

COATING REFURBISHMENT WORK FOR OIL PIPELINE IN THE STATES OF ASSAM, WEST BENGAL AND BIHAR, INDIA

Project No. P.010416
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Tender Document No. CGI5616P18

Oil India Ltd, Assam
ASSAM | INDIA

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TECHNICAL DOCUMENTATION

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**FORWARDING LETTER &
INSTRUCTION TO BIDDER**

FORWARDING LETTER

M/s _____

Sub: IFB No. CGI5616P18 for 'Coating Refurbishment Work for OIL Pipeline in the States of Assam, West Bengal and Bihar, India'.

Dear Sirs,

- 1.0 OIL INDIA LIMITED (OIL), a "Navaratna" Category, Government of India Enterprise, is a premier oil Company engaged in exploration, production and transportation of oil & natural gas with its Pipeline Headquarters at Guwahati, Assam.
- 2.0 In connection with its operations, **Tractebel Engineering Pvt. Ltd.** on behalf of OIL INDIA LIMITED (OIL), Guwahati (Assam) invites Local Competitive Bids (LCB) from competent and experienced Contractors through OIL's e-procurement Portal: <https://etender.srm.oilindia.in/irj/portal> for '**Coating Refurbishment Work for OIL Pipeline in the States of Assam, West Bengal and Bihar, India**'. One complete set of Bid Document covering OIL's IFB for the above services is uploaded in OIL's e-procurement portal. You are invited to submit your most competitive bid on or before the scheduled bid closing date and time through OIL's e-procurement portal. For your ready reference, few salient points of the IFB (covered in detail in the Bid Document) are highlighted below:

(i)	IFB No. /E-Tender No.	:	CGI5616P18
(ii)	Type of Bidding	:	Online-Single Stage-Two Bid System
(iii)	Tender Fee	:	INR 2,000.00 (Tender fee should be paid only through the payment gateway available on OIL's e-Tender Portal. No other mode of payment shall be accepted.) Bidders claiming waiver of tender fees shall apply to Pipelines Projects Department, Oil India Limited, Guwahati with documentary evidence as mentioned in Para. 4.4 below, before 07 (seven) days of bid closing date.
(iv)	Tender available on OIL's e-portal	:	From 07.09.2017
(v)	Bid Closing Date & Time	:	06.10.2017 upto 11.00 AM as mentioned in Online E-tender portal
(vi)	Technical Bid Opening Date & Time	:	06.10.2017 upto 02.00 PM as mentioned in Online E-tender portal
(vii)	Price Bid Opening Date & Time	:	Will be intimated only to the eligible/qualified Bidders nearer the time.
(viii)	Bid Submission Mode	:	Bids must be uploaded online in OIL's E-procurement portal
(ix)	Bid Opening Place	:	Office of GM-Pipeline Projects Oil India Limited, Guwahati -781171, Assam, India.
(x)	Bid Validity	:	120 days from date of Bid Closing
(xi)	Mobilization Time	:	30 days from the date of issue of Letter of Award (LOA)
(xii)	Bid Security Amount	:	For one Spread - Rs. 51.28 Lacs For Two Spreads-Rs. 79.72 Lacs For Three Spreads - Rs. 104.73 Lacs
(xiii)	Bid Security Validity	:	03-04-2018
(xiv)	Original Bid Security to be	:	Office of GM-Pipeline Projects

	submitted		Oil India Limited, Guwahati -781171, Assam, India.
(xv)	Amount of Performance Security	:	10% of the Annualized Contract Value.
(xvi)	Validity of Performance Security	:	15 months from the date of completion of the contract.
(xvii)	Duration of the Contract	:	03(Three) years (inclusive of Mobilization period) from the date of Letter of Award (LOA).
(xviii)	Quantum of Liquidated Damage for Default in Timely Mobilization	:	Refer General Conditions of Contract
(xix)	Integrity Pact	:	Must be digitally signed & uploaded along with the Techno-commercial Bid.
(xx)	Bids to be addressed to	:	Office of GM-Pipeline Projects Oil India Limited, Guwahati -781171, Assam, India.
(xxi)	Last date for receipt of pre-bid queries	:	13.09.2017 or two days prior to Scheduled Pre Bid Conference
(xxii)	Pre-bid Conference date	:	15.09.2017
(xxiii)	Venue of Pre-bid Conference	:	TE's Gurgaon office. Tractebel Engineering Pvt. Ltd. 2nd floor, HSBC Building, Plot no. 68, Sector 44, Gurgaon- 122002

3.0 **Integrity Pact** : The Integrity Pact must be uploaded in OIL's E-procurement portal along with the Technical Bid digitally signed by the same signatory who signed the Bid i.e. who is duly authorized to sign the Bid. If any bidder refuses to sign Integrity Pact or declines to submit the Integrity Pact, their bid shall be rejected straightway. Uploading the Integrity Pact with digital signature will be construed that all pages of the Integrity Pact has been signed by the bidder's authorized signatory who signs the Bid.

4.0 **GUIDELINES FOR PARTICIPATING IN OIL'S E-PROCUREMENT:**

4.1 To participate in OIL's E-procurement tender, bidders should have a legally valid digital certificate of **Class 3 with Organizations Name** and **Encryption certificate** as per Indian IT Act from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India (<http://www.cca.gov.in>). **Digital Signature Certificates having "Organization Name" field as "Personal" are not acceptable.**

4.2 Bidders must have a valid User ID to access OIL's e-Procurement site for submission of bid. Vendors having User ID & password can purchase bid documents **on-line through OIL's electronic Payment Gateway**. New vendor shall obtain User ID & password through online vendor registration system in e-portal and can purchase bid documents subsequently in the similar manner.

4.3 Parties, who do not have a User ID, can click on **Guest** login button in the E-portal to view and download the available open tenders. **The detailed guidelines are available in OIL's e-procurement site (Help Documentation).** For any clarification in this regard, bidders may contact E-Tender Support Cell at Guwahati at erp_mm@oilindia.in, Ph.: 0374- 2807178/4903. The link to OIL's E-Procurement portal has also been provided in OIL's web site (www.oil-india.com).

4.4 **EXEMPTION OF TENDER FEE:**

4.4.1 If the bidder is a Micro or Small Enterprise [MSEs] under the Micro, Small and Medium Enterprises Development Act, 2006 and is registered with District Industries Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of

Micro, Small and Medium Enterprises, then they are exempted from payment of tender fees for the items/services for which they are registered. Copy of valid Registration Certificate, must be enclosed along with the application for issuing tender documents and the Registration Certificate should clearly indicate the items/services for which bidder are registered [or they intend to quote against OIL tenders] with any of the aforesaid agencies.

4.4.2 The Central Govt. Departments and Central Public Sector Undertakings will also be exempted from the payment of tender fee. Parties registered with DGS&D, having valid certificates will be exempted from payment of tender fee.

4.4.3 Bidders claiming waiver of tender fees, shall apply to M/s Tractebel, Gurgaon Office with documentary evidence before 07 days of bid closing date.

5.0 **PRE-BID CONFERENCE:**

5.1 A pre-Bid conference is planned to be held during **3rd week of September, 2017** at TE office **Gurgaon** to explain the requirements of Company in details to the interested prospective Bidders and to understand bidders' perspective including exchange of views/clarifications, if any, on the Scope of Work, Bid Rejection/Bid Evaluation Criteria and other terms & conditions of the Tender. The parties who purchase the bid documents shall be allowed to participate in the Pre-Bid conference. For details of the venue, bidders may contact M/s Tractebel, Gurgaon Office.

5.2 At the most 2 (two) representatives from each prospective bidder shall be allowed to participate in the pre-bid conference. All costs for attending the pre-bid conference shall be to prospective bidders' account.

5.3 The prospective bidders shall submit their queries through E-mail / Fax / Courier addressed to M/s Tractebel, Gurgaon Office two days prior to the scheduled date of pre-bid conference. Tractebel shall provide clarifications to the queries in the pre-bid conference.

5.4 However, clarifications/exceptions/deviations, if required any, should be brought out by the bidder prior to or during the Pre-Bid Conference only. After processing these suggestions, as a sequel to the pre-bid conference, Company/ Tractebel may communicate the changes in this regard, if agreed any, through an addendum to tender document to the prospective bidders who purchased the tender document. Company will not accept any exception/deviation to tender conditions/specifications once the same are frozen after the pre-bid conference and the non-compliant bid (s) shall be rejected outright against this tender.

5.5 The exact date and venue of pre-bid conference will be intimated later on.

6.0 **IMPORTANT NOTES:**

Bidders shall take note of the following important points while participating in OIL's e-procurement tender:

- i) The bid along with all supporting documents must be submitted through OIL's E-procurement site only except the "Original Bid Security" and following documents which shall be submitted manually by the bidder in a sealed envelope superscribed with OIL's IFB No./ E-Tender No., Bid Closing date and marked as "Original Bid Security" and addressed to GM-Pipeline-Projects, Pipeline Projects Department, Oil India Limited, Guwahati-781171, Assam(India).

Additionally, following documents to be submitted in hard form if specifically called for in the tender:

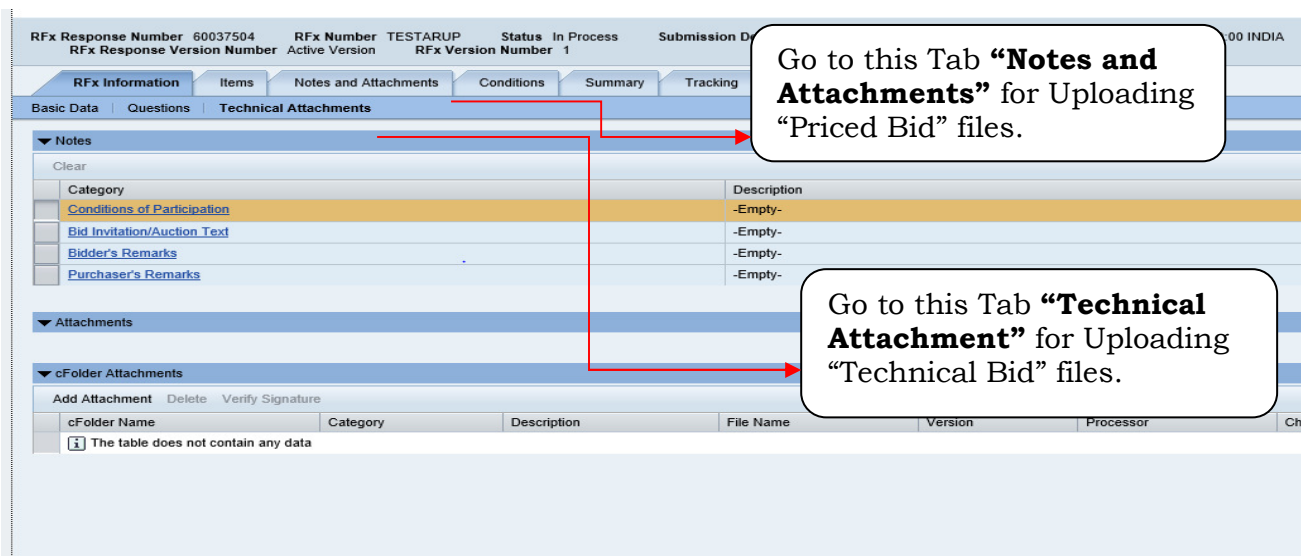
- a) Printed catalogue and Literature, if called for in the tender.
- b) Power of Attorney for signing the bid.
- c) Any other document required to be submitted in original as per tender requirement.

The above documents including the Original bid security, must be received at Pipeline Project's office, OIL at Guwahati on or before 13:00 Hrs. (IST) on the technical bid closing date failing which the bid shall be rejected. A scanned copy of the Bid Security shall also be uploaded by the bidder along with their Technical Bid in OIL's E-procurement site.

- ii) Bid should be submitted online in OIL's E-procurement site up to 11.00 AM (IST)(Server Time) on the date as mentioned and will be opened on the same day at 2.00 PM(IST) at the office of the GM-Pipelines-Projects, Guwahati in presence of the authorized representatives of the bidders.
- iii) If the digital signature used for signing is not of "Class -3" with Organizations name, the bid will be rejected.
- iv) The Company reserves the right to reject any or all the tenders or accept any tender without assigning any reason.
- v) Conditional bids are liable to be rejected at the discretion of the Company.
- vi) The bidders are required to furnish the composition and status of ownership of the firm in whose name bid documents have been purchased / issued along with one or more of the following documentary evidences (which are applicable to the bidder) in support of the same and scanned copies of the same should be uploaded along with the Technical Bid.
 - a) In case of Sole Proprietorship Firm, Copies of Telephone/Electricity/Mobile Bill, PAN card, latest Income Tax Return form indicating therein the name, business and residential address, E-mail and telephone numbers of the owner and copies of Service Tax and Central Excise Registration Certificate.
 - b) In case of HUF, Copies of Telephone/Electricity/Mobile Bill, PAN card, latest Income Tax Return form, Family Arrangement indicating therein the name, residential address, E-mail and telephone numbers of the owners in general and Karta in particular and copies of Service Tax and Central Excise Registration Certificate.
 - c) In case of Partnership Firm, Copies of Telephone/Electricity/Mobile Bill, PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the partners (including the Managing Partner), registered partnership agreement/deed and copies of Service Tax and Central Excise Registration Certificate.
 - d) In case of Co-Operative Societies, Copies of Telephone/Electricity/Mobile Bill, PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the Directors or persons who are at the helm of affairs, registration certificate from Registrar of Co-Operative Societies and copies of Service Tax and Central Excise Registration Certificate.
 - e) In case of Societies registered under the Societies Registration Act, Copies of Telephone/Electricity/Mobile Bill, PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the Directors or persons who are at the helm of affairs, registration certificate from the Registrar of the state and copies Service Tax and Central Excise Registration Certificate.
 - f) In case of Joint Stock Companies registered under the Indian Companies Act, Copies of Telephone/Electricity/Mobile Bill, PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the Directors or persons who are at the helm of affairs, Certificate of Incorporation from the Registrar of Companies, Memorandum and Articles and copies of Service Tax and Central Excise Registration Certificate.
 - g) In case of Trusts registered under the Indian Trust Act, Copies of Telephone/Electricity/Mobile Bill, PAN card, latest Income Tax Return form indicating therein the name, residential address, E-mail and telephone numbers of all the Trustee or persons who are at the helm of affairs, registration certificate from the Registrar of the state, Trust Deed and copies Service Tax and Central Excise Registration Certificate.
- vii) The selected bidder will be required to enter into a formal contract, which will be based on their bid and O.I.L.'s Standard Form of Contract.
- viii) The Bid Security / Performance Security Money shall not earn any interest.

- ix) Time will be regarded as the essence of the Contract and the failure on the part of the Contractor to complete the work within the stipulated time shall entitle the Company to recover liquidate damages and / or penalty from the Contractor as per terms of the tender /contract.
- x) The contractor will be required to allow OIL officials to inspect the work site and documents in respect of the workers' payment.
- xi) **BACKING OUT BY BIDDER:** No Bidder can withdraw his bid within the validity or extended validity of the bid. In case any bidder withdraws their bid within the bid validity period, Bid Security will be forfeited and the party will be put on Holiday as per the Banning Policy (available in OIL's website) of Company. Once a bid is withdrawn, the offer will be treated as withdrawn and no further claim / correspondence will be entertained in this regard.
- xii) **BACKING OUT BY L-1 BIDDER AFTER ISSUE OF LOA:** In case LOA issued is not accepted by the L1 bidder or the Performance Security is not submitted as per the terms of the contract within the time specified in the Bid Document, the Bid Security shall be forfeited and the bidder shall be dealt as per the Banning Policy (available in OIL's website) of Company.
- xiii) **FURNISHING FRAUDULENT INFORMATION/DOCUMENT:** The information and documents furnish by the bidder/ contractor in respect of the subject tender/contract are accepted to be true and genuine. However, if it is detected during technical scrutiny or after award of the contract or after expiry of the contract, that the bidder had submitted any fake/fraudulent document or furnished false statement, the offer/contract shall be rejected/ cancelled, as the case may be and the bidder (if fake document/false statement pertains to such bidder) shall be dealt as per the Banning Policy (available in OIL's website) of Company.
- xiv) **ERRING / DEFAULTING AGENCIES:** Erring and defaulting agencies like bidder, contractor, supplier, vendor, service provider will be dealt as per OIL's Banning Policy dated 6th January, 2017 available in OIL's website: www.oil-india.com.
- xv) **The tender will be governed by:**
 - Forwarding Letter
 - Instruction to Bidders
 - BEC-BRC- Bid Evaluation Criteria & Bid Rejection Criteria.
 - Part-I : General Conditions of Contract (GCC)
 - Part-II : Scope of Work and Technical Specification
 - Part-III: Special Conditions of Contract (SCC)
 - Part-IV: Price Schedule/Schedule of Rates
 - Part-V : Integrity Pact
 - Part-VI: Proforma and Annexures
- xvi) **Bidders are requested to examine all instructions, forms, terms and specifications in the bid. Failure to furnish all information required as per the bid or submission of offers not substantially responsive to the bid in every respect will be at the bidder's risk and may result in the rejection of its offer without seeking any clarifications. Offers sent without the requisite value of prescribed bid security (if called for in the bid) in original will be ignored straightway.**
- xvii) The tender is invited under **SINGLE STAGE-TWO BID SYSTEM**. The bidders shall submit both the "TECHNICAL" and "PRICED" bids through electronic form in the OIL's e-Procurement portal within the Bid Closing Date and Time stipulated in the e-Tender portal. The Technical Bid should be submitted as per Scope of Work & Technical Specifications along with all technical documents related to the tender and uploaded in **"Technical Attachments" Tab only. Bidders to note that no price details should be uploaded in "Technical Attachments" Tab Page. Details of prices as per Price Bid format/Priced bid to be uploaded under "Notes & Attachments" tab. A screen shot in this regard is shown below. Offer not complying with**

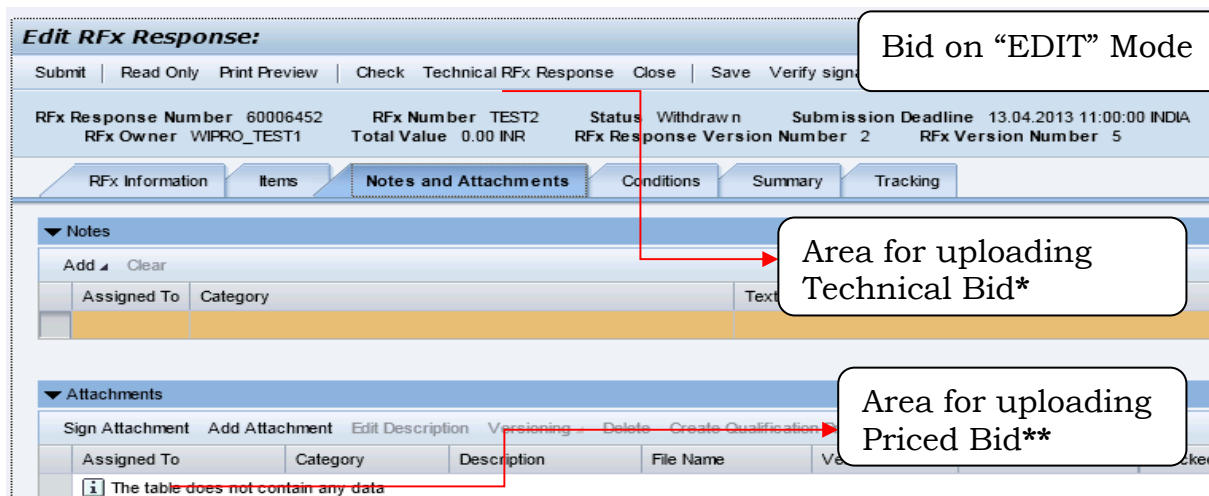
above submission procedure will be rejected as per Bid Evaluation Criteria mentioned in Clause 1.0 of (C) Commercial Evaluation Criteria.



Go to this Tab **“Notes and Attachments”** for Uploading “Priced Bid” files.

Go to this Tab **“Technical Attachment”** for Uploading “Technical Bid” files.

On “EDIT” Mode, Bidders are advised to upload “Technical Bid” and “Priced Bid” in the respective places as indicated below:



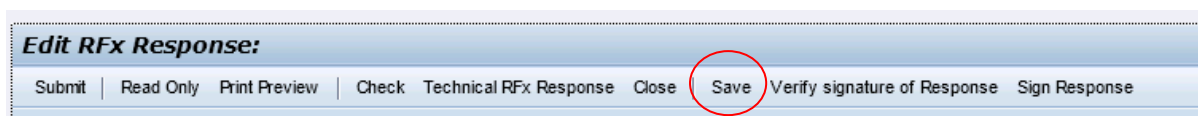
Bid on “EDIT” Mode

Area for uploading Technical Bid*

Area for uploading Priced Bid**

Note:

- * The “Technical Bid” shall contain all techno-commercial details **except the prices**.
- ** The “Priced bid” must contain the price schedule and the bidder’s commercial terms and conditions, if any. For uploading Priced Bid, click on Add Attachment, a browser window will open, select the file from the PC and name the file under Description, Assigned to General Data and click on OK to digitally sign and upload the File. Please click on Save Button of the Response to Save the uploaded files.



7.0 OIL now looks forward to your active participation in the IFB.

INSTRUCTIONS TO BIDDERS

- 1.0 Bidder shall bear all costs associated with the preparation and submission of bid. Oil India Limited, hereinafter referred to as Company, will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

A. BID DOCUMENTS

- 2.0 The services required, bidding procedures and contract terms are prescribed in the Bid Document. This Bid Document includes the following:

- (a) A Forwarding Letter highlighting the following points:
 - (i) Company's IFB No. & Type and Tender Fee
 - (ii) Bid closing date and time
 - (iii) Bid opening date and time
 - (iv) Bid submission Mode
 - (v) Bid opening place
 - (vi) Bid validity, Mobilisation time & Duration of contract
 - (vii) The amount of Bid Security with validity
 - (viii) The amount of Performance Guarantee with validity
 - (ix) Quantum of liquidated damages for default in timely mobilization
- (b) Instructions to Bidders
- (c) BEC-BRC- Bid Evaluation Criteria & Bid Rejection Criteria
- (d) General Conditions of Contract (Part-I)
- (e) Scope of work & Technical Specification,(Part-II)
- (f) Special Conditions of Contract, (Part-III)
- (g) Schedule of Rates, (Part-IV)
- (h) Integrity Pact, (Part-V)
- (i) Proforma and Annexures, (Part-VI)

- 2.1 The bidder is expected to examine all instructions, forms, terms and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or submission of a bid not substantially responsive to the Bid Documents in every respect will be at the Bidder's risk & responsibility and may result in the rejection of its bid.

3.0 TRANSFERABILITY OF BID DOCUMENTS:

- 3.1 Bid Documents are non-transferable. Bid can be submitted only in the name of the bidder in whose name the Bid Document has been issued.
- 3.2 Unsolicited bids will not be considered and will be rejected straightway.

