (E & C)
2.	Naizu A. V.	Manager (F & S)
3.	Roopesh M.	Manager (Inspection)
4.	Saji Babu	Manager (Manufacturing)

In addition to the above, several experts from various departments contributed in the preparation, review and finalisation of this document.

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1 INTRODUCTION

Confined Space means a space that is (a) large enough and so configured that a person can bodily enter and perform assigned work, (b) has limited or restricted means for entry or exit and (c) is not designed for continuous human occupancy. In a refinery entry into confined spaces are inevitable as part of operation, inspection and maintenance. A confined space can be more hazardous than regular workspaces for many reasons. Many workers are injured or killed each year while working in and around confined spaces across the world. Those injured or killed were not only persons who worked in confined spaces but also others who tried to rescue them. Hence adequate control measures are essential for the safe working in the confined space.

1.1 PURPOSE

The purpose of this ROS is to control risks associated with working in a confined space and eliminate the incidents related to working in and around confined spaces.

1.2 SCOPE

The scope of this ROS is to specify the safety guidelines related to man entry into various confined spaces in Kochi Refinery and establish roles and responsibilities of stakeholders involved in such jobs.

The scope includes the following unless otherwise excluded in Section 1.5 of this document.

1. Identification of confined space and hazard associated with it.
2. Control and preventive measures for entry into confined space.
3. Emergency preparedness.

1.3 COVERAGE

This ROS is applicable to the following facilities under the administrative control of Kochi Refinery unless otherwise excluded in the section 1.5.

1. Kochi Refinery
2. Jetty Facilities like NTB, STB, & COT
3. Pipeline corridor
4. STF and SPM
5. SWSS Aluva

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1.4 LIMITATIONS

This ROS shall not be used in conflict with legal and other requirements applicable to KR for working in confined space. However, if the requirements of this ROS are more stringent than the requirements of the regulation, then the requirements of this ROS shall govern.

1.5 EXCLUSIONS

1. Other SBUs of the Corporation.
2. Procedures and guidelines required for carrying out the jobs in the confined space.

1.6 DEVIATIONS

The procedures / practices described in the ROS are intended for standardization of the processes involved and hence the same shall be strictly adhered to. However, deviation, if any, arise due to unavoidable circumstance(s), shall be approved by Head of Kochi Refinery. The deviation note in the prescribed format specified in ROS-001 Appendix 'ROS-001/A9.4: Format for Approval of Deviation in ROS' shall be initiated by the HOD of the department proposing the deviation through the Functional Head.

2 DEFINITIONS & ABBREVIATIONS

This section lists all definitions and abbreviations used for the purpose of this ROS.

2.1 DEFINTIONS

Confined Space	:	Confined Space means a space that is (a) large enough and so configured that a person can bodily enter and perform assigned work, (b) has limited or restricted means for entry or exit and (c) is not designed for continuous human occupancy. Confined spaces can be enclosed or partially enclosed and can be above or below ground. Examples of confined space are: vessels in process units, utility and offsite areas, storage tanks, fired heaters, boiler furnaces, cooling tower sumps, silos, bins, sumps, pits, excavation exceeding 1.2m in depth, roof of floating roof tanks when products level is below 3m from tank top, junction pits of OWS, CDS pits, pipeway culverts, large diameter piping (inside) etc.
Corporation	:	Bharat Petroleum Corporation Limited.
Executing Agency	:	Person(s) or agency authorised by Kochi Refinery to carry out the work involving confined space entry.

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Executing Department	:	Department responsible for carrying out the work involving confined space entry. E.g. Maintenance, E&C etc.
Functional Head	:	Head of Functional Area such as General Manager, Deputy General Manager (In charge).
Functional Area	:	Operation, Technical, Finance, Human Resources, Projects etc.
KR & ME	:	BPCL Kochi Refinery Intralink
May	:	Optional
Owner Department	:	Department which owns the process units, operational area etc. where the work involving confined space is carried out. E.g. Manufacturing, OM&S, P&U etc.
Refinery	:	Kochi Refinery premises and its connected facilities.
Shall	:	Mandatory
Should	:	Recommended
Owner	:	Section / Department in Kochi Refinery responsible for area, unit, complex or facility where work involving confined space is carried out. E.g. Manufacturing, Stock & Oil Movement (OM&S), Power and Utility (P&U) etc.

2.2 ABBREVIATIONS

BPCL	:	Bharat Petroleum Corporation Limited
COT	:	Cochin Oil Terminal
HOD	:	Head of the Department
KR	:	Kochi Refinery
PDP	:	Pressurization and de-pressurization
PPE	:	Personal Protective Equipment
RC	:	Refinery Council
ROS	:	Refinery Operating System
SBU	:	Strategic Business Unit
SCBA	:	Self Contained Breathing Apparatus

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STF : Shore Tank Farm

3 REQUIREMENTS

The following sections specify the requirements to be met as a minimum.

3.1 HAZARD INDENTIFICATION IN CONFINED SPACE

All hazards found in a regular workspace can also be identified in a confined space. However, they can be even more hazardous in a confined space than in a regular worksite.

3.1.1 HAZARDS IN CONFINED SPACES

1. Hazards in confined spaces include:

   a. Poor air quality: There may be an insufficient amount of oxygen for the worker to breathe. The atmosphere might contain a poisonous substance that could make the worker ill or even cause the worker to lose consciousness and death. Natural ventilation alone may not be sufficient to maintain breathable quality air.

   b. Chemical exposures due to skin contact or ingestion as well as inhalation of contaminated air.

   c. Fire Hazard: There may be an explosive / flammable atmosphere due to flammable liquids and gases and combustible dusts, which if ignited would lead to fire or explosion.

   d. Process-related hazards such as residual chemicals, release from supply line.

   e. Noise.

   f. Safety hazards such as moving parts of equipment, structural hazards, entanglement, slips, and falls.

   g. Radiation.

   h. Atmospheric and surface temperature extremes.

   i. Shifting or collapse of bulk material.

   j. Barrier failure resulting in a flood or release of free-flowing solid.

   k. Uncontrolled energy including electrical shock.

   l. Poor visibility.

   m. Claustrophobia.

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2. Some of the above conditions may already be present in the confined space. However, some may arise when the work is carried out or because of ineffective isolation of plant nearby. E.g. leakage from a pipe connected to the confined space.

3.1.2 HAZARD IDENTIFICATION

1. Many factors need to be evaluated when looking for hazards in a confined space. An error in identifying or evaluating potential hazards can have more serious consequences. In some cases the conditions in a confined space are always extremely hazardous. In other cases, conditions are life threatening under an unusual combination of circumstances. This variability and unpredictability make hazard assessment extremely important and hence the health assessment must be taken very seriously.
2. Before carrying out the confined space entry, Owner department shall identify all the hazards and assess the risks thereof. The analysis shall include assessment of the chance of encountering such hazards by any person, the extent of impact, the effectiveness of the existing measures for controlling risks. Additional precautions, if needed, specific to the activities related to the confined space entry / jobs shall be taken. The assessment shall consider
    a. the task
    b. the working environment
    c. working materials and tools
    d. suitability of those carrying out the task
    e. arrangements for emergency rescue

3.2 CONTROL AND PREVENTIVE MESURES FOR CONFINED SPACE ENTRY

Control and preventive measures are important in the management of jobs in the confined space. The following steps are included as control and preventive measures.

3.2.1 IDENTIFICATION OF CONFINED SPACES

1. Section Head of all operating areas shall ensure that confined spaces in their respective area are identified, listed and displayed in the respective control rooms / operator cabin.

3.2.2 OPTION OF AVOIDING ENTRY TO A CONFINED SPACE

1. Confined space entry shall be exercised only if there are no other means of executing the jobs effectively without entry.
2. The engineer in charge of the job shall check for alternatives for carrying out the work so as to avoid entry and work in confined space.

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3.2.3 PREPARING CONFINED SPACE FOR ENTRY

The following procedure may be adopted for preparing a confined space for entry inside. All the steps may not be applicable in all cases; however, the same shall be applied based on the hazard identification and risk assessment.

3.2.3.1 Initial Isolation

1. For confined space connected to a process system, the Owner department shall isolate the confined space at the nearest possible point(s), using valves, dampers, guillotines etc.

3.2.3.2 Emptying Out

1. The Owner department shall empty out the confined space by removing the contents by pumping, draining / venting / flaring of liquid / gases etc. If emptying of the confined space is not possible due to the construction of the confined space or process involved, the same shall be taken care during the risk assessment.

2. Any temporary connection used for emptying out the contents such as fittings, hoses etc. shall be recorded by the Owner department and the same should be removed before entry.

3.2.3.3 Initial Purging

1. The initial purging shall be carried out using steam / air / nitrogen to remove the flammable / toxic gas / vapours to facilitate positive isolation and safe opening of the manways.

2. Pressurization and de-pressurization (PDP) with nitrogen may be adopted in special cases for effective purging. While performing PDP, extra care shall be taken to avoid pressurization and vacuum beyond design pressure of equipment.

3. Purging shall be continued for required time period for safe isolation and opening of manways. The time shall be reviewed as per the site condition.

3.2.3.4 Water Boiling

1. If applicable, water boiling shall be conducted in systems handling toxic material such as benzene to remove all traces of the material.

2. The water boiling shall be continued for required time period for safe isolation and opening of manways. The time shall be reviewed as per the site condition.

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3.2.3.5 Electrical Isolation

1. If the confined space is connected with any equipment that is powered using electricity, such as pumps, blowers, mixers, igniters, soot blowers, transformer grids, electrodes etc., the same shall be electrically isolated before permitting entry inside.

2. All electrical isolations shall be done using the electrical de-energisation permit and the certificate of isolation shall be obtained from the authorised personnel from P&U Electrical section before entering the confined space.

3.2.3.6 Final Positive Isolation

1. The confined space shall be positively isolated to prevent the ingress of contaminants through piping, ducts, vents, drains, conveyors, service pipes and fire protection equipment etc.

2. The final isolation shall be by using mechanical blinds or disconnecting / dismantling the connections and blanking off them as detailed in the approved blind list. The blind shall be installed as close as possible to the confined space.

3. Nitrogen connections if used for purging shall be disconnected and positively isolated before permitting entry. During turnaround, the positive isolation of nitrogen header should be carried out at the battery limit of process units.

4. While opening the flange for inserting blinds, the chances of exposure to toxic / inert gas contained / trapped in the process system shall be considered and appropriate air supplied respirators shall be worn by the workers.

5. The blind once installed and certified shall not be altered or disturbed until completion of confined space entry job.

3.2.3.7 Final Purging

1. After installing the blinds as per the blind list, the confined space shall be thoroughly purged using steam / air / nitrogen to remove the residual flammable / toxic gas / vapours.

2. Final purging shall be continued for required time period for opening of manways. The time shall be reviewed as per the site condition.

3.2.3.8 Water Washing

1. Depending on the service of the confined space, water washing shall be done, unless it is prevented by process reasons, to remove any residual material and to keep pyrophoric substances are wet.

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2. Chemical neutralisation (e.g. by using KMnO4) of pyrophoric substances should be considered wherever presence of pyrophoric is expected.
3. Care should be taken to distribute the water / chemical to minimise channelling inside the vessel / column.

3.2.3.9 Chemical Decontamination

1. Once initial isolation and purging is completed, chemical decontamination may be an alternative for making the confined space free from hydrocarbon / gas / vapours / chemical etc. However, the chemical decontamination shall be done by an approved procedure.

3.2.4 OPENING MANWAY

1. The external manways on the confined space, if any shall be opened by the executing agency to facilitate cooling by natural draft or mechanical type ventilation. The manway shall be opened from top to bottom, one at a time to control the ingress of air, which may lead to pyrophoric fires.
2. If temperature monitoring is available for the confined space at local panel or at control room, the same shall be monitored continuously to detect any abnormal rise in temperature during opening of manways due to pyrophoric fires inside. In case of temperature rise, the water / chemical washing should be continued or inert atmosphere should be maintained, as the case may be, to control the pyrophoric burning. In case of uncontrolled rise in temperature, all manways shall be closed to avoid air ingress and the water or chemical washing / inert gas purging / steam purging shall be ensured to control the pyrophoric burning.
3. Each entry point to the confined space shall be secured against entry inside using metallic covers and physical barriers, which requires special tools and equipment for their removal.
4. Whenever the entry point to a confined space is open, a warning sign displaying “Danger; Confined Space; No Unauthorised entry” must be placed near the opening.

3.2.5 VENTILATION IN THE CONFINED SPACE

1. Ventilation in the confined space with fresh air, by natural, forced or mechanical means, may be necessary to establish and maintain a safe and comfortable atmosphere for people entering and working inside. Wherever the confined space has sufficient openings, natural ventilation may be adequate; but in cases where natural ventilation is not adequate, the ventilation through forced / mechanical means shall be resorted to.

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2. Selection of mechanical ventilating equipment shall be based on type and size of the confined space as well as the number of openings available in them. Depending on the above, air eductors / heavy duty exhaust fan shall be used for ventilating the atmosphere. The exhaust fan used in ventilating potential flammable atmosphere shall be flame proof type.

3. While using air eductors for dilution ventilation of confined space, effective circulation throughout the confined space shall be ensured considering the configuration of the space, the position of the openings and the properties of the contaminants in the confined space.

4. The air eductors shall be positioned in such a way that the contents from the confined space are sucked outside. Nitrogen or any gas other than air shall not be used as drive force for eductors.

5. Air eductors shall be bonded effectively to avoid static charge accumulation.

6. Exhaust of eductors shall not be pointed towards personnel or ignition source during ventilation.

7. The confined space shall not be ventilated by inserting air hoses directly into it and also by using pure oxygen. However, for effective ventilation of the confined space with single manway, air hoses should be used for introducing fresh air into it. For this, special blinds with provision of connecting air hoses may also be considered. The hoses used for ventilating shall be tagged at both ends as 'Air Hose'. Work permit for such direct ventilation using air hose shall be controlled to prevent untoward incidents. Nitrogen utility points in all process units shall be flanged and kept positively isolated (by providing blind) under normal operating conditions to avoid accidental ventilation by Nitrogen. Also air from an oil lubricated compressor should be avoided for direct ventilation of confined spaces.

8. Ventilation may be necessary even after entry of personnel inside the confined space, to maintain a breathable atmosphere by removing / diluting the contaminants generated out of the activity inside. This shall be affected using suitable local exhaust ventilation or dilution ventilation. Air Conditioning of the confined space should be considered for long duration jobs in confined space for better comfort of the personnel.

9. During ventilation of confined space, it shall be ensured that contaminants such as pollutants exhaust gases from Internal Combustion (IC) engines, inert gases etc. are not accumulated in the confined space.

10. IC engines shall not be used inside confined space.

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11. Ventilation equipment shall not impede access or egress.

12. When more than one manway is available for a confined space, all the available manways shall be kept open during entry unless prevented by operational / process constraints.

13. Ventilation shall be continued for required time period for safe entry. The time shall be reviewed as per the site condition.

3.2.6 ATMOSPHERIC TESTING

1. Atmosphere inside the confined space shall be tested using a calibrated portable single / multi gas detectors (direct reading instrument) for oxygen content, flammable gases / vapours and toxic or harmful gases. Gas detectors having suitable sensors for the target gases identified during risk assessment shall be used for atmosphere testing.

2. Initial testing should be done from outside the confined space by inserting a sample probe and / or portable gas detection device at appropriately selected access holes, nozzles and openings.

3. Combustible gases or vapours can accumulate within a confined space due to inefficient or insufficient ventilation. Gases that are heavier than air will accumulate in the lower levels of a confined space and lighter than air will accumulate at top regions. Each part of the confined space shall be tested – side to side and top to bottom because contaminants can settle at different levels.

4. Adequate precautions shall be taken during the gas testing as lighter gases may be vented into the breathing zone of the person conducting the tests can endanger him / her.

5. Gases that are dissolved in liquids accumulated inside the confined space may be released when the liquid is disturbed. The liquids shall be agitated therefore before monitoring the atmosphere. Precautions shall be taken in case of trapped gases in solids too.

6. If it is necessary to enter the space to test remote regions away from entrances or access openings, then air-supplied respiratory equipment shall be worn by the person entering. All precautions envisaged in an inert atmosphere entry shall be followed during entry inside for testing (Refer Section 3.3).

7. Re-testing and continuous monitoring of the air quality inside the confined space shall be carried out if the risk assessment indicates that conditions may change due to the work

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being done or due to disturbance of hazardous material in the confined space for the reasons as listed below. The atmosphere shall be tested continuously in all such cases.

a. Jobs like spray painting, coating etc. or use of flammable solvent for cleaning in the confined space can generate a flammable atmosphere.

b. Welding or cutting with oxyacetylene / oxy-LPG equipment can also result in formation of an explosive mixture / low oxygen atmosphere inside.

c. Gas cylinders, welding machines etc. shall never be kept inside confined space.

d. Minor gas leaks through cutting / welding gas hoses can generate an explosive atmosphere and therefore, shall be removed from the confined when not in use.

8. Nearby facilities shall be closely monitored for possible release of toxic or flammable material, inert gas or hot or cold gases / liquids before and during entry in to the confined space.

9. The readings of the gas testing shall be recorded in the Work Permit for confined space.

10. Entry shall not be permitted if oxygen content is less than 19.5% volume or greater than 23% volume without proper supplied air respirators.

11. No person shall be permitted to enter the confined space containing toxic atmosphere at a level exceeding the TLV without proper supplied air respirators.

12. No hot work shall be permitted in the confined spaces unless the hydrocarbon reading is zero in the gas detector.

3.2.7 LIGHTING

Adequate lighting is important for safe working inside the confined spaces. The following shall be complied for the lighting.