4.0 AMENDMENT OF BID DOCUMENTS:

- 4.1 At any time prior to the deadline for submission of bids, the Company may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bid Documents through issuance of an Addendum.
- 4.2 The Addendum will be uploaded in OIL's E-Tender Portal in the Tab "**Technical Rfx**" and under External Area - "Amendments" folder. The Company may, at its discretion, extend the deadline for bid submission. Bidders are expected to take the Addendum into account in preparation and submission of their bid. **Bidders are to check from time to time the E-Tender portal ["Technical RFX" Tab and under the**

folder “Amendments”] for any amendments to the bid documents before submission of their bids. No separate intimation shall be sent to the Bidders.

B. PREPARATION OF BIDS

5.0 **LANGUAGE OF BIDS:** The bid as well as all correspondence and documents relating to the bid exchanged between the Bidder and the Company shall be in English language, except that any printed literature may be in another language provided it is accompanied by an official and notarised English translated version, which shall govern for the purpose of bid interpretation.

6.0 **BIDDER’S NAME & ADDRESS:**

Bidders should indicate in their bids their detailed postal address including the Fax/Telephone /Cell Phone Nos. and E-mail address.

7.0 **DOCUMENTS COMPRISING THE BID:**

Bids are invited under Single Stage Two Bid System. The bid to be uploaded by the Bidder in OIL’s E-Tender portal shall comprise of the following components:

(A) UN-PRICED TECHNICAL BID

- (i) Complete technical details of the services and equipment specifications with catalogue, etc.
- (ii) Documentary evidence established in accordance with Clause 10.0 hereunder.
- (iii) Bid Security (scanned) in accordance with Clause 11.0 hereunder. Original Bid Security should be sent as per Clause No. 11.10 below.
- (iv) Statement of Non-compliance (if any).
- (v) Copy of Priced Bid (Schedule of Rates) ***without indicating prices***
- (vi) Integrity Pact digitally signed by OIL’s competent personnel, attached with the bid document to be digitally signed by the bidder.
- (vii) Any other document as per tender requirement (scanned copy). Hard copy(s) of the same, if called for in the tender, should be sent separately to reach on or before **13:00 Hrs (IST) on the bid closing date failing which the bid shall be rejected.**

Note: Please note that no price details should be uploaded in UN-PRICED TECHNICAL BID under “Technical Attachment” Tab.

(B) PRICED BID

Bidder shall quote their prices in the Proforma available in OIL’s E-procurement portal in the “Notes & Attachments” Tab. **The price quoted in the “PRICE BID FORMAT” will only be considered for evaluation.** The Priced Bid shall contain the prices along with the currency quoted and any other commercial information pertaining to the service offered.

8.0 **BID FORM:**

The bidder shall complete the Bid Form and the appropriate Price Schedule furnished in their Bid.

9.0 **BID PRICE:**

- 9.1 Prices must be quoted by the Bidders online as per the price bid format available in OIL’s E-Tender Portal under “Notes & Attachment” Tab. Prices must be quoted by the bidders as per the Pricing format.
- 9.2 Prices quoted by the successful bidder must remain firm during its performance of the Contract and is not subject to variation on any account.
- 9.3 All duties and taxes (excluding GST) including Corporate Income Tax, Personal Tax, Entry Taxes if applicable etc. and other Cess/levies payable by the successful bidder under the Contract for which this Bid Document is being issued, shall be included in the rates, prices and total Bid Price submitted by the bidder, and the evaluation and comparison of bids shall be made accordingly. For example, personal taxes and/or

any corporate taxes arising out of the profits on the contract as per rules of the country shall be borne by the bidder.

9.4 Bidders shall quote the prices in Indian Rupees only.

9.5 Bidders are advised to ensure timely submission of correct invoice(s) as per GST regulation with all required supporting document(s) within a period specified in Contracts/ LOA to enable Owner to avail Input Credit as applicable.

If input credit with respect to GST is not available to owner for any reason which is not attributable to owner, then Owner shall not be obligated or liable to pay or reimburse GST charged in the invoice(s).

9.6 It is presumed that bidder has already complied GST regulations. Bidder shall get registered in the three states i.e. Bihar, West Bengal & Assam before start of services.

9.7 All payment to be made by Owner shall be made in Indian Rupees only.

10.0 **DOCUMENTS ESTABLISHING BIDDER'S ELIGIBILITY AND QUALIFICATIONS:**

10.1 These are listed in **BID EVALUATION CRITERIA (BEC)** of the Bid document.

11.0 **BID SECURITY:**

11.1 The Bid Security is required to protect the Company against the risk of Bidder's conduct, which would warrant forfeiture of the Bid Security, pursuant to sub-clause 11.9 hereunder.

11.2 All the bids must be accompanied by Bid Security in Original for the amount as mentioned in the "Forwarding Letter" and shall be in the OIL's prescribed format as Bank Guarantee (BG) enclosed with the NIT or a Bank Draft/Bankers' cheque in favour of OIL and payable at Guwahati, Assam from any Scheduled Indian Bank or Any Branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank.

The Bank Guarantee shall be valid for the time as asked for in the Bid Document. Bank Guarantees issued by Banks in India should be on non-judicial stamp paper of requisite value, as per Indian Stamp Act, purchased in the name of the Banker.

11.3 **Bidders can submit Bid Security on-line through OIL's electronic Payment Gateway.**

11.4 Any bid not secured in accordance with **sub-clause 11.2** above shall be rejected by the Company as non-responsive.

11.5 The bidders shall extend the validity of the Bid Security suitably, if and when specifically advised by OIL, at the bidder's cost.

11.6 Unsuccessful Bidder's Bid Security will be discharged and/or returned within 30 days after finalization of IFB.

11.7 Successful Bidder's Bid Security will be discharged and/or returned upon Bidder's furnishing the Performance Security and signing of the contract. Successful bidder will however ensure validity of the Bid Security till such time the Performance Security in conformity with **Clause 29.0** below is furnished.

11.8 Bid Security shall not accrue any interest during its period of validity or extended validity.

11.9 The Bid Security may be forfeited:

- i) The bidder withdraws the bid within its original/extended validity.
- ii) The bidder modifies/revise their bid suo-moto.
- iii) Bidder does not accept the order/contract.
- iv) Bidder does not furnish Performance Security Deposit within the stipulated time as per tender/order/contract.

- v) If it is established that the bidder has submitted fraudulent documents or has indulged into corrupt and fraudulent practice, the bid security shall be forfeited after due process in addition to other action against the bidder
- 11.10 In case any bidder withdraws their bid within the bid validity period, Bid Security will be forfeited and the party will be put on Holiday as per the Banning Policy (available in OIL's website) of Company.
- 11.11 **The scanned copy of the original Bid Security in the form of either Bank Guarantee or Banker's Cheque or Bank Draft must be uploaded by bidder along with the Technical bid in the "Technical Attachment" of OIL's E-portal.** The original Bid Security shall be submitted by bidder to the office of GM-Pipelines Projects, Oil India Ltd., Guwahati-781171(Assam), India in a sealed envelope which must reach GM- Pipelines Projects' office on or before 13:00 Hrs (IST) on the Bid Closing date.
- 11.12 A bid shall be rejected straightway if Original Bid Security is not received within the stipulated date & time mentioned in the Tender and/or if the Bid Security validity is shorter than the validity indicated in Tender and/or if the Bid Security amount is lesser than the amount indicated in the Tender.
- 11.13 The following is the Bank details of OIL for obtaining Bank Guarantee:

	Bank Details of Beneficiary	
a	Bank Name	AXIS BANK
b	Branch Name	GUWAHATI
c	Branch Address	CHIMBER HOUSE, G.S.ROAD, DISPUR ASSAM
d	Banker Account No.	140010200027654
e	Type of Account	Current Account
f	IFSC Code	UTIB0000140
g	MICR Code	781211002
h	SWIFT Code	AXISINBB140
i	Contact No.	8876501401
j	Contact Person Name	Mr. Dibakar Ghosh
k	Email Id	Guwahati.branchhead@axisbank.com

- 12.0 **EXEMPTION FROM SUBMISSION OF BID SECURITY:**
- 12.1 Central Govt. offices and Central Public Sector undertakings are exempted from submitting Bid Security.
- 12.2 If the bidder is a Micro or Small Enterprises (MSE) registered with District Industry Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of MSME, then they are also exempted from submitting Bid Security. Bidding MSEs shall have to submit a Copy of valid Registration Certificate clearly indicating the monetary limit, if any and the items/Services for which bidder are registered with any of the aforesaid agencies.
- In case bidding MSE is owned by Schedule Caste or Schedule Tribe entrepreneur, valid documentary evidence issued by the agency who has registered the bidder as MSE owned by SC/ST entrepreneur should also be enclosed.
- 13.0 **PERIOD OF VALIDITY OF BIDS:**

- 13.1 Bids shall remain **valid for 120** days from the date of closing of bid prescribed by the Company. **Bids of shorter validity will be rejected as being non-responsive.** If nothing is mentioned by the bidder in their bid about the bid validity, it will be presumed that the bid is valid for 120 days from Bid Closing Date.
- 13.2 In exceptional circumstances, the Company may solicit the Bidder's consent to an extension of the period of validity. The request and the response thereto shall be made in writing through Fax or e-mail. The Bid Security provided under Para 11.0 above shall also be suitably extended. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request will neither be required nor permitted to modify their Bid.

C. SIGNING & SUBMISSION OF BIDS:

14.0 SIGNING OF BID:

- 14.1 Bids are to be submitted online through OIL's E-procurement portal with digital signature. The bid and all attached documents should be digitally signed by the bidder using "Class 3" digital certificates with Organizations Name [e-commerce application (Certificate with personal verification and Organisation Name)] as per Indian IT Act 2000 obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India before bid is uploaded. Digital Signature Certificates having "Organization Name" field other than Bidder's Name are not acceptable. Digital Signature Certificates having Bidder's Name in the "Organization Name" field are only acceptable.

The bid including all uploaded documents shall be digitally signed by duly authorized representative of the bidder holding a Power of Attorney to bind the Bidder to the contract.

If any modifications are to be made to a document after uploading, the same may be deleted and such revised document is to be Digitally Signed again before uploading. It is advised to delete the unwanted documents before submission of the response. The Power of Attorney shall be submitted by bidder as mentioned in Para 15.1 below.

In case the digital signature is not of "Class-3" with organization name, the bid will be rejected. Bidder is responsible for ensuring the validity of digital signature and its proper usage by their employees.

- 14.2 The original and all copies of the bid shall be typed or written in indelible inks. Since bids are to be submitted ONLINE with digital signature, manual signature is NOT relevant. The letter of authorisation shall be indicated by written Power of Attorney accompanying the Bid.
- 14.3 Any person signing the Bid or any other document in respect of this Bidding Document or other relevant documents on behalf of the Bidder without disclosing his authority to do so shall be deemed to have the authority to bind the Bidder. If it is discovered at any time that the person so signing has no authority to do so, the Company (OIL) may, without prejudice to any other right or remedy, cancel his Bid or Contract and hold the Bidder liable to the Company (OIL) for all costs and damages arising from the cancellation of the Bid or Contract including any loss which the Company (OIL) may sustain on account thereof.
- 14.4 Any physical documents submitted by bidders shall contain no interlineations, white fluid erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such correction shall be initialled by the person or persons who has/have digitally signed the Bid.
- 14.5 Any Bid, which is incomplete, ambiguous, or not in compliance with the Bidding process will be rejected.

15.0 SUBMISSION OF BIDS

- 15.1 The tender is processed under single stage - Two bid system. Bidder shall submit the Technical bid and Priced bid along with all the Annexures and Proforma (wherever applicable) and copies of documents in electronic form through OIL's e-procurement portal within the Bid Closing Date & Time stipulated in the e-tender. For submission of Bids online at OIL's E-Tender Portal, detailed instructions is available in "User Manual" available in OIL's E-Tender Portal. Guidelines for bid submission are also provided in the "Forwarding Letter". The Technical Bid is to be submitted as per Terms of Reference/Technical Specifications of the bid document and Priced Bid as per the Price Schedule. The Technical Bid should

be uploaded in the “Technical Attachment” Tab Page only. Prices to be quoted as per Price Bid Format should be uploaded as Attachment just in the attachment link under “Notes & Attachments” Tab under General Data in the e-portal. **No price should be given in the “Technical Attachment”, otherwise bid shall be rejected.** The priced bid **should not** be submitted in physical form and which shall not be considered.

However, the following documents in one set should necessarily be submitted in physical form in sealed envelope superscribing the “IFB No., Brief Description of services and Bid Closing/Opening date & Time along with the bidder’s name and should be submitted to GM-Pipelines Projects, Oil India Ltd., Guwahati-781171 (Assam) on or before 13:00 Hrs (IST) on the bid closing date indicated in the IFB :

- i) The Original Bid Security along with 1(one) photocopy
- ii) Power of Attorney for signing of the bid
- iii) Any other document required to be submitted in original as per bid document requirement.

Printed catalogue and literature if called for in the bid document.

Documents sent through E-mail/Fax/Telephonic method will not be considered.

- 15.2 All the conditions of the contract to be made with the successful bidder are given in various Sections of the Bid Document. Bidders are requested to state their non-compliance to each clause as per Proforma of the bid document and the same should be uploaded along with the Technical Bid.
- 15.3 Timely delivery of the documents in physical form as stated in Para 15.1 above is the responsibility of the bidder. Bidders should send the same through Registered Post or by Courier Services or by hand delivery to the Officer in Charge of the particular tender before the Bid Closing Date and Time. Company shall not be responsible for any postal delay/transit loss.
- 15.4 Bids received through the e-procurement portal shall only be accepted. Bids received in any other form shall not be accepted.
- 16.0 Before submission of Bids, Bidders are requested to make themselves fully conversant with all Conditions of the Bid Document and other relevant information related to the works to be executed under this contract.
- 17.0 **DEADLINE FOR SUBMISSION OF BIDS:**
- 17.1 Bids should be submitted online as per the online tender submission deadline. Bidders will not be permitted by System to make any changes in their bid/quote after the bid submission deadline is reached. Bidders are requested to take note of this and arrange to submit their bids within the submission deadline to avoid last minute rush/network problems.
- 17.2 No bid can be submitted after the submission dead line is reached. The system time displayed on the e-procurement web page shall decide the submission dead line.
- 17.3 The documents in physical form as stated in Para 15.1 must be received by Company at the address specified in the “Forwarding Letter” on or before 13:00 Hrs(IST) on the Bid Closing Date. Timely delivery of the same at the address mentioned in the Forwarding Letter is the responsibility of the Bidders.
- 18.0 **LATE BIDS:** Bidders are advised in their own interest to ensure that their bids are uploaded in system before the closing date and time of the bid. The documents in physical form mainly the Original Bid Security if received by the Company after the deadline for submission prescribed by the Company shall be rejected and shall be returned to the Bidders in unopened condition immediately.
- 19.0 **MODIFICATION AND WITHDRAWAL OF BIDS:**
- 19.1 The Bidder after submission of Bid may modify or withdraw its Bid prior to Bid Closing Date & Time.
- 19.2 No Bid can be modified or withdrawn subsequent to the deadline for submission of Bids.
- 19.3 No Bid can be withdrawn in the interval between the deadline for submission of Bids and the expiry of the period of Bid Validity specified by the Bidder on the Bid Form. Withdrawal of a Bid during this interval shall result in the Bidder's forfeiture of its Bid Security and bidder shall also be debarred from participation in future tenders of OIL.

20.0 EXTENSION OF BID SUBMISSION DATE:

Normally no request for extension of Bid Closing Date & Time will be entertained. However, OIL at its discretion, may extend the Bid Closing Date and/or Time due to any reasons.

21.0 BID OPENING AND EVALUATION:

- 21.1 Company will open the Technical Bids, including submission made pursuant to clause 19.0, in presence of Bidder's representatives who choose to attend at the date, time and place mentioned in the Forwarding Letter. However, an authorisation letter from the Bidder must be produced by the Bidder's representative at the time of Bid Opening. Unless this Letter is presented, the representative will not be allowed to attend the Bid Opening. The Bidder's representatives who are allowed to attend the Bid Opening shall sign a register evidencing their attendance. Only one representative against each Bid will be allowed to attend. In technical bid opening, only "Technical Attachment" will be opened. Bidders therefore should ensure that technical bid is uploaded in the "Technical Attachment" Tab Page only in the E-portal.
- 21.2 In case of any unscheduled holiday or Bandh on the Bid Opening Date, the Bids will be opened on the next full working day. Accordingly, Bid Closing Date / time will get extended up to the next working day and time.
- 21.3 Bids which have been withdrawn pursuant to clause 19.0 shall not be opened. Company will examine bids to determine whether they are complete, whether requisite Bid Securities have been furnished, whether documents have been digitally signed and whether the bids are generally in order.
- 21.4 At bid opening, Company will announce the Bidder's names, written notifications of bid modifications or withdrawal, if any, the presence of requisite Bid Security, and such other details as the Company may consider appropriate.
- 21.5 Normally no clarifications shall be sought from the Bidders. However, for assisting in the evaluation of the bids especially on the issues where the Bidder confirms compliance in the evaluation and contradiction exists on the same issues due to lack of required supporting documents in the Bid (i.e. document is deficient or missing), or due to some statement at other place of the Bid (i.e. reconfirmation of confirmation) or vice versa, clarifications may be sought by OIL. In all the above situations, the Bidder will not be allowed to change the basic structure of the Bid already submitted by them and no change in the price or substance of the Bid shall be sought, offered or permitted.
- 21.6 Prior to the detailed evaluation, Company will determine the substantial responsiveness of each bid to the requirement of the Bid Documents. For purpose of these paragraphs, a substantially responsive bid is one, which conforms to all the terms and conditions of the Bid Document without material deviations or reservation. A material deviation or reservation is one which affects in any way substantial way the scope, quality, or performance of work, or which limits in any substantial way, in-consistent way with the Bid Documents, the Company's right or the bidder's obligations under the contract, and the rectification of which deviation or reservation would affect unfairly the competitive position of other bidders presenting substantial responsive bids. The Company's determination of Bid's responsiveness is to be based on the contents of the Bid itself without recourse to extrinsic evidence.
- 21.7 A Bid determined as not substantially responsive will be rejected by the Company and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
- 21.8 The Company may waive minor informality or nonconformity or irregularity in a Bid, which does not constitute a material deviation, provided such waiver, does not prejudice or affect the relative ranking of any Bidder.

22.0 OPENING OF PRICED BIDS:

- 22.1 Company will open the Priced Bids of the techno-commercially qualified Bidders on a specific date in presence of representatives of the qualified bidders. The techno-commercially qualified Bidders will be intimated about the Priced Bid Opening Date & Time in advance. In case of any unscheduled holiday or Bandh on the Priced Bid Opening Date, the Bids will be opened on the next working day.
- 22.2 The Company will examine the Price quoted by Bidders to determine whether they are complete, any computational errors have been made, the documents have been properly signed, and the bids are generally in order.

- 22.3 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price (that is obtained by multiplying the unit price and quantity) the unit price shall prevail and the total price shall be corrected accordingly. If there is a discrepancy between words, and figures, the amount in words will prevail. If any Bidder does not accept the correction of the errors, their Bid will be rejected.
- 23.0 **EVALUATION AND COMPARISON OF BIDS:**
- The Company will evaluate and compare the bids as per **BID EVALUATION CRITERIA (BEC)** of the Bid Document.
- 24.0 **DISCOUNTS / REBATES:**
- Unconditional discounts/rebates, if any, given in the bid will be considered for evaluation.
- 24.1 Post bid or conditional discounts/rebates offered by any bidder shall not be considered for evaluation of bids. However, if the lowest bidder happens to be the final acceptable bidder for award of contract, and if they have offered any discounts/rebates, the contract shall be awarded after taking into account such discounts/rebates.
- 25.0 **CONTACTING THE COMPANY:**
- 25.1 Except as otherwise provided in **Clause 21.0** above, no Bidder shall contact Company on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded except as required by Company vide **sub-clause 21.6**.
- 25.2 An effort by a Bidder to influence the Company in the Company's bid evaluation, bid comparison or Contract award decisions may result in the rejection of their bid.
- D. **AWARD OF CONTRACT****
- 26.0 **AWARD CRITERIA:**
- The Company will award the Contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.
- 27.0 **COMPANY'S RIGHT TO ACCEPT OR REJECT ANY BID:**
- Company reserves the right to accept or reject any or all bids and to annul the bidding process and reject all bids, at any time prior to award of contract, without thereby incurring any liability to the affected bidder, or bidders or any obligation to inform the affected bidder of the grounds for Company's action.
- 28.0 **NOTIFICATION OF AWARD:**
- 28.1 Prior to the expiry of the period of bid validity or extended validity, Company will notify the successful Bidder in writing by registered letter or by fax or E-mail (to be confirmed in writing by registered / couriered letter) that its Bid has been accepted.
- 28.2 The notification of award will constitute the formation of the Contract.
- 28.3 Upon the successful Bidder's furnishing of Performance Security pursuant to **Clause 29.0** below, the Company will promptly notify each un-successful Bidder and will discharge their Bid Security, pursuant to **Clause 11.0** hereinabove.
- 29.0 **PERFORMANCE SECURITY:**
- 29.1 On receipt of notification of award from the Company, the successful Bidder shall furnish to Company the Performance Security for an amount specified in the Forwarding Letter (and Letter of Award (LOA) issued by Company to Contractor awarding the contract) or in any other format acceptable to the Company and must be in the form of a Demand Draft or Bank Guarantee from any schedule Indian Bank or any Branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank.
- Bank Guarantee issued by a Bank, amongst others, must contain the following particulars of such bank:
- a) Full address.
- b) Branch Code.

c) Code Nos. of the authorized signatory with full name and designation.

d) Phone Nos., Fax Nos., E-mail address.

The domestic bidders will have to submit the Bank Guarantee from any of the scheduled banks and on non-judicial stamp paper of requisite value as per the Indian Stamp Act, purchased in the name of the issuing banker.

The Performance Security shall be denominated in the currency of the contract.

29.2 The Performance Security specified above must be valid for 3(three) months beyond the contract period after completion of warranty obligations. The Performance Security will be discharged by Company not later than 30 days following its expiry. In the event of any extension of the Contract period, Bank Guarantee should be extended by Contractor by the period equivalent to the extended period.

29.3 The Performance Security shall be payable to Company as compensation for any loss resulting from Contractor's failure to fulfil its obligations under the Contract.

29.4 The Performance Security will not accrue any interest during its period of validity or extended validity.

29.5 Failure of the successful Bidder to comply with the requirements of **clause 29.0 and/or 30.0** shall constitute sufficient grounds for annulment of the award and forfeiture of the Bid Security or Performance Security. In such an eventuality, action shall be taken as per OIL's Bidding Policy.

30.0 SIGNING OF CONTRACT:

30.1 At the same time as the Company notifies the successful Bidder that its Bid has been accepted, the Company will either call the successful Bidder for signing of the agreement or send the Contract Form provided in the Bid Documents, along with the General & Special Conditions of Contract, Technical Specifications, Schedule of Rates incorporating all agreements agreed between the two parties.

30.2 The successful Bidder shall sign and date the contract and return it to the Company after receipt of LOA. Till the contract is signed, the LOA issued to the successful bidder shall remain binding amongst the two parties.

30.3 In the event of failure on the part of the successful Bidder to sign the contract, OIL reserves the right to terminate the LOA issued to the successful Bidder and invoke the Bid Security or the Performance Security if submitted by the successful Bidder.

31.0 INTEGRITY PACT:

31.1 OIL shall be entering into an Integrity Pact with the Bidders as per format enclosed at **Part V** of the Bid Document. The Integrity Pact has been duly signed digitally by OIL's competent signatory and uploaded in the OIL's e-portal. The Integrity Pact shall be returned by the bidder (along with the technical Bid) duly signed by the same signatory who signed the Bid i.e. who is duly authorized to sign the Bid. Uploading the Integrity Pact in the OIL's E-portal with digital signature will be construed that all pages of the Integrity Pact has been signed by the bidder's authorized signatory who has signed the bid. **If any bidder refuses to sign Integrity Pact or declines to submit the Integrity Pact, their bid shall be rejected straightway.**

31.2 OIL has appointed Shri Rajiv Mathur, IPS(Retd) and Shri Satyananda Mishra, IAS(Retd.) as Independent Monitors (IEM) for a period of 3(three) years to oversee implementation of Integrity Pact in OIL. Bidders may contact the Independent External Monitors for any matter relating to the IFB at the following addresses:

a. Shri Rajiv Mathur, IPS(Retd), Former Director, IB, Govt. of India;

E-mail: rajivmathur23@gmail.com

b. Shri Satyananda Mishra, IAS(Retd.), Former Chief Information Commissioner of India & Ex-Secretary, DOPT, Govt. of India

E-mail: satyanandamishra@hotmail.com

32.0 LOCAL CONDITIONS:

It is imperative for each Bidder to be fully informed themselves of all Indian as well as local conditions, factors and legislation which may have any effect on the execution of the work covered under the Bidding Document. The bidders shall be deemed, prior to submitting their bids to have satisfied themselves of all the aspects covering the nature of the work as stipulated in the Bidding Document and obtain for themselves all necessary information as to the risks, contingencies and all other circumstances, which may influence or affect the various obligations under the Contract.

No request will be considered for clarifications from the Company (OIL) regarding such conditions, factors and legislation. It is understood and agreed that such conditions, factors and legislation have been properly investigated and considered by the Bidders while submitting the Bids. Failure to do so shall not relieve the Bidders from responsibility to estimate properly the cost of performing the work within the provided timeframe. Company (OIL) will assume no responsibility for any understandings or representations concerning conditions made by any of their officers prior to award of the Contract. Company (OIL) shall not permit any Changes to the time schedule of the Contract or any financial adjustments arising from the Bidder's lack of knowledge and its effect on the cost of execution of the Contract.

33.0 PURCHASE PREFERENCE POLICY (LINKED WITH LOCAL CONTENT)

(PP-LC)

MoP & NG has notified Government policy for providing Purchase Preference (linked with local content) (PP-LC). In this tender, target for local content is 20%. Bidders having local content of 20% or more in overall quoted price of each spread separately will be eligible for Purchase Preference .

33.1 In case a bidder is eligible to seek benefits under PP-LC policy as well as Public Procurement Policy for MSEs - Order 2012, then the bidders should categorically seek benefits against only one of the two policies i.e. either PP-LC or MSE policy. If a bidder seeks free of cost tender document under the MSE policy, then it shall be considered that the bidder has sought benefit against the MSE policy and this option once exercised cannot be modified subsequently.

33.2 Bidders seeking Purchase preference (linked with local content) (PP-LC) shall be required to meet / exceed the target of Local Content (LC) of 20 %.

33.2.1 Such bidders shall furnish following undertaking on its letter head along with their techno commercial bid. The undertaking shall become a part of the contract.

“We _____ (Name of the bidder) undertake that we meet the mandatory minimum Local Content (LC) requirement i.e.20% for claiming purchase preference linked with Local Contents under the Govt. policy against under tender no. _____.”

33.2.2 Above undertaking shall be supported by the following certificate from Statutory Auditor engaged by the bidder, on the letter head of such Statutory Auditor.

“We _____ the statutory auditor of M/s _____ (name of the bidder) hereby certify that M/s _____ (name of the bidder) meet the mandatory Local Content requirements of the Services i.e. 20% quoted vide offer No. _____ dated _____ against OIL tender No. _____ by M/s _____ (Name of the bidder).”

Note : In case of bidder(s) for whom Statutory Auditor is not required as per law required certificates shall be provided by a practicing Chartered Accountant.

33.2.3 At the bidding stage the bidder shall provide Break-up of “Local Component” and “Imported Component” in the format attached as Annexure A to ITB and shall be uploaded by the bidders along with their price bid in the e-procurement portal.

33.3 Eligible (techno-commercially qualified) LC bidder shall be granted a purchase preference to 10% i.e. where the evaluated price is within 10% of the evaluated lowest price of Non Local Content (NLC) bidder, other things being equal. Accordingly, purchase preference shall be granted to the eligible (techno-commercially qualified) LC bidder concerned, at the lowest valid i.e. Non-LC price bid.

- 33.3.1 Only those LC bidders whose bids are within 10% of the Non-LC L1 bid would be allowed an opportunity to match L1 bid. All the eligible LC bidders shall be asked to submit their confirmation to match their price in sealed envelopes. Envelopes of the bidders shall be opened and award for the prescribed quantity (Complete quantity of spread as this is non-split able tender for any spread) shall be made to the lowest evaluated (Techno- Commercial Acceptable) bidder among the eligible LC bidders. In case the lowest eligible LC bidder fails to match L1 price, the next eligible LC bidder will be awarded the work and so on. In case none of the eligible LC bidders matches the L1 bid, the actual bidder holding L1 price will secure the order.
- 33.4 Order for supply of 50% of the tendered quantity would be awarded to the lowest techno-commercially qualified LC bidder, subject to matching with valid NLC L1 price. The remaining will be awarded to L1 (i.e. NLC bidder). Prescribed 50% tendered quantity for LC bidders shall not be further sub-divided among eligible LC bidders.
- 33.4.1 However, if L1 bidder happens to be a LC bidder, the entire procurement value shall be awarded to such bidder.
- 33.4.2 When the tendered goods/services cannot be divided in the exact ratio of 50% / 50% then OIL reserve the right to award on lowest eligible PP-LC bidder for quantity not less than 50%, as may be dividable.
- For example
- In case tendered quantity is 3 (not divisible in the ratio of 50:50), PP-LC bidder shall get order for 2 nos. only and the rest will go to L-1 (NLC bidder).
- OR
- (Alternate clause applicable for cases where tendered quantity cannot be divided)
- 33.5 The tendered quantity is not splittable / non-dividable / cannot be procured from multiple sources. Hence, the entire procurement value shall be awarded to the lowest techno-commercially qualified LC bidder subject to matching with valid NLC L1 rates.
- 33.6 For the purpose of this policy, all terms used vide aforesaid policy shall be governed by the definitions specified at para 2 of the policy document notified by MoPNG vide letter No. O-27011/44/2015-ONG-II/FP dated 25.04.2017.
- 33.7 The successful bidder shall be obliged to fulfill the requirements of quality and completion period in accordance with the provisions of the Purchase order/contract.
- 33.8 OIL shall have the right to satisfy itself of the bidder's capability and quality of services of the contractor.
- 33.9 Determination of LC
- 33.9.1 LC of Services shall be calculated on the basis of the ratio of service cost of domestic component in service to the total cost of services.
- 33.9.2 The total cost of service shall be constituted of the cost spent for rendering of service, covering :
- Cost of component (material), which is used.
 - Manpower and consultant cost, cost of working equipment/facility, and
 - General service cost, excluding profit, company overhead cost, taxes and duties.
- 33.9.3 The criteria for determination of cost of local content in the service shall be as under :
- In the case of material being used to help the provision of service, based on country of origin.
 - In the case of manpower and consultant based on INR component of the services contract.
 - In the case of working equipment/facility, based on country of origin and
 - In the case of general service cost, based on the criteria as mentioned in clauses a, b and c above.
 - Indian flag vessels in operation as on date.

- 33.9.4 Determination of Local Content : The determination of local content of the working equipment/facility shall be based on the following provision.

Working equipment produced in the country is valued as 100% (one hundred percent) local content, working equipment produced abroad is valued as much as nil (0% percent) local content.

33.10 Calculation of LC and Reporting

- 33.10.1 LC shall be calculated on the basis of verifiable data. In the case of data used in the calculation of LC verifiable, the value of LC of the said component shall be treated as nil.

- 33.10.2 Formats for the calculation of LC of services may be seen at Annexure A attached.

33.11 Certification and Verification

- 33.11.1 Bidder seeking Purchase Preference under the policy, shall be obliged to verify the LC of goods as follows :

- 33.11.1.1 At bidding stage :

- a) Price Break-up
 - (i) The bidder shall provide break-up of “Local Component” and “Imported Component” along with the price bid as per provisions under clause 33.2.3.
 - (ii) Bidder must have LC in excess of the specified requirement.
- b) Undertaking by the bidder
 - i. The bidder shall submit undertaking along with the techno-commercial bid as per clause no. 33.2.1, such undertaking shall become a part of the contract.
 - ii. Bidder shall also submit the list of items / services to be procured from Indian manufacturers / service providers.
- c) Statutory Auditor’s Certificate

The Undertaking submitted by the bidder shall be supported by a certificate from Statutory Auditor as per clause 33.2.2.

- 33.11.1.2 After Contract Award

- a) In the case of procurement cases with the value less than Rs. 5 crore (Rupees Five Crore), the LC content may be calculated (self-assessment) by the contractor and certified by the Director/Authorized Representative of the Company.
 - b) The verification of the procurement cases with the value Rupees Five Crore and above shall be carried out by a Statutory Auditor engaged by the bidder.
- 33.11.2 Each supplier shall provide the necessary local content documentation to the statutory auditor, which shall review and determine the local content requirements have been met and issue of local content certificate to that effect on behalf of OIL, stating the percentage of local content in the good or service measured. The Auditor shall keep all necessary information obtained from suppliers for measurement of Local Content confidential.
- 33.11.3 The Local Content certificate shall be submitted along with each invoice raised. However, the % of local content may vary with invoice while maintaining the overall % of Local Content for the total work/purchase of the pro-rata Local Content requirement. In case, it is not satisfied cumulatively in the invoices raised up to that stage, the supplier shall indicate how the local content requirement would be met in the subsequent stages.
- 33.11.4 Where currency quoted by the bidder is other than Indian Rupee then the bidder claiming benefits under PP-LC shall consider exchange rate prevailing on the date of notice inviting tender (NIT) for the calculation of Local Content.

33.11.5 OIL shall have the authority to audit as well as witness production processes to certify the achievement of the requisite local content.

33.12 Sanctions

33.12.1 OIL shall impose sanction on bidder not fulfilling LC of goods/services in accordance with the value mentioned in certificate of LC.

33.12.2 The sanctions may be in the form of written warning, financial penalty and blacklisting.

33.12.3 If the bidder does not fulfill his obligation after the expiration of the period specified in such warning. OIL shall initiate action for blacklisting such bidder/ successful bidder.

33.12.4 A bidder who has been awarded the contract after availing Purchase Preference is found to have violated the LC provision, in the execution of the procurement contract of goods and/or services shall be subject to financial penalty over and above the PBG value prescribed in the contract and shall not be more than an amount equal to 10% of the Contract Price.

33.12.4.1 In pursuance of the clause No.34.12.4 above, towards fulfillment of conditions pertaining to Local Contents in accordance with the value mentioned in the certificate of LC, the bidder shall have to submit additional Bank Guarantee (format attached as Annexure B of ITB) equivalent to the amount of PBG.

35.0 SITE VISIT:

The Bidder, at the Bidder's own cost, responsibility and risk is encouraged to visit and examine the site of work and its surroundings, understand the logistics and obtain all information that may be necessary for preparing the Bid and entering into a Contract for the required services/work. The Contractor shall be deemed prior to Pre-Bid Conference & submitting their Bid to have:

- a) Inspected and examined the Site and its surroundings and carried out such surveys as it considers necessary;
- b) Satisfied itself as to the nature of the work and materials necessary for the execution of the Works;
- c) Satisfied itself as to the circumstances at the Site, including, without limitation, the ground and sub-soil, the form and nature of the Site and the climate and hydrological conditions of the Site;
- d) Satisfied itself as to the means of communication with and access to & through the Site, the accommodation it may require and the precautions and the times and methods of working;
- e) Obtained for itself all necessary information as to the risks, contingencies and all other circumstances, which may influence or affect the Contract price and its obligations under the Contract;
- f) Satisfied itself with all the Indian as well as local conditions, factors and legislation which may have any effect on the execution of the work covered under the Bid Document.
- g) Ascertained the general labour position at the Site and have understood the cost associated with engagement of the labours.

Annexure A
CALCULATION OF LOCAL CONTENT- SERVICE

NAME OF PROVIDER OF SERVICE:							
			Cost Summary				
			Domestic	Imported Rs./Foreign Currency (To be specified by the service provider)	Total	LC	
						%	Rs./Foreign Currency (To be specified by the service provider)
			a	b	c = a+b	d = a/c	e = cxd
A	Cost component						
	I. Material used cost	Rs./ Foreign Currency					
	II. Personnel & Consultant cost	Rs./ Foreign Currency					
	III. Other services cost	Rs./ Foreign Currency					
	IV. Total cost (I to IV)	Rs./ Foreign Currency					
B	Taxes and Duties (GST)	Rs./ Foreign Currency					
C	Total quoted price inclusive of GST	Rs./ Foreign Currency					

Note:

Percentage of LC Service = $A_{IV} a / A_{iv} c * 100$

As regards cases where currency quoted by the bidder is other than Indian Rupee, exchange rate prevailing on the date of notice inviting tender (NIT) shall be considered for the calculation of Local Content. *(Applicable only for Foreign Purchase / Global Tenders)*

Annexure B

Proforma of Bank Guarantee towards Purchase Preference – Local Content

Ref. No. _____ Bank Guarantee No. _____

Dated _____

To

Oil India Limited

India

Dear Sirs,

1. In consideration of _____ (hereinafter referred to as OIL, which expression shall, unless repugnant to the context or meaning thereof, include all its successors, administrators, executors and assignees) having entered into a CONTRACT No. _____ dated _____ (hereinafter called 'the CONTRACT' which expression shall include all the amendments thereto) with M/s _____ having its registered/head office at _____ (hereinafter referred to as the 'CONTRACTOR') which expression shall, unless repugnant to the context or meaning thereof include all its successors, administrators, executors and assignees) and OIL having agreed that the CONTRACTOR shall furnish to OIL a Bank guarantee for India Rupees/US\$ _____ for the faithful fulfillment of conditions pertaining to Local Content in accordance with the value mentioned in the certificate of Local Content submitted by the contractor for claiming purchase preference under the Purchase Preference Policy (linked with Local Content).
2. We (name of the bank) _____ registered under the laws of _____ having head/registered office at _____ (hereinafter referred to as "the Bank", which expression shall, unless repugnant to the context or meaning thereof, include all its successors, administrators, executors and permitted assignees) do hereby guarantee and undertake to pay to OIL immediately on first demand in writing any / all money to the extent of Indian Rs./US\$ (in figures) _____ (Indian Rupees/US Dollars (in words) _____) without any demur, reservation, contest or protest and/or without any reference to the CONTRACTOR. Any such demand made by OIL on the Bank by serving a written notice shall be conclusive and binding, without any proof, on the bank as regards the amount due and payable, notwithstanding any dispute(s) pending before any Court, Tribunal, Arbitrator or any other authority and/or any other matter or thin whatsoever, as liability under these presents being absolute and unequivocal. We agree that the guarantee herein contained shall be irrevocable and shall continue to be enforceable until it is discharged by OIL in writing. This guarantee shall not be determined, discharged or affected by the liquidation, winding up, dissolution or insolvency of the CONTRACTOR and shall remain valid, binding and operating against the bank.
3. The Bank also agrees that OIL at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance, without proceeding against the CONTRACTOR and notwithstanding any security or other guarantee that OIL may have in relation to the CONTRACTOR's liabilities.
4. The Bank further agrees the OIL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said CONTRACT or to extend time of performance by the said CONTRACTOR(s) from time to time or to postpone for any time or from time to time exercise of any of the powers vested in OIL

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

5. The Bank further agrees that the Guarantee herein contained shall remain in full force during the period that is taken for the performance of the CONTRACT and all dues of OIL under or by virtue of this CONTRACT have been fully paid and its claim satisfied or discharged or till OIL discharges this guarantee in writing, whichever is earlier.
6. This Guarantee shall not be discharged by any change in our constitution, in the constitution of OIL or that of the CONTRACTOR.
7. The Bank confirms that this guarantee has been issued with observance of appropriate laws of the country of issue.
8. The Bank also agrees that this guarantee shall be governed and construed in accordance with Indian Laws and subject to the exclusive jurisdiction of Indian Courts of the place from where the purchase CONTRACT has been placed.
9. Notwithstanding anything contained herein above, our liability under this Guarantee is limited to Indian Rs./US\$(in figures) _____ (Indian Rupees/US Dollars (in words) _____) and our guarantee shall remain in force until _____ (indicate the date of expiry of bank guarantee).

Any claim under this Guarantee must be received by us before the expiry of this Bank Guarantee. If no such claim has been received by us by the said date, the rights of OIL under this Guarantee will cease. However, if such a claim has been received by us within the said date, all the rights of OIL under this Guarantee shall be valid and shall not cease until we have satisfied that claim.

In witness whereof, the Bank through its authorized officer has set its hand and stamp on this _____ date of _____ 20__ at _____

WITNESS NO.1

(Signature)

Full name and official address

(in legible letters)

Stamp

WITNESS NO.2

(Signature)

Full name and official address

(in legible letters)

Stamp

(Signature)

Full name, designation and address

(in legible letters)

With Bank

Attorney as per power of

Attorney No. _____

Dated _____

BEC – BRC
BID EVALUATION CRITERIA
&
BID REJECTION CRITERIA

ANNEXURE-A**BID REJECTION CRITERIA (BRC)/BID EVALUATION CRITERIA (BEC)****I. VITAL CRITERIA FOR BID ACCEPTANCE:**

The bid shall conform generally to the specifications and terms and conditions given in this bid document. Bids shall be rejected in case the services offered do not conform to required parameters stipulated in the technical specifications. Notwithstanding the general conformity of the bids to the stipulated specifications, the following requirements will have to be particularly met by the Bidders without which the same will be considered as non-responsive and rejected.

A. TECHNICAL EVALUATION CRITERIA:**1.0 THE FOLLOWING MINIMUM CRITERIA SHOULD BE MET BY THE BIDDER FAILING WHICH THEIR BID/OFFER WILL BE REJECTED:**

- 1.1 Bidder should have executed at least one pipeline job, involving coating refurbishment or laying of buried cross-country hydrocarbon pipeline, of minimum 8” diameter, of length as defined below in last seven years reckoned from the the Original bid closing date.

Length of executed pipeline in single order for qualifying one spread	20 Km
Length of executed pipeline in single order for qualifying two spreads	40 Km
Length of executed pipeline in single order for qualifying three spreads	60 Km

- 1.2 The experience of a consortium member, if such a member has executed the job within its scope as the member of the consortium, which is required as experience as per the qualification criteria in clause A.1.1 will be considered. The appropriate documentary evidence is to be submitted towards such experience.

- 1.3 Documents required for meeting technical BEC requirement:

- Purchase Order / Work Order copy/ LOA
- Copy of SOR clearly describing the scope of work / Contract copy
- Completion certificate/ Execution Certificate issued by owner certifying the size & length of pipeline executed in single stretch.

In absence of requisite documents, OIL/Tractebel reserves the right to reject the bid without making any reference to bidders.

- 1.4 In case the bidder is executing a laying/refurbishment contract which is still running and the quantity executed till one month prior to the Original Bid Closing date is equal to or more than the minimum requirement as mentioned above at clause no. A.1.1, such experience will also be taken into consideration provided that the bidder has submitted satisfactory work execution certificate to this effect issued by the end user / owner.

- 1.5 Bidders can quote for any number of spreads. Bidder must quote for complete scope of work of quoted spread. In case bidder quotes for incomplete scope of work, the bid shall be summarily rejected.

2.0 BIDS FROM CONSORTIUM OF COMPANIES:

- 2.1 Bids from a consortium of companies comprising maximum three members (one Leader and two members) are also acceptable, provided the following requirement should be satisfied by the bidder:

- a) The leader of the Consortium meets the qualification criteria as defined at clause A.1.1 above.
- b) Only the Leader of the consortium shall buy the bid document, submit bid and sign the contract agreement (in the event of award of contract) on behalf of the consortium.

- c) The Bid Security shall be in the name of the Leader of the consortium on behalf of consortium with specific reference to consortium bid and name & address of consortium members. Similarly the Performance Security shall be in the name of the Leader on behalf of the consortium.
- d) The division in scope of work between Consortium members shall be commensurate with their past experience. The overall Project management shall be performed by the Leader. The members of Consortium shall assume responsibility jointly and severally and shall submit Agreement/MOU along with the bid clearly defining the scope and responsibility of each member along with nomination of the Leader. This Agreement/MOU must remain in force at least to the end of Defects Liability Period and shall be extended if required as per Owner's advice.
- e) Each member in a consortium shall be a legal entity and not an individual person.
- f) The consortium agreement shall essentially identify the "Leader's and the member. The Consortium leader and the distribution of work will be identified and set forth in the bid and will not be permitted to change thereafter without the consent of owner.
- g) No change in project plans, time tables or pricing will be permitted as a consequence of any withdrawal of failure to perform by a consortium member.
- h) Any bidder or entity can bid either singly or as a member of only one consortium.

2.2 BIDS FROM INDIAN JOINT VENTURE COMPANIES:

In case, the bidder is an Indian Joint Venture Company who does not meet the experience criteria as per clause No. **A.1.1** above, may also bid on the strength of Joint Venture Partner provided all the following criteria are compiled:

- a. The Joint Venture Partner at its own shall meet the experience criteria A.1.1 above. The experience of the Joint Venture Partner with other firms will not be qualified. In this regard, the documents establishing experience of the Joint Venture Partner shall be submitted as per clause A.1.3 above.
 - b. The primary bidder shall meet the financial criteria as per clause B. Financial, sub clause 1.0 below.
- 2.2.1 Acceptable Memorandum of Understanding (MOU) has to be made between joint venture partners, clearly defining the role/responsibility (scope of work) of each partner, binding the members jointly and severally to all obligations under the contract, if awarded. The MOU should be addressed to OIL and shall remain valid and binding till the end of Defects Liability Period and shall be extended if required as per Owner's advice.
- 3.0 Bidder(s) quoting in Joint Venture Partnership/Consortium with any firm are not allowed to quote separately/independently against this tender. The Joint Venture Partner is also not allowed to quote separately/independently against this tender. All the bids received in such case will be summarily rejected.
- 4.0 The Bid must cover entire services mentioned in the tender (i.e. Scope of Work/Terms of Reference). Bid, which does not include all the jobs/services mentioned in the tender document/price schedule format will be considered as incomplete and rejected.
- 5.0 A job executed by a bidder for its own organization/subsidiary will not be considered as experience for the purpose of meeting BEC.
- 6.0 Multiple/Alternative bids: A bidder (i.e. the bidding entity) shall, on no account submit more than one bid directly (as a single bidder or as a member of consortium) failing which all bids submitted by such bidder, shall stand rejected and EMD, if any, submitted by bidder shall be forfeited.