1. The portable lighting used inside confined space shall be of flame proof type with voltage not exceeding 24 volts. All the portable lights shall be adequately protected from breakage with suitable guards.

2. Step-down transformers used for converting into 24v shall be kept outside the confined space.

3. Ordinary portable lights below 24v and fixed lighting above 24v up to 230v may be used in confined space that is tested and confirmed as gas free and is found fit for hot work (inside the confined space).

4. When fixed lighting above 24v is provided, the same shall be adequately protected using safety devices such as ELCB with 30mA rating. The body of such equipment shall be properly grounded.

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3.2.8 SAFETY BRIEFING

1. Before entering the confined space for any job execution, tool box meeting should be conducted for workers involved in the job about the hazards and precaution in place by the Owner and / or Execution department.

2. The attendance of the safety briefing shall be recorded in the approved format.

3.2.9 ENTRY INTO CONFINED SPACE

1. All confined space entry shall be with an authorised hot work permit issued by the Owner of the area.

2. The work permit for confined spare entry shall mention the number of entrants for the job. The number of entrants for a confined space job shall be restricted as minimum as possible.

3. Care should be taken to avoid same person(s) working for a prolonged period in the confined space.

4. The work permit shall be displayed in a conspicuous space within the immediate vicinity of the confined space for workers' reference.

5. Any other work which may jeopardize the safety of workers inside a confined space shall never be permitted outside, outside and in the vicinity of the confined space.

6. The work permit for confined space entry shall be given only after thorough atmospheric monitoring as detailed in section 3.2.6 for ensuring the presence of adequate oxygen.

3.2.10 STANDBY PERSONS

1. A healthy person of the executing agency shall be present outside near the manway as safety standby so long as people are inside the confined space.

2. The standby person shall wear a green coloured vest for identification.

3. Until relieved by an authorized person, standby person shall be available near the manway of the confined space as long as people are inside the confined space.

4. The standby person shall not be assigned any other work other than standby duties.

5. In case of independent entry to multiple section of the same equipment, the standby should be available at each section.

6. The standby person shall be a person well versant on the hazards that may arise during entry as well as working inside, including mode of communication, signs or symptoms, and consequence of exposure to low oxygen / toxic atmosphere.

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7. The standby person shall maintain a record containing names of entrants with time of entry and exit in a register kept at the entry area of the confined space in the format given in Appendix ROS-018/A9.1. Owner of the area should verify the same in every shift and ensure compliance.
8. Standby person shall monitor the personnel entering with self contained breathing apparatus (SCBA) and make sure that they are not overstaying beyond the working duration of the SCBA.
9. In the event of any emergency, the standby person shall immediately intimate the same to the operating staff / permit issuing authority. Fire station shall also be intimated by Owner and / or Execution Department in case additional help is required for the rescue operation during emergency.
10. The standby person shall be equipped with all required rescue equipment (for example, safety harnesses, lifting equipment, a lifeline, communication facility etc.) for removing the workers from the confined space in case of an emergency.
11. The standby person shall have the required authority to order workers to exit the space if any hazardous situation arises.
12. The standby person shall never enter the space to attempt rescue unless properly trained and equipped with all necessary personnel protective equipment.

3.2.11 COMMUNICATION

1. Executing department shall ensure effective two way communication facilities between standby persons and entrants. Depending up on the type of the confined space any one or combination of the communication mode namely; UHF set, VHF set, lifeline with bell, oral, signal, audio or visual communication, shall be used.
2. The standby person shall ensure return communication with each entrant at regular intervals.

3.2.12 PERSONAL PROTECTIVE EQUIPMENT

1. Owner department shall identify and specify the requirement of PPE while issuing the confined space entry permit.
2. The identified PPE shall be provided for each entrant by the Executing Agency. The same shall be ensured by the Executing and Owner departments.
3. If the entrant is unaware of the use of the PPE, they shall be briefed about proper usage of the PPE. Bearded personnel shall not be allowed to enter a confined space where entry is permitted only with the use of supplied air breathing apparatus sets such as SCBA, air line trolley.

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3.2.13 ACCESS AND EGRESS

1. A safe means of access to and within the confined space, such as fixed ladders, rope ladders, platforms and walkways shall be provided by the executing department.
2. Access points should be unobstructed by fittings or equipment that could impede rescue and should also be kept free of any obstructions during work in the confined space. If equipment such as electrical cables, leads, hoses and ventilation ducts are required to pass through an access hole, a second access point should be provided, if available.
3. The size of the manways shall be considered while selecting PPEs such as SCBA for easy access and egress of the persons wearing them.
4. Persons entering the confined space shall be provided with proper fall restraining system like full body harness with lanyards, retractable fall arrestors and / or life lines where the nature of the confined space warrants the usage.

3.2.14 EMERGENCY PREPAREDNESS

1. All entrants to confined space shall wear full body harness with lifeline it the same is warranted by the nature of confined space. The lifeline shall be under the control of the standby person.
2. Wherever practicable, appropriate lifting equipment, e.g. rescue hoist or winch, safety harness, lifeline, split-leg tripod with a frame-mounted hoist and one-man access cradle should be available for rescue purposes.
3. Executing department shall ensure that the space near the entrance / exit is always clear for free movement in case of emergency.
4. Fire and Safety shall conduct random visit to the confined spaces when people are working inside, check the emergency preparedness of the standby person and plan the rescue procedures.

3.3 ENTRY INTO INERT / LOW OXYGEN ATMOSPHERE

1. In very special cases where entry has to be made into a confined space where the oxygen level is below 19.5% or in an inert / toxic atmosphere (e.g. reactor entry for catalyst replacement), specific and detailed control procedure based on the hazard identification and risk assessment shall be prepared and approved by the HOD / Section Head of Owner, Executing Department and Fire & Safety. The approval from other departments / sections may be included on need basis.

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2. In such cases, entire work shall be carried out under the close supervision of authorized officers of the Owner, executing and Fire & Safety departments.

4 ROLES AND RESPONSIBILITIES

This section outlines only the major roles and responsibilities of various stakeholders related to ROS-018. The roles and responsibilities are detailed in the requirement given in Section of 3.0 of this document. The stakeholders shall comply with these requirements.

4.1 OWNER DEPARTMENT

1. Identify all confined spaces in area of ownership and display the same in control room / operator cabin.
2. Conduct hazard identification and risk assessment and determine control measures for each entry into confined space before issuing entry permit.
3. Prepare the confined space for entry as given in Section 3.2.3.
4. Monitor the temperature of the confined space while opening manways, if available, to detect any abnormal rise in temperature due to pyrophoric fires.
5. Test the atmosphere inside the confined space for presence of flammable / toxic gases and oxygen deficient atmosphere.
6. Conduct safety briefing / tool box talk to the workers before starting confined space entry and record the attendance.
7. Identify the PPE requirement for the confined space entry job as per the hazard identification and risk assessment of the works involving confined space entry.
8. Verify and sign on the confined space entry record.

4.2 EXECUTING DEPARTMENT

1. Ensure that manways of confined spaces are opened from top to bottom one at a time.
2. Ensure that only 24V Direct Current flame proof lighting is used in confined space.
3. Ensure an exclusive standby person for all confined space jobs and that he is maintaining an entry / exit log of the entrants.
4. Ensure that the workers are provided with all identified PPE for the job and are conversant with their use.
5. Ensure that entrance / exit of confined space where entry job is carried out is always clear for free movement in case of emergency.

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4.3 FIRE & SAFETY DEPARTMENT

1. Conduct random visit to the confined spaces when people are working inside, check the emergency preparedness of the standby person and plan the rescue procedures.
2. Provide necessary technical advises and suggestions for improving the safety precautions and emergency preparedness for confined space entry and rescue.

5 APPROVAL

This ROS undergoes a review and approval process in line with the process specified in Section 5.0 of ROS-001.

5.1 REVIEW OF ROS

1. HODs of F&S, Manufacturing, OM&S, P&U, Maintenance and E&C, Functional Heads of Operations and Projects are the reviewing authorities of this ROS.
2. Reviewing authorities shall ensure that requirements of ROS are relevant with respect to context of the business and are in line with current environment.
3. Reviewing authority shall sign on the Document Release Note of this ROS.

5.2 APPROVAL OF ROS

Refinery Council (RC) is the approving authority for the approval of this ROS. Head of KR is the signatory on behalf of the RC and shall sign on the Document Release Note of this ROS.

6 MONITORING AND CONTROL

1. Fire & Safety personnel shall conduct periodic visits and verify compliance with this ROS. Any deviation shall be reported in the operations meeting by HOD of Fire and Safety for necessary corrective action.

7 RECORDS

1. Record of entrants with in and out time and duration of stay.
2. Work permits with record of confined space atmospheric monitoring.

8 REFERENCES

1. Factories Act 1948
2. Kerala Factory Rules 1956
3. OISD STD 105: Work Permit System

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4. Confined space code of practice, Safe Work Australia
5. Confined space guideline, Ministry of Labour, Ontario, Canada
6. Confined Spaces: A brief guide to work safely, HSE, UK
7. Confined Space Safety Guidebook, Workplace Safety and Health Council, Singapore

9 APPENDIX

1. Format for record of entry / exit into confined space: ROS-018/A9.1

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9.1 APPENDIX ROS-018/A9.1: FORMAT FOR RECORD OF ENTRY / EXIT INTO CONFINED SPACE

Confined space location / Area / Equipment:				Permit No:	
Sl No	Name of entrant	Pass No	Date	Time	
				In	Out

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Refinery Operating System

ROS-019

Edition: 2015, Revision: 00/2015

SAFETY GUIDELINES FOR EXCAVATION

Kochi Refinery

This ROS outlines safety guidelines to be followed in BPCL Kochi Refinery for excavation / trenching activities to prevent accidents / incidents endangering people and property.

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HOD – Fire & Safety

HOD – E & C

HOD-Maintenance

Functional Head - Operations

Functional Head - Projects

Reviewed in : Refinery Council

RC Meeting Record Note : No…105…… dated…01-08-2015….

Approved By

Head of Kochi Refinery

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AMENDMENT SHEET

All amendments in the ROS shall be documented in the following table. The details of the amendment shall be elaborated in a separate document (Amendment Document) and shall be available with custodian.

Tracking ID	Section No	Amendment		Reason	Amendment Document No
		From	To		
ROS-019/15-01	All			Revised in total	ROS019/AD-01

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PREFACE

Director (Refinery) of erstwhile Cochin Refineries Limited (CRL) appointed a committee in 1994 for devising a procedure of standard operations. The committee formulated a system named Refinery Operating System (ROS). A set of ROS was formulated and released by the committee. Over years, the ROS was evolved to a well-documented Refinery Operating System (ROS), which outlines the Management System Procedure for various business processes in the refinery. There were 90 approved ROS and 12 ROS under formulation before the current edition. Prior to 2015 edition, Project (Technical) department, which was earlier known as Corporate Planning, before organizational re-structuring in 2006, was the custodian of the ROS.

In 2014, General Manager (Operations) constituted a task force for a thorough revision of ROS in terms of the purpose, relevance, scope and work flow in the current business context vide office note KDD/03/09 dated 28-02-2014.

The task force reviewed entire ROS and concluded that entire structure and contents required a major revision. In order to incorporate standardization, the task force decided to formulate the first ROS, which outlines procedure for formulating a ROS. Hence the first ROS in the series was revised in full incorporating document structure, numbering philosophy and new approval procedure.

Excavation is one of the dangerous construction activities. Various types of excavations are necessitated within the refinery facilities related to maintenance, additions as well as major projects. The excavations vary from minor road cuttings to major site grading jobs such as major projects like IREP.

The earlier version of ROS 63 (Rev 2) was guidelines for excavations. On review the task force reviewed the entire ROS and renamed as ROS-019 as Guidelines for Safety Guidelines for Excavation.

Hence the ROS-019 is revised with wider understanding and explicit guidelines for preventing accidents / incident related with the excavation activity thereby preventing damage to personnel, structures and equipments. The 13 point checklist of the earlier version of ROS 63 is retained in this edition.

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Task Force for ROS Edition-2015

The Task Force was constituted by Mr. Soman C. K., General Manager (Operations) in 2014 for revision of the existing Refinery Operating System.

Task Force

Sl. No.	Name	Designation
1.	Muralidharan V.	Manager (E & C)
2.	Naizu A. V.	Manager (F & S)
3.	Roopesh M.	Manager (Inspection)
4.	Saji Babu	Manager (Manufacturing)

In addition to the above, several experts from various departments contributed in the preparation, review and finalisation of this document.

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1 INTRODUCTION

Work associated with excavation is one of the most hazardous construction activities. Accidents are caused mainly by land slide of the side walls of the excavation, toppling of machinery into the trench or people getting struck by the bucket of the excavator and hazards associated with underground power / instrument / communication cables.

To ensure safety of persons involved and to prevent accidents in the excavation works, they have to be properly planned, managed, supervised and executed. The persons involved in all stages should be aware of the hazards involved and procedures should be in place to control risks associated with works involving excavation.

1.1 PURPOSE

The purpose of this Refinery Operating System (ROS) is to provide guidelines for carrying out excavation works in BPCL Kochi Refinery so as to safe guard the persons carrying out them, to avoid process interruption and to ensure structural integrity of the nearby facilities.

1.2 SCOPE

This ROS details guidelines with regard to hazard identification, risk assessment and precautions to be taken with respect to the hazards identified such as underground services, excavation collapse, falling of people, materials and vehicle into the excavations, accumulation of water and gases etc. The scope also includes the guideline to ensure integrity of structures close to excavations.

1.3 COVERAGE

ROS is applicable to the following facilities under KR and facilities under its administrative control such as

1. Kochi Refinery
2. Pipeline corridor
3. STF
4. SWSS Aluva

1.4 LIMITATIONS

This ROS covers excavations in land only. The procedures / practices described in the ROS are not intended to supplant other practices / procedure that have proven satisfactory, nor is the ROS intended to discourage innovation and originality in the best practices in the refinery.

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Users of the ROS are reminded that no ROS is a substitute for the judgment of a responsible, qualified person.

1.5 EXCLUSIONS

The following works are excluded from the scope of this ROS

1. Underwater excavations are not covered
2. Manual / mechanical piling activities
3. Tunnelling
4. Horizontal Directional Drilling

1.6 DEVIATIONS

The procedures / practices described in the ROS are intended for standardization of the processes involved and hence the same shall be strictly adhered to. However, deviation, if any, arises due to unavoidable circumstance(s), shall be approved by Head of Kochi Refinery. The deviation note in the prescribed format specified in ROS-001 Appendix 'ROS-001/A9.4: Format for Approval of Deviation in ROS' shall be initiated by the HOD of the department proposing the deviation through the Functional Head.

2 DEFINITIONS & ABBREVIATIONS

This section lists all definitions and abbreviations used for the purpose of this ROS.

2.1 DEFINTIONS

Adjacent Structures Stability	:	This refers to the stability of the foundation(s) of adjacent structures whose location may create surcharges, changes in soil conditions or other disruptions that have the potential to extend into the failure zone of the excavation or trench.
Angle of repose	:	It is the steepest angle of descent or dip relative to the horizontal plane to which a material can be piled without slumping
Battering	:	Battering means forming face or side or wall of an excavation to an angle, usually less than the natural angle of repose to prevent earth slippage.
Corporation	:	Bharat Petroleum Corporation Limited.

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Excavation	:	An excavation is any man-made cut, cavity, trench, or depression in an earth surface that is formed by earth removal.
Functional Head	:	Head of Functional Area such as General Manager, Deputy General Manager (In charge).
Functional Area	:	Operations, Technical, Finance, Human Resources, Projects etc.
KR & ME	:	BPCL Kochi Refinery Intralink
May	:	Optional
Refinery	:	Kochi Refinery premises and its connected facilities.
Shall	:	Mandatory
Shoring	:	Shoring is an assembly of structural members designed to prevent earth or material from falling, sliding or rolling into an excavation.
Should	:	Recommended
Trench	:	Trench means an excavation that is deeper than its width measured at the bottom. In general, the depth of a trench is greater than its width, and the width (measured at the bottom) is not greater than 15 ft (4.6 m). If a form or other structure installed or constructed in an excavation reduces the distance between the form and the side of the excavation to 15 ft (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.
Zone of influence	:	Zone of influence means the volume of soil around the excavation affected by any external load (for example vehicles, plant, excavated material).

2.2 ABBREVIATIONS

BPCL	:	Bharat Petroleum Corporation Limited
COT	:	Cochin Oil Terminal
GOVT	:	Government
HOD	:	Head of the Department

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KR	:	Kochi Refinery
MHSSEC	:	Management Health Safety Security Environment Committee
RC	:	Refinery Council
ROS	:	Refinery Operating System
SBU	:	Strategic Business Unit
SPM	:	Single Point Mooring
STB	:	South Tanker Berth
STF	:	Shore Tank Farm
SWSS	:	Standalone Water Supply Scheme

3 REQUIREMENTS

Hazards in excavation, their identification and risk assessment and management of risks are covered in this section. Requirements for carrying out these steps to be followed in works involving the excavation are specified.

3.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT

1. A hazard identification and risk assessment shall be carried out in relation to activities undertaken by persons at a place of excavation work and that a safe system of work be prepared and implemented to protect employees and persons engaged or affected by the activities taking place at that place of work.

2. The common hazards associated with excavation works are

   a. contact with underground services like electric cable, pipelines etc.

   b. contact with overhead pipelines and power transmission lines

   c. collapse of the excavation's sides (cave-in) and land slides

   d. materials falling onto people working in the excavation

   e. people and vehicles falling into the excavation

   f. struck by machinery

   g. collapse of nearby structures

   h. ingress / egress to / from the excavation

   i. presence of fumes gases etc. and lack of oxygen.

   j. ground water, flooding

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k. accidents to public

3. The job shall be planned considering the hazards identified and the risk posed by the activities. The job shall be carried out only using valid work permits (Earth work permit, cold / hot work permit as the case may be) issued as per ROS-016.

3.2 UNDERGROUND SERVICES AND OVERHEAD POWER LINE

If the presence of underground services like cables, sewers, hydrocarbon pipelines etc. or overhead lines cannot be identified or diverted, then the following steps should be taken to avoid contact.

1. Look around for obvious signs of underground services, e.g. valve covers, patching of the road surface, cable markers etc.
2. Use locators, if available, to trace for any services and mark the ground accordingly.
3. Mechanical excavations, using earth movers, shall be started only after excavating up to 1.2m by manual methods. If the area to be excavated is free of any underground lines or cables, excavation using mechanical devices can be started directly.
4. Manual excavations shall be carried out using equipment having wooden / non conductive handles.
5. Pointed tools shall not be used to probe for underground gas and electrical services.
6. If possible, blunt shovels should be used to expose the facility. Adequate caution should be taken especially, if new and sharp spade shovels are used.
7. Trees, utility poles, rocks, or similar objects near the edge of an excavation must be removed or secured to prevent workers getting injured.
8. Survey the area for overhead obstructions such as power transmission lines, pipeline, structures etc.

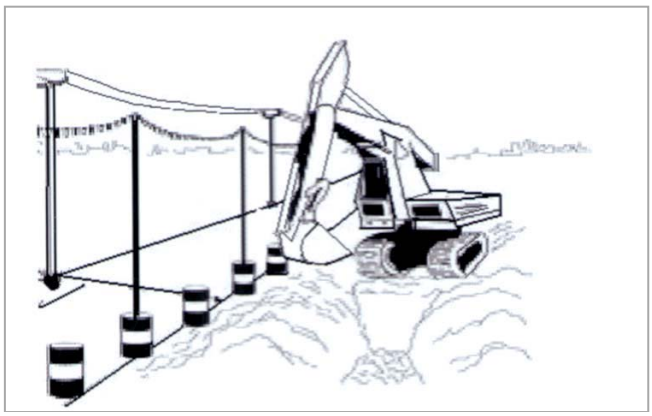


Figure 1: Bunting to Protect Equipment from Coming into Contact with Overhead Electricity Line

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9. Works that are in close proximity to overhead lines should be conducted as per advice of Electrical Safety Officer. Goal posts and bunting if required should be erected (*Figure 1*).

10. No electric power driven pumps or machinery shall be kept inside the excavation whenever not in use.

3.3 EXCAVATION COLLAPSE

1. Excavation deeper than 1.2m shall be protected from dislodgement of the sides of the excavation. This protection could be in the form of shoring and strutting (support for the excavation), battering (sloping excavation) or other suitable means. Notwithstanding this, all excavations and the area in the vicinity of an excavation must be safe (when people have access to them) and without risk to health as far as reasonably practicable.

2. All or a combination of the following steps shall be taken to prevent a person becoming engulfed or injured in an excavation due to its collapse.

   a. Battering: Battering is where the wall of an excavation is sloped back to a predetermined angle to ensure stability (*Figure 2*). Battering prevents ground collapse by cutting the excavated face back to a safe slope.

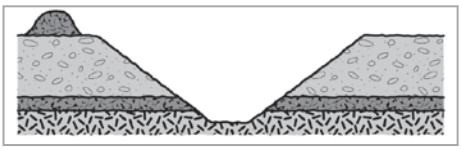


Figure 2: Battering

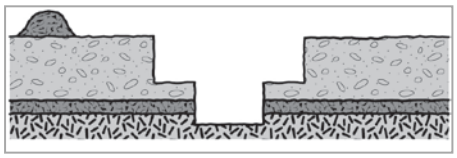


Figure 3: Benching

   b. A safe angle of repose shall be maintained for excavation exceeding 1.5 m depth up to 3.0m. Based on soil conditions, a slope of 45^0 (45 degree) should be provided.

   c. Benching: Except hard rock area, suitable bench of 0.5 m width at every 1.5 m depth of excavation in all soils shall be provided (*Figure 3*).

   d. Shoring and Strutting: Alternatively, proper shoring and strutting, which match the depth of excavation shall be ensured to prevent cave-in. (*Figure 4)*.

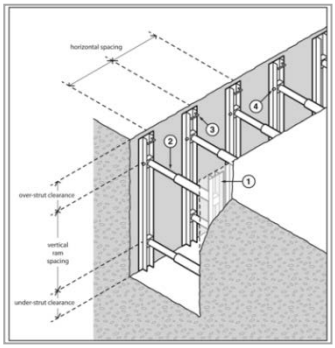


Figure 4: Shoring and strutting

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3. No vehicle or machinery shall be allowed near an edge of an excavation, which is likely to cause collapse.

4. Excavated earth should be placed at least 1m away from the edge of the trench or to a distance equal to the depth of trench whichever is greater.

5. A ladder shall be provided for easy ingress to / from egress for excavations more than 1.2m deep. The ladder shall extend minimum 1m above ground level.

6. Water accumulation in the trench shall be pumped / bailed out. Necessary precautions should be taken to prevent entry of surface water in trenches.

3.4 MATERIALS FALLING INTO EXCAVATIONS

1. Spoil or other materials shall not be stored close to the sides of excavations. The spoil may fall into the excavation and the extra loading will make the sides more prone to collapse.

2. The edges of the excavation shall be protected against falling materials. Provide toe boards where necessary.

3. Hard hat shall be worn when working in excavations.

4. In rock cut excavations where the rock is friable, netting should be used.

3.5 PEOPLE AND VEHICLES FALLING INTO EXCAVATIONS

1. Adequate steps shall be taken to prevent people falling into excavations. Provide substantial barriers, for example guard rails and toe boards. Barricade of 1m height shall be provided for excavations beyond 1.2m depth. Provide two entries / exists for such excavation.

2. Mechanical plant, vehicles, storage of materials (including excavated material) or any other heavy loads should not be located in the 'zone of influence' of an excavation.

3. In case of excavation provided with shoring and strutting, the mechanical plant, vehicles, storage of materials etc. shall be kept away from the edge of excavations as shown in *Figure 5*.

4. In all other cases vehicles shall not be allowed to operate too close to excavated area. At least 2m distance from edge of excavation shall be maintained while operating the vehicles.

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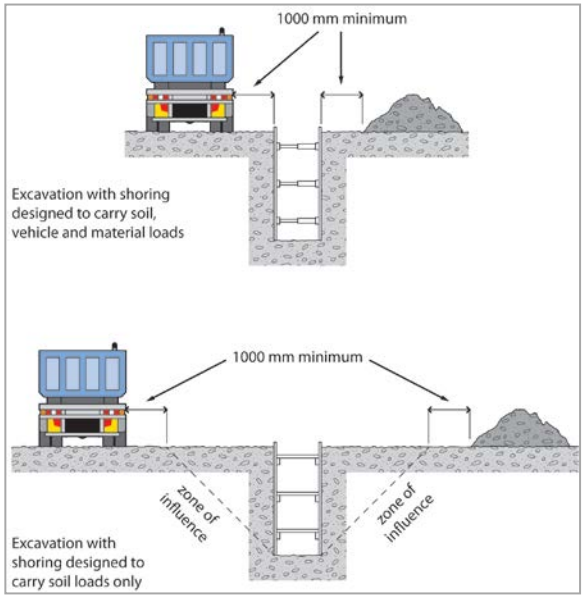


Figure 5: Excavated material and loads near excavations

Top: an excavation with shoring that has been designed to carry vehicle and material loads.

Bottom: an excavation with shoring that has been designed only to carry the load of the excavated faces and the related zone of influence.

5. If vehicles have to tip materials into excavations, use stop blocks to prevent them from over-running (*Figure 6)*. The sides of the excavation shall be provided extra support to prevent collapse.

6. Powered mobile plant / excavators shall not operate near the edge of an excavation unless the ground support system is installed. Physical barriers, such as wheel stoppers, shall be considered for restricting movement near an excavation.

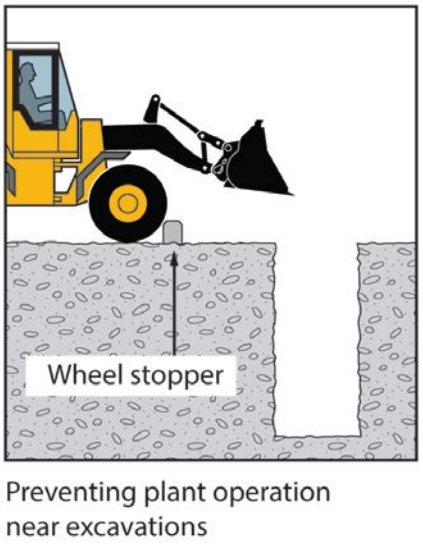


Figure 6: Preventing plant operation near excavations

7. Never have a person in an excavation while machinery is working over it. The extra surcharge from the weight of the machine may induce a collapse.

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3.6 PEOPLE STRUCK BY MACHINERY

1. Workers should be away from moving machinery such as excavators. The workers should work outside the reach of the excavator bucket. Safe systems of work shall be used to prevent people getting struck if this is not possible.
2. The machinery operators shall be competent and possess necessary license to operate the type of equipment.
3. Attachments for excavators fitted via quick hitch mechanisms must be effectively secured.
4. All moving machinery shall be fitted with reverse horns that operate automatically while reversing.

3.7 STABILITY OF NEARBY STRUCTURES

1. Excavations shall not affect the foundations of nearby structures or footings of scaffolds. Walls may have very shallow foundations that can be undermined by even small trenches.
2. In case the location of the excavation is close to other structures, the engineer in charge of the work involving excavation shall consult the Section Head of Civil section of E&C Department and obtain foundation details of nearby structures and measures to be adopted for ensuring their stability before starting digging.

3.8 ACCUMULATION OF GASES AND VAPOURS

1. Internal Combustion engine driven equipment such as generators or compressors shall not be placed in or near the edge of an excavation unless the exhaust gases can be ducted away to a safe area or the area can be adequately ventilated.
2. The activity inside an excavated area shall not introduce toxic, flammable or other asphyxiant gases within, which can endanger workers.
3. Gas cylinders shall not be kept inside the excavation unattended, to avoid accidental leakage and possible gas accumulation.
4. Oxygen / flammable / toxic gas presence shall always be checked before starting jobs inside the excavation.

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4 ROLES AND RESPONSIBILITIES

This section outlines only the major roles and responsibilities of various stakeholders related to ROS-019. The roles and responsibilities are detailed in the requirement given in Section of 3.0 of this document. The stakeholders shall comply with these requirements.

4.1 ENGINEER IN CHARGE

1. Before carrying out excavation, the engineer in charge of the job shall prepare a check list in the format given as Appendix ROS-19/A9.1. The filled in checklist shall form a part of the hot / cold work permit taken for the job.
2. Excavation permit shall be obtained as per the Work Permit System ROS-016.
3. Site of excavation shall be thoroughly inspected by the Engineer in Charge as per the below given schedule:
    a. Daily, prior to starting of work
    b. After every blasting operation
    c. After an unexpected fall of ground
    d. After substantial damage to supports
    e. After rain.

5 APPROVAL

This ROS undergoes a review and approval process in line with the process specified in Section 5.0 of ROS-001.

5.1 REVIEW OF ROS

1. HODs of F&S, E&C and Maintenance and Functional Heads of Operations and Projects are reviewing authorities of this ROS.
2. The reviewing authorities shall ensure that requirements of ROS are relevant with respect to context of the business and are in line with current environment.
3. Reviewing authority shall sign on the Document Release Note of this ROS.

5.2 APPROVAL OF ROS

Refinery Council (RC) is the approving authority for the approval of this ROS. Head of KR is the signatory on behalf of the RC and shall sign on the Document Release Note of this ROS.

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6 MONITORING AND CONTROL

Fire & Safety department shall conduct random site inspections and verify records thereof as per this ROS and ensure the compliance. Any discrepancy noticed shall be reported along with corrective action.

7 RECORDS

1. Duly filled excavation checklist.
2. Excavation permit obtained from the department.

8 REFERENCES

1. Excavation work: Code of Practice, Safe work Australia
2. OHSA technical manual
3. OISD105- Work Permit System
4. Previous revision of ROS63 Safety guidelines for excavation in refinery premises

9 APPENDIX

1. Appendix ROS-019/A9.1- Checklist for Excavation

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9.1 APPENDIX ROS-19/A9.1: CHECKLIST FOR EXCAVATION

Name of the Job:..... Area / Location:.....

Sl. No.	Check Point	Checked (√)		If No, what other remedial steps taken?	Remarks
		Yes	No		
1	Is the ground stable for excavation?				
2	Are the adjoining buildings, structures or roadways unaffected by the excavation?				
3	Have gas, water, electrical and other public utilities shut off or disconnected?				
4	Is the area to be evacuated free of underground pipes, cables, conductors etc.				
5	Is it possible to maintain a safe repose angle of 45^0 for the excavation?				
6	Is it possible to provide suitable bench of 0.5 m wide at every 1.5 m depth of excavation?				
7	If the above points 5 & 6 cannot be met, has proper shoring and strutting to prevent cave-in or slides be provided?				
8	Has exit route in case of emergency decided and marked at site? Does facilities like ladder etc., has been kept ready to enable workers to come out quickly?				
9	Has steps taken to place the excavated earth at least one meter away from the trench?				
10	Has steps taken to prevent vehicular movement or locating the plant or equipment close to 1.5m from the edge of the trench?				
11	Has necessary precautions taken to comply with the conditions in work permit				

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	system in KR regarding underground utility lines taken?				
12	Has steps taken to prevent entry of surface water into the trenches? Does the site has facilities for pumping out water, if any accumulating in the trench?				
13	Has steps taken to prevent superimposed load like new construction coming near the excavation site within a distance equal to depth of excavation?				

Signature	Name	Designation	Department
---	---	---	---

.....End of Document.....

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Refinery Operating System

ROS-020

Edition: 2015, Revision: 00/2015

SAFETY GUIDELINES FOR SCAFFOLD

Bharat Petroleum

Kochi Refinery

This ROS outlines safety guidelines for erection, use and dismantling various types of temporary working platforms such as scaffolds in BPCL Koch Refinery.

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DOCUMENT RELEASE NOTE

Document Details

Document Name	:	Safety Guidelines for Scaffold
Document No	:	ROS-020
Edition	:	2015
Revision	:	00/2015
Issue	:	Sept-2015

Reviewed by

HOD - F & S

HOD - Maintenance

HOD - E & C

Functional Head - Operations

Functional Head- Projects

Submitted for Approval

Approved in : **Refinery Council**

RC Meeting Record Note : No.....105..... dated.....01-08-2015.....

Approved By

Head of Kochi Refinery

Digitally controlled document and hence sign is not requird for pdf version of ROS. Signed Mastercopy is available with Custodian

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AMENDMENT SHEET

All amendments in this ROS shall be documented in the following table. The details of the amendment shall be elaborated in a separate document (Amendment Document) and shall be available with custodian.

Tracking ID	Section No	Amendment		Reason	Amendment Document No
		From	To		
ROS-020/15-01	All			Revised in total	ROS020/AD-01

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PREFACE

Director (Refinery) of erstwhile Cochin Refineries Limited (CRL) appointed a committee in 1994 for devising a procedure of standard operations. The committee formulated a system named Refinery Operating System (ROS). A set of ROS was formulated and released by the committee. Over years, the ROS was evolved to a well-documented Refinery Operating System (ROS), which outlines the Management System Procedure for various business processes in the refinery. There were 90 approved ROS and 12 ROS under formulation before the current edition. Prior to 2015 edition, Project (Technical) department, which was earlier known as Corporate Planning, before organizational re-structuring in 2006, was the custodian of the ROS.

In 2014, General Manager (Operations) constituted a task force for a thorough revision of ROS in terms of the purpose, relevance, scope and work flow in the current business context vide office note KDD/03/09 dated 28-02-2014.

The previous version of this ROS was ROS-94 Rev0. The task force revised the previous revision with new structure in line with ROS-001 and renumbered as ROS-020 as per the new ROS index.

The procedures / practices described in the ROS are not intended to supplant other practices / procedure that have proven satisfactory, nor is the ROS intended to discourage innovation and originality in the best practices in the refinery. Users of the ROS are reminded that no ROS is a substitute for the judgment of a responsible, qualified person.

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Task Force for ROS Edition-2015

The Task Force was constituted by Mr. Soman C. K., General Manager (Operations) in 2014 for revision of the existing Refinery Operating System.

Task Force

Sl. No.	Name	Designation
1.	Muralidharan V.	Manager (E & C)
2.	Naizu A. V.	Manager (F & S)
3.	Roopesh M.	Manager (Inspection)
4.	Saji Babu	Manager (Manufacturing)

In addition to the above, several experts from various departments contributed in the preparation, review and finalisation of this document.

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1 INTRODUCTION

Working at height is unavoidable for operations, maintenance and construction in refinery and hence, temporary platforms and scaffolding are provided for the safe working of personnel at height. Scaffold is a temporary safe work platform, either supported from below or suspended from above, on which workers can perform tasks at heights above the ground when work cannot be done at ground level or on a finished floor. Scaffolds, once properly erected, are a control measure to prevent risk of persons and objects falling while working at height.