NOTE: Oil India Limited (OIL)/Tractebel reserves the right to contact the Client(s) referred by the Bidder for authentication of the documents submitted by the bidder. OIL/Tractebel may contact the clients/operators under intimation/copy to the respective bidder. OIL/Tractebel will not be responsible for Client(s) not conforming or not replying to OIL's/Tractebel's request for information. If OIL/Tractebel does not get an affirmative response within the stipulated time then such Bidder's technical bid will be considered as non-responsive. It will be the responsibility of the Bidder to take up the matter with his Client(s) and arrange for the confirmation as desired by OIL/Tractebel.

	ANNEXURE – A (BID REJECTION CRITERIA)	P.010416 R11050 002

B. FINANCIAL EVALUATION CRITERIA:

- 1.0** The minimum annual financial turnover of the bidder during any of the preceding 03(three) financial/accounting years reckoned from the original bid closing date should be as under:

Annual Turnover requirement	Amount (INR)
For qualifying in one spread	Rs. 9.60 Crores
For qualifying in two spread	Rs. 19.08 Crores
For qualifying in three spread	Rs. 27.41 Crores

Note:- Bidder quoting for more than one Spread shall meet the Turnover requirement on cumulative basis.

- 2.0** "Net worth of bidder must be positive for preceding financial/accounting year.
- 3.0** In case the bidder is a Consortium of companies, then the minimum annual financial turnover during any of the preceding 03(three) financial/accounting years reckoned from the original bid closing date for the consortium members should be as under:

Annual Turnover Requirement	At least one of the member of the Consortium	Other member(s) of the Consortium
For qualifying in one spread	Rs. 9.60 Crores	Rs. 4.80 Crores
For qualifying in two spread	Rs. 19.08 Crores	Rs. 9.54 Crores
For qualifying in three spread	Rs. 27.41 Crores	Rs. 13.705 Crores

- 3.1** The net worth of all the consortium partners individually should be positive for the financial/accounting year preceding the bid closing date.
- 4.0** Considering the time required for preparation of Financial Statements, if the last date of preceding financial / accounting year falls within the preceding six months reckoned from the original bid closing date and the Financial Statements of the preceding financial / accounting year are not available with the bidder, then the financial turnover of the previous three financial/accounting years excluding the preceding financial / accounting year will be considered. In such cases, the Net worth of the previous financial / accounting year excluding the preceding financial / accounting year will be considered. However, the bidder has to submit an affidavit/undertaking certifying that 'the balance sheet/Financial Statements for the financial year has actually not been audited so far'.

Note:

- (a) For proof of Annual Turnover & Net worth any one of the following document must be submitted along with the bid:-
- i) A certificate issued by a practicing Chartered /Cost Accountant (with Membership Number and Firm Registration Number), certifying the Annual turnover & Net worth as per format prescribed in Appendix to BEC
- OR**
- ii) Audited Balance Sheet along with Profit & Loss account.
- (b) In case the bidder is a Central Govt. Organization/PSU/State Govt. Organization/Semi-State Govt. Organization or any other Central/State Govt. Undertaking, where the auditor is appointed only after the approval of Comptroller and Auditor General of India and the Central Government, their certificates may be accepted even though FRN is not available. However, bidder to provide documentary evidence for the same.

NOTE: OIL/Tractebel reserves the right to ask for any Original or other relevant document to verify the certification.

C. COMMERCIAL EVALUATION CRITERIA:

- 1.0** Bids are invited under Single Stage Two Bid System i.e. Technical Bid (Un-priced) and Commercial Bid (Priced) separately. Bidders must submit both “Technical” and “Commercial” Bids in electronic form through online OIL’s e-Tender portal accordingly within the Bid Closing Date and time stipulated in the e-Tender. The Technical Bid is to be submitted as per Scope of Work & Technical Specifications of the tender and the Commercial Bid as per the **PRICE BID FORMAT**.
- 2.0** Bidder shall offer firm prices. Price quoted by the successful bidder must remain firm during the execution of the contract and not subject to variation on any account. Bids with adjustable price terms will be rejected.
- 3.0** Bids with shorter validity will be rejected as being non-responsive.
- 4.0** Bid Security in Original shall be furnished as a part of the Technical Bid and shall reach OIL’s GM-Pipelines Projects’ office at Guwahati on or before 12.45 Hrs (IST) on the bid closing date. A scanned copy of the bid security shall however be uploaded in OIL’s E-Procurement portal along with the Technical Bid. The amount of Bid Security shall be as specified in the Forwarding Letter of the Bid Document. Bid without proper & valid Bid Security will be rejected.
- 5.0** The Integrity Pact must be uploaded in OIL’s E-Procurement portal along with the Technical Bid digitally signed by the same signatory who digitally signed the Bid i.e. who is duly authorized to sign the Bid. If any bidder refuses to sign Integrity Pact or declines to submit the Integrity Pact, their bid will be rejected.
- 6.0** Physical Bids, if any received from the bidders, shall not be considered and will be rejected.
- 7.0** Bids submitted after the Bid Closing Date and Time will be rejected.
- 8.0** Bids received through the e-procurement portal shall only be accepted. Bids received in any other form whether it be Telex/Cable/Fax/E-mail shall not be accepted.
- 9.0** The bid documents are non-transferable. Bid can only be submitted in the name of the bidder in whose name the User ID and Password have been issued. Unsolicited bids will not be considered and will be straightway rejected.
- 10.0** Bids documents shall be typed or written in indelible ink and shall be digitally signed by the bidder or his authorised representative.
- 11.0** Any physical documents wherever called for, submitted by bidders shall contain no interlineations, white fluid erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such correction shall be initialled by the person or persons who has/have digitally signed the Bid.
- 12.0** Bidders shall bear, within the quoted rates, the personal tax as applicable in respect of their personnel and Sub-Contractor's personnel, arising out of execution of the contract.
- 13.0** Bidders shall bear, within the quoted rate, the corporate tax as applicable on the income from the contract.
- 14.0** Any Bid containing false statement will be rejected.
- 15.0** Bidders must quote clearly and strictly in accordance with the price schedule outlined in “Price Bid Format” of Bid Document, otherwise the Bid will be summarily rejected.
- 16.0** Non-submission of the documents as specified in BEC will result in rejection of bids.
- 17.0** Bidder must accept and comply with the following clauses as given in the Bid Document in toto failing which bid will be rejected –
 - i) Performance Guarantee Clause
 - ii) Force Majeure Clause
 - iii) Tax Liabilities Clause
 - iv) Arbitration Clause

- v) Acceptance of Jurisdiction and Applicable Law
- vi) Liquidated damage and penalty clause
- vii) Safety, Environment & Labour Law
- viii) Termination Clause
- ix) Integrity Pact
- x) Warranty and remedial of defects
- xi) Liability
- xii) Insurance

18.0 The Bids and all uploaded documents must be digitally signed using “Class 3” digital certificate [e-commerce application (Certificate with personal verification and Organization name)] as per Indian IT Act obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India.

D. PRICE EVALUATION CRITERIA:

The bids conforming to the technical specifications, terms and conditions stipulated in the bidding document and considered to be responsive after subjecting to Bid Evaluation Criteria will be considered for further evaluation as per the Price Evaluation Criteria given below:

- 1.0** If there is any discrepancy between the unit price and the total price, the unit price will prevail and the total price shall be corrected. Similarly, if there is any discrepancy between words and figure, the amounts in words shall prevail and will be adopted for evaluation.
- 2.0** The bidders must quote their charges/rates in the manner as called for vide “Price Schedule” under Part -IV for each spreads.
- 3.0** Bidder must quote for all the items covered in Price Schedule of the spreads quoted by them, else the bid will be rejected. The bid will not be evaluated if bidder fails to quote against the items mentioned in the Price Schedule of the spreads quoted by them.
- 4.0** **Discount:** Bidders are advised not to indicate any separate discount. Discount if any, should be merged with the quoted price. Discount of any type indicated separately will not be taken in to account for evaluation purposes. However, in the event such offer without considering discount is found to the lowest, OIL shall avail such discount at the time of award of contract.
- 5.0** Evaluation of Price bid shall be carried out spread wise and total evaluated price of each spread shall be compared.

6.0 EVALUATION OF PRICE BIDS

- 6.1** Work for Individual Spread shall be awarded as per the following:
 - a) Bidder has option to quote for one spread or more than one spread subject to meeting BEC requirement. However, the bidder shall be considered for award of maximum of three spreads only, based upon Bidder's qualification and on overall least cost to Owner/OIL.
 - b) In case the Lowest(L-1) evaluated Bidder (s), for all the spreads, happens to be different, then the same shall be considered for award, i.e. one spread to one bidder on Lowest(L-1) bid basis. However,
 - (i) In case a Bidder happens to be L1 for more than one spread, keeping in view Bidder's Eligibility/Qualification for spreads, all combinations of the evaluated prices of qualified bidder(s) shall be prepared, and then the overall lowest combination, resulting in least cost to Owner/OIL, among all combinations will be considered for award.
 - (ii) In case the lowest evaluated price happens to be same for more than one combination, then the combination for award shall be considered, where the bigger part shall be awarded to the bidder based on the ranking of annual turnover during the recent financial year i.e. the bidder having higher turnover shall be considered for bigger part.

- c) Once certain spread (s) awarded to such L1 bidder (On Least Cost to OIL basis), the bidder ceases to be lowest bidder for the remaining spread(s). The award of remaining spread (s) on other bidders should not be considered as award on L2, L3,...bidder.

6.2 PURCHASE PREFERENCE:

6.2.1 MICRO AND SMALL ENTERPRISES (MSEs)

- a) In case participating MSEs quote price within price band of L1+15%, such MSE shall be considered for award of contract by bringing down their price to L1 price in a situation where L1 price is from someone other than a MSE. In case of more than one such MSE qualifying for 15% purchase preference, the contract shall be awarded to lowest eligible MSE amongst the MSEs qualifying for 15% purchase preference.
- b) In case any part of the work is sub-contracted to a Micro or Small Enterprise as per contract conditions than the contractor shall provide complete details (i.e. name of the subcontractor, value of sub-contacted work, copy of valid registration certificate etc.) of the sub-contractor to OIL.

6.2.2 Documentation Required to be submitted by MSEs:

Copy of valid Registration Certificate, if bidder is a Micro or Small Enterprises (MSE) registered with District Industry Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of MSME. The Registration Certificate should clearly indicate the monetary limit, if any and the items for which bidder are registered with any of the aforesaid agencies.

In case bidding MSE is owned by Schedule Caste or Schedule Tribe entrepreneur, valid documentary evidence issued by the agency who has registered the bidder as MSE owned by SC/ST entrepreneur should also be enclosed.

6.2.3 POLICY (LINKED WITH LOCAL CONTENT) (PP-LC)

“Purchase preference policy-linked with Local Content (PP - LC) notified vide letter no. O-27011/44/2015-ONG-II/FP dated 25.04.2017 of MoP&NG shall be applicable in this tender.

Bidders seeking benefits, under Purchase Preference Policy (linked with Local Content) (PP-LC) shall have to comply with all the provisions specified at Clause No. 33.0 of ITB and shall have to submit all undertakings / documents applicable for this policy”.

E. GENERAL:

- 1.0** The compliance statement should be suitably filled up by the Bidder and to be uploaded alongwith the Techno-commercial bid. Exception/deviations with respect to the clauses under BRC/BEC above shall not be accepted. However, in case the bidder takes exception to any clause of the tender document not covered under BEC/ BRC, then the Company has the discretion to load or reject the offer on account of such exception if the bidder does not withdraw/modify the deviation when/as advised by Company. The loading so done by the Company will be final and binding on the bidders.
- 2.0** To ascertain the substantial responsiveness of the bid, the Company reserves the right to ask the bidder for clarifications in respect of clauses covered under BEC also and such clarifications fulfilling the BEC clauses in toto must be received on or before the deadline given by the Company, failing which the offer will be summarily rejected.
- 3.0** If any of the clauses in the BRC contradict with other clauses of tender document elsewhere, then the clauses in the BRC shall prevail.
- 4.0** Bidders should provide copies of the following:
- GST Registration Certificate
 - PAN Card

- Bank A/C NO, Bank Address, with IFSC Code
- Vendor Code (for existing vendors),
- P.F. Registration Number OR Declaration (Declaration by applicant that provisions of Provident Fund Act are not applicable to them. In case P.F. is required to be deposited later on, the same will be deposited by the bidder (Applicant). In case successful bidder doesn't have P.F. Code at the time of bidding and PF Act is applicable on him/her, the same has to be provided by him/her before signing of contract agreement and issue of work order by OIL.

APPENDIX-I

CERTIFICATE OF ANNUAL TURNOVER & NET WORTH

TO BE ISSUED BY PRACTISING **CHARTERED ACCOUNTANTS' FIRM** ON THEIR LETTER HEAD

TO WHOM IT MAY CONCERN

This is to certify that the following financial positions extracted from the audited financial statements of M/s.....(Name of the Bidder) for the last three (3) completed accounting years upto.....(as the case may be) are correct.

YEAR	TURN OVER In INR (Rs.) Crores	NET WORTH In INR (Rs.) Crores

Place:

Date:

Seal:

Membership No.

Registration Code :

Signature

**PART – I –GENERAL
CONDITIONS OF CONTRACT
(GCC)**

	GENERAL CONDITIONS OF CONTRACT	P.010416 R11050 002

OIL INDIA LTD

GENERAL CONDITIONS OF CONTRACT

PART - I

	GENERAL CONDITIONS OF CONTRACT	P.010416 R11050 002

OIL INDIA LIMITED
(A Government of India Enterprise)
CONTRACTS SECTION, PHQ
P.O. Udayan Vihar – 781171, Guwahati, ASSAM

DESCRIPTION OF WORK/SERVICES:-

Coating Refurbishment Work for Oil Pipeline in the State of Assam, West Bengal and Bihar.

GENERAL CONDITIONS OF CONTRACT (GCC)

MEMORANDUM OF AGREEMENT made this _____ day of _____ between OILINDIA LIMITED a Company incorporated under the Companies Act 1956 and having its registered Office at Duliajan in the District of Dibrugarh, Assam (hereinafter called Company) of the one part and Shri/Smti _____ and Shri/Smti _____ carrying on business as partners /proprietor under the firm name and style of M/s. _____ with the main Office at _____ in the District of _____ aforesaid (hereinafter called 'Contractor') on the other part.

WITNESSETH:

1. (a). A the contractor hereby agrees to carry out the work of Coating Refurbishment for Pipeline set down in the Scope of Work and Technical specification and Price Schedule which forms Part- II and Part IV respectively of this contract and in accordance with the 1968 General Conditions of Contract of Oil India Limited (Part-I) and Special Conditions of Contract (Part-III) within the states of Assam, West Bengal & Bihar.
- b) In this Contract all words and expressions shall have the same meaning as are respectively assigned to them in the 1968 General Conditions of Contract of Oil India Limited which the Contractor has perused and is fully conversant with before entering into this Contract.
- c) The clauses of this contract and of the specifications set out hereunder shall be paramount and in the event of anything herein contained being inconsistent with any term or terms of the 1968 General Conditions of Contract of Oil India Limited, the said term or terms of the 1968 General conditions of Contract to the extent of such inconsistency, and no further, shall not be binding on the parties hereto
2. The contractor shall provide all labour, supervision and transport and such specified materials described in **Part-II** of the Contract including tools and plants as necessary for the work and shall be responsible for all royalties and other levies and his rates shall include for these. The work executed and materials supplied shall be to the satisfaction of the Company's Engineer and Contractor's rates shall include for all incidental and contingent work which although not specifically mentioned in this contract are necessary for its completion in a sound and workman like manner.
3. The Company's Engineer shall have power to:
 - a) Reduce the rates at which payments shall be made if the quality of work although acceptable is not up to the required standard set forth in the OIL Standard Specifications which have been perused and fully understood by the Contractor.
 - b) Order the Contractor to remove any inferior material from the site and to demolish or rectify any work of inferior workmanship, failing which the Company's Engineer may arrange for any such work to be demolished or rectified by any other means at the Contractor's expenses.
 - c) Order the Contractor to remove or replace any workman who he (The Engineer) considers incompetent or unsuitable; the Engineer's opinion as to the competence and suitability of any workman engaged by the Contractor shall be final and binding on the Contractor.

	GENERAL CONDITIONS OF CONTRACT	P.010416 R11050 002

- d) Issue to the Contractor from time to time during the progress of the work such further drawings and instructions as shall be necessary for the purpose of proper and adequate execution and maintenance of the works and the Contractor shall carry out and be bound by the same.
- e) Order deviations in **Part II, III and IV** of this Contract. All such deviation orders shall be in writing and shall show the financial effect, if any, of such deviation and whether any extra time is to be allowed.
4. The Contractor shall have no claim against the company in respect of any work which may be withdrawn but only for work actually completed under this contract. The contractor shall have no objection to carry out work in excess of the quantities stipulated in **Part-II** if so ordered by the company at the same rates, terms and conditions.
- The Company reserves the right to cancel this Contract at any time upon full payment of work done and the value of the materials collected by the contractor for permanent incorporation in the work under this contract particularly for execution of this contract up to the date of cancellation of the Contract. The valuation of the work done and the materials collected shall be estimated by the company's Engineer in presence of the contractor.
- The Contractor shall have no claim to any further payment whatsoever. The valuation would be carried out exparte if Contractor fails to turn up despite reasonable notice which will be binding on the Contractor.
6. The Contractor hereby undertakes to indemnify the Company against all claims which may arise under the under noted Acts:-
- i) The Factories Act & Rules
 - ii) The Minimum Wages Act, 1948.
 - iii) The Workman's Compensation Act, 1923.
 - iv) The Payment of wages Act, 1963.
 - v) The Payment of Bonus Act, 1965.
 - vi) The Contract Labour (Regulation & Abolition) Act, 1970 and the rules framed there under.
 - vii) Employees Pension Scheme, 1995.
 - viii) Inter-State Migrant (Regulation of Employment and Condition of Service) Act. 1979.
 - ix) The Employees Provident Fund and Miscellaneous Provisions Act, 1952.
 - x) AGST Act.
 - xi) Service Tax Act.
 - xii) GST Rules
- or any other Acts or Statute not here in above specifically mentioned having bearing over engagement of workers directly or indirectly for execution of work. The Contractor shall not make the Company liable to reimburse the Contractor for the statutory increase in the wage rates of the Contract Labour appointed by the Contractor. Such Statutory increase in the wage rates of Contract Labour shall be borne by the contractor.
- The Contract shall be deemed to be a Contract made under, governed by and construed in accordance with the laws of India for the time being in force and shall be subject to the exclusive jurisdiction of **Courts situated in Guwahati**
7. The Contractor shall clear away all rubbish and surplus material from the site on completion of work and shall leave the site clean and tidy.
8. The duration of the contract shall be 03 (Three) years from the commencement date mentioned in the work order. The Contractor must complete the work within the contract period. During the currency of the job, the work progress must be commensurate with the time elapsed. In the event of any delay on the contractor's part, he/she will be liable to pay to the company liquidated damages at the rate of ½% (Half percent) per week of the contract price of the items delayed in completion and the maximum value of the liquidated damages will be 7.5% of the contract price of the item(s) delayed provided the item(s) delayed are not critical for commissioning and final utilization of the work. If ,however, the item(s) delayed in completion are critical for commissioning and final

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utilization of the work then contractor will be liable to pay liquidated damages by way of penalty at the rate of ½% (Half Percent) of the total contract cost subject to a maximum of 7.5% of the total contract cost.

Oil's Engineer's certificates as to the criticality or otherwise of an item shall be final.

The payment of liquidated damages/penalty may be reduced or waived at the sole discretion of the Company whose decision in this regard will be final.

In the event of there being undue delay in execution of the Contract, the

Company reserves the right to cancel the Contract and / or levy such additional damages as it deems fit based on the actual loss suffered by the company attributable to such delay. The company's decision in this regard shall be final.

9. In order to promote, safeguard and facilitate the general operational economic in the interest of the Company during the continuance of this contract the Contractor hereby agrees and undertakes not to take any direct or indirect interest and or support, assist, maintain or help any person or persons engaged in antisocial activities, demonstration, riots , or in any agitation prejudicial to the Company's interest and any such even taking shape or form at any place of the Company's works or and its neighborhood.
10. The tendered all-inclusive of Price (the Contract price) except service tax is Rs.XXXXXXXXXX **(Not to be filled up by the bidder. This will be entered at the time of Signing of the agreement) but the Company shall pay the Contract or only for actual work done at the all-inclusive rates set down in the Price Schedule Part IV of this Contract.**

Final payment will be made only after satisfactory completion of the work. Such final payment shall be based on the work actually done allowing for deviations and any deductions and the measurement shall be checked and certified correct by the Company's Engineer before any such final payment is made

11. The contractor employing 20 (twenty) or more workmen on any day preceding 12 months shall be required to obtain requisite licence at his cost from the appropriate Licensing Officer before undertaking any Contract work. The Contractor shall also observe the rules & regulations framed under the Contract Labour (Regulation & Abolition) Act.
12. The Company for any reason whatsoever and of which the company shall be sole judge may terminate this Contract with a 24 hours" notice in writing to the Contractor and in the event of Company's so doing the clause 5 here of shall prevail and the accounts between the parties will be in accordance therewith finalized.
13. The Contractor will not be allowed to construct any structure (for storage / housing purpose) with thatch, bamboo or any other inflammable materials within any company's fenced area.
14. The Contractor shall ensure that all men engaged by him/her are provided with appropriate protective clothing and safety wear in accordance with Factories Act & Rules. The Company's representative shall not allow/accept those men who are not provided with the same.
15. All Statutory taxes levied by the Central & State Government or any other competent authority from time to time will be borne by contractor and the amount of the contract specified in the contract is inclusive of all tax liabilities but excluding Service Tax. Service Tax if applicable shall be, to the company's account. However, Service Tax portion payable directly by the Service provider (if applicable) shall be reimbursed to the Contractor on the basis of the documentary evidence.
16. The Contractor shall deploy local persons in all works.
17. The Contractor shall not engage minor labour below 18(eighteen) years of age under any circumstances.
18. The Contractor and his/her workmen shall strictly observe the rules and regulations as per Factories Act & Rules(latest editions).
19. **GENERAL OBLIGATIONS OF COMPANY:**

COMPANY shall, in accordance with and subject to the terms and conditions of this contract:

- i. Pay the Contractors in accordance with terms and conditions of the contract

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- ii. Allow access to Contractors and their personnel, subject to normal security and safety procedures, to all areas as required for orderly performance of the work.