Working at height remains one of the biggest causes of fatalities and major injuries in the workplace. Common cases include falls from ladders and through fragile surfaces. If there are no precautions in place, a person may fall a distance liable to cause personal injury and hence control measures are inevitable.

1.1. PURPOSE

The purpose of this ROS is to establish the minimum safety guidelines for scaffolds used in BPCL Kochi Refinery.

1.2. SCOPE

The scope of this ROS is to establish procedure for safe erection, use, and dismantling of scaffolds for operations, maintenance, and construction activities by BPCL or by contractors at facilities of KR and project sites.

1.3. COVERAGE

ROS is applicable to the following facilities under KR SBU

1. Kochi Refinery
2. Jetty Facilities like NTB, STB, & COT
3. Pipeline corridor
4. STF and SPM
5. SWSS Aluva

1.1 LIMITATIONS

This ROS shall not be used in conflict with legal and other requirements applicable to KR for erection of scaffold and working at height. However, if the requirements of this ROS are

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more stringent than the requirements of the above, then the requirements of this ROS shall govern.

1.2 EXCLUSIONS

1. Other SBUs of the Corporation.

1.3 DEVIATIONS

The procedures / practices described in the ROS are intended for standardization of the processes involved and hence the same shall be strictly adhered to. However, deviation, if any, arises due to unavoidable circumstance(s), shall be approved by Head of Kochi Refinery. The deviation note in the prescribed format specified in ROS-001 Appendix 'ROS-001/A9.4: Format for Approval of Deviation in ROS' shall be initiated by the HOD of the department proposing the deviation through the Functional Head.

2 DEFINITIONS & ABBREVIATIONS

This section lists all definitions and abbreviations used for the purpose of this ROS.

2.1 DEFINTIONS

Base Plate	:	A plate for distributing the load from an upright.
Bay	:	The space between the centre lines of two adjacent standards along the face of the scaffold.
Brace	:	A tube incorporated diagonally in scaffolding for stability.
Corporation	:	Bharat Petroleum Corporation Limited.
Coupler	:	A fitting by which a grip is applied to the external surfaces of two tubes that thereby holds them together.
Functional Head	:	Head of Functional Area such as General Manager, Deputy General Manager (In charge).
Functional Area	:	Operations, Technical, Finance, Human Resources, Projects etc.
Guardrail	:	A tube connected at the edge of platform and other places to prevent persons falling from platform or place. It is also known as a Handrail.
Lanyard	:	The line used to connect the safety harness to anchorage point.
Ledger	:	A tube spanning horizontally and tying a scaffold longitudinally that may act as a support for putlogs or transoms.

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Lift	:	The height from the ground or floor to the lowest ledger or the vertical distance between any two adjacent ledgers.
May	:	Optional
Putlog	:	A tube or other member spanning from a ledger to the wall of a building that may have a specially formed end (may be detachable) for the purpose of fixing into the brickwork.
Raker	:	An inclined tube having a bearing on the ground or on an adjacent structure or if carrying portion of the projecting scaffolding being connected to a horizontal member of the scaffold at a lower level.
Refinery	:	Kochi Refinery premises and facilities under its administrative control.
Safety harness	:	Personal Protective Equipment consists of waist belt together with shoulder straps and leg straps.
Shall	:	Mandatory
Should	:	Recommended
Standard	:	A tube used as a column or vertical in the construction of a scaffold, and transmitting a load to the ground via a base plate. It is also known as an Upright or Column.
Transom	:	A tube spanning across ledgers to tie a scaffold transversely that may also support a working platform.

2.2 ABBREVIATIONS

BPCL	:	Bharat Petroleum Corporation Limited
COT	:	Cochin Oil Terminal
HOD	:	Head of the Department
KR	:	Kochi Refinery
PPE	:	Personal Protective Equipment
RC	:	Refinery Council
ROS	:	Refinery Operating System
SBU	:	Strategic Business Unit
SCBA	:	Self Contained Breathing Apparatus
STF	:	Shore Tank Farm

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3 REQUIREMENTS

This section of ROS covers hazard identification and risk assessment, types, requirements for materials used, safety requirements in erection and dismantling of scaffolds.

3.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT

Since working at height involves various hazards and care shall be taken to identify the hazards and assess the risk to minimise untoward incidents.

3.1.1 IDENTIFYING THE HAZARD

Some examples of the hazards associated with work involving the erection, use, maintenance, alteration and dismantling of scaffolds include:

a. Scaffolding collapse (before, during and after placement of the scaffold)

b. Overhead electric lines

c. Mobile plant and other workplace traffic

d. Fall from heights

e. Falling objects

3.1.2 ASSESSING THE RISK

Risk assessment shall be carried out to select the most suitable type of scaffold for the work and minimise number of persons working at heights for erecting, use and dismantling scaffolds. The following aspects are to be considered while carrying out the risk assessment.

a. type of scaffold to be used

b. height of the scaffold to be erected

c. scheduling of the scaffolding work

d. layout of the workplace, including proximity to public areas

e. surface on which the scaffold will be erected (ground conditions, the structural integrity of the surface to support the scaffold and its load)

f. number of people intend to work on the scaffold

g. machinery that will be used on the scaffold, plant and equipment near the scaffold

h. skill and competencies required to erect, use, maintain, alter and dismantle the scaffold

i. local weather conditions, particularly wind forces

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j. type of work

3.2 TYPES OF SCAFFOLD

Various types of scaffolds are used based on the job requirements and some of the commonly used ones are described below.

3.2.1 BIRD CAGE SCAFFOLD

A birdcage scaffold is an independent scaffold that consists of more than two rows of standards in both directions and is connected by ledgers and transoms. It is mainly used for working on a single level, such as ceilings.

3.2.2 TOWER SCAFFOLD

A tower scaffold is an independent scaffold consisting of four vertical members connected longitudinally and transversely.

3.2.3 MOBILE SCAFFOLD

A mobile scaffold is a tower scaffold that is mounted on castors as shown in *Figure- 1.*

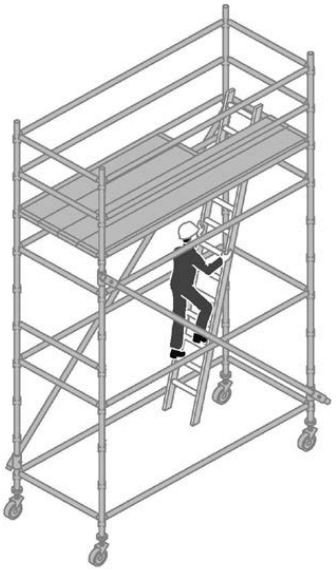


Figure- 1 : Mobile Scaffold

3.2.4 TUBE AND COUPLER SCAFFOLD

Tube and coupler scaffolds are so-named because they are built from tubing connected by coupling devices. They are frequently used where heavy loads need to be carried, or on structures with unusual design, shape and locations because of their strength. The versatility

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of tube and coupler scaffolds enables them to be assembled in multiple directions in a variety of settings.

3.2.5 PRE-FABRICATED FRAME SCAFFOLD

Frame scaffold is a scaffold assembled from prefabricated frames, braces and accessories. Frame scaffolds such as 'A' and 'H' frame trestle scaffolds are commonly used by bricklayers, plasterers and painters, and for general fit-out and finishing work.

3.2.6 HUNG SCAFFOLD

A hung scaffold is an independent scaffold that hangs from another structure, but is not capable of being raised or lowered when in use.

3.2.7 SINGLE POLE SCAFFOLD

A single pole scaffold consists of a single row of standards connected by ledgers. Putlogs are fixed to the ledgers and built into the wall of the building or structure. A single pole scaffold is dependent upon the structure against which it is placed for support. It is important that no components of this type of scaffold are removed until the scaffold is being dismantled.

3.2.8 SUSPENDED (SWING-STAGE) SCAFFOLD

A suspended scaffold incorporates a suspended platform that is capable of being raised or lowered when in use. An example of a suspended scaffold is a swing-stage scaffold.

3.3 GENERAL REQUIREMENTS

1. Scaffold shall be erected in accordance with the guidelines specified in this ROS for persons engaged in work at height that cannot be done safely from the ground so as to prevent fall of person and material from height.

2. Scaffolds shall be provided with safe means of access, such as stairs or ladders. Ladders shall be secured against inadvertent movement.

3. Every scaffold shall be properly designed, constructed, erected and maintained so as to prevent collapse or accidental displacement.

4. Every scaffold and parts thereof shall be

   a. so designed as to prevent hazards for workers during erection and dismantling.

   b. so designed that guardrails and other protective devices, platforms, putlogs, rakers, transoms, ladders, stairs or ramps can be easily put together.

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c. of suitable and sound material and of adequate size and strength for the purpose for which it is to be used.

d. maintained in a proper condition.

5. Scaffolds and their components shall be capable of supporting without failure at least four times maximum intended load.

3.4 MATERIAL OF CONTRUCTION

1. Scaffolds tubes are to be made from heavy class welded or seamless steel tubes of 40mm nominal bore conforming to IS: 1161-1998.

2. Steel tubes for individual component type scaffolding shall be of 6ft., 8ft., 10ft., 12ft., 14ft., 16ft. and 20ft. in length and may be either galvanized or plain. Plain steel tube shall be protected against corrosion by applying two coats of zinc chromate primers or zinc phosphate primer followed by two coats of chlorinated rubber based finish paint. The plain ends of tubes shall be chamfered off preferably to 3mm.

3. Straight clamps should be used to connect two tubes at 90 degrees. Cross clamps or swivel camps should be used to connect two tubes at an angle.

4. Bolts and Nuts used shall be of mild steel / black bolt confirming to IS: 1362.

5. Scaffold steel boards shall be lightweight, sturdy and rugged construction preferably 300mm wide, 2000 to 2500mm long maximum and free from any defects likely to affect its strength. Steel board gratings shall be designed such a way that no tools shall fall through it.

6. Wooden boards shall not be used to substitute of steel boards.

7. When steel boards are used, use wire rope for tying the boards or alternate safe method may be used.

8. Rope made of plastic, coir etc. shall not be used for erection of scaffolds and for tying scaffold boards.

9. Materials used in the construction of scaffolds should be stored in good condition and in a manner that shall not affect the integrity of the scaffold materials.

10. All tubes, couplers and fittings used for scaffolds shall be free from damage and distortion and shall be maintained in rust free condition.

11. Couplers shall be made of drop forged steel or equivalent material.

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3.5 ERECTION OF SCAFFOLD

1. All unwanted materials shall be removed from the area before erection of scaffold.

2. Ensure the ground is firm where the scaffold is intended to be erected. When scaffold is to be erected in the vicinity of excavation or on low earth, ensure that ***standards*** are not likely to slide or cave in.

3. The ***bay length*** is dependent upon the height and load on the scaffold but shall never exceed 2500mm. All base ***lift*** shall be supported on metallic base plates of adequate size and must be erected straight.

4. Except on the side adjacent to the site of work all ***standards*** shall extend at least 1050mm above the top most working platform to enable handrail / guard rail to be fitted. Guardrail, mid rail and toe rail may be fitted 1050mm, 525mm and 75mm respectively above the platform level across the scaffold structure.

5. The vertical distances between ***ledgers*** shall not be more than 2100mm.

6. The horizontal distance between ***transoms*** and ***putlogs*** carrying 32mm thick boards shall not exceed 1500mm.

7. The gap between front edge of platform and work shall not be more than 350mm.

8. The area within toe guard and handrail shall be fully covered using scaffold boards. There shall not be any gap between the scaffold boards.

9. The end of the scaffold board shall not extend more than 300mm or less than 150mm beyond the transoms.

10. The ledgers shall not extend more than 250mm beyond the standards at the ends. The ledgers up to a height of two metres shall be provided with rubber end covers to prevent injury to people moving in the area.

11. Safety harness shall be used while working at height above 2m and it shall be suitably anchored to limit the fall distance to minimum and also to avoid falling on to the ground.

12. Every scaffold shall be effectively ***braced*** to make it rigid and ***tied*** to make it stable. Scaffolds may be effectively tied to adjacent structure to ensure stability.

13. A safe and convenient means of access shall be provided to the platform level of a scaffold. Portable ladders may be used for this purpose up to a height of 4 m. When

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used, it shall be placed at an angle of approximately 75 degrees from the horizontal. For platforms above 4 m height, fixed ladders shall be provided and tied or hooked with scaffold to take adequate load of people.

14. Wherever provision of a ladder is not feasible, provide additional rungs at a spacing of 450mm at any convenient side of the scaffold.

15. Ensure that no un-insulated overhead electric lines exist within 3m of the working platform.

16. Scaffolds, which are not designed to be independent, should be rigidly connected to a structure or a building at suitable vertical and horizontal distances.

17. A scaffold shall never extend above the highest anchorage to an extent, which might endanger its stability and strength.

18. Sufficient putlogs and transoms shall remain in position and securely fastened to the ledgers, uprights or standards as the case may be, to ensure the stability of the scaffold until it is finally dismantled.

19. All scaffolds and appliances used as supports for working platforms shall be of sound construction, have a firm footing and be adequately braced to maintain their stability.

20. When necessary to prevent danger of falling objects, overhead screens / safety net of adequate strength and dimensions shall be provided for working platforms and stairways of scaffolds.

21. Scaffolding materials shall not be thrown from scaffolds or from heights. Other materials may be thrown (if material is not affected by the action) from scaffolds or heights only when the landing areas has been designated, protected, appropriate notice displayed and is under the supervision of a person on the landing level.

22. Platforms on scaffolds shall be of adequate dimension, especially in width, for the tasks to be performed from the scaffold.

23. Resting platforms shall be provided at every six meter heights for high rise scaffolds.

24. Utmost care is to be taken against fall while erecting a scaffold. Use of full body safety harness with double lanyards is recommended to ensure that at least one is always anchored at all times even when moving up or down.

25. Only trained persons shall be allowed to erect scaffolds with valid work permit.

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26. During erection of scaffold a red coloured "**DO NOT USE SCAFFOLD**" tag as given in Appendix ROS-020/A9.2 shall be displayed on the scaffold for preventing usage of incomplete scaffold.

3.6 PRE-FABRICATED SCAFFOLD

1. Prefabricated frame scaffold should be erected and dismantled by a competent person in a progressive manner to ensure both the installers' safety and the stability of the overall structure.

2. Braces shall be attached to the frames in accordance with the manufacturer's or supplier's instructions. As the height of frames increase, there is a greater need to provide lateral stability to the frames.

3. Prefabricated frame scaffold shall be stable and erected on a suitable foundation to ensure that it can adequately carry and distribute the loads such as materials and workers evenly to each frame.

3.7 SUSPENDED SCAFFOLD

In addition to the requirements for scaffold in general as regards to soundness, stability and protection against the risk of falls, suspended scaffolds shall meet the following specific requirements:

1. Two point suspension scaffold platforms shall be not less than 500mm and no more than 914mm wide overall. The platform shall be securely fastened to the hangers by U-bolts or by equivalent means.

2. The hangers of two point suspension scaffolds shall be made of wrought iron, mild steel, or other equivalent material having a cross-sectional area capable of sustaining four times the maximum intended load.

3. When hoisting machines are used on two-point suspension scaffolds, such machines shall be design tested and approved by a competent person.

4. Wire or fibre rope used for scaffold suspension shall be capable of supporting at least six times the intended load.

5. The safety of workers shall be safeguarded by an extra rope having a point up attachment independent of the anchorage arrangements of the scaffold

6. The anchorage and other elements of support of the scaffold shall be designed and built in such a way as to ensure sufficient strength.

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3.8 INTERNAL SCAFFOLD

1. While erecting scaffold inside heaters, vessels, columns, the Engineer in Charge of the job may grant relaxation in width and height of scaffold to be erected due to space constraint. However fitness of scaffolds shall be ensured and certified. Safety harness shall be used at heights above 2 m and same shall be suitably anchored.

2. Provide platform all around at one meter below the tube clamp level while erecting scaffold inside heaters.

3.9 INSPECTION AND MAINTENANCE OF SCAFFOLD

1. After erection, the Engineer in Charge of the job shall inspect and ensure construction of the scaffold as per the plan.

2. The Engineer in Charge of the job shall inspect the scaffolding as per the checklist given in Appendix ROS-020/A9.1. He /she shall certify the scaffolding fit for use and provide the duly filled green '**READY FOR USE SCAFFOLD**' tag with his / her signature given in Appendix ROS-020/A9.2. The Red coloured '**DO NOT USE SCAFFOLD'** tag shall be removed from the scaffold, which was put during erection of scaffold.

3. No person shall be allowed to work on scaffolds during storms or high winds. After heavy rains or storm the Engineer in Charge of the job shall inspect scaffolds; ensure that the integrity is not lost and certify once again.

4. A scaffold once erected shall not be substantially altered or dismantled without the concurrence of the executing Engineer in Charge.

5. The validity of an approved scaffold is up to 7 days. Thereafter the scaffold shall be revalidated by the Engineer in Charge of the job using the checklist given in Appendix ROS-020/A9.1 and renew the certification by signing on that renewal column in the tag.

6. No scaffold should be partly dismantled and left with '**READY FOR USE SCAFFOLD**' tag. In case the scaffold is to be used for other works (e.g. using the partially dismantled scaffold with lower height), it shall be used only after recertification by the Engineer in Charge.

3.10 SAFETY DURING USAGE OF SCAFFOLD

1. Ensure that scaffolds are used appropriately and only for the purpose for which they are designed or erected.

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2. In transferring heavy loads on or to a scaffold a sudden shock to the scaffold shall be avoided.
3. When necessary to prevent danger, loads being hoisted on or to scaffolds should be controlled by a guide line so that they don't strike against the scaffold.
4. The load on the scaffold should be evenly distributed, as far as practicable, and in any case should be so distributed as to avoid disturbance of the stability of the scaffold.
5. During the use of a scaffold care should constantly be taken that it is not overloaded or otherwise misused.
6. Scaffold should not be used for the storage of material except that required for immediate use.

4 ROLES AND RESPONSIBILITIES

This section outlines only the major roles and responsibilities of various stakeholders related to the ROS-020. The roles and responsibilities are detailed in the requirement given in Section of 3.0 of this document. The stakeholders shall comply with these requirements.

4.1 ENGINEER IN CHARGE

1. Ensure that the contractor erecting the scaffold is putting a red tag on the scaffold giving warning "**DO NOT USE SCAFFOLD**" during erection.
2. Ensure that the scaffold erected is strictly as per the guidelines of ROS-020.
3. Inspect the scaffold after erection as per the checklist given in Appendix ROS-020/A9.1 and certify the scaffold ready for use by replacing the red tag "**DO NOT USE SCAFFOLD**" with the green tag " **READY FOR USE SCAFFOLD**" with signature duly endorsed.
4. Inspect the scaffold after heavy rain or storm and ensure that the integrity of the scaffold is not lost.
5. Revalidate the scaffold in every 7 days using checklist and by signing on the renewal column of the green "**READY FOR USE SCAFFOLD**" tag.

5 APPROVAL

This ROS undergoes a review and approval process in line with the process specified in Section 5.0 of ROS-001.

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5.1 REVIEW OF ROS

1. HODs of F&S, Maintenance and E&C and Functional Heads of Operations and Projects are the reviewing authorities of this ROS.
2. The reviewing authorities shall ensure that requirements of ROS are relevant with respect to context of the business and are in line with current environment.
3. The reviewing authorities shall sign on the Document Release Note of this ROS.

5.2 APPROVAL OF ROS

Refinery Council (RC) is the approving authority for the approval of this ROS. Head of KR is the signatory on behalf of the RC and shall sign on the Document Release Note of this ROS.

6 MONITORING AND CONTROL

1. Fire & Safety department shall conduct periodic visits to the site and verify compliance with this ROS. Any deviation shall be reported in the operations meeting by HOD of fire and safety department for necessary corrective action.
2. The compliance of this ROS shall also be verified during the periodic safety walk of senior executives and non-compliance shall be reflected in the report generated.
3. The compliance shall also be ensured during the internal safety audit.

7 RECORDS

1. Work permit
2. Duly filled Scaffold Tags

8 REFERENCES

1. IS:4014 Part-1: Code of Practice for Steel Tubular Scaffolding - Definitions and Materials.
2. IS:4014 Part-2: Code of Practice for Steel Tubular Scaffolding - Safety Regulations for Scaffolding
3. OISD STD 105: Work Permit System
4. ROS94,Revision prior to Edition 2014

9 APPENDIX

1. Appendix ROS-020/A9.1: Scaffold checklist
2. Appendix ROS-020/A9.2: Scaffold Tags

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3. Appendix ROS-020/A9.3: Scaffold Terminologies and Components

9.1 APPENDIX ROS-015/A9.1: SCAFFOLD CHECKLIST

SCAFFOLD CHECKLIST		
LOCATION (Unit/Equip):	PURPOSE:	ERECTED BY (Contractor):
Item	Check point	Condition
Base Plate	In place	
Sole Plate	On lose ground	
Tubes	Proper size	
	Straight	
Standards (Uprights)	Vertical	
	Staggered joints	
	Right spacing	
	Not damaged	
Ledgers (Runner)	Level	
	Staggered joints	
	Not loose	
	Not damaged	
Bracing Ties	In place	
	None missing	
	Not loose	
Fittings	Right fitting	
	Not damaged	
	Check couplers	
Boards	Not damaged	
	Not loose	
	Right support	
Ladders	Proper angles	
	Right length	
	Properly secured	
	Separate landing	
	Right extension	
Guardrails	Top rail	
	Mid rail	
	None missing	
Toe boards	In place	
General comments		

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9.2 APPENDIX ROS-020/A9.2: SCAFFOLD TAGS





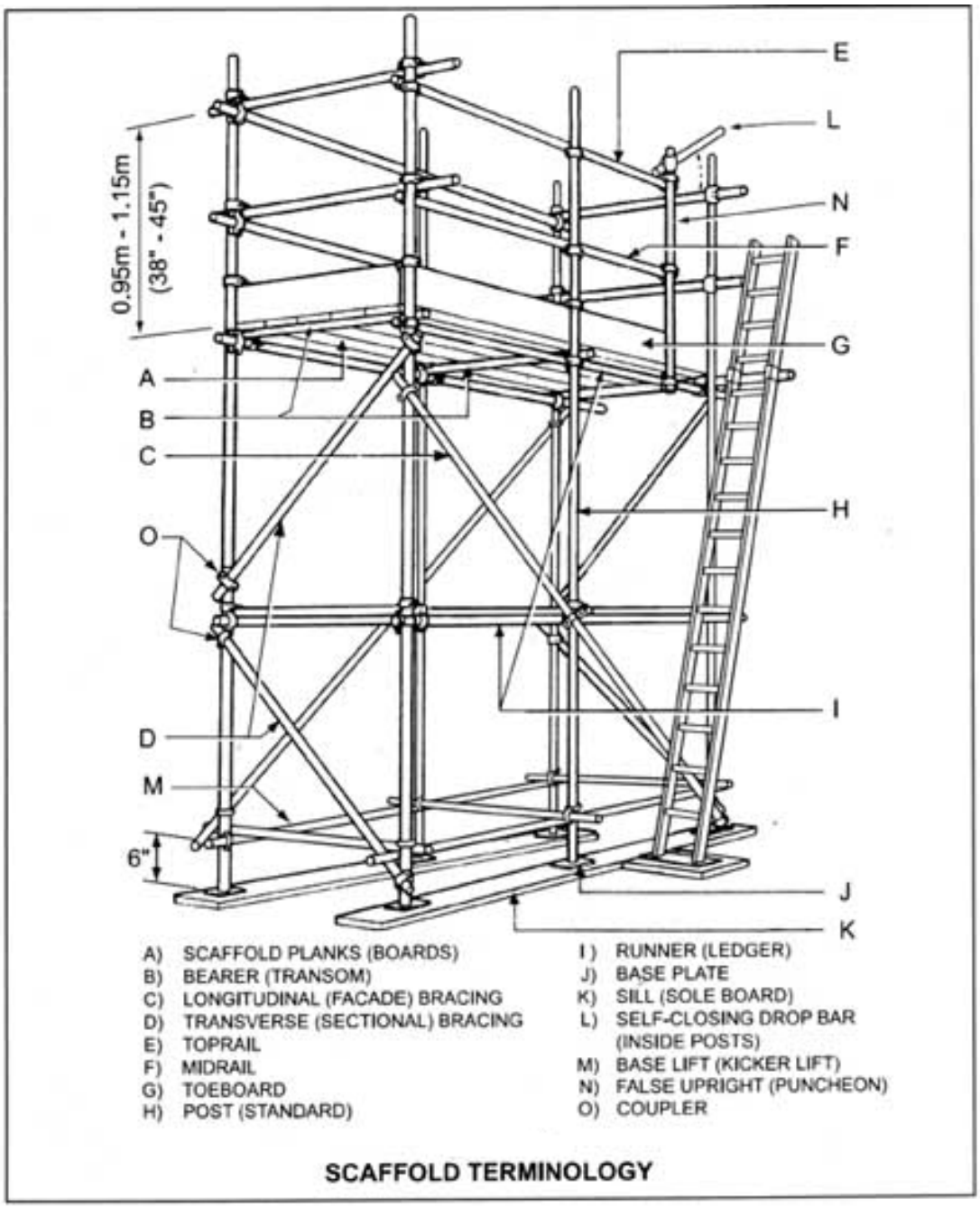




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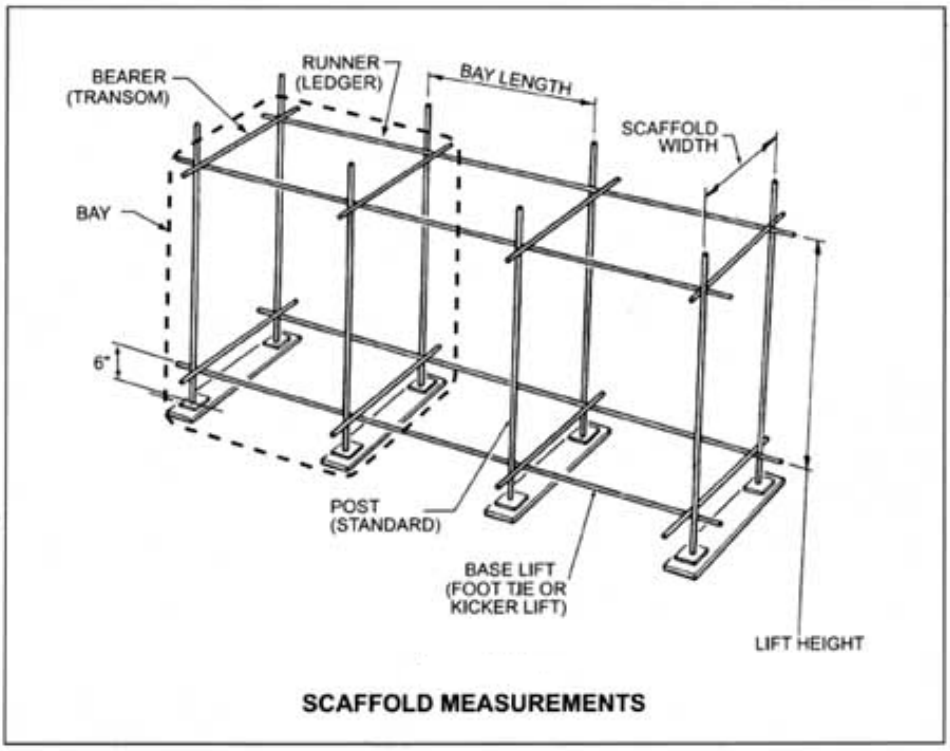
9.3 APPENDIX ROS-020/A9.3: SCAFFOLD TERMINOLOGIES AND COMPONENTS



SCAFFOLD TERMINOLOGY

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SCAFFOLD MEASUREMENTS

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Refinery **O**perating **S**ystem

ROS-023

Edition: 2015, Revision: 00/2015

REGULATIONS FOR HANDLING AND STORAGE OF RADIOGRAPHY DEVICES

Kochi Refinery

This ROS outlines procedure for movement / transportation, handling and storage of industrial radiographic devices in Kochi Refinery and facilities under its administrative control.

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DOCUMENT RELEASE NOTE

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Reviewed by

HOD - F&S | HOD - Maintenance | HOD - E&C

Functional Head - Operations | Functional Head - Projects

Approved in : **Refinery Council**

RC Meeting Record Note : No.....105..... dated 01-08-2015

Approved By

Head of Kochi Refinery

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AMENDMENT SHEET

All amendments in the ROS shall be documented in the following table. The details of the amendment shall be elaborated in a separate document (Amendment Document) and shall be available with custodian and in KR&ME.

Tracking ID	Section No	Amendment		Reason	Amendment Document No
		From	To		
ROS-023/15-01	All			New ROS	Not Applicable

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PREFACE

Director (Refinery) of erstwhile Cochin Refineries Limited (CRL) appointed a committee in 1994 for devising a procedure of standard operations. The committee formulated a system named Refinery Operating System (ROS). A set of ROS was formulated and released by the committee. Over years, the ROS was evolved to a well-documented Refinery Operating System (ROS), which outlines the Management System Procedure for various business processes in the refinery. There were 90 approved ROS and 12 ROS under formulation before the current edition. Prior to 2015 edition, Project (Technical) department, which was earlier known as Corporate Planning before organisation re-structuring in 2006, was the custodian of the ROS.

In 2014, General Manager (Operations) constituted a task force for a thorough revision of ROS in terms of the purpose, relevance, scope and work flow in the current business context vide office note KDD/03/09 dated 28-02-2014.

In this process, new ROS requirements were also identified. ROS on Regulations for Handling and Storage of Radiography Devices is a new ROS identified.

Open field industrial radiography is conducted for assessing the soundness of weld joints as well as for developing thickness profile mainly for small bore piping (profile radiography). It is a regular non-destructive examination (NDE) carried out in our refinery. Radiography is carried out using radiographic devices brought in by radiographic agencies approved by Atomic Energy Regulatory Board (AERB). The storage, handling and movement of radiographic sources are controlled by AERB in our country. However, existing measures followed in KR are to be made more effective for controlling the usage of radiographic equipment handling sources and associated activities like movement / transportation, handling and storage of them.

Health hazard due to radiation exposure, concerns regarding the strength of the source, cordon off distance, storage location etc. were highlighted in various forums. To address these concerns and to establish effective control of movement / transportation, handling and storage of radiographic devices, it was decided to formulate a ROS as ROS-023. This ROS (ROS-023) also ensures that the relevant statutory requirements with regard to entry, storage and movement of radiographic devices within our refinery are complied with.

The procedures / practices described in the ROS are not intended to supplant other practices / procedure that have proven satisfactory, nor is the ROS intended to discourage innovation and originality in the best practices in the refinery. Users of the ROS are reminded that no ROS is a substitute for the judgment of a responsible, qualified person.

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Task Force for ROS Edition-2015

The Task Force was constituted by Mr. Soman C. K., General Manager (Operations) in 2014 for revision of the existing Refinery Operating System.

Task Force

Sl. No.	Name	Designation
1.	Muralidharan V.	Manager (E & C)
2.	Naizu A. V.	Manager (F & S)
3.	Roopesh M.	Manager (Inspection)
4.	Saji Babu	Manager (Manufacturing)

In addition to the above, several experts from various departments contributed in the preparation, review and finalisation of this document.

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1 INTRODUCTION

Ensuring mechanical integrity of equipment is of utmost important to avoid any untoward incidents resulting in release of flammable and toxic substance to environment as well as fluid at high pressure and / or temperature. Open field industrial radiography is a common means of non-destructive examination (NDE) used to asses for flaw in weld joint / material to ensure the mechanical integrity of equipment and pipelines. In Kochi Refinery radiographic jobs are carried out by AERB approved agencies. Severe, acute or prolonged exposure to ionising radiation can have serious health hazard and it is important to monitor and control the entry, movement, transportation, handling and storage of radiography devices in Kochi Refinery and facilities under its administrative control.

Any type of work involving ionizing radiation shall be carried out in a manner that the radiation exposure to the individuals (radiation workers, refinery employees and contract workers) is As Low As Reasonably Achievable (ALARA) without exceeding the limits stipulated by Atomic Energy Regulatory Board (AERB). This ROS is made to comply with the requirements of Atomic Energy Regulatory Board (AERB) and Atomic Energy (Radiation Protection) Rules, 2004.

1.1 PURPOSE

The purpose of the ROS-023 is to establish a procedure for better control in movement, transportation, handling and storage of the radiography devices containing radioactive devices in KR to promote standardised process for safe radiography complying statutory regulations.

1.2 SCOPE

The scope of this ROS includes all open field industrial radiography jobs including X-ray radiography carried out in KR as part of new, repair / replacement or testing jobs.

1.3 COVERAGE

This ROS is applicable to Kochi Refinery and its connected facilities under its administrative control as listed below

1. Kochi Refinery
2. Jetty Facilities like NTB, STB, & COT (when job is directly executed by KR)
3. Pipeline corridor

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4. STF and SPM
5. SWSS Aluva
6. Pre-treatment plant (Chullichira Quarry)

1.4 LIMITATIONS

Requirements of ROS-023 shall not be used in conflict with any requirement of Legal, Statutory or Jurisdiction norms or codes / standards. However, if the requirements of this ROS are more stringent than the requirements of the above, then the requirements of this ROS shall govern.

1.5 EXCLUSIONS

This ROS does not cover the requirements related to Nucleonic Gauges. The requirements regarding Nucleonic Gauges are covered in ROS-024.

Radiography devices used for interpretation or review, digital image processing are excluded.

1.6 DEVIATIONS

The procedures / practices described in the ROS are intended for standardization of the processes involved in bringing movement, storage and handling of radioactive isotopes for industrial radiography and hence the same shall be strictly adhered to. However, deviation, if any, arise due to unavoidable circumstance(s), shall be approved by Head of Kochi Refinery. The deviation note in the prescribed format specified in ROS-001 Appendix 'ROS-001/A9.4: Format for Approval of Deviation in ROS' shall be initiated by the HOD of the department proposing the deviation through the Functional Head.

2 DEFINITIONS & ABBREVIATIONS

This section lists all definitions and abbreviations used for the purpose of this ROS.

2.1 DEFINTIONS

Becquerel : Becquerel (Bq) is the unit of radioactivity. Activity (A) of a radioactive nuclide in a particular energy state at a given time is the quotient of dN/dt, where dN is the expectation value of the number of spontaneous nuclear transitions from that energy state in the time interval of dt. $1Bq = 1s^{-1}$. Old unit of activity is curie (Ci)

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and is defined as 1 Ci = 3.7 × 10^{10} s^{-1}. One curie is roughly the activity of 1 gram of the radium isotope ^{226}Ra.