20. SPECIAL CONDITIONS

- a) The contractor will be required to allow OIL Officials to inspect the work site and documents in respect of the workers' payment.
- b) Contractor(s) whosoever is liable to be covered under the P.F. Act and contract cost is inclusive of P.F., must ensure strict compliance of provisions of Provident Fund and Miscellaneous Provisions Act, 1952 in addition to the various Acts mentioned elsewhere in this contract. Any contractor found violating these provisions will render themselves disqualified from any future tendering. As per terms of the contract, if applicable, the Contractor must deposit Provident Fund Contribution (covering Employee's & Employer's share) with the competent authority monthly under their direct code. The Contractor shall be required to submit documentary evidence of deposit of P.F. Contribution to the Company. In case of failure to provide such documentary evidence, the Company reserves the right to withhold the amount equivalent to applicable P.F. Contribution.

21. FORCE MAJEURE:

- 21.1 In the event of either party being rendered unable by 'Force Majeure' to perform any obligation required to be performed by them under the contract, the relative obligation of the party affected by such 'Force Majeure' will stand suspended for the period during which such cause lasts. The word 'Force Majeure' as employed herein shall mean acts of God, war, revolt, agitation, strikes, riot, fire, flood, sabotage, civil commotion, road barricade (but not due to interference of employment problem of the Contractor), acts of government of the two parties, which makes performance impossible or impracticable and any other cause, whether of kind herein enumerated or otherwise which are not within the control of the party to the contract and which renders performance of the contract by the said party impossible.
- 21.2 Upon occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid thereby, shall notify the other party in writing within Seventy Two (72) hours of the alleged beginning and ending thereof, giving full particulars and satisfactory evidence in support of its claim.
- 21.3 Should „force majeure” condition as stated above occurs and should the same be notified within seventy two (72) hours after its occurrence the force majeure” rate shall apply for the first fifteen (15) days. Parties will have the right to terminate the Contract if such “ force majeure” conditions continue beyond fifteen (15) days with prior written notice. Should either party decide not to terminate the Contract even under such condition, no payment would apply after expiry of fifteen (15) days force majeure period unless otherwise agreed to.

22. TERMINATION:

- 22.1 TERMINATION ON EXPIRY OF THE TERMS (DURATION): The contract shall be deemed to have been automatically terminated on the expiry of duration of the Contract or the extension period, if exercised by Company under the provision of the Contract.
- 22.2 TERMINATION ON ACCOUNT OF FORCE MAJEURE: Either party shall have the right to terminate this Contract on account of Force Majeure as set forth in Article 21.0 above.
- 22.3 TERMINATION ON ACCOUNT OF INSOLVENCY: In the event that the Contractor or its collaborator at any time during the term of the Contract, becomes insolvent or makes a voluntary assignment of its assets for the benefit of creditors or is adjudged bankrupt, then the Company shall, by a notice in writing have the right to terminate the Contract and all the Contractor's rights and privileges hereunder, shall stand terminated forthwith.
- 22.4 TERMINATION FOR UNSATISFACTORY PERFORMANCE: If the Company considers that, the performance of the Contractor is unsatisfactory, or not upto the expected standard, the Company shall notify the Contractor in writing and specify in details the cause of the dissatisfaction. The Company shall have the option to terminate the Contract by giving 15 days” notice in writing to the Contractor, if Contractor fails to comply with the requisitions contained in the said written notice issued by the Company.

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- 22.5 **TERMINATION DUE TO CHANGE OF OWNERSHIP & ASSIGNMENT:** In case the Contractor's rights and /or obligations under this Contract and/or the Contractor's rights, title and interest to the equipment/ material, are transferred or assigned without the Company's consent, the Company may at its absolute discretion, terminate this Contract.
- 22.6 If at any time during the term of this Contract, breakdown of Contractor's equipment results in Contractors being unable to perform their obligations hereunder for a period of 15 successive days, Company at its option, may terminate this Contract in its entirety without any further right or obligation on the part of the Company, except for the payment of money then due. No notice shall be served by the Company under the condition stated above.
- 22.7 Notwithstanding any provisions herein to the contrary, the Contract may be terminated at any time by the Company on giving 30 (thirty) days written notice to the Contractor due to any other reason not covered under the above clause from 22.1 to 22.6 and in the event of such termination the Company shall not be liable to pay any cost or damage to the Contractor except for payment for services as per the Contract upto the date of termination including the De-mobilization cost, if any.
23. **CONSEQUENCES OF TERMINATION:** In all cases of termination herein set forth, the relative obligations of the parties to the Contract shall be limited to the period up to the date of termination. Notwithstanding the termination of this Contract, the parties shall continue to be bound by the provisions of this Contract that reasonably require some action or for bearance after such termination.
- 23.1 Upon termination of this Contract, Contractor shall return to Company all of Company's items, which are at the time in Contractor's possession.
- 23.2 In the event of termination of contract, Company will issue Notice of termination of the contract with date or event after which the contract will be terminated. The contract shall then stand terminated and the Contractor shall demobilize their personnel & materials.
24. **SETTLEMENT OF DISPUTES AND ARBITRATION:**
- 24.1 **Arbitration (Applicable for Suppliers/Contractors other than PSU) :**
- Except as otherwise provided elsewhere in the contract, if any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives or assignees, in connection with construction, meaning, operation, effect, interpretation of the contract or breach thereof which parties are unable to settle mutually, the same shall be referred to Arbitration as provided hereunder :
- a. A party wishing to commence arbitration proceeding shall invoke
- Arbitration Clause by giving 30 days notice to the other party. The notice invoking arbitration shall specify all the points of dispute with details of the amount claimed to be referred to arbitration at the time of invocation of arbitration and not thereafter. If the claim is in foreign currency, the claimant shall indicate its value in Indian Rupee for the purpose of constitution of the arbitral tribunal.
- b. The number of arbitrators and the appointing authority will be as under:

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Claim amount		
(excluding claim for interest and counter claim, if any)	Number of Arbitrator	Appointing Authority
	Sole Arbitrator	
Upto Rs. 5 Crore		OIL
		One Arbitrator by each party and
	3 (Three)	the 3 rd Arbitrator, who shall be
Above Rs. 5 Crore	Arbitrators	the presiding Arbitrator, by the
		two Arbitrators.

- c. The parties agree that they shall appoint only those persons as arbitrators who accept the conditions of the arbitration clause. No person shall be appointed as Arbitrator or Presiding Arbitrator who does not accept the conditions of the arbitration clause.
- d. Parties agree that there will be no objection if the Arbitrator appointed holds equity shares of OIL and/or is a retired officer of OIL/any PSU. However, neither party shall appoint its serving employees as arbitrator.
- e. If any of the Arbitrators so appointed dies, resigns, becomes incapacitated or withdraws for any reason from the proceedings, it shall be lawful for the concerned party/arbitrators to appoint another person in his place in the same manner as aforesaid. Such person shall proceed with the reference from the stage where his predecessor had left if both parties consent for the same; otherwise, he shall proceed de novo
- f. Parties agree that neither shall be entitled for any pre-reference or pendente-lite interest on its claims. Parties agree that any claim for such interest made by any party shall be void.
- g. The arbitral tribunal shall make and publish the award within time stipulated as under :

	Period for making and publishing of the award (counted from the date of first meeting of the Arbitrators)
Amount of Claims and counter Claims (excluding interest)	
Upto Rs. 5 Crore	Within 8 months
Above Rs. 5 Crore	Within 12 months

The above time limit can be extended by Arbitrator, for reasons to be recorded in writing, with the consent of the other parties.

- h. If after commencement of the arbitration proceedings, the parties agree to settle the dispute mutually or refer the dispute to conciliation, the arbitrators shall put the proceedings in abeyance until such period as requested by the parties.

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- i. Each party shall be responsible to make arrangements for the travel and stay etc. of the arbitrator pointed by it. Claimant shall also be responsible for making arrangements for travel/stay arrangements of the Presiding Arbitrator and the expenses incurred shall be shared equally by the parties.
- j. In case of sole arbitrator, OIL shall make all necessary arrangements for his travel, stay and the expenses incurred shall be shared equally by the parties.
- k. The Arbitration shall be held at the place from where the contract has been awarded. However, parties to the contract can agree for a different place for the convenience of all concerned.
- l. The Arbitrator(s) shall give reasoned and speaking award and it shall be final and binding on the parties.
- m. Subject to aforesaid, provisions of the Arbitration and Conciliation Act, 1996 and any statutory modifications or re-enactment thereof shall apply to the arbitration proceedings under this clause

24.2 **Arbitration (applicable in case of Contract awarded on Public Sector Enterprise):**

In the event of any dispute or difference relating to, arising from or connected with the Contract, such dispute or difference shall be referred by either party to the arbitration of one of the Arbitrators in the Department of Public Enterprises, to be nominated by the Secretary to the Government of India, In-Charge of the Bureau of Public Enterprises. The Arbitration and Conciliation Act 1996 shall not be applicable to the Arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided however; any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference, the dispute shall be decided by the Law Secretary or the Special Secretary/Additional Secretary, whose decision shall bind the parties finally and conclusively.

The parties in the dispute will share equally the cost of the arbitration as intimated by the Arbitrator.

The venue of all arbitrations under both 24.1 & 24.2 will be **Guwahati, Assam**. The award made in pursuance thereof shall be binding on the parties.

25. **I.B. VERIFICATION REPORT AND SECURITY REVIEW:**

Contractor will be required to submit the verification report to ascertain character and antecedents from the Civil Administration towards the persons engaged under this contract to the Head of the user Department before engagement.

In case of any doubt or dispute as to the interpretation of any clause herein contained, the decision of the Company's Engineer shall be final and binding on the contractor.

26. **SET OFF CLAUSE:**

Any sum of money due and payable to the contractor (including Security Deposit refundable to them) under this or any other contract may be appropriated by Oil India Limited and set off against any claim of Oil India Limited (or such other person or persons contracting through Oil India Limited) for payment of a sum of money arising out of this contract or under any other contract made by the contractor with Oil India Limited (or such other person or persons contracting through Oil India Limited).

27. **FURNISHING FRAUDULENT INFORMATION/DOCUMENT:**

If it is found that a Bidder/Contractor has furnished fraudulent document/information the party shall be debarred for period of 3(three) years from date of detection of such fraudulent act, besides the legal action.

28. **WARRANTY AND REMEDY OF DEFECTS:**

- 28.1 Contractor warrants that it shall perform the work in a professional manner and in accordance with the highest degree of quality, efficiency, and with the state of the art technology/ inspection services and in conformity with all specifications, standards and drawings set forth or referred to in the Scope of Work. They should

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comply with the instructions and guidance which Company may give to the Contractor from time to time. For any rectification works during Defect Liability Period (12 Months from the date of completion of the project) of any Works contractor(s) / purchase(s), PMC shall extend their supervisory / technical assistance at no extra cost. **Warranty/ Defect Liability Period shall be 12 Months from the date of completion of the project.**

28.2 Should Company discover at any time during the execution of the

Contract that the work carried out by the contractor does not conform to the foregoing warranty, Contractor shall after receipt of notice from Company, promptly perform all corrective work required to make the services conform to the Warranty. Such corrective work shall be performed entirely at contractor's own expenses. If such corrective work is not performed within a reasonable time, the Company, at its option, may have such remedial work carried out by others and charge the cost thereof to Contractor which the contractor must pay promptly. In case contractor fails to perform remedial work, the performance security shall be forfeited.

29. **CONFIDENTIALITY, USE OF CONTRACT DOCUMENTS**

AND INFORMATION:

29.1 Contractor shall not, without Company's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing pattern, sample or information furnished by or on behalf of Company in connection therewith, to any person other than a person employed by Contractor in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for purposes of such performance.

29.2 Contractor shall not, without Company's prior written consent, make use of any document or information except for purposes of performing the contract.

29.3 Any document supplied to the Contractor in relation to the contract other than the Contract itself remain the property of Company and shall be returned (in all copies) to Company on completion of Contractor's performance under the Contract if so required by Company.

30. **TAXES:**

30.1 Tax levied as per the provisions of Indian Income Tax Act and any other enactment/rules on income derived/ payments received under the contract will be on contractor's account.

30.2 Contractor shall be responsible for payment of personal taxes, if any, for all the personnel deployed in India.

30.3 The contractor shall furnish to the company, if and when called upon to do so, relevant statement of accounts or any other information pertaining to work done under the contract for submitting the same to the Tax authorities, on specific request from them. Contractor shall be responsible for preparing and filing the return of income etc. within the prescribed time limit to the appropriate authority.

30.4 Prior to start of operations under the contract, the contractor shall furnish the company with the necessary documents, as asked for by the company and / or any other information pertaining to the contract, which may be required to be submitted to the Income Tax authorities at the time of obtaining "No objection Certificate" for releasing payments to the contractor.

30.5 Tax clearance certificate for personnel and corporate taxes shall be obtained by the contractor from the appropriate Indian Tax authorities and furnished to company within 6 months of the expiry of the tenure of the contract or such extended time as the company may allow in this regard

30.6 Corporate income tax will be deducted at source from the invoice at the specified rate of income tax as per the provisions of Indian Income Tax Act as may be in force from time to time.

30.7 Corporate and personal taxes on contractor shall be the liability of the contractor and the company shall not assume any responsibility on this account.

30.8 All applicable taxes & duties including custom duty if applicable on purchases and sales made by contractor shall be borne by the contractor and shall be included in rates quoted by bidders.

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30.9 Goods & Service Tax:

Quoted price should be **exclusive** of applicable GST.

30.10 CUSTOMS DUTY ON EQUIPMENT:

- i) Contractor is liable to pay all customs duty, as applicable on the equipment brought to India for executing the works.
- ii) The Contractor shall be fully liable for observing all the formalities in this regard as well as to pay the customs duty chargeable on the equipment, including any deposit payable for such purposes. No adjustment in the Contract Price shall be permissible for any change in duty drawback applicable in respect of equipment and machinery brought to India for use in the project and for re-export of equipment & machinery, on completion of the project.

30.11 CUSTOMS DUTY:

The quoted price shall include full customs duties for materials (for permanent incorporation in the work), equipment and plants envisaged to be imported for execution of work.

30.12 IMPORT LICENSE:

The Contractor shall arrange import of all materials required for permanent incorporation in the works as well as construction equipment as per the guidelines laid down by the Government of India. Import license shall not be provided by Company

31. **INSURANCE:**

31.1 The contractor shall arrange insurance to cover all risks in respect of their personnel, materials and equipment belonging to the contractor or its subcontractor during the currency of the contract.

31.2 Contractor shall at all time during the currency of the contract provide, pay for and maintain the following insurances amongst others:

- a) Workmen compensation insurance as required by the laws of the country of origin of the employee.
- b) Employer's Liability Insurance as required by law in the country of origin of employee.
- c) General Public Liability Insurance covering liabilities including contractual liability for bodily injury, including death of persons, and liabilities for damage of property. This insurance must cover all operations of Contractor required to fulfill the provisions under this contract.
- d) Contractor's equipment used for execution of the work hereunder shall have an insurance cover with a suitable limit (as per international standards).
- e) Automobile Public Liability Insurance covering owned, non-owned and hired automobiles used in the performance of the work hereunder, with bodily injury limits and property damage limits shall be governed by Indian Insurance regulations.
- f) Public Liability Insurance as required under Public Liability Insurance Act 1991.

31.3 Contractor shall obtain additional insurance or revise the limits of existing insurance as per Company's request in which case additional cost shall be to Contractor's account.

31.4 Any deductible set forth in any of the above insurance shall be borne by Contractor

31.5 Contractor shall furnish to Company prior to commencement date, certificates of all its insurance policies covering the risks mentioned above.

31.6 If any of the above policies expire or are cancelled during the term of this contract and Contractor fails for any reason to renew such policies, then the Company will renew/replace same and charge the cost thereof to Contractor. Should there be a lapse in any insurance required to be carried by Contractor for any reason whatsoever, loss/damage claims resulting there from shall be to the sole account of Contractor.

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31.7 Contractor shall require all of their sub-contractor to provide such of the foregoing insurance coverage as Contractor is obliged to provide under this Contract and inform the Company about the coverage prior to the commencement of agreements with its sub-contractors.

31.8 All insurance taken out by Contractor or their sub-contractor shall be endorsed to provide that the underwriters waive their rights of recourse on the Company.

32. **CHANGES:**

32.1 During the performance of the work, Company may make a change in the work within the general scope of this Contract including, but not limited to, changes in methodology, and minor additions to or deletions from the work to be performed. Contractor shall perform the work as changed. Changes of this nature will be affected by written order by the Company.

32.2 If any change result in an increase in compensation due to Contractor or in a credit due to Company, Contractor shall submit to Company an estimate of the amount of such compensation or credit in a form prescribed by Company. Such estimates shall be based on the rates shown in the Schedule of Rates (Part - II). Upon review of Contractor's estimate, Company shall establish and set forth in the Change Order the amount of the compensation or credit for the change or a basis for determining a reasonable compensation or credit for the change. If Contractor disagrees with compensation or credit set forth in the Change Order, Contractor shall nevertheless perform the work as changed, and the parties will resolve the dispute in accordance with Clause 24.0 hereunder. Contractor's performance of the work as changed will not prejudice Contractor's request for additional compensation for work performed under the Change Order

33. **NOTICES:**

33.1 Any notice given by one party to other, pursuant to this Contract shall be sent in writing or by telex or Fax and confirmed in writing to the applicable address specified below:

Company

For contractual matters

For Technical matters

Chief Manager (Contracts)

DGM(M&S)

OIL INDIA LIMITED

OIL INDIA LIMITED

PO: UdayanVihar

PO: UdayanVihar

Assam-781171, India

Assam-781171, India

E-mail: ellora@oilindia.in

E-mail: rksarma@oilindia.in

Fax No. 91-0361-2643686

Fax No. 91-0361-2643686

Contractor

Fax No. :

Email:

33.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

34. **SUBCONTRACTING:**

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- 34.1 Contractor shall not sub contract or assign, in whole or in part, its obligations to perform under this contract, except with company's prior written consent.
35. **MISCELLANEOUS PROVISIONS:**
- 35.1 Contractor shall give notices and pay all fees at their own cost required to be given or paid by any National or State Statute, Ordinance, or other Law or any regulation, or bye-law of any local or other duly constituted authority as may be in force from time to time in India, in relation to the performance of the services and by the rules & regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the services
- 35.2 Contractor shall conform in all respects with the provisions of any Statute, Ordinance of Law as aforesaid and the regulations or bye-law of any local or other duly constituted authority which may be applicable to the services and with such rules and regulation, public bodies and Companies as aforesaid and shall keep Company indemnified against all penalties and liability of every kind for breach of any such Statute, Ordinance or Law, regulation or bye-law.
- 35.3 During the tenure of the Contract, Contractor shall keep the site where the services are being performed reasonably free from all unnecessary obstruction and shall store or dispose of any equipment and surplus materials and clear away and remove from the site any wreckage, rubbish or temporary works no longer required. On the completion of the services, Contractor shall clear away and remove from the site any surplus materials, rubbish or temporary works of every kind and leave the whole of the site clean and in workman like condition to the satisfaction of the Company and conform to ISO 14001.
- 35.4 Key personnel cannot be changed during the tenure of the Contract except due to sickness/death/resignation of the personnel in which case the replaced person should have equal experience and qualification which will be again subject to approval by the Company.
36. **LIABILITY:**
- 36.1 Except as otherwise expressly provided, neither Company nor its servants, agents, nominees, Contractors, or sub-contractors shall have any liability or responsibility whatsoever to whomsoever for loss of or damage to the equipment and/or loss of or damage to the property of the Contractor and/or their Contractors or sub-contractors, irrespective of how such loss or damage is caused and even if caused by the negligence of Company and/or its servants, agent, nominees, assignees, contractors and sub-Contractors. The Contractor shall protect, defend, indemnify and hold harmless Company from and against such loss or damage and any suit, claim or expense resulting there from.
- Neither Company nor its servants, agents, nominees, assignees, Contractors, subcontractors shall have any liability or responsibility whatsoever for injury to, illness, or death of any employee of the Contractor and/or of its Contractors or sub-contractor irrespective of how such injury, illness or death is caused and even if caused by the negligence of Company and/or its servants, agents nominees, assignees, Contractors and sub-contractors. Contractor shall protect, defend, indemnify and hold harmless Company from and against such liabilities and any suit, claim or expense resulting there from.
- 36.3 The Contractor hereby agrees to waive its right to recourse and further agrees to cause their underwriters to waive their right of subrogation against Company and/or its underwrites, servants, agents, nominees, assignees, Contractors and subcontractors for loss or damage to the equipment of the Contractor and/or its subcontractors when such loss or damage or liabilities arises out of or in connection with the performance of the contract.
- 36.4 The Contractor hereby further agrees to waive its right of recourse and agrees to cause its underwriters to waive their right of subrogation against Company and/or its underwriters, servants, agents, nominees, assignees, Contractors and sub-contractors for injury to, illness or death of any employee of the Contractor and of its Contractors, sub-contractors and/or their employees when such injury, illness or death arises out of or in connection with the performance of the contract.
- 36.5 Except as otherwise expressly provided, neither Contractor nor its servants, agents, nominees, Contractors or sub-contractors shall have any liability or responsibility whatsoever to whomsoever for loss of or damage to the equipment and/or loss or damage to the property of the Company and/or their Contractors or sub-contractors,

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irrespective of how such loss or damage is caused and even if caused by the negligence of Contractor and/or its servants, agents, nominees, assignees, Contractors and sub-contractors. The Company shall protect, defend, indemnify and hold harmless Contractor from and against such loss or damage and any suit, claim or expense resulting there from.

- 36.6 Neither Contractor nor its servants, agents, nominees, assignees, Contractors, subcontractors shall have any liability or responsibility whatsoever to whomsoever for injury or illness, or death of any employee of the Company and/or of its Contractors or sub-contractors irrespective of how such injury, illness or death is caused and even if caused by the negligence of Contractor and/or its servants, agents, nominees, assignees, Contractors and sub-contractors. Company shall protect, defend indemnify and hold harmless Contractor from and against such liabilities and any suit, claim or expense resulting there from.

The Company agrees to waive its right of recourse and further agrees to cause its underwriters to waive their right of subrogation against Contractor and /or its underwriters, servants, agents, nominees, assignees, Contractors and subcontractors for loss or damage to the equipment of Company and/or its contractors or sub-contractors when such loss or damage or liabilities arises out of or in connection with the performance of the contract.

- 36.8 The Company hereby further agrees to waive its right of recourse and agrees to cause it underwriters to waive their right of subrogation against Contractor and/or its underwriters, servants, agents, nominees, assignees, Contractors and sub-contractors for injury to, illness or death of any employee of the Company and of its Contractors, sub-contractors and/or their employees when such injury, illness or death arises out of or in connection with the performance of the Contract.

37. **CONSEQUENTIAL DAMAGE:**

- 37.1 Except as otherwise expressly provided, neither party shall be liable to the other for special, indirect or consequential damages resulting from or arising out of the contract, including but without limitation, to loss or profit or business interruptions, howsoever caused and regardless of whether such loss or damage was caused by the negligence (either sole or concurrent) of either party, its employees, agents or sub-contractors.