Corporation	:	Bharat Petroleum Corporation Limited.
Functional Area	:	Operations, Technical, Finance, Human Resources, Projects etc.
Functional Head	:	Head of Functional Area such as General Manager, Deputy General Manager (In charge).
Gray (Gy)	:	The gray (symbol: Gy) is a derived unit of ionizing radiation dose in the International System of Units (SI). It is defined as the absorption of one joule of radiation energy by one kilogram of matter.
KR & ME	:	BPCL Kochi Refinery Intralink
May	:	Optional
Refinery	:	Kochi Refinery premises and its connected facilities.
Shall	:	Mandatory
Should	:	Recommended
Sievert (Sv)	:	Sievert is a derived unit of ionizing radiation dose in the International System of Units (SI). It is a measure of the health effect of low levels of ionizing radiation on the human body. One sievert equals 100rem. The rem is an older (CGS), a non-SI unit of measurement.

2.2 ABBREVIATIONS

ALARA	:	As Low As Reasonably Achievable
AERB	:	Atomic Energy Regulatory Board
BARC	:	Bhabha Atomic Research Centre
BPCL	:	Bharat Petroleum Corporation Limited
BRIT	:	Board of Radiation and Isotope Technology
COT	:	Cochin Oil Terminal
HOD	:	Head of the Department
KR	:	Kochi Refinery

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NDE	:	Non Destructive Examination
MHSSEC	:	Management Health Safety Security Environment Committee
MRM	:	Management Review Meeting
RC	:	Refinery Council
Rem	:	Roentgen equivalent man
ROS	:	Refinery Operating System
ROSC	:	ROS Committee
RSO	:	Radiological Safety Officer
SBU	:	Strategic Business Unit
STF	:	Shore Tank Farm

3 REQUIREMENTS

Various ionisation radiation sources are used for field industrial radiography. The choice of a particular radiation source is decided on the basis of the material, thickness of the object to be radio-graphed etc. The sources used for the industrial radiography jobs are

1. Gamma emitting radio nuclides such as Iridium-192 (^{192}Ir), Cobalt-60 (^{60}Co), Casesium-137 (^{137}Cs), Selenium-75 (^{75}Se)
2. X-ray

In KR, gamma emitting radio nuclides are generally used for the radiography.

Source Pellets and Source Pencils

The isotopic sources used for gamma radiography are generally in metallic form. The normal sources used for radiography are Cobalt-60 (^{60}Co), Selenium-75 (^{75}Se) and Iridium-192 (^{192}Ir). These sources are sealed in stainless steel capsules to avoid any damage to the source during handling.

The minimum requirements to be followed as part of carrying out any radiography jobs (using ionisation radiation) are specified in the following sub-sections.

3.1 GENERAL SAFETY PRECAUTIONS

1. All radiography jobs shall be duly authorised by F&S Department.

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2. Radiography shall be performed only by AERB approved agencies and all radiographers (excluding workers assisting the job) shall be AERB certified personnel. The radiography personnel shall be either ISNT / ASNT level I or II certified.
3. Radiography shall be performed with valid work permit as per ROS-016 'Work Permit System'.
4. All radiographers shall wear film badges / dosimeter during the radiography jobs.
5. Area around radiography job shall be cordoned off. Calculations and documents certified by Radiological Safety Officer (RSO) of the radiography agency shall be submitted for the cordon off distance. Fire & Safety department shall review and verify the cordon off distance certified by the RSO of the radiography agency.
6. Radiation level along the cordon shall be monitored and shall be within 0.25mR/hr for radiography within refinery premises.
7. Radiation warning symbols and red lights shall be exhibited along the cordon.
8. Entry into the cordoned area shall be restricted to Radiographers only.
9. The concerned radiographer / a coordinator from the contractor side is available at the site very near the cordoned area throughout the exposure for proper coordination.
10. Wherever practicable, field radiography work shall be limited to collimated exposures.
11. Remote control devices shall be used while using higher strength sources or while working at elevated areas / where accessibility is restricted.
12. All radiography jobs shall be planned in advance to reduce the exposure duration and should be carried out when the occupancy site is minimum such as night, holidays, and work intervals.
13. After each exposure, source shall be securely kept in the camera.
14. A minimum of one radiation survey meter shall be available at the radiography site.

3.2 GENERAL REQUIREMENTS FOR RADIOGRAPHY EQUIPMENT

3.2.1 GAMMA RADIOGRAPHY EQUIPMENT

Each model of radiography camera is designed to house a particular source of specified maximum strength. Gamma ray sources of appropriate strength are used in radiography cameras. Depending upon the nature and strength of the source used and the type of radiography work, radiography equipment either of the stationary type or of the mobile type

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can be used. The following shall be ensured while carrying out the radiography jobs *(Ref: AERB Guide No. SG/ IN-2 Radiological Safety in Open Field Industrial Radiography).*

1. Higher strengths source {i.e. more than 20 Curie of Iridium-192 (^{192}Ir) and 5 Curie of Cobalt-60 (^{60}Co) shall be used only in radiographic cameras provided with remote handling mechanisms for minimizing radiation exposure to the operator.
2. The leakage radiation levels in the 'OFF' position of industrial gamma radiography equipment shall be limited to the values stipulated by the competent authority (AERB).

3.2.2 X-RAY RADIOGRAPHY EQUIPMENT

X-ray equipment used in Industrial Radiography must be provided with adequate built-in safety features so as to minimise radiation hazards to its users and to the public. X-ray tubes are provided with lead lined housing so as to reduce the leakage radiation below the levels specified by the competent authority.

3.3 SELECTION OF RADIOGRAPHY SITE

Radiography jobs, to the extent possible, shall be carried out at site or areas where occupancy is minimum. The following shall be ensured.

1. Radiography jobs should be carried out at fabrication yard to the extent possible to minimise the radiography jobs in the process plant or facilities.
2. Radiography should be carried out preferably during night, holidays, intervals, etc.
3. Radiography site shall be kept sufficiently away from nucleonic devices installed in process plants such as Continuous Catalyst Regeneration Reforming Unit. If any situation warrants for radiography close to or within such process plants, adequate measures such as additional shielding of the nucleonic gauges shall be taken to avoid erratic behaviour of the nucleonic devices that may lead to plant upsets.

3.4 BRINGING RADIOGRAPHY EQUIPMENT

1. Engineer in Charge of job shall furnish the detailed radiography plan in the prescribed format (Appendix ROS-023/A9.1: 'Request for carrying out radiography') to the Fire & Safety department for allowing the radiography contractor to bring radiography devices.
2. The following documents certified by Radiological Safety Officer (RSO) of the radiography agency shall be submitted along with the request for carrying out radiography

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a. Decay chart for the source prepared based on the decay factor of the source.

b. Detailed calculation of the cordon off distance considering the source strength, occupancy factor, location, radiography plan etc.

3. Copy of the packaging note of the camera from BRIT (Board of Radiation and Isotope Technology), permission from AERB for the movement of radiography devices to BPCL Kochi Refinery, details of the radiographers intended to be employed, etc. shall also be enclosed along with the above format.

4. The Fire and Safety department shall review the documents submitted and give a written authorisation for bringing in the radiography equipment inside the refinery for specified duration. (Appendix - ROS-023/A9.2). This authorisation shall be made in triplicate. The original and duplicate are issued to intender.

5. Security Section shall permit entry of radiography devices only on production of the above written authorisation (Original & Duplicate) from Fire and Safety department. The details of movement of such equipment in and out of the refinery shall be maintained in a register kept at the Security Office. Security Section shall forward the duplicate copy of the authorisation to Fire and Safety department upon entry of the indented device to refinery with entry seal from security office. The original with entry seal shall be returned to the radiography personnel bringing the source.

6. Fire and Safety department shall verify the register in the Security Section and sign the register on monthly basis.

3.5 CONDUCTING RADIOGRAPHY

1. The written authorisation (Appendix ROS-023/A9.2) issued by the Fire and Safety department shall be produced for obtaining work permit for radiography from the respective work area.

2. The radiography shall be performed with valid work permit as per ROS-016.

3. When conducting radiography in running units where nucleonic gauges are installed or in the proximity of running units where nucleonic gauges are installed, the work permit shall be countersigned from the respective area to enable unit personnel to provide additional shielding for the gamma receptors to avoid malfunctioning of the gauges, if required.

3.5.1 RADIATION LEVEL AT CORDON OFF AREA

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1. The calculated cordon off distance shall be given in the authorization given by Fire and Safety department for carrying out radiography, considering the type and strength of radiation source, the type of exposure given, the location of radiography, the nature of occupancy and the total exposure time per week to restrict the annual dose equivalent limit to 1mSv (0.1Rem) on the basis of the documents submitted and calculations furnished by the RSO of the radiography agency.

2. Considering a very conservative 400 hours of radiation exposure per employee over a period of one year the exposure dose works out to be 0.25mR/hr. Hence the radiation level at the cordon boundary area in KR shall be less than 0.25mR/hr during any radiography job.

3. The calculated cordon off distance is indicative and the actual cordon off distance may vary as per the actual work and site condition. Hence the cordon distance shall be established such that the radiation level outside the cordon shall be less than 0.25mR/hr.

4. When a source is used for carrying out radiography with at a different source location (e.g. changing the source spot from outside of the vessel to inside of vessel) or at later time (considering the disintegration of the source) than that mentioned in the original approval, the cordon off distance shall be reviewed and altered by Owner and Executing Department and this should be intimated to the Fire and Safety department. The new cordon off distance shall be marked in the work permit. However, in no case, the radiation level outside the cordon shall be more than 0.25mR/hr.

3.6 STORAGE OF RADIOGRAPHY EQUIPMENT

1. Fire and Safety department shall maintain the list of AERB approved storage rooms in KR for storage of radiography devices (camera).

2. If the radiography device brought inside the refinery is required to be stored inside the refinery, the Engineer In Charge (EIC) shall obtain the storage room allotment and receive the storage room key from Fire and Safety department.

3. The Fire and Safety department shall put a seal on the original approval highlighting “storage room allotted” whenever a source storage room is allotted. At a time, no more than one room shall be allotted to a radiography agency unless it is really warranted.

4. The radiography devices (camera (s)) brought inside the refinery shall be stored only at the designated radiography source storage room allotted by the Fire and Safety department.

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5. Radiography devices (camera (s)) of two radiography agencies shall not be stored in the same storage room.

6. The details of the movement of radiographic source in and out of the source storage room shall be recorded by the certified radiographer in a log book kept at the respective source storage rooms. The log book shall be verified and signed by the Safety Officer once in a month.

7. The approved radiography source storage room shall be kept locked always and key shall be under the custody of Fire and Safety department. Once the room is allotted, one key shall be issued to the radiography agency and the spare key shall be available at the Fire and Safety department.

3.7 TAKING OUT RADIOGRAPHY EQUIPMENT

1. All radiography equipment shall be taken out of the refinery immediately after the completion of the radiography job or the approved period, whichever is earlier with the intimation to the Fire and Safety department.

2. The Engineer-In Charge shall obtain the source storage room key and sign on the original authorisation with remark ‘storage room key returned’ whenever a source camera, which has been allotted storage room, is taken out of the refinery.

3. The details of radiography device taken out of the refinery shall be intimated to the security and shall be entered in the register kept for the purpose at security gate.

4. The earlier obtained authorisation (Appendix- ROS-023/A9.2) for bringing in the radiography device shall be surrendered at security while taking out the radiography device from the refinery

5. Security shall ensure that devices having storage room allotment permits are allowed to be taken out only if there is signature from Engineer in Charge (EIC) with endorsement ‘storage room key returned’. If the radiography agency has another device stored in the same room, the agency may be allowed to retain the key on production of the authorization of the other devices. The EIC shall mention the authorisation number of the other device in such cases.

6. Security shall forward the closed authorisation so obtained to the Fire and Safety department immediately for final closure of the records.

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7. The radiography devices without the authorisation for storage (see section 3.6) shall be taken out by the radiography agency within 24 hours from the time of entry. In case the devices required to be kept beyond 24 hours, the authorisation for storage shall be obtained along with the request for carrying out radiography. In extreme emergency case, if the device is to be taken out after 24 hours without authorisation for storage (e.g. radiography jobs postponed due to an emergency in the process plants), the Security section shall ensure that material pass is counter signed by HOD of Fire and Safety during normal working hours or from CM (SHA) during other than normal working hours and holidays.

3.8 RADIATION EMERGENCIES

1. Even though the radiation exposure devices are designed and manufactured with maximum built in safety features, untoward incidents involving them may lead to radiation emergencies. The occurrence of any one or more of the following situations may be deemed constitute an emergency:
   a. Receipt of radiography devices in the damaged form.
   b. Loss / theft or damage to Radiography device
   c. Accidental exit of Radiography radio nuclides from the confinement
   d. Failure of cranking devices to retract the source to the camera
   e. Emergency at the radiography site or area such as fire during the course of radiography period.
   f. Any other off-normal situation with a potential to result in exposure of individuals to radiation
2. HOD of Fire & Safety shall ensure an Emergency Response Plan with respect to each of the above radiation emergencies in line with the model emergency plan published by the Radiological Safety Division of AERB. The same shall be reviewed periodically once in three years.
3. The Emergency Response Plan shall be rehearsed once in a year by conducting mock drills on any of the emergency scenario mentioned in the plan. The functioning of all personnel in the emergency plans shall be tested. A review meeting shall be conducted after the exercise. The lessons learnt from the exercise should be judiciously incorporated in the emergency response plan.

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4. In the unlikely event of a radiation emergency, leading to radiation exposure to workers and members of the public, the following actions as below shall be taken.

3.8.1 ACTIONS BY ENGINEER-IN-CHARGE / SHIFT-IN-CHARGE OF THE AFFECTED AREA

1. Immediately report to Fire & Safety and CM (SHA) regarding the emergency situation, respond quickly and initiate actions to mobilize resources at the shortest possible time.
2. The Engineer-in-Charge shall locate radiation zone using radiation survey meter and arrange to cordon off the affected area.
3. Evacuate all personnel from the cordon off area.

3.8.2 ACTIONS BY HEAD OF FIRE & SAFETY

1. Inform AERB about the incident within 24 hrs of its occurrence and submit a detailed report on the incident after carrying out investigations
2. Lodge a written complaint with the local police station in case of loss or theft, if the radiography source(s) are not traced within 24 hours.
3. When all efforts to locate the source have failed or when the source cannot be brought to its safe shielded location, necessary assistance shall be sought from Division of Radiological Protection, BARC, Trombay, Mumbai giving particulars regarding the incident. Decontamination of rooms and buildings shall only be done under the supervision of Radiological Safety Officer.
4. Medical management of the affected person must be carried out in consultation with the competent authority of AERB.

4 ROLES AND RESPONSIBILITIES

This section outlines only the major roles and responsibilities of various stakeholders related to ROS-023. The roles and responsibilities are detailed in the requirement given in Section of 3.0 of this document. The stakeholders shall comply with these requirements.

4.1 HOD FIRE & SAFETY DEPARTMENT

HOD of Fire and Safety Department

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1. Shall coordinate all correspondence with Atomic Emergency Regulatory Board and ensure that all applicable legal requirements with regard to open filed industrial radiography are complied with.

2. Shall ensure that the emergency preparedness plan is available and are reviewed periodically (once in three years).

3. Shall rehearse the emergency plan once in a year by conducting a mock drill on any of the emergency scenario mentioned in the plan. The functioning of all personnel in the emergency plans shall be tested. A review meeting shall be conducted after the exercise. The lessons learnt from the exercise should be judiciously incorporated in the emergency response plan.

4. Communicate to AERB about the emergency occurrences, if any, within 24 Hrs and submit a detailed report on the incident after carrying out investigations.

5. Filing written complaint with the local police station, in case of loss or theft of radioactive source, if it is not traceable within 24 Hrs.

6. Conduct a yearly review and verify records thereof as per this ROS and ensure the compliance. Any discrepancies noticed shall be reported to the MHSSEC.

7. The proper records of incoming and outgoing of radiography devices shall be maintained.

8. Advise the various agencies regarding safety measures and coordinate with various departments to comply the requirements of Atomic Energy Act and Radiation Protection Rules.

9. Authorise the in / out movement, storage and use of radiography equipment inside the refinery.

10. Based on the radiography requirements, ensure that source packaging note, disintegration chart, cordon off distance etc. are verified and written authorisation for bringing in the radiography equipment inside the refinery is issued.

11. Upon request from the Engineer in Charge, the Fire and Safety department shall issue storage room for the radiography equipment in the approved source storage rooms, ensuring that radiography equipments of two different agencies are not stored in the same source storage room at any time.

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4.2 SECURITY

1. The Security shall permit entry of radiography equipment only on production of the written approval from Fire and Safety department. The duplicate copy of the authorisation shall be forwarded to Fire and Safety department with entry seal upon entry of the device to refinery.

2. The proper records of incoming and outgoing of radiography devices shall be maintained separately at security department.

3. Whenever a radiography device is taken in or out of the refinery, the security personnel shall enter the time and date of such movements in the written authorisation issued from Fire and Safety department as well as in the register kept at Security Gate with his signature. Also, the details of such movement shall be informed to Fire and Safety department immediately.

4. Security shall ensure that authorisation with storage room allotment entry is permitted to be taken out only if there is signature from Engineer in Charge regarding return of key or on production of the authorization of the other devices.

5. Whenever a radiography device is taken out of the refinery, the security shall collect the earlier issued authorisation to the agency and forwarded the same to the Fire and Safety department for final closure of the records.

6. Ensure that the material pass is counter signed by HOD of Fire and Safety during normal working hours or from CM (SHA) during other than normal working hours and holidays, if the radiography device is to be taken out after 24 hours without authorisation for storage

4.3 ENGINEER IN CHARGE

Whenever a radiography job is awarded to any contractor, the executing engineer of the job shall ensure that:

1. The radiography agency is duly authorized by Radiological Safety Division (RSD), AERB to move the radiography source to BPCL Kochi Refinery.