38. **INDEMNITY AGREEMENT:**

- 38.1 Except as provided hereof Contractor agrees to protect, defend, indemnify and hold Company harmless from and against all claims, suits, demands and causes of action, liabilities, expenses, cost, liens and judgments of every kind and character, without limit, which may arise in favour of Contractor's employees, agents, contractors and sub-contractors or their employees on account of bodily injury or death, or damage to personnel/properly as a result of the operations contemplated hereby, regardless of whether or not said claims, demands or causes of action arise out of the negligence or otherwise, in whole or in part or other faults.

- 38.2 Except as provided hereof Company agrees to protect, defend, indemnify and hold Contractor harmless from and against all claims, suits, demands and causes of action, liabilities, expenses, cost, liens and judgments of every kind and character, without limit, which may arise in favour of Company's employees, agents, contractors and sub-contractors or their employees on account of bodily injury or death, or damage to personnel/properly as a result of the operations contemplated hereby, regardless of whether or not said claims, demands or causes of action arise out of the negligence or otherwise, in whole or in part or other faults.

39. **INDEMNITY APPLICATION:**

The indemnities given herein above, whether given by Company or Contractor shall be without regard to fault or to the negligence of either party even though said loss, damage, liability, claim, demand, expense, cost or cause of action may be caused, occasioned by or contributed to by the negligence, either sole or concurrent of either party.

40. **PAYMENT & INVOICING PROCEDURE:**

- 40.1 Company shall pay to Contractor, during the term of the contract, the amount due calculated according to the rates of payment set and in accordance with other provisions hereof. No other payments shall be due from

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Company unless specifically provided for in this contract. All payments will be made in accordance with the terms hereinafter described.

- 40.2 All payments due by Company to Contractor shall be made at Contractor's designated bank. All bank charges will be to Contractor's account. Payment will be cleared on monthly basis only.
- 40.3 Payment of any invoices shall not prejudice the right of Company to question the validity of any charges therein, provided Company within one year after the date of payment shall make and deliver to Contractor written notice of objection to any item or items the validity of which Company questions.
- 40.4 Contractor will submit six sets of all invoices to Company for processing of payment. Separate invoices for the charges payable under the contract shall be submitted by Contractor for foreign currency and Indian Rupee.
- 40.5 Payment of invoices if undisputed shall be made.

The Company shall within 30 days of receipt of the invoice notify Contractor of any item under dispute, specifying the reasons thereof, in which event, payment of the disputed amount may be withheld until settlement of the dispute, but payment shall be made of any undisputed portion

- 40.7 The acceptance by Contractor of part payment on any billing not paid on or before the due date shall not be deemed a waiver of Contractor's rights in respect of any other billing, the payment of which may then or thereafter be due.
- 40.8 Contractor shall maintain complete and correct records of all information on which Contractor's invoices are based up to 2(two) years from the date of last invoice. Such records shall be required for making appropriate adjustments or payments by either party in case of subsequent audit query / objection. Any audit conducted by Company of Contractor's records, as provided herein, shall be limited to Company's verification (i) of the accuracy of all charges made by Contractor to Company and (ii) that Contractor is otherwise in compliance with the terms and conditions of this Agreement.

41. **WITH-HOLDING:**

- 41.1 Company may withhold or nullify the whole or any part of the amount due to Contractor, after informing the Contractor of the reasons in writing, on account of subsequently discovered evidence in order to protect Company from loss on account of :

41.2

- a) For non-completion of jobs assigned as per **PART-III.**
- b) Contractor's indebtedness arising out of execution of this Contract.
- c) Defective work not remedied by Contractor.
- d) Claims by sub-Contractor of Contractor or others filed or on the basis of reasonable evidence indicating probable filing of such claims against Contractor.
- e) Failure of Contractor to pay or provide for the payment of salaries/wages, contributions, unemployment compensation, taxes or enforced savings with-held from wages etc.
- f) Failure of Contractor to pay the cost of removal of unnecessary debris, materials, tools, or machinery.
- g) Damage to another Contractor of Company.
- h) All claims against Contractor for damages and injuries, and/or for non-payment of bills etc.
- i) Any failure by Contractor to fully reimburse Company under any of the indemnification provisions of this Contract. If, during the progress of the work Contractor shall allow any indebtedness to accrue for which Company, under any circumstances in the opinion of Company may be primarily or contingently liable or ultimately responsible and Contractor shall, within five days after demand is made by Company, fail to pay and discharge such indebtedness, then Company may during the period for which such indebtedness shall remain unpaid, with-hold from the amounts due to Contractor, a sum equal to the amount of such unpaid indebtedness.

With-holding will also be affected on account of the following:-

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- i) Order issued by a Court of Law in India.
- ii) Income-tax deductible at source according to law prevalent from time to time in the country.
- iii) Any obligation of Contractor which by any law prevalent from time to time to be discharged by Company in the event of Contractor's failure to adhere to such laws. When all the above grounds for with-holding payments shall be removed, payment shall thereafter be made for amounts so with-hold. Notwithstanding the foregoing, the right of Company to withhold shall be limited to damages, claims and failure on the part of Contractor which is directly/ indirectly related to some negligent act or omission on the part of Contractor.

42. **SUBSEQUENTLY ENACTED LAWS:**

Subsequent to the date of submission of contractor's bid, if there is a change in or enactment of any law or interpretation of existing law, which results in additional cost/reduction in cost to Contractor on account of the operation under the Contract, the company/Contractor shall reimburse/pay Contractor /company for such additional/ reduced costs actually incurred.

43. **ROYALTY AND PATENTS:**

Each party shall hold harmless and indemnify the other from and against all claim and proceedings for or on account of any patent rights, design, trade mark or other protected rights arising from any use of materials, equipment, processes, inventions and methods which have not been imposed on the attending party by the terms of the contract or the specifications or drawings forming part thereof.

44. **WAIVER:**

Any delay in exercising and any omission to exercise any right, power or remedy exercisable by the Company under this contract shall not impair such right, power or remedy nor shall any waiver by the Company of any breach by the Contractor of any provision of this contract prevent the subsequent enforcement of that provision by the Company or be deemed a waiver by the Company of any subsequent breach by the Contractor.

IN WITNESS whereof the parties hereunto set their hands seals the day and year first written above:-

SIGNED AND DELIVERED FOR AND
ON BEHALF OF CONTRACTOR

(Signature of Contractor or his legal
Attorney)

_____ by _____

the hand of _____ its (Full Name of Signatory)

Partner/Legal Attorney

(Seal of Contractor's Firm)

And in presence of _____

	GENERAL CONDITIONS OF CONTRACT	P.010416 R11050 002

(Signature of (Witness))

Date: _____

(Full name of Signatory)

Address:

SIGNED & DELIVERED FOR & ON

BEHALF OF OIL INDIA LIMITED

(Signature of Acceptor)

Date: _____

Designation: _____

PART – II
SCOPE OF WORK AND
TECHNICAL SPECIFICATION



OIL INDIA LIMITED

PIPELINE REHABILITATION PROJECT
- PHASE I

TRACTEBEL ENGINEERING PVT. LTD.

SCOPE OF WORK& WORK PROCEDURE
FOR PIPELINE REHABILITATION PROJECT – PHASE-I

DOC. NO. R230TRA8-RX-Y-SOW-0001

0	06.09.2017	Issued for Enquiry	MS	SK	SKH
Rev.	Date	Subject of revision	Prepared By	Checked By	Approved By

	SCOPE OF WORK & WORK PROCEDURE FOR PIPELINE REHABILITATION PROJECT – PHASE-I	P.010416 D-11075- 001

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PTS - HSE

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1. PROJECT GENERAL DESCRIPTION

1.1. Introduction

OIL INDIA LIMITED (OIL), is a Government of India Enterprise, engaged in the business of Exploration, Production & Transportation of Crude Oil, Petroleum Products and Natural Gas and Production of LPG in India with participating interest in E&P sector in various overseas projects.

The Pipeline Department of Oil India Limited deals with transportation of hydrocarbons to different refineries and operates a total of 1860 Km of Hydrocarbon pipelines, comprising of 1206 km of Crude oil pipeline and 654 km of Product pipeline. It owns a 1157 Km long x 18 m wide Right-of-way [ROW] from Duliajan, Assam, India to Barauni, Bihar, India. This ROW has multiple hydrocarbon pipelines viz. crude, product & natural Gas, all protected from a common Impressed Current Cathodic Protection (ICCP) system owned and maintained by OIL.

A schematic drawing showing the existing pipelines which are laid in the common 18 m wide ROW strip (at some locations the ROW width reduces to 6mtr) from Duliajan, Assam to Barauni, Bihar along with different Pump stations and SV/TOP stations are shown in 'Annexure-1: Drawing 1 and Drawing 2' (Schematic showing existing pipelines in the ROW from Duliajan to Barauni).

1.2. Project Background

A total of 1415 km of currently operating hydrocarbon pipelines are beyond or nearing completion of their design life, as mentioned below:

- The 406 mm (16") and 355 mm (14") crude oil pipelines, totalling 1157Km are more than 50 years old and
- 249 km of NSPL and refinery delivery line of 8Km are approx. 40 years old.

Due to natural degradation of the existing coal tar coating of these pipelines along with associated problems like shorted cased crossings and insulating flanges, the CP system is unable to adequately protect the pipeline system. Recent additions of more pipelines in the ROW [viz NSPL and DNPL have increased the load on the CP System many folds. Degraded/ exhausted ICCP anode beds have compounded the problem.

Intelligent Pigging Survey carried out for the crude oil as well as the NSPL product pipeline, indicates no major corrosion defects and hence de-rating of the pipelines is not recommended. Since the pipelines are in good health, issues related to Coating and CP system needs to be immediately addressed to ensure safe and reliable operation of the pipelines.

1.3. Project Requirement

In order to ensure continued safe and reliable operation of the pipelines and also to enhance the life of the pipeline system by another approx. 30 years, it is proposed to Rehabilitate 575 Km of the said 1415 Km pipelines under Phase-I of the Project in the states of Assam, West Bengal and Bihar.

As per the work strategy, 10 to 15 Km Pipeline coating refurbishment is proposed to be carried out on both sides of Pump and Repeater stations (which incidentally are also where the CP stations are installed), refer Table-2 for details.

Table -2

Sl No	Chainage	Section	Phase-1 (Pipeline Coating Rehab lengths)		
			Crude oil ML (in KM)	Branch Line (in KM)	NSPL (in KM)
1	Ch 0.00 to Ch 50.5	PS-1(Duliajan) to PS-2(Moran)	30		
2	Ch 50.50 to Ch 89.90	PS-2(Moran) to RS-1(Maduri)	20		
3	Ch 89.9 to 132.00	RS-1(Maduri) to PS-3(Jorhat)	20		

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SI No	Chainage	Section	Phase-1 (Pipeline Coating Rehab lengths)		
			Crude oil ML (in KM)	Branch Line (in KM)	NSPL (in KM)
4	Ch 132.20 to Ch 172.00	PS-3(Jorhat)to RS-2(Badulipur)	20		
5	Ch 172.00 to Ch 214.10	RS-2(Badulipur) to RS-3(Kaziranga)	20		
6	Ch 214.100to Ch 260.00	RS-3(Kaziranga) to PS-4(Sekoni)	20		20
7	Ch 260.500 to Ch 313.30	PS-4(Sekoni) to RS-4(Ghani)	20		20
8	Ch 313.300to Ch 360.80	RS-4(Ghani) to RS-5(Jagiroad)	10		20
9	Ch 360.8 to Ch 401.00	RS-5(Jagiroad) to PS-5(Guwahati)	20		
10	Ch 401.300 to Ch 468.240	PS-5(Guwahati) to (Jalukbari to Amingaon) to RS-8(Dharampur)	22	3.5km Ghy Refinery BL	20
11	Ch 468.245 to Ch 512.975	RS-8(Dharampur) to RS-9 (Barpeta Rd)	20		20
12	Ch 512.975 to Ch 556.720	RS-9(Barpeta Rd) to PS-6 (Bongaigaon)	20		
13	Ch 557.090 to Ch 602.895	PS-6(Bongaigaon D/S) to RS -10 (Pratapkhata)	20	4.5km 12” BGR BL	
14	Ch 602.895 to Ch 655.485	RS-10 (Pratapkhata) to RS-11 (Chepani)	20		
15	Ch 655.485 to Ch 703.699	RS-11(Chepani) to PS-7(Madarihat)	20		
16	Ch 704.092 to Ch 728.780	PS-7(Madarihat) to RS-12(Binnaguri)	25		
17	Ch 728.780 to Ch 784.425	RS-12(Binnaguri) to RS-13(Odlabari)	20		
18	Ch 784.425 to Ch 853.919	RS-13(Odlabari) to PS-8(Sonapur)	20		
19	Ch 854.022 to Ch 905.805	PS-8(Sonapur) to RS-14(Kishanganj)	20		
20	Ch 905.800 to Ch 958.340	RS-14(Kishanganj) to RS-15(Belgachi)	20		

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Sl No	Chainage	Section	Phase-1 (Pipeline Coating Rehab lengths)		
			Crude oil ML (in KM)	Branch Line (in KM)	NSPL (in KM)
21	Ch 958.340 to Ch 1009.632	RS-15(Belgachi) to PS-9(Dumar)	20		
22	Ch 1009.632 to Ch 1058.440	PS-9(Dumar) to RS-16(Thanahbihpur)	NIL		
23	Ch 1058.440 to Ch 1110.755	RS-16(Thanahbihpur) to RS -17 (Khargaria)	20		
24	Ch 1110.775 to Ch 1157.580	RS-17(Khargaria) to Barauni Pump Station	20		
	TOTAL LENGTH IN KM PIPELINE WISE		16" -180 km + 14"-287 km	8 KM	100 KM
	GRAND TOTAL			575 KM	

Apart from this, in order to reduce the CP current drainages all shorted cased crossings falling within the 575 Km section shall be repaired/removed/mitigated along with recoating of all buried Block valves falling within 1451 Km section, to give a renewed life to the system. Refer Annexure-2 for pipeline Coating length in each spread.

‘Tractebel India Pvt. Ltd.’ has been hired by the owner as the Project Management Consultancy (PMC) for this project.

1.4. Scope

For actual execution of the project work, as per the engineering / design and recommendations of the PMC, a ‘Works contractor’ shall be employed by the owner.

This document establishes the Scope of Work for Works Contractor (hereinafter referred to as ‘Contractor’ in this document) for repair work to be carried out for the existing pipelines, buried valves, cased crossing, insulation joints and flanges, as per project requirements.

The key activities of the contractor shall include:

1. Pipeline Coating Refurbishment,
2. Recoating of buried Block valves,
3. Repair/replacement of shorted Insulating Joints (IJs) using stopple plugging
4. Repair of defective pipeline sections using full encirclement welded sleeves.
5. Repair and Mitigation of shorted cased crossings.

The above is just an indicative description of Contractors activities. For understanding the detailed Scope of Work, the contractor must go through the subsequent sections of this document in detail.

1.5. Site Description

As indicated in Table -2 the project scope is spread all along the pipeline ROW of 1157 Km (i.e. from Duliajan, Assam to Barauni, Bihar) across the 3 states of Assam, West Bengal and Bihar. The terrain is mostly plain and hilly in some areas. The ROW mostly passes through cultivated land, with stretches of barren land, forests, reserved forests, small

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villages and clusters of population. It runs parallel to existing roads / highways in some sections and also passes through marshy, waterlogged area. There are chances of pipelines being submerged / waterlogged in certain areas.

As indicated above, the pipeline covers three states i.e. Assam, West Bengal and Bihar, the rainy season in Assam/West Bengal tentatively starts from Mid- April till October/November i.e. there will only be 4 / 5 working months in a year when the coating works can be performed. However, the working months might vary to 5-6 months in Bihar. The EPC contractor would be expected to be in-contact with the Meteorological department to get a forecast of weather for planning to start work and to complete the project within the contractual time period. Project Planning & Scheduling shall be so done, as to maximise the utilization of available time for working of Contractor, taking care of expected rainy periods in each location.

The historical meteorological data of rainfall of last five years is attached as Annexure- 8. The data has been taken from the IMD (Indian meteorological department). The Contractor shall carry out a site visit and acquaint himself well with the terrain, existing conditions, the expected works along the ROW and for a complete understating of the scope of work, before submitting his offer. The EPC contractor shall plan their activities of number of working days per year available based on the Meteorological data furnished and further details to be collected by the contractor from available sources as the coating works cannot be carried out during rainy days.

1.6. Definitions

Owner/Client:	Oil India Limited (OIL).
PMC	: Agency employed by Owner for carrying out Engineering, Procurement and overall Project Management for this project
Contractor / Works Contractor	: Contractor employed by Owner for carrying out Pipeline Rehabilitation work as per project requirements
Vendor/Manufacturer :	The party that manufactures and supplies material. equipment and/or services to the Contractor.

1.7. Abbreviations

OIL	: Oil India Limited
PMC	: Project management Consultant
CTE	: Coal Tar Enamel Coated
DNPL	: Duliajan Numaligarh Pipeline Limited
d/s or DS	: Downstream / Outlet side
PPL/GSPL	: Guwahati Siliguri Product Pipeline
MIJ	: Monolithic Isolation joint [Electrical Isolation]
LL	: Loopline -Pipeline segment laid in the sector RS3 – PS4 – RS4- RS5
ML	: Mainline
NH	: National Highway
NSPL	: Numaligarh Siliguri product Pipeline
IOCL	: Indian Oil Corporation Limited a downstream Hydrocarbon Company
PS	: Pumping Stations with ICCP stations
RS	: Repeater Stations with ICCP stations

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u/s or US	:	Up stream /Inlet side
FIM	:	Free Issued Material
MIJ	:	Monolithic Isolation Joint

2. BRIEF SCOPE OF WORK

This section describes the ‘Scope of Work’ for the EPC contractor to facilitate the understanding of the overall work required to be executed as part of this project. The description given in this section is not exhaustive and for complete understanding the overall scope of work, the Contractor must go through the subsequent sections of this document in detail.

2.1. Key Activities

The key activities to be carried out by the Contractor as part of this project shall be as mentioned below. Please note that this is an indicative list of minimum required activities and is not an exhaustive list :

- Site visit for studying the ROW and existing station facilities as per the scope of the project, understanding the existing terrain and conditions, getting familiar with the expected working conditions and a thorough understanding of the project scope of work. The Contractor shall be deemed to have acquainted himself well with the site and project requirements before submitting his offer.
- Study all the Engineering documents, including Drawings and Procedures prepared by the PMC and understand the technical requirements of the work.
- Carry out Trenching and excavation in the designated section of the 575 km Pipeline segment (Phase-I of the project), expose the existing buried pipeline, carry out required engineering measurements including pipe thickness, removal of existing coating, surface preparation of the pipe for application of new coating, application of new coating as per procedure, back filling of the trench and restoration of the site.
- Coating material for pipelines to be free issued by OIL.
- In locations where thickness of the pipe is found to be lower than acceptable levels, a metallic Full sleeve shall be welded to the pipeline, as per approved procedure, for providing strength and for improving the life of the pipeline. Pipes for fabrication of sleeve shall be provided by the OIL.
- Coating rehabilitation works for 115 no’s of block valves installed along the length of the pipeline ie 1157 km section. The scope includes exposing the buried valves, removal of existing coating, surface preparation, re-coating the valves as per procedure, backfilling and restoration of the site. In some location the Block valves are installed in RCC chamber. Contractor’s scope also included dismantling of the RCC chamber for coating of valve and Construction of new RCC Chamber after completion of Coating works.
- Coating material for block valves shall be free issued by OIL.
- API 5L pipes for preparation of metallic sleeve to be welded at pitted locations and spool pieces for installation of MIJ pipe sections shall be free issued by OIL.
- Carry out rehabilitation work for all cased crossings in the 575 km section of the pipeline, as per the approved procedure. (See Chapter 14 – Rectification of shorted Cased Crossings.)
- Carry out rehabilitation work for all damaged /shorted Insulation Joints / Flanges as per the approved procedures. (See Chapter 10 – Rectification of shorted Insulation Joints.). This would include stopple plugging of the operational pipeline by specialized agency to be engaged by EPC contractor, cold cutting of the pipeline section having shorted isolation joint, preparation of spool piece fitted with MIJ-Monolithic isolation joint and 6D LR bend of . 90°/ 45°, fitment of spool piece, welding of spool piece, removal of stopple plug and capping.(stopple plug shall be supplied by the specialist).EPC contractor scope shall include supply of MIJ, 6D LR bends and stopple plug.
- The underground LR bends/spool pieces section shall be coated with 3 ply/2ply cold applied tape free- issued by OIL.
- If EPC contractor carries out any repair job after backfilling due to bad workmanship, all costs including excavation of the trench/recoating/ etc. shall be borne by the contractor and no extra payment shall be made by OIL. Also the cost of free issued coating material for coating repair shall be recovered from contractor.

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- The contractor shall provide proper barricading / warning tape around the working area. In highly populated area, solid hard barriers shall be used to avoid any accidents (refer drawing attached), however caution tape with danger marking shall be provided at all other locations.
- In case of any exigencies/disasters or leak during the execution of job, the Contractor shall keep all the required manpower, equipment and vehicles on stand-by for immediate containment and restoration.
- In Dry or Marshy areas, after excavation of trench, the earth may be swampy and adequate pipe support may be required by use of belt, chain pulley fitted to suitable cross members or pipes laid across trenches or by any other suitable arrangement. The suitable arrangement for the workable area also needs to be provided like placement of metal sheets or wooden planks etc.

The above is a listing of broad activities to be carried out by the contractor as part of this project. However, the Scope of Contractor shall cover all the activities required for successful execution of the project at site, as per project requirements, specifications and work procedures, to the satisfaction of the owner/client.

2.2. Description

The contractor's scope of work shall include all the activities required for carrying out repair work for the existing pipelines, buried valves, cased crossing, isolation joints and flanges, as per project requirements. In addition to the key activities listed above, the following description provides a summary of major activities required to be carried out by the Contractor as part of the project. The activities shall include the following as a minimum:

Site Visit :

- a) The Contractor shall carry out a detailed site visit including all the station facilities within project scope, for acquainting himself fully with the site, prevailing conditions, terrain, work requirement, site specific requirements and a thorough understanding of complete scope of work.
- b) Collect & record all required details / information, validate information provided in tender document and update the same where required.
- c) The contractor shall be deemed to have acquainted himself well with the prevailing site conditions and overall project requirement, before making his offer and no additional cost / time shall be admissible on account of any site condition.

Installation & Application Procedures

- a) The procedures for rehabilitation of coating for pipeline, rehabilitation of coating of block valves, revamp of cased crossings, replacement of shorted IJ's, installation of metallic sleeve are attached as a part of the document for reference of the EPC contractor. However, the contractor shall be required to review the same and submit the application procedures on award of contract.
- b) Any procedure which is required for successful completion of the works at site, but not enclosed with the Tender, shall be prepared by the Contractor as part of scope of work, and shall be reviewed and approved by the PMC / Owner.
- c) Similarly all additional drawings, which are required for execution and successful completion of the works at site, but not enclosed with the Tender, shall be prepared by the Contractor as part of scope of work, and shall be reviewed and approved by the PMC / Owner.