2. The radiography work has got prior written authorisation from the Fire and Safety department.

3. All the radiographers (excluding workers assisting the job) are certified by BARC / AERB.

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4. The radiographer has at least one radiation survey meter in working condition.
5. The radiographer cordons sufficient area to control access of unauthorized person during radiography at the site.
6. Radiation warning symbols are conspicuously posted along the cordon by the radiographer.
7. When the radiography work is carried out at night time, red warning lights must be conspicuously displayed along the cordon.
8. The concerned radiographer / a coordinator from the contractor side is available at the site very near the cordoned area throughout the exposure.
9. The radiographers are wearing film badges / dosimeters during the radiography job.
10. Wherever practicable, field radiography work shall be limited to collimated exposures.
11. During collimated exposures the primary beam shall be directed towards areas of minimum occupancy.
12. All panoramic exposures with sources of activities greater that 20 Ci of ^{192}Ir or 5 Ci of ^{60}Co shall be carried out using remote control system.
13. All operations should be planned in advance and executed in minimum possible time.
14. All radiography works shall be done with a proper permit as envisaged in ROS-016 'Work Permit System'.

4.4 OWNER DEPARTMENT (PERMIT ISSUER)

1. Ensure that the radiography job is duly authorized by Fire and Safety department before issuing the permit for radiography.
2. Ensure that licensed radiographers (workers for assisting the radiography jobs need not require the license) are available for carrying out the radiography
3. Ensure that the radiographer cordons sufficient area to control access of unauthorized person during radiography at the site.
4. Ensure that radiation warning symbols are conspicuously posted along the cordon.
5. The radiation levels along the cordon shall be monitored by a suitable radiation survey meter brought in by radiographer / or available with the area and confirm that the cordon distance maintained by the radiographer is adequate to restrict the radiation level outside the cordon to below 0.25mR/hr.

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6. Ensure that road blocks due to cordon off during radiography is informed to CM (SHA), Fire Station control room and Security Officer.

5 APPROVAL

This ROS undergoes a review and approval process in line with the process specified in Section 5.0 of ROS-001.

5.1 REVIEW OF ROS

1. HODs of F&S, Maintenance, E&C and Functional Heads of Operations and Projects are the reviewing authorities of this ROS.
2. Reviewing authorities shall ensure that requirements of ROS are relevant with respect to context of the business and are in line with current environment.
3. Reviewing authority shall sign on the Document Release Note of this ROS.

5.2 APPROVAL OF ROS

Refinery Council (RC) is the approving authority for the approval of this ROS. Head of KR is the signatory on behalf of the RC and shall sign on the Document Release Note of this ROS.

6 MONITORING AND CONTROL

The HOD of Fire and Safety shall monitor the compliance of the requirements specified in this ROS. He / she shall compile deviations from the requirements specified in this ROS and report the status to MHSSEC.

7 RECORDS

1. Record of application and radiography plan in Appendix (ROS-023/A9.1) with required attachments.
2. Record of authorisation for carrying out radiography (Appendix ROS-023/A9.2).
3. Record of allotment of radiography source storage room.
4. Record of movement of radiographic sources at Security Gate.
5. Record of storage of radiographic sources kept at source storage room.
6. Record of approval of radiographic source storage rooms.

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8 REFERENCES

1. AERB Guide No SG/IN-2, Radiological Safety in Open Field Industrial Radiography.
2. Atomic Energy Act, 1962.
3. Radiation Protection Rules, 1971.
4. Atomic Energy (Radiation Protection) Rules, 2004.

9 APPENDIX

List of appendixes used in ROS-023 is listed below.

1. Format for request for carrying out radiography (No: ROS-023/A9.1)
2. Format for authorisation for carrying out radiography (No: ROS-023/A9.2)

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9.1 ROS-023/A9.1: FORMAT FOR REQUEST FOR CARRYING OUT RADIOGRAPHY

BHARAT PETROLEUM CORPORATION LTD
KOCHI REFINERY

Request for carrying out radiography

Sl. No.....

1	Executing department			
2	Exact location of radiography: Unit / Area / Equipment No			
3	Expected duration of radiography	Date / Time	From	
			To	
4	Exposure device model and Serial number			
5	Name of the radiography agency			
6	Source type and present activity (Copy of source packing note shall be enclosed)			
7	Reference number of permission for movement of radiography exposure device to BPCL Kochi Refinery (Copy of the AERB permission shall be enclosed)	AERB Ref. No	Period of approval	
8	Cordon off distance (Attach detailed calculation duly certified by RSO of the radiography agency)			
9	Name of certified radiographers and license number (Copy of the certificate shall be enclosed)- *Not required for assistants*			
10	Dosimeter Number			
11	Type of exposure (With collimator / without collimator)			
12	Whether source storage room allotment required for the radiography equipment			
13	Name, staff number and signature of executing agency.	Name & Staff No	Signature	

To: Fire and Safety department

Authorisation No:.....
(To be issued by Fire & Safety)

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9.2 ROS-023/A9.2: FORMAT FOR AUTHORISATION FOR CARRYING OUT RADIOGRAPHY

BHARAT PETROLEUM CORPORATION LTD
KOCHI REFINERY

Authorisation for carrying out radiography

Request Doc No:..... *Sl. No.....*

1	Executing department				
2	Location of radiography: Unit/Area/Eqpt. No				
3	Permission duration	Date		Time	
		From	To	From	To
4	Exposure device model and Serial number				
5	Name of the radiography agency				
6	Source type and present activity.				
7	Calculated Cordon off distance *				
8	Panel of Certified radiographers				
9	Type of exposure with / without collimator				
10	Location of storage pit allotted				

*****_Calculated value is indicative and the actual cordon off distance to be established as per the actual work and site condition. In no case, the radiation level outside the cordon shall be more than_ ***0.25mR/hr.***

Name, Staff No and Signature of Safety Officer	Name	Staff No	Date	Signature

Key returned **:** Yes / Not Applicable Key No: ..... Date.....Sign: .....

Remarks (*Engineer In Charge*) :..... .....

Details of movement of radiography device in / out of the refinery

1	Date and time the above device is taken inside the refinery	Date	Time	Signature of security personnel	Name and staff number
2	Date and time the above device is taken out of the refinery	Date	Time	Signature of security personnel	Name and staff number

(Security personnel shall inform Fire and Safety department regarding the movement of the radiography device in / out of the refinery. The above permit shall be forwarded to Fire and Safety department once the material is taken out of the refinery).

..... *End of Document*.....

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STANDARD SPECIFICATION FOR HEALTH, SAFETY & ENVIRONMENTAL MANAGEMENT AT CONSTRUCTION SITES (DOC NO. 6-82-0001 REV-2)

निर्माण स्थल पर स्वास्थ्य, सुरक्षा एवं पर्यावरण प्रबंधन हेतु मानक विनिर्देश

STANDARD SPECIFICATION FOR HEALTH, SAFETY & ENVIRONMENTAL MANAGEMENT AT CONSTRUCTION SITES

Rev. No.	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
2	18/04/2023	REVISED & UPDATED	BT	RK	JPV	SM
1	07/06/2022	REVISED & UPDATED	BT	RK	JPV	SM
0	23/12/2020	REVISED & UPDATED	BT	RK	AKK	S Mazumdar

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Abbreviations:

AERB	:	Atomic Energy Regulatory Board
ANSI	:	American National Standards Institute
BARC	:	Bhabha Atomic Research Centre
BS	:	British Standard
BOCW	:	Building and other construction workers
BOO/BOOT	:	Build, Own, Operate/Build, Own, Operate, Transfer
EIL	:	Engineers India Limited
EIC	:	Engineer In charge
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
HIRAC	:	Hazard, Identification Risk Assessment & Control
HMV	:	Heavy Motor Vehicle
HV	:	High Voltage
IS	:	Indian Standard
ISO	:	International Organization for Standardization
IE	:	Indian Electricity
LTI	:	Lost Time Injuries
LMV	:	Light Motor Vehicle
LOTO	:	Lock Out & Tag Out
LPG	:	Liquefied Petroleum Gas
LSTK	:	Lump Sum Turn Key
MV	:	Medium Voltage
OH&S	:	Occupational Health and Safety
OISD	:	Oil Industry Safety Directorate
PPE	:	Personal Protective Equipment
PUC	:	Pollution Under Control
RC	:	Registration Certificate
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 John Paul V, ED(Construction)

Members: Sh.Janak Kishore, ED (Projects)
Sh.Biswajit Mandal, CGM (SCM)
Sh. Udayan Chakravarty, Sr.GM (Piping)
Sh.Ravindra Kumar, Sr.GM (Construction)
Sh.Debasish Ghosal, GM(Construction)
Sh. Pankaj Kumar Rai, DGM (Construction)

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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, (Refer Appendix-D)
- Indian Factories Act,(Refer Appendix-D)
- 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/ISO 45001) 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.
The Contractor's senior management shall provide strong visible leadership and continuously demonstrate commitment to develop, operate and maintain, review and continually improve a HSE culture at site which empowers individuals to take responsibility for their safety and embrace and accept nothing but responsible HSE behaviour.
Contractor shall refer in clause No. 3.3.23 for Key Performance Indicator (KPI).

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

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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 insufficient 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:

(i) Safety Observer/Steward: Contractor shall depute one Safety Observer/Steward for every 100 workers or part thereof

(ii) Safety Supervisor: In addition to above(i), contractor shall depute one Safety Supervisor for every 250 workers or part thereof

(iii) Safety Engineer: In addition to above (i&ii), one safety engineer/ officer for every 1000 workers or part thereof.

Contractor shall intimate/obtain prior permission from EIC before demobilizing any safety personnel. The Contractor shall mobilize suitable safety personnel as replacement.

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:

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(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 **or** 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, 1948) 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.

Upon fulfilling the basic requirement of qualification and relevant experiences, the performance of contractor HSE personnel's is to be monitored.

The good performing contractor's HSE personnel at site shall be rewarded upon assessment of performance by EIL/Owner. The non-performing HSE personnel shall be counselled by EIL/Owner & suitable action may be taken for suspension from site for 3-6 days. Contractor shall arrange training for non performing HSE personnel.

HSE In –Charge of the contractor shall be given the status at par with the other heads of department and shall report to Head of Project.

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.)

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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/equipment's 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 Monthly 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. Hydraulic Mobile Crane, cranes, lifting machinery, mobile equipment's/ 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/equipment's 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.

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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 byall
- 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 behavior improvements occur
- Change behaviors 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) 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 & equipment's
- Hazard Identification & control
- House keeping
- Confined space entry
- Hot works
- Excavation
- Loading & unloading
- Work at height
- Stacking & storage
- Ergonomics

f) EIL/Owner and Contractor's site staff at all levels shall monitor the behavior of contractor employees that create and/or contribute to the unsafe situations at work place.

g) Contractor shall arrange Behavior Based safety (BBS) training of their employees at site on yearly basis.

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's workmen & supervisory staff shall participate in common Tool Box Meeting as & when organized/required at site to avoid any incident/accident or occupational disease arising out of multidisciplinary jobs/activities being performed by various contracting agencies in the same location at different elevation.

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e) 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.

f) Contractor shall assess & recognize the behavioral change of its site engineers / supervisors periodically and constantly motivate / encourage them to implement HSE practices at project works

g) Life Saving Rules (refer Appendix-I for details) are to be displayed at prominent location of site.

3.1.8 **Fire Prevention & First-Aid**

The Contractor shall deploy First aider & 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.

a) 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.

b) 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.

c) 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
- Risk Assessment & HIRAC for critical works.
- 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**

Safety Audit shall be conducted at initial stage by EIL/Owner to understand the readiness to start the job after mobilization of contractor's RCM at site& Suitable action shall be taken by contractor to comply the audit observation(s).

The Contractor shall submit an Audit Plan to EIL/Owner indicating the type of audits covering following as minimum:

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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: OHSAS 18001/ISO 45001 certification).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 18001/ISO 45001certification). However, minimum one external HSE audit will have to be conducted irrespective of time period of the contract.

c) EIL/Owner may participate in Opening and closing meeting of external audits and provide inputs to the external auditor. Outcome of external audit shall be discussed during HSE Meeting with EIL/Owner.

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) along with safety officer 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.

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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,BOO/BOOT, 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

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Sl. No.	Violation of HSE Norms	Penalty Amount
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
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

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Sl. No.	Violation of HSE Norms	Penalty Amount
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
24.	Failure to deploy adequately qualified and competent Safety Officer	Rs.10,000/- per day per Officer
25.	Utilization of Hydraulic Mobile Crane /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

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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) Upkeep/cleaning of site to be carried out on regular basis by the contractor. Contractor shall earmark the area for waste/scrap disposal and ensure that all waste/scrap arising out of the day's work is properly disposed to the earmarked area.

o) Hazardous waste shall be segregated and shall be kept separately at designated place.

p) Contractor shall present the status of housekeeping in HSE meeting.

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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 equipment's (Hydraulic Mobile Crane, 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, equipment's/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

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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

h) 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.

i) 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.

j) 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.

k) 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.

l) 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) An indicative list of HSE standards/codes is given under **Appendix-A**.

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i) Contractor shall ensure procurement & usage of following safety equipment's/ 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. Emergency Man-basket/rescue kit for height works
vii. Portable ladders (varying lengths)
viii. Life-lines (steel wire-rope, dia. not less than 8.0 mm)
ix. Full body double lanyard Safety harness with Rebar/ladder hook or scaffolding hook.
x. Lanyard
xi. Karabiner
xii. Retractable fall arresters (various length)
xiii. Portable fire extinguishers (DCP type) – 5 kg&10 kg capacity
xiv. Portable Multi Gas detector
xv. Sound level meter
xvi. Digital lux meter
xvii. Fire hoses & flow nozzles
xviii. Fire blankets/ Fire retardant cloth (with eyelets)
xix. Flame retardant/Flame resistant coverall-based on hazard identification & risk assessment, if required.

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 equipment's. 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. Contractor shall develop the model for conducting vertigo test. The fitness examination shall be done once in six months. Sticker for "PASS FOR HEIGHT WORK" shall be pasted on the safety helmet of the site personnel.

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

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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 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 equipment's& 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) Providing of steel scaffold stair tower system with landings at regular intervals as and when required for height work.

q) 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 equipment's 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

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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.

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:

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a. Shall make Single Line Diagram (SLD) for providing connection to each equipment's & 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.

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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 devices 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. Periodical check tests of all electrodes should be carried out and record shall be maintained of such checks.

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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, Hydraulic Mobile Crane 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. Competency of the crane operator to be thoroughly checked prior to engaging in crane operation.

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,

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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 equipment's including cranes must be maintained in good condition &record of such maintenance shall be maintained. Routine preventive maintenance of the crane to be carried out& record to be maintained for such preventive maintenance. Healthiness of the crane to be checked by Crane Expert on regular basis as per manufacturer guidelines.

d) HIRAC/JSA for assembly/dismantling activity of the crane to be submitted for approval of EIC.

e) No one should stand/work below the mast & boom of the crane. Mast of the crane should not be used for unintended lifts.

f) Mast of the crane to be kept in right position during dismantling activity of the crane.

g) Log book of all crane to be maintained.

h) Only authorized person shall be allowed to give signal to the operator.

i) Lifting/Loading/Unloading activities shall be carried out by the trained riggers under supervision of rigging Foreman.

j) Prior to marching/movement of the crane, obstructions free access/route to be ensured.

k) Skilled Technician to be engaged for AC gas checking and refilling of refrigerant and should follow the safe operating procedure for cranes.

l) Manufacturer's instructions to be followed without any deviation.

m) The contractor shall not be allowed to use defective equipment or tools not adhering to safety norms.

n) Adequate capacity of Chain pulley blocks with valid TPI certificate to be used for lifting/lowering/dragging/erection of piping material .

o) 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. Strictly avoid standing close to Hydraulic Mobile Crane/vehicles tyres during operation.

iv. The contractor shall deploy cranes in good working condition of maximum allowable years of service from the year of manufacture as specified below: -

20 years for cranes of 50 MT & below capacity,25 years for 51 MT to 100 MT,30 years for cranes above 101 MT.

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v. In general Man basket shall not be lifted by Hydraulic Mobile Crane. Generally Crane shall be used for lifting the man basket.

vi. Tower Crane, Crane, Hydraulic Mobile Crane 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.

vii. The Contractor shall arrange periodical training for the operators of Hydraulic Mobile Crane, crane, excavator, mobile machinery, Tower Crane, etc. at site by utilizing services from renowned manufacturers.

viii. Hydraulic Mobile Crane 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 equipment's.

f) Fuelling of construction equipments/Diesel Generator set shall be carried out by hand operated pump.

g) In view of the congested working environment and associated hazards, deployment of manpower/machineries shall be in staggered manner keeping adequate safe distance between two adjacent work spot.

h) For jobs like drilling/demolishing/dismantling/steam blowing/cardboard blasting etc. where noise pollution exceeds the specified limit of 85decibels, ear muffs shall be provided to the workers. The Noise level monitoring record shall be maintained.

i) 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.

j) 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.

k) The Contractor shall arrange Medical Camps at regular intervals at work sites and labor colonies to assess health condition of workers.

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l) 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 Equipment's 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

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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, ifrequired 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/equipment's. The Contractor shall maintain copy of PUC,RC and Insurance etc. for all the vehicles/equipment's.

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) Hydraulic Mobile Crane 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 / Equipment's, which do not have competent operator and / or experienced banks-man/signal-man. Such machinery/equipment's 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.