Project Planning and Scheduling

- a) Project Planning and Scheduling: The EPC contractor is expected to perform proper planning based on the weather conditions of site and get regular weather forecasts from the meteorological department or other sources, as weather tracking would play a crucial part in project completion activity
- b) Detail planning of material and manpower required for each activity
Plan and schedule mobilisation of Manpower as per project schedule.

Manpower and Equipment

- a) Provide adequate manpower as per project requirement and timelines
- b) Provide all Tools, Tackles, Machines and Equipment required as per minimum equipment list attached.

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- c) All equipment provided by the Contractor for the project, shall be dedicated for this project only. Declaration for the same shall be submitted by bidder with the bid.
- d) Safeguard and storage of all equipment, tools and tackles, machinery, vehicles etc, arranged by the Contractor, shall be in Contractors Scope of work.

Camp Facility and Transportation

- a) Setup main office facility at any one location with a RCM/project coordinator
- b) Setup camp facilities for workers/ project personnel at/near project site as per project requirement
- c) Provide adequate space, safe environment and working conditions for all workers.
- d) Provide safe drinking water, sanitation and other basic facilities to all workers
- e) Provide basic medical / first aid facilities
- f) Arrange for safe transportation of workers to and from the site.

Material Storage and Preservation

- a. The contractor has to make available safe storage facility for storing the FIM and contractor's material, as per project requirement. The storage shall be fully covered with adequate protection from moisture, dirt, dust, wind and ingress of foreign items.
- b. The responsibility of storage, preservation and safeguard of all the material, including FIM, for the entire project duration, shall be in scope of contractor.
- c. In case of pilferage or theft or wastage of FIM, cost of the FIM shall be recovered from the Contractor, as per recovery rate mentioned in the Tender.
- d. All transportation of material including FIM, to and from the owner's store yard shall be in scope of Contractor.

Material Procurement and Supply

- a. Estimation of material requirement for the project
- b. Procurement and supply of all material required for the project, except FIM issued by the Owner.
- c. Prepare detailed schedule for material delivery and transportation to site, to meet project timelines.
- d. Prepare inspection & test plans for material as well as for project activities.
- e. Assistance to PMC/Owner for carrying out inspection and testing of incoming material as required.
- f. Taking over of Free Issue Material (FIM) supplied by the Owner.
- g. Owner shall store FIM at nine different locations along the pipeline. (PS-2, PS-3, PS-4, PS-5, PS-6, PS-7, PS-8, PS-9 and BarauniPS-10). Contractor shall choose and pick material from the location closest to the site of activity being carried out.
- h. Supply of all consumables for the project.

Site Works

The works to be executed at site, as part of this project, shall include but not limited to the following works:

- a. Identification of buried pipeline / pipelines in the ROW for re-coating using pipeline locators and cross trenching at regular intervals.
- b. Trenching using backhoe type excavator's up to a predetermined depth considering safety aspects and then trenching manually so as to prevent damage to the pipeline. The trench size shall be of sufficient width and depth for safe operation of the personnel for removal of the coating and application of the new rehabilitation coating. In some areas complete manual trenching may be required for protection of other facilities in ROW as determined during cross trenching and as determined by site conditions.
- c. De-watering of the pipeline trench to ensure dry atmosphere for re-coating wherever required.

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- d. In submerged area, pumping out of the surface and ground water using sludge, de-watering pumps or installing well point system for enabling excavation of the trench to access the pipeline. It would also include preparation of bund around the pipeline segment to prevent flow of surface water into the pipeline trench. The contractor shall be responsible to deploy of the necessary equipment /measures to enable excavation of trench and access to pipeline.
- e. In case the trench depth is more than 1.5 meters, the trench shall be securely shored and timbered.
- f. Surface preparation of the steel surface as per type of the coating as detailed later in this section. Surface preparation of the steel surface in dry area shall be abrasive blasting using copper slag.
- g. Inspection of the steel surface for any pitting and reduction in wall thickness. If required, welding metal sleeve steel reinforcement as per approved method statement / QA-QC procedures (to be submitted by contractor for review and approval by PMC).
- h. Application of the refurbishment coating as per approved method statement / QA-QC procedures (to be submitted by Contractor for review and approval by PMC).
- i. Inspection and testing of the applied coating as per approved ITP (to be submitted by contractor for review and approval by PMC).
- j. Backfilling of the trench including compaction as per approved method statement / QA-QC procedures (to be submitted by Contractor for review and approval by PMC). If required additional soil shall have to be transported to ROW for backfilling.
- k. In rocky terrain padding over and around the pipe with fine sand/soil is to be done during backfilling up to a level of 150 mm above the pipeline
- l. Application of coating at un-cased crossing sections – roads & nallahs as per approved method statement / QA-QC procedures (to be submitted by contractor for review and approval by PMC).
- m. The roads up to a maximum height of 3 m above ground level from Toe will be taken up for cutting for refurbishment of coating.
- n. Keeping the pipeline safe and operational 24x7, when exposed during coating refurbishment.
- o. Night patrolling shall be provided for sections under construction / exposed for work, to ensure safety and integrity of the pipeline sections. The patrolling team shall be provided with suitable communication (phone) for any emergency. The details of personnel along with mobile no shall be submitted to the PMC/Owner. It is the responsibility of EPC contractor to provide all necessary items (Torch, shoes etc.) to the personnel required for effective patrolling at night. Also the EPC contractor shall ensure sufficient lighting be provided along the open trench throughout the night in areas where residences are very near to the RoW Boundary.

The scope of work also includes the following:

- Coating of block valves in respective packages. (Ref Annexure-3 for details)
- EPC Contractor shall be responsible for supply and installation of the cathodic protection components comprising of various type of FRP test lead boxes with concrete encased FRP/equivalent post CP cables, pin brazing connections and terminate the cable in a test lead posts (TLP) as indicated in the cathodic protection section.
- All cased crossings in respective packages will be checked for shorting and rectification / mitigation measures as per specification shall be carried out. Contractor shall supply all material for rectification and mitigation. This would also include supply of Magnesium based sacrificial cathodic protection system. At certain locations casing annulus to be filled with a high dielectric material. The casing filling activity to be carried out by specialized agency. (Ref Annexure-4 for details)
- All the isolation flanges shall be replaced with monolithic isolation joints. The supply of the monolithic isolation joints shall be the scope of EPC contractor.
- MIJ shall be installed by stoppling which shall be carried out by specialized agency as per vendor list. Stopping operations shall be carried out simultaneously at the inlet and outlet of the repeater station. Shut down of the flow of the crude shall be for 48 hours and all activities including cold cutting of the pipeline section and replacement with the new pipeline section fitted with MIJ. The scope of the EPC contractor includes supply of LR- 6D bends

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along with fabrication of the straight length spool pieces (free issued by OIL. Please note pipe for L R bends shall be in the scope of EPC contractor.)The scope also includes supply of stopple plugging and accessories.

- Inspection and testing of the refurbished pipeline, buried valves, insulation joints, cased crossings as per project specifications
- p. Restoration of the ROW to its original condition.
- q. Restoration of Asphalted / concrete / Gravel roads shall be carried out by the EPC contractor to the satisfaction of the concerned authority. A certificate of no objection shall be produced by the EPC contractor from the authority at the completion of activity, for all such locations. All liaisoning work related to this shall be in contractor's scope.
- r. OIL shall be conducting coating defects survey - CAT/DCVG to check the healthiness of the new coating and identify the defects .EPC contractor shall be responsible for repairing the coating defects identified during CAT/DCVG survey conducted on the pipeline by OIL/PMC to check the coating health, with no extra cost to OIL.

PERMISSIONS & LIAISONING

- a) In general, all the permissions required for project execution, from statutory authorities like MOEF (Ministry of Environment & Forest), defence, forest, wild life sanctuaries, railways, irrigation, national/ state highways authorities, etc. shall be obtained by the OIL
- b) Execution of job under Defence areas, forest areas shall be as per the instruction of the concerned authorities.
- c) OIL has ownership of the entire length of the ROW from Duliajan, Assam to Barauni, Bihar. The same shall be provided for EPC contractors work. Clearing of the ROW for execution of the project shall be in the scope of EPC contractor.
- d) Crops / cultivation maybe present in the ROW at the time of coating works. In such cases, it is the responsibility of the EPC contractor to reach agreement with the farmers so as not to affect the progress of work.

Project Management & HSE

- a) Materials Management
- b) Quality control as per approved Quality Assurance plan
- c) Project Management & Monitoring
- d) Health & Safety Management, complying with Statutory, Regulatory and National & International Standards.
- e) All project related activities shall be carried out in full compliance to the HSE requirements of the Owner, and applicable statutory requirement.
- f) Adequate PPE shall be provided to all personnel working for the project, in compliance to HSE requirements.
- g) EPC contractors are required to maintain a site registry during the whole tenure of the contract detailing all activities on a daily basis.

ADDITIONAL ACTIVITIES

- a) Site restoration work at all locations and existing facilities, as required.
- b) Any associated work or activity required for successful completion of the project.
- c) Preservation of newly constructed facilities like test stations and other repair/replacement works while performing the coating works. The contractor to make sure that the components installed/repaired, stay intact till the handover of the project.
- d) Project documentation
 - Approved QAP/method statements of various activities as per tender requirement.
 - Approved /As built drawings of pipeline sections fitted with MIJ at repeater stations.
 - Field coating log book duly certified by PMC.

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- Reconciliation statement duly certified by PMC for all free issue material- coating/pipes etc.
- Radiography records of welds
- Test certificates/Inspection reports of all bought out items included in contractors scope
- Guarantee/warranty certificates of all bought out items
- Field log book of pipe thickness recorded with GPS coordinates of welded pipe sleeves.
- Field log book of all CP components installed including GPS coordinates of test lead posts
- Testing and commissioning reports including PSP/CSP(Pipe/casing to soil potential) at cased crossings
- Testing and commissioning of Monolithic Isolation Joints

The documentation shall be submitted in three sets of hard bound copies and soft copies (in USB drive)

e) Project closeout

The EPC contractor shall work with the aim to complete the project on or before the schedule and shall follow all relevant & applicable international/national codes and standards.

The above is a summary of activities is not an exhaustive list. All the activities not specifically mentioned here, but otherwise required to be carried out for successful execution of the project, as per tender requirements shall be included in EPC contractor's scope of work.

The EPC contractor shall carry out and complete the said work under this contract in every respect in conformity with the contract documents and with the direction of and to the satisfaction of OIL/PMC.

3. PROJECT SPECIFIC REQUIREMENTS

3.1. Free Issue Items

The following 'Free Issue Material' (FIM) shall be supplied by the OIL:

A) COATING MATERIAL :

Coating material for refurbishment of the pipeline and block valves.

B) HAND WRAPPING MACHINE :

Hand wrapping machine for coating wrapping.

C) PIPES

API 5L pipes , for preparation of metallic sleeve to be welded at pitted locations and straight spool pieces for installation of MIJ pipe sections

All balance items and material required for the project, except the FIM Mentioned above, including cathodic protection material, monolithic isolation joints, LR Bend, stopple plug and accessories , consumables, spares, etc. shall all be included in EPC contractor scope of supply.

3.2. PACKAGES

The phase - I of pipeline rehabilitation project shall cover 575 km of pipeline in identified sections.

Coating refurbishment works for entire 575 km of pipeline shall be carried out in five packages as below:

Spread / Package	Station	State	Coating Length (KM)
1	PS-1(Duliajan) to PL KM 224.10	Assam	130
2	PL KM 250 to PL KM 411.30	Assam	131
3	PL KM 457.24to PL KM 612.89	Assam	119

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Spread / Package	Station	State	Coating Length (KM)
4	PL KM 645.48 to PL KM 905.80, RS-14(Kishanganj)	West Bengal	115
5	PL KM 905.80 (RS-14(Kishanganj) to Barauni Pump Station	Bihar	80
Total			575 KM

For details of Coating length, Nos. of Block Valves, Nos. of Cased Crossing, Nos. of existing insulating flanges and tentative Nos. of uncased crossing in each spread, refer following annexure attached with this document:

Annexure-2 : Spread wise details of coating length

Annexure-3 : Spread wise nos. of block valves

Annexure-4 : Spread wise nos. of cased crossing

Annexure-5 : Spread wise nos. of insulating joints

Annexure-6 : Spread summary

Annexure-7 : Warehouse location

Annexure-8 : Historical meteorological data

Annexure-9 : Technical specification LR (Long radius) bends

4. COATING DETAILS

4.1. Type of Refurbishment Coating:

OIL / PMC intends to refurbish the defective coating by in-situ application of various types of protective cold applied coating systems depending on the terrain / trench conditions as detailed below and rectify the pitted portion of the pipeline steel by providing metallic sleeving in line with site conditions and decision of OIL / PMC shall be binding and final.

The refurbishment coating system shall comprise of the following:

Type of terrain / trench condition	Type of coating	Surface preparation
Dry (pipe surface dry) /Wet ROW during rainy season	3 ply / 2 ply cold applied tape coating system comprising of three layers: primer, inner anti-corrosion tape(3ply) and outer mechanical layer(2ply) to be applied by hand wrapping machines. Filler mastic shall be provided for filling irregularities around weld reinforcement.	Abrasive blasting – Sa1/2 with anchor profile 50-100 μ
Perennial swampy ROW (pipe surface dry but abrasive blasting not possible in the trench)	Visco elastic coating - Self-healing monolithic polymer wrap cold applied coating system comprising of two layers: Inner anti-corrosion visco-elastic layer and outer mechanical layer to be applied by hand.	Wire brushing - St 2 / St 3
Perennial submerged ROW(pipe surface wet)	Petrolatum based cold applied coating system comprising of three layers: primer, inner petrolatum tape, outer mechanical layer to be applied by hand.	Wire brushing – St 2 / St 3

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4.2. Coating refurbishment & ALLIED works:

It is envisaged that for each package, recoating works will commence simultaneously at minimum locations as follows:

Package 1, 2, 3 & 4: Minimum 4 openings per package

Package 5: Minimum 3 openings

In case during the progress of work, additional openings are required to meet the project completion target, the same will have to be opened by the EPC contractor, as per contract

Contractor shall submit in the bid a detailed organizational chart of personnel to be deployed comprising of Project Manager, Planning Engineers, QA / QC Engineers, HSE Engineers for each location. Contractor shall deploy a team of qualified diploma holder engineers in Mech./Civil/ Electrical stream for execution of each activity as detailed above. The team to be deployed should have similar experience of pipe trenching & coating activities of hydro-carbon pipelines.

Contractor shall deploy sufficient machinery to achieve the desired daily rate of progress for coating refurbishment at each location. The minimum equipment, machinery, test and inspection equipment list to be deployed for each location is attached with this document.

The most critical machinery for re-coating works is the air compressor, the blasting pot required for surface preparation and dewatering pump. The air compressors deployed shall be in good working condition and shall be fitted with the required de-humidifiers, filters to ensure dry air at the required pressure is available at the blasting pot and the nozzle pressure is as required to ensure the required surface profile. Prior to deployment, the air compressors shall be checked by the PMC Engineers. Only those air compressors and pump will be deployed which shall be approved. Stand by air compressors, pump and sufficient spares shall be available at site to ensure that there is no stoppage of work.

Fitness Certificate for all equipment to be used for the project shall be obtained by the Contractor from a TPI or Chartered engineer with a valid certificate from the Institution of Engineers, India.

Contractor shall deploy specialized agency as per vendor list for carrying out stopple plugging activity for installation of MIJ.

EPC contractor shall deploy CP contractor as per approved vendor list for installation, testing and commissioning of CP components.

EPC contractor shall deploy specialized agency as per vendor list for casing filling.

4.3. Procedures For Site Activities

All the activities described above shall be carried out as per the attached 'Procedures'. These procedures for all critical activities are included in subsequent sections of this document, as detailed below:

Section Chapter 5 - Procedure for locating pipeline, excavation and pipeline exposure

Section Chapter 6 - Procedure for coating removal and surface preparation

Section Chapter 7 - Procedure for application of coating

Section Chapter 8 - Procedure for backfilling, final restoration of row and measurement

Section Chapter 9 - Procedure for coating removal/surface preparation of buried block valves

Section Chapter 10 - Procedure for replacement of flanged isolation joint with Monolithic isolation joint including stopple plugging and replacement of fabricated pipeline section

Section Chapter 11 - Material handling, transportation & material consumption at site

Section Chapter 12 - Cathodic protection system component installation

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Section Chapter13 - Procedure for installation of metallic sleeves at pitted pipe sections

Section Chapter14 - Procedure for rectification of shorted cased crossing and casing filling

The contractor is required to go through all the subsequent chapters in detail for a complete understanding of scope of work and activities required to be carried out for execution and successful completion of the project.

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PROCEDURES FOR SITE ACTIVITIES

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5. PROCEDURE FOR LOCATING PIPELINE, EXCAVATION AND PIPELINE EXPOSURE

The scope includes clearing of ROW for carrying out coating refurbishment works, identification of buried pipeline / pipelines in the ROW using pipeline locators and cross trenching at regular intervals, marking pipeline alignment as directed by the site engineer for the trench excavation work including but not limited to cutting/clearing the ROW of all bunds, dewatering surface water in submerged section/in pipe trenches, vegetation, bushes, trees etc. to enable movement of vehicles, equipment viz. compressor, welding sets etc. and to enable excavation of the trench for coat and wrap works.

OIL/PMC shall show the contractor the location of the pipeline with the help of Pipeline markers, turning points, boundary pillars etc. in the ROW. However establishing exact alignment of pipe is to be done by contractor by using Pipeline Locators or by digging bell-holes. No extra payment whatsoever in this respect shall be payable to bidder for this.

The checking or approving of any line, level or marks by the OIL/PMC representative shall not in any way relieve the contractor of his responsibility for the correctness thereof. Earth work in excavation includes in all types of soils like hard murrum dry/wet condition, water logged areas requiring shoring/shuttering and de-watering of surface water / water in pipeline trench up to depth required to expose the pipeline all around and width including but not limited to road cutting and providing necessary by-pass roads for movement of vehicle / equipment etc. and further restoring the road to its original condition which shall be deemed to be within the purview of item as mentioned in SOR and as per the instructions of OIL/PMC. No extra cost shall be applicable for any of the above activities, including providing bypass roads and restoration work.

The Contractor shall be liable for any and all damage to the OIL pipeline/ other pipelines ,OFC cable paths, walkways, roads, dykes caused by him and agree to pay, indemnify the OIL from any loss or damage or alleged damage to such structures caused by the Contractor.

5.1. Excavation of pipe trenches:

- All excavations shall be carried out as per IS 3764 Excavation Work – Code of Safety and OISD-GDN- 192 - Safety Practices During Construction.
- Safety helmets shall be worn by all persons entering trench where hazards from falling stones excavated earth, timber or other materials exist.
- Appropriate safety footwear (rubber boots, protective covers, etc.) shall be worn by workers/ employees who are engaged in work requiring such protection.
- Suitable barricading of 1m height with glowing caution board shall be provided for excavation beyond 2.0 m depth.
- All trenches in soil / friable or unstable rock more than 2.0 m deep shall be securely shored and timbered. In case of high water tables, continuous flow of water in the trench, shoring shall be required at lesser depth also and shall be as per instructions of OIL/PMC.
- Excavations shall have suitable arrangement for moving in and out of the trench like ladders etc. are to be provided every 30 m of length or fraction thereof. Ladders shall extend at least one meter above the top of the cut to provide a hand hold when stepping on or off the ladder.
- Wherever necessary, suitable cross-over / temporary bridges should be provided and maintained over the open ditch to permit general public, property owners or his tenants to cross or move stock or equipment from one side of the trench to the other. The width of such crossovers shall not be less than 75 cm and shall be strong enough to withstand the intended use. During excavation, mechanical excavator should not touch OIL's pipeline or adjacent pipelines of OIL's / other companies. The earth around pipeline should be removed manually to prevent any damage to pipeline. Extra precaution must be taken while exposing pipeline.
- The Contractor shall also take additional precautions in places where there are other crossings like other pipelines, water pipes, OFC, power cables, drainage system underneath or above the Owner's pipeline.
- Excavation of earth shall be done in all kinds of soil including hard murrum, soft rock, hard rock, including but not limited to overburden earth containing large size boulders, by any/ all means except blasting. The job includes bailing out of water from the ground surface /pipe trench by using sludge/dewatering pumps including installation of well point system as instructed by OIL/PMC to drain out the surface water for excavating the pipe trench, shoring, shuttering etc. . In addition to above, patches of rocky/murrum /water logged stretches may

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be found within normal stretches of soft/silty soil areas after excavation. The length of Rocky/murum/water logged patches may vary after excavation of trench and no extra cost shall be applicable on account of the same.

- All equipment, materials, tools, tackle, chemical material, application etc. required for the works shall be in the scope of the Contractor.
- The contractor shall dig the pipeline trench by any method, except blasting. The Contractor shall ascertain pipe depth by making cross-trenching at suitable intervals 100~110 meters to understand exact depth of pipe, parallel pipes in the common ROW, fibre optic cable orientation with respect to the pipe so that damage to pipe, foreign pipes, fiber optic cable by excavator during excavation is avoided.
- Normally, the pipeline is buried up to a depth of 1.5m. However, the depth may vary depending on the site conditions.
- In Package 1, near Duliajan /Moran the pipeline laid in the ROW is crossings many flowlines which are laid above ground or at the sub- ground level which prevents excavation/trenching activity with excavators At such locations ,the contractor shall adopt manual excavation to expose the pipeline for recoating .
- The depth of pipeline at Nala, Rail, Cart track and Road may be up to 3.0 m to 5.0 m or more on either side near the crossings depending on site conditions. Excavation at all places has to be carried out at all depths on ROW.
- Excavation shall require mechanical means (except blasting) / chiseling / pneumatic drilling for required length of stretch along the pipeline trench.
- The Contractor shall exercise special care in cleaning all debris, loose material, rock particles etc. from the ROW to prevent the soil intended to be used for backfilling the ditch, becoming mixed with such debris.
- The trench is to be cut to a grade that will provide sufficient space for carrying out surface preparation and coating refurbishment works.
- The trench size should be such that on all sides of the exposed pipe and including bottom there has to be a clearance as given below from the outer wall of pipe.
 - o Ground clearance : 500 mm
 - o Lateral clearance : 800 mm
- If there is one pipe in the ROW requiring refurbishment, the trench size for pipe at a normal depth of 1.2~1.5 meter shall be:
- Width 2.0 meter average Depth 1.5~ 2.0 meter depth.
- The types of soil in the terrain are hard murum, soft/hard rock and soil containing large boulders. The Contractor shall clear the ROW and prepare site etc. for the convenient passage of all equipment by removing all bush, vegetation, undergrowth, stumps, rocks and other obstacles liable to impede the convenient passage of the equipment and carrying out the work unto the width as directed and to the satisfaction of Site Engineer. Where necessary, the minimum amount of trees, bushes and shrubs shall be removed to clear through cultivated areas.
- In rough, steep terrain, the Contractor may have to construct bypass and access roads for its use. Where these are not on the ROW , the Contractor shall obtain necessary permission from landowners and tenants and be responsible for all damages caused by the construction and use of such roads at no extra cost to the Owner.
- The Contractor has to take care about the ROW facilities like TLP, boundary pillars, KM post, turning posts and caution boards during excavation. All these facilities are to be restored after coating & wrapping work to its original condition. No payment shall be paid for this work.
- Trenching in all water logged areas/ marshy areas/ water crossings like canal/nala crossings etc. shall be provided with shoring and shuttering.
- Along the ROW, at locations where pipeline is laid under concrete slabs to avoid surfacing of pipeline in waterlogged areas, the concrete chambers/slabs wherever necessary and as directed by OIL/PMC shall be repaired/ replaced / restored as original.
- During excavation, the exposed pipeline section shall be provided with earth support to ensure maximum unsupported length of less than 10 m. However, if required contractor shall provide sand bags to support pipe section

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at a suitable distance, wherever required with the help of side boom / hydra, tripods, winches etc. during the course of repair/refurbishment work.