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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) Height barrier/Restriction to be provided on both side of the HT lines, if required.

k) 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 shall ensure the test report of drinking water.

h) 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.

The contractor shall ensure availability of stack emission test report of DG set. Monitoring of air quality emission of DG stack shall be carried out on yearly basis. However, air quality emission shall be monitored first time on commissioning of DG Set.

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. Environmental Aspect Impact Register of the contractor shall be reviewed by EIL/Owner on half-yearly basis.

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 dust, poisonous gases, toxic releases,

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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)

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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. Contractor 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.
Rescue arrangement must be readily available at workplace to fulfill requirement of the emergency situation.

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 equipment's 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 equipment's, 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

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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 man hours 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 arrangement sand 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.

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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.

Avoid vertical wall of less than 2mtrs between two adjacent deep excavated pit/area. Further deep excavation should not be kept open for a longer duration.

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. Vehicles movement should be restricted to minimum three meters away from the excavated pit.

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 Job specific 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.

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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.
Contractor shall arrange suitable facilities (e.g training room/place, audio visual facilities etc.) for organizing such training on HSE.

b) Contractor shall conduct Safety induction programme on HSE for all his workers and maintain records. Sticker for "Safety Induction" shall be pasted on the safety helmet of the site personnel. The Gate Pass shall be issued only to those workers who successfully qualify the Safety induction programme. Contractor to conduct effective safety induction program at work site by making efforts to arrange Video film/Virtual Reality (VR) technology pertaining to the escape routes, assembly points, risks involved in the event of an emergency etc while imparting safety induction.

c) The Contractor 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 submit job specific training schedule for approval of EIL/Owner &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

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- 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.

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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. Fire watcher to be deployed to ensure the same.

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:-

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- 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 equipment's, 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 program eat 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.

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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) To maintain & monitor the level of legal compliance at site, a committee shall be formed comprising of contractor's RCM as Head and lead representatives as member(s)from HR/Legal, HSE and discipline engineer(s) (Civil, Mechanical, Electrical, Instrumentation) as applicable. Committee shall review the applicable legal requirements during periodical meetings and monitor the compliance status.

k) arrange testing, examination, inspection of own as well as borrowed construction equipment's/ 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.

l) carryout 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.

m) Arranging HSE training for site workmen (of his own &subcontractors) through internal or external faculty at periodical intervals.

n) Assistance& cooperate during HSE audits by EIL/Owner or any other 3rd party and submit compliance report.

o) Generate & submit of HSE records/report as per this specification.

p) Contractor shall arrange minimum 100 lux. illumination level at construction site for night works& record shall be maintained.

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q) Mobile phones shall not be permitted in operational area of the Project Site. However, intrinsically safe mobile phone can be permitted on approval from EIL/Owner. Alternatively, telephone booth(s) may be set up by the contractor after obtaining approval from EIL/Owner. Use of mobile phone shall also be restricted during construction activities such as height work, erection of material, confined space and Pre-commissioning & Commissioning activities at all project sites.

r) The contractor shall assign responsible person as in charge for night works and it shall be informed to owner/EIL.

s) Appraise EIL/Owner on HSE activities at site regularly.

t) Carry-out all dismantling activities safely, with prior approval of EIL/Owner representative.

u) 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
Hydraulic Mobile Crane Inspection Checklist	HSE-22
Hydraulic Rig Inspection Checklist	HSE-23

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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 by contractor in consultation with EIL/Owner.

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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

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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

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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.

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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.

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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.

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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 atleast 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 atleast 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

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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 atleast 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 equipment's 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.

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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

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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

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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 ANDUSAGE	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 equipment's 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

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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 un armoured 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.

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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.

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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.

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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 2 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. Multiple activities at same location to be avoided. .
(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

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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 equipment's at the end of the day
(L) HANDLING AND LIFTING EQUIPMENTS	Failure of load lifting and moving equipment's	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.

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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.

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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. Wedges to be provided below the pipe to prevent spool/pipe roll out. 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 grit sand 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.

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APPENDIX-F

TRAINING SUBJECTS / TOPICS

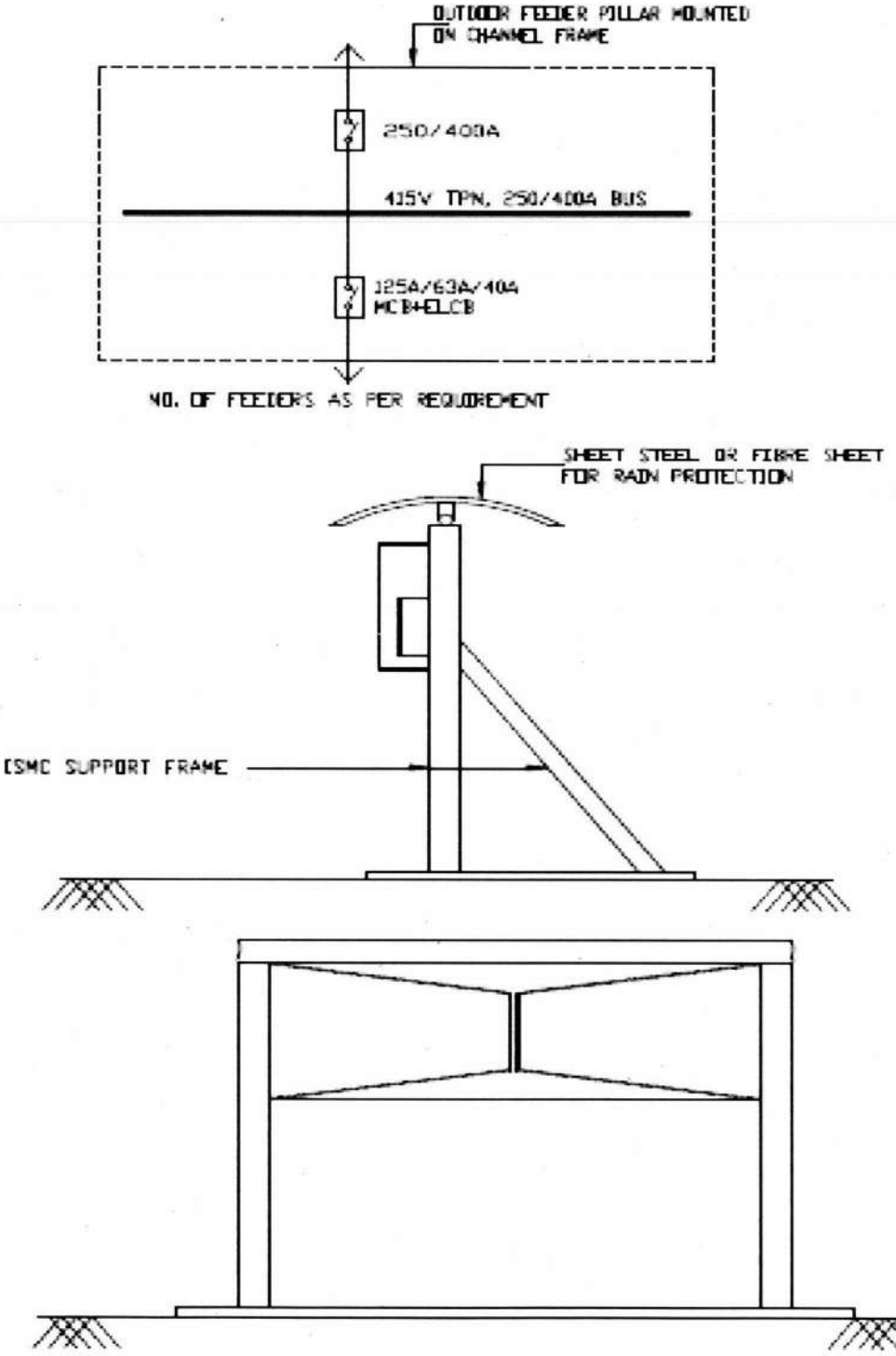
(For contractors' personnel)

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 / Hydraulic Mobile Crane handling.
8. Occupational Health in Construction sector.
9. Personal Protective Equipment's – 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.

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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 OR DIRECTLY 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.

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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

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APPENDIX-I

LIFE SAVING RULES

Bypassing Safety Controls

Obtain authorisation before overriding or disabling safety controls



- I understand & use safety-critical equipment and procedure which apply to my task
- I obtain authorization before:
  - disabling or overriding safety equipment
  - deviating from procedures
  - crossing a barrier

Confined Space

Obtain authorisation before entering a confined space



- I confirm energy sources are isolated
- I confirm the atmosphere has been tested and is monitored
- I check and use my breathing apparatus when required
- I confirm there is an attendant standing by
- I confirm rescue plan is in place
- I obtain authorization to enter

Driving

Follow safe driving rules



- I always wear a seatbelt
- I do not exceed the speed limit, and reduce my speed for road conditions
- I do not use phones or operate devices while driving
- I am fit, rested and fully alert while driving
- I follow journey management requirements

Energy Isolation

Verify isolation and zero energy before work begins



- I have identified all energy sources
- I confirm that hazardous energy sources have been isolated, locked and tagged
- I have checked there is zero energy and tested for residual or stored energy

Hot Work

Controls flammables and ignition sources



- I identify and control ignition sources
- Before starting any hot work:
  - I confirm flammable material has been removed or isolated
  - I obtain authorization
- Before starting hot work in a hazardous are I confirm:
  - a gas test has been completed
  - gas will be monitored continually

Line of Fire

Keep yourself and others out of the line of fire



- I position myself to avoid:
  - moving objects
  - vehicles
  - pressure releases
  - dropped objects
- I establish and obey barriers and exclusion zones
- I take action to secure loose objects and report potentialdropped objects

Safe Mechanical Lifting

Plan lifting operations and control the area



- I confirm that the equipment and load have been inspected and are fit for purpose
- I only operate equipment that I am qualified to use
- I establish and obey barriers and exclusion zones
- I never walk under a suspended load

Work Authorization

Work with a valid permit when required



- I am authorised to perform the work
- I understand the permit
- I have confirmed that hazards are controlled and it is safe to start
- I stop and reassess if conditions change

Work at Height

Protect yourself against a fall when working at height



- I inspect my fall protection equipment before use
- I secure tools and work materials to prevent dropped objects
- I tie off 100% to approved anchor points while outside a protected area

Excavation

Follow safe excavation procedure



- Before starting any excavation:
  - I confirm availability of underground utilities
  - I obtain authorization
  - I take adequate precautions to prevent collapse of soil

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FORMAT NO. : HSE-1 REV 1

(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).....

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FORMAT NO. : HSE-1 REV 1

(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).....

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FORMAT NO. : HSE-1 REV 1

(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).....

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FORMAT NO. : HSE-1 REV 1

(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).....

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FORMAT NO. : HSE-1 REV 1

(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).....

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FORMAT NO. : HSE-1 REV 1

(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				
i)	Adherence to Govt. Guidelines/procedures during epidemic and pandemic (as applicable).				
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).....

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FORMAT NO. : HSE-2 REV 0

(Sheet 1 of 3)

ACCIDENT REPORT

(To be submitted by Contractor after every 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-LTI)	Hospitalized but resumed duty before end of 48 hrsof accident	
Disabling injury (other LTI)	Hospitalized & failed to resume duty within next 48 hrs	
Fatal (LTI):	Death / Expiry	
First Aid case	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: _____

_____

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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 oroils		Vehicle accident	
Other/specify					

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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)
- Nodal Officer HO through RCM (In case of major accident)
- Divisional Head (Constn) through RCM
- Project Manager, EIL, through RCM

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FORMAT NO. : HSE-3 REV 0

(Sheet 1 of 5)

SUPPLEMENTARY ACCIDENT INVESTIGATION REPORT

TICK THE APPROPRIATE ONEAS 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-LTI **)**	Hospitalized but resumed duty before end of 48 hrs of accident.	
Disabling injury (other LTI**)**	Hospitalized & failed to resume duty within next 48 hrs.	
Fatal (LTI)	Death / Expiry	
First Aid case	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: _____

_____

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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	

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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	

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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_____

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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)
Nodal Officer HO through RCM (In case of major accident)
Divisional Head (Constn.) through RCM
Project Manager EIL, through RCM

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FORMAT NO. : HSE-4 REV 0

NEAR MISS INCIDENT/ DANGEROUS OCCURRENCE REPORTPROFORMA

(to be submitted within 24 hours)

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)

Note:

- **Near Miss:** Human injury escaped & no damage to property, equipmentor interruption to work.
- **Dangerous Occurrence**: Occurrences as mentioned below shall be considered as "Dangerous occurrences"

a. collapse or failure of lifting appliances or hoist or conveyors or other similar equipment for handling building or construction material or breakage or failure of rope, chain or loose gears; overturning of cranes used in building or other construction work; falling of objects from height;
b. collapse or subsidence of soil, any wall, floor, gallery, roof or any other part of any structure, platform, staging, scaffolding or any means of access including formwork;
c. collapse of transmission tower;
d. fire and explosion causing damage to property at Construction site.
e. spillage or leakage of hazardous substances and damage to their container;
f. Collapse, capsizing, toppling or collision of transport equipment;
g. Leakage or release of harmful toxic gases at the construction site.

To :Owner
:RCM/Site-in-charge EIL (3 copies)

Divisional Head (Const.) through RCM
Project Manager EIL, through RCM
} (Applicable for Dangerous Occurrence only)

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FORMAT NO. : HSE-5 REV 0

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 basedpackage (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 site personnel undergone HSE Induction				
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 Loss Time Injuries (LTI)	Fatalities			
	Other LTI			
8) Number of Non disabling injury (Non-LTI)				
9) Number of First Aid Cases				
10) Number of Near Miss Incidents				
11) Number of Dangerous Occurrences				
12) No. of unsafe acts/ practices detected				
13) No. of disciplinary actions taken against staff/ workmen				
14) Man-days lost due to injury				
15) LTI Free man-hours i.e. LTI free man-hours counted from the Last LTI (enter date: .....)				
16) Frequency Rate (No. of reportable LTI per 10lacs man-hours worked)				
17) Severity Rate (No. of man days lost due to LTI per 10lacs man-hours worked)				
18) No. of activities for which HIRAC Completed				
19) No. of incentives/ awards given				
20) No. of occasions on which penalty imposed by EIL/ Owner				
21) No. of Audits conducted				
22) No. of pending NCs in above Audits				
23) Compensation cases raised with Insurance				
24) Compensation cases resolved and paid to workmen				
25) No of Vehicular Accident cases				
26) No of fire/Explosion cases				

27) Whether workmen compensation policy taken			Yes		No
28) Whether workmen compensation policy is valid			Yes		No
29) Whether workmen registered under ESI Act, as applicable			Yes		No
30) Whether HIRAC Register prepared and updated			Yes		No
31) Whether Environment Aspect Impact Register prepared and updated			Yes		No
32) 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: -

- RCM EIL

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FORMAT NO. : HSE-6 REV 1

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 / Equipment's 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 Receiver Verification By Work Permit issuer
Contractor Job Supervisor Contractor Safety Officer Contractor Engineer/RCM

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)

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FORMAT NO. : HSE-7 REV 1

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
			Work Permit Receiver(Contractor Supervisor)	Verification by Contractor Safety officer	Work permit issuer Contractor Engineer/RCM	From	To	Workman

Permit Closure :

(A) Entry ☐ was closed ☐ stopped ☐ will continue on ...

(B) ☐ Site left in a safe condition ☐ Housekeeping done

(C) Multi lock ☐ removed ☐ key transferred

☐ Ensured all men have come out ☐ Man-ways barricaded

Remarks, if any:

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FORMAT NO. : HSE-8 REV 0

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:

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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	☐	☐

Work Permit Receiver
(Contractor's Supervisor/Engineer)

Verification by Contractor
(Contractor's Safety Officer)

Permission is granted.

(Work Permit issuer-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

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FORMAT NO. : HSE-10 REV 0

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

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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,				

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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

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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	Electrical Panel door to be in closed condition and Insulated Mat to be provided in front of panel.		
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

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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?				

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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

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FORMAT NO. : HSE-14 REV 1

(sheet 1 of 2)

PERMIT FOR ERECTION / MODIFICATION & DISMANTLING OFSCAFFOLDING

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 ( )

  Work Permit Receiver Verification By Work Permit issuer Contractor Job Supervisor
  Contractor Safety Officer Contractor Engineer/RCM

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FORMAT NO. : HSE-14 REV 1

(sheet 2of 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.								

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FORMAT NO. : HSE-15 REV 1

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?				

Work Permit Receiver Verification By Work Permit issuer Contractor Job Supervisor
Contractor Safety Officer Contractor Engineer/RCM

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FORMAT NO. : HSE-16 REV 1

PERMIT FOR ENERGY ISOLATION & DE-ISOLATION

Project :
Name of the work :
Name of contractor :

Sr.No. :
Date :
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 Client/Contractor RCM (as applicable) 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 Client/Contractor RCM (as applicable) Signature: Date: Name: **(*to be included by contractor in consultation with issuing authority)**	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 ,equipment's 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 Client/Contractor RCM (as applicable) Signature: Date: Name: **(*to be included by contractor in consultation with issuing authority)**

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 Client/Contractor RCM (as applicable) 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

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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, it's 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 (Receiver) Contractor (Issuer)

Verification by Contractor Safety Officer

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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 _____	Receiver (site Engr. of Main Contractor)	Issuer(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.

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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	

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(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

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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:** Likely, **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

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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		

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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

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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)		

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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

Signature Not Verified

Digitally signed by MD MAZHER ALI
Date: 2026.05.14 16:14:47 IST
Location: eProcure-EPROC

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