- The supported portions shall be taken up after completion of works on unsupported length. The unsupported length shall be backfilled and soil compacted adequately. Sand bags shall be provided as required to support the pipe before starting work on supported sections. The sand bags will be punctured / removed once area around it is backfilled and compacted properly.
- At road crossings where pipeline crosses a kuccha or Hard standing road etc. the scope would include exposing the pipe by road cutting, shoring, shuttering and providing necessary by-pass roads for movement of people and vehicle/ equipment and further restoring the site to its original condition without any extra cost and as per the instructions of OIL/PMC.
- The roads up to a maximum height of 3 m above ground level from Toe will be taken up for cutting for refurbishment of coating.
- Restoration of roads to its original shall be performed by the contractor for only SH/NH, PWD or Govt. roads, defense roads, forest roads.
- Public travel shall not be unnecessarily inconvenienced, nor shall it be wholly constructed at any point, without consent of the responsible authorities. The Contractor shall at his cost furnish and maintain watchman, detours, lights, barricades and signs where necessary to fully protect the public.
- The Contractor shall be responsible for making the temporary approach road to ROW wherever required, at his own cost and risk and shall keep the OIL indemnified for any claim or damages whatsoever caused by the Contractor in this regard. Wherever any permission, etc. required to be taken from Govt. authorities towards these, contractor shall be responsible for obtaining such permission and shall keep OIL indemnified from all such claims, damages arising out of the above, from any / all quarters. However, OIL shall extend help wherever required.
- With regard to soil conditions and/or the topography of the ground, the trench shall be excavated and finished to the minimum dimensions as indicated above or as directed by OIL/PMC representative for earth & rock with a view to expose the pipeline and to provide for sufficient working space for carrying out the coating work all round the circumference of pipeline.
- The excavated length of pipeline shall be such as to carry out the intended length of coat and wrap as per standard coating practices and the Contractor shall quote accordingly.
- While backfilling, the soil recovered from around the pipe i.e. in close vicinity of the pipeline shall be used for backfilling over the newly coated pipe, care shall be exercised to see that no loose debris or foreign material or stones are used for backfilling directly on in the trench.
- For depth of excavation more than 2.5mtr (measured from undisturbed ground level (GL) to pipe top) found at areas such as in canal beds/water courses and/or specific locations if any, specified and certified by EIC, rates shall be applicable as per provision of SOR.
- Locating all existing nearby underground pipelines & cables by pipe/ cable locator and marking/ flagging-off their location suitably before beginning of any construction activity, on both sides of the crossing and within crossing limits, such that no existing pipeline/ cable gets damaged. Any damage to the existing pipelines/ cables due to the constructional activities by the contractor shall be attributable to the Contractor. Contractor shall be responsible for claims if any arising out of damage/ obstruction to any existing facilities such as public utilities like roads, electric cables, pipes, OFC lines of DOT etc. where the claims will cover the restoration costs as well as loss of revenue due to down time. All such claims including claims due to delay in restoration of such facilities shall be settled by the Contractor at Contractor's own expense including carrying out coordination & Liaisoning with local people, without any time and cost implication to Company.
- OFC cable of OIL is laid in the same RoW at a distance of 2 meters or less horizontal separation and depth 1.5 meter or less from the ground. All care to protect the OIL's OFC during excavation and other operation of coating refurbishment work shall be taken by contractor. Any damage to OFC shall be repaired at the cost of the contractor causing damage.
- The contractor is warned that while excavation job is carried out, the pipeline, which is carrying highly explosive petroleum product, should not be damaged and chiseling, hammering etc. shall not be resorted to on the pipeline surface in any case.

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- The contractor shall be responsible for taking all necessary precautions to prevent any damage whatsoever to the pipeline. Each project site should be equipped with all preventive measures including keeping minimum 4nos fire extinguishers duly charged and in good working condition near each work site.
- Contractor shall make available First Aid Box as per standard practices and one standby vehicle at each opening for emergency situations. Contractor shall have all the details of nearby Police Station, Hospital, Fire Station etc. and display the same at each location. The Contractor shall also coordinate with district administration for the works carried out under their jurisdiction.
- Contractor must ensure all PPEs for each of the labour & supervisors. Non-compliance in this regard shall attract penalty and deducted from RA Bill/s of the contractor.

The Contractor shall provide suitable drainage arrangement to prevent surface water entering the trenches. The Contractor shall engage dewatering/sludge pumps or well point system as per approval from OIL/PMC to keep the trench free of water.

In such areas, even though the water shall be drained out continuously from the working trench, the trench shall be muddy and clay, contractor to make suitable arrangements to ensure safe working of the personnel in such areas so as to not to effect the progress of the work/personnel safety at no extra cost to the OIL.

5.2. Opening of the trench of the pipeline:

The pipeline will be exposed 300~400 meters at a stretch and as directed by OIL /PMC. Contractor will ensure that the exposed pipeline in the trench is re-coated within the shortest span but not more than 5 to 6 days. 24x7 security shall be provided by the contractor for the exposed pipelines. Flood lights shall be provided for safety at suitable distances.

5.3. MAXIMUM UNSUPPORTED LENGTH OF PIPE FOR RECOATING:

- a) Maximum unsupported length of pipeline shall not exceed 10 m.
- b) During excavation, pipe support shall be left as unexcavated/undisturbed pipe length i.e. original earth support of suitable width (approx. 0.7m-1.0 m as per site condition).
- c) After completion of coating of main stretch (8m–10m), pipe at such supports shall be taken up for coating refurbishment.
- d) Prior to removal of above earth support, following precautions shall be taken:
 - Back filling (minimum up to pipe top) of pipe length already exposed and re-coated.
 - Proper compaction of backfill of such re-coated pipe length.
 - If required, sand bag supports shall be provided

5.4. Crossings

The scope of work includes excavation and coating repair at all types of uncased road crossings. Trenching at crossings shall include road cutting, shoring and shuttering and providing necessary bypass roads as per requirement for movement of vehicle/ equipment etc. and further restoring the road to its original condition as per the instructions of OIL/PMC/Concerned Authority.

The scope of work also includes excavation and coating at all water crossings like canal/nala crossings etc. including providing shoring and shuttering. The coating at canal crossings shall be exempted where the mainline pipe was laid through HDD or at design submerged crossings and at locations where concrete coating or concrete cover for Exposure repairs has been provided.

The Contractor shall be responsible for making all necessary arrangement to bail or pump out water from the trench or from wet area or submerged area, wherever required, during excavation and operations of coat and wrap , without any extra cost/ liability to the OIL.

Suitable types of shoring and shuttering, whenever necessary if the depth of the trench is more than 1.5m, shall be adopted to with-hold the vertical face of trench or cutting in slope/stepped cutting resorted to as per site requirements and as directed by the OIL/PMC.

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In locations, where the trench is cut across roads, patches, walkways etc., the Contractor shall provide temporary bridges/ suitable bypass of adequate strength & proper construction to allow the passage of normal traffic with minimum of inconvenience and interruptions. The Contractor should make good and restore the area etc. to its original condition without any extra cost.

The permission of road cutting shall be taken by owner, however necessary intimation/co-ordination with the concerned local official to be made by the concerned contractor prior to start of the road cutting job and only on his concurrence shall the job start.

6. PROCEDURE FOR COATING REMOVAL AND INSPECTION OF PIPE SURFACE

Before the application of coating, all paint or temporary protection, previous coatings, oils or grease, grinding and welding slags, rust, unevenness, burrs, grooves, dirt, mud, moisture and any other foreign matter must be removed from the pipeline surface.

Removal of the old coal tar coating and cleaning, surface preparation of pipe conforming to Sa 2 1/2 by abrasive blasting for 3ply / 2 ply cold applied tape coating and hand tool / power tool cleaning conforming Swedish standard St-2 or St-3 for visco-elastic & petrolatum tape coating application.

Pipe wall thickness of each pipe length exposed for coating refurbishment shall be measured using a standard digital ultrasonic thickness gauge duly calibrated, which shall be supplied by contractor at every weld location and at locations where pitting is observed or as advised by PMC/OIL. The wall thickness data shall be properly documented along with GPS coordinates of pitted sections.

Application of the required coating system 3ply / 2 ply cold applied tape / visco-elastic / petrolatum tape system as per specified application procedure and manufacturer's recommendation.

6.1. REMOVING OLD CTE COATING:

Old coating shall be manually removed using scrappers and small brass hammers. In no case hard hammer shall be used that may result in formation of dent on pipe.

The old and damaged coating over the pipe shall be removed carefully with the scrappers and small brass hammers, so that outer surface of the pipe is not damaged. After the coating is removed, the pipe surface shall be thoroughly cleaned of old primer, scales, rust, if any, and dust particles. The cleaning of pipe surface shall be carried out to the satisfaction of OIL / PMC.

6.2. INSPECTION OF THE PIPE SURFACE:

After excavation and removal of old CTE coating, thorough physical inspection of pipeline surface shall be carried out by the Contractor and OIL / PMC jointly. All pitting and corrosion patch if any, depth shall be measured with the PIT gauge (Pit gauge to be supplied by the Contractor).

Actual wall thickness of the pipes would also be measured at every weld location and at locations where pitting is observed at four locations (12'o clock, 3'o clock, 6'o clock and 9'o clock) and also the suspected area and at equal intervals with the help of the thickness meter (Ultrasonic thickness gauge shall be arranged by the Contractor).

Based on these readings, the actual health of the pipe can be known. If all these defects are within the permissible limits, only then blasting shall be allowed at normal blasting pressure.

If the pipeline defects are beyond the acceptable limit (Refer ANSI B 31.4 -latest edition) the pipeline shall be repaired by welding full encircled metallic sleeve as per direction given by OIL / PMC. Repair by installation of metallic sleeve shall be in the scope of the contractor.

All the test equipment's as required shall have valid calibration certificates. The same shall be submitted for OIL/PMC record.

7. PROCEDURE FOR APPLICATION OF COATING

7.1. APPLICATION OF TAPE COATING: GENERAL REQUIREMENTS

Equipment, accessories, inspection and testing instruments for coating material as per manufacturer's recommendation shall be in good operating conditions for completing the coating refurbishment job. Adequacy of equipment and

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accessories shall be approved by the OIL / PMC prior to start of the coating works and shall be checked at regular intervals.

Necessary arrangements for power supply based on diesel driven generators and other utilities shall be made by the contractor for the completion of the job.

Any materials brought to site shall be as per the specification and applicable standard(s) and should be approved by Engineer-in-Charge (EIC).

All work shall be carried out in accordance with the specification and shall be phase-wise approved by the OIL / PMC. All working procedures / method statement shall be approved in advance by OIL / PMC.

Utmost care should be taken to avoid stepping on the pipe by the people during coating.

Training shall be provided by the contractor to the supervisors and applicators who are engaged, for coating application, inspection and quality assurance, through the coating manufacturer during trial run. Only those applicators certified by the coating manufacturer's representative shall be deployed for wrapping and coating application. In case the application crew gets replaced, certification for application of the wrapping and coating will have to be carried out by the coating manufacturer's representative again. In such cases of recertification, at least 20 days' notice will have to be given by the Contractor to OIL / PMC to organize the coating representative manufacturer.

It is envisaged that the coating manufacturer representative will be available for training /certification for two times per calendar year for 15 days at the cost of OIL during the original contract period. However, if recertification is further required, EPC contractor shall organize training from the coating manufacturer's representative at his own cost and at least 20 days' notice have to be given to the coating manufacturer/OIL/PMC for the same.

Contractor will ensure that sufficient applicators are trained so as to ensure that there is no stoppage of work.

For 3ply / 2 ply cold applied tape application, hand wrapping machine for inner and outer wrap shall be free issued by OIL / PMC. Contractor will ensure safe keeping and maintenance of the wrapping and coating machines. In case of any breakage / mishandling / theft, contractor will have to replace the machine from the coating manufacturer at no extra cost OIL. Any spares required shall be directly procured by the coating applicator from the coating manufacturer at no cost to OIL.

Coating material shall be free issued by OIL from designated ware-houses (Refer Annexure-7 for warehouse location)

The EPC contractor shall issue coating material as per proper schedule discussed by OIL/PMC. The coating material along the ROW shall be stored in a temporary storage such as it does not get damaged due to rain etc. Any coating material which shall get wet, shall not be used and the cost of the material shall be recovered from the coating contractor as per recovery rate mentioned in this document. The temporary warehouse / storage yard shall have a cemented base with a leak proof roof and all 4 sides shall be brick lined to a height so that there is no ingress of water / rain. There should be adequate fire extinguishers provided in the ware house.

The safe keeping of the free issued coating material shall be in Contractor's scope. Any loss damage to the free issued coating material, the contractor shall indemnify OIL as per commercial terms & conditions

OIL / PMC will issue the coating material depending on the schedule and the progress to the nominated representative of the contractor. The coating material shall be transported to ROW in a truck with proper plastic / tarpaulin cover. Typically for a day's production of average 100 linear meters per day PER OPENING, 3ply / 2ply cold applied tape rolls of dimension 100mm x 30 meters required for 16" & 14 " dia pipe are as follows:

Pipe dia	Average linear distance coated / day (meter)	Average pipe surface area (square meter)	Size of rolls	No of rolls / primer used	Approximate weight (Kgs)
16"	100	129	100mm x 30 meter	Inner=86 Nos Outer=86 Nos Primer=19 L	372 Kgs.
14"	100	115	100mm x 30 meter	Inner = 75 Nos Outer = 75 Nos Primer = 16 L	329 Kgs

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Coating refurbishment at support locations shall be done only after backfilling the main section of pipeline to avoid unwanted sagging of mainline sections. Proper backfilling and any support required to avoid any wrinkle to new coating on main section shall be provided. Proper cleaning of overlapped area free from dirt and dust to be done.

7.2. Surface preparation of the pipe surface:

- a. Before starting of blasting, all fire and safety precautions should be taken and clearance should be taken from the OIL/PMC. All fire and safety precaution must be ensured prior to start of work by the contractor without any extra cost. Lower explosive limit (LEL) of hydrocarbon & O₂ level near the trench must be recorded and proper escape route must be provided. Adequate Dry chemical powder fire extinguisher, water and sand must be available during working on site. The surface preparation of the pipe shall be as per type of coating used.
- b. For 3ply / 2ply cold applied tape the dry pipe surface shall be abrasive blasted using copper slag to surface finish of Sa2 1/2 and anchor profile of 50~100 microns.
- c. For visco-elastic coating the pipe surface shall be cleaned using a hand wire brush to St/St3 surface and the pipe shall be dry prior to application of the coating.
- d. For petrolatum tape, the surface shall be cleaned by hand wire brush. There shall be no loose rust.

Abrasive used for blast cleaning should normally contain large and small size particles. Larger particles crack the mill scale and existing coatings, whereas the smaller one results in increased cleaning rate. Particle size distribution should be selected to get required anchor profile during blast cleaning.

A near - white blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, dirt, mill scale, rust, old paint/primer, coating, oxides, corrosion products and or any other foreign matter.

The Contractor shall immediately bring to the Owner's attention any unacceptable pipe defects detected at the time of surface preparation and hold the pipe till cleared by owner for further action.

7.3. Environmental conditions during blasting / coating:

Optimal environmental conditions are essential for surface preparation, application of coating to maximize successful performance.

Weather prediction technology shall be deployed (AcuRite Professional weather stations or equivalent) using weather stations, to be installed along the ROW.

Blasting / coating activity will be done only if the relative humidity is $\leq 85\%$. The surface temperature of the steel pipe shall be $>3^{\circ}$ above dew point. In case the coating has to be done at higher relative humidity the same shall be permitted as per recommendations of the coating manufacturer and directions of OIL/PMC

The following measurements shall be taken and recorded before start of the work at each site/location:

1. Ambient dew point.
2. Relative humidity
3. Dew point at near the metal surface.
4. Surface temperature of the metal pipe

Relative humidity and dew point shall be recorded every 2 hours during blasting and coating application and shall be recorded in the coating log book.

Coating contractor shall ensure that calibrated relative humidity / dew point measurement instruments and contact digital thermometers are available at each blasting / coating location. Valid calibration certificate of measuring equipment to be submitted.

7.4. 3PLY / 2PLY COLD APPLIED TAPE COATING APPLICATION:

After the pipe has been inspected for corrosion pits / wall thickness measured, the pipe surface shall be abrasive blasted to surface finish of Sa21/2 and anchor profile of 50~100 microns. The salt contamination on the abrasive blasted steel surface shall be $< 20\text{mg/m}^2$.

The contractor shall submit a method statement/ application procedure for approval of OIL/PMC prior to start of work.

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7.4.1 Cleaning of pipe surface area:

Prior to abrasive blasting it shall be ensured that pipe surface shall be free of oil, grease salts and other contaminations Suitable solvents which do not leave any residuals like benzene, xylene or equivalent shall be used. Kerosene shall not be used for cleaning. Solvent cleaning procedure shall be according to SSPC-SP1.

Pipe surface will be dry prior to start of abrasive blasting.

7.4.2 Abrasive blasting:

The steel surface shall be prepared by abrasive blasting.

Copper slag shall be used as abrasive media for surface preparation of pipe surface. The copper slag shall be supplied as per ISO 11126-3(Preparation of steel Substrates before application of paints and related products - Specifications for non-metallic blast-cleaning abrasives - Part 3: Copper refinery slag).

Before start of the abrasive blasting operation, the contractor shall take approval for the compressor and hopper to be deployed from OIL/PMC.

7.4.3 Air compressor:

The contractor shall deploy minimum 2 sets of air compressors / blasting pots per opening to achieve an average blasting production rate of 70 to 110 meters / day for 14” and 16” dia pipeline respectively. The compressor shall not be older than 7 years from the date of award of project.

The diesel engine driven air compressor used shall be of rating 60 to 75 HP to produce displacement of 5.6 to 7.0. m³/min (200 to 250cfm) of clean compressed air at a pressure of 7 Kg/cm². The contractor along with the bid shall specify HP rating of the compressors with the required compressed air output to get 7 kg/cm² (100psi) pressure at the nozzle.

Clean compressed air is required to prevent contamination of coating materials and surfaces being prepared for coating as such air compressors to be deployed shall be fitted with suitable air dryers, oil / moisture traps with desiccants. The quality of the compressed air shall be checked two times / day as per ASTM D-4285-2012 “Standard Test Method for Indicating Oil or Water in Compressed Air”.

All oil / air pressure gauges attached to the compressor unit shall be in perfect working condition with valid calibration. Compressors with defective instruments shall not be acceptable.

The moisture traps and the condition of the desiccants / air dryers shall be checked regularly by the contractor’s maintenance crew.

7.4.4. Blasting Pot:

Blasting pot along with the compressor of suitable size to ensure un-hindered blasting of the pipeline to achieve blasting production rate as specified above.

The capacity of the blasting pots to be deployed shall be indicated by the contractor in the technical bid.

The blasting pot will be fitted with pressure regulator with safety valve, water separator / filter & hoses.

7.4.5 Nozzle:

The nozzle shall preferably be of ceramic type having orifice of 5/16” or as required to get the required surface finish of Sa21/2 with anchor profile of 50-100μ. Sufficient nozzles will always be available at each blasting location for quality blasting.

The compressor unit shall be deployed for blasting production only when the unit is able to satisfy the OIL / PMC about required performance as stated above. In case the unit is not found suitable at any point of time during the course of operation, the Contractor shall make suitable replacement acceptable to OIL / PMC without additional cost to the OIL.

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7.4.6 Blasting media:

The abrasive blasting media to be used is copper slag. Brief specification of the abrasive media is as below:

Specification for mineral and slag abrasives (ISO 11126-3 Part-3)		
Property	Method	Requirements
Water Soluble Contaminants	ASTM D 4940 Conductivity	1000 Micro-seimen max
Oil content	Observe surface of extract	No oil
Moisture content	ASTM C 566	0.50%
Hardness	Moh's Scale	6 minimum
Specific gravity		3.5
Bulk density /Particle		1.87Kg/L (Particle size ranging from 0.5-2 mm)

Manufacturer / Source of copper slag shall be specified by the contractor in the technical bid.

Test certificates of each batch complying to the above specified properties shall be provided by the Contractor.

No other abrasive media shall be used by the Contractor other than that specified in this document. The Contractor shall adopt good blasting practices such as those recommended in SSPC SP-COM.

The Contractor shall use size of abrasive media that will ensure the necessary anchor profile height specified.

At all times the blast cleaning abrasive shall be dry and free of oil, grease and other contaminants.

For heavily pitted localized surface, the nozzle shall be suitably rotated around its own axis in all planes and held at various angles so that the abrasive cleans out all the pores and interstices of the surface being blasted.

Suitable spray masks filter type air respirators, safety goggles and other safety equipment are to be provided by the Contractor to the persons engaged for the job. Blast cleaning team should take up precautionary measures to protect the pipeline during blasting operation. Proper personnel protection equipment required during blasting shall be used.

7.4.7 Checking of profile of the blasted surface:

The blasted steel surface shall be inspected by OIL / PMC prior to application of the coating using

- Surface finish using surface comparator – Sa 21/2
- Blasted profile using replica tape and micrometer (Press O Film)
- Blasted profile using digital surface profile gauge
- Chloride contamination using SCM 400 salt contamination meter.

Blasted profile shall be measured every one meter in all the 3'o clock, 6'o clock, 9'o clock and 12'oclock locations using a surface profile gauge. Blasted profile shall also be measured every 20-30 meters at two locations 6'o clock and 12'o clock using Testex replica tape (PRESS-O-FILM). The record of blasted profile at every 30 meter shall be recorded and documented. The Testex replica tape shall be preserved and attached in the log book.

Chloride contamination shall be checked every 50 meters at two location 6'o clock and 12 o'clock. The measurements will be recorded in coating application log book. The chloride level should be less than 20 mg/m² as per ISO 21809-3 Clause 9.1.2.2. In case the chloride contamination is greater than above specified value, the surface shall be washed with potable water. The contractor shall be required to arrange for a potable water tanker for washing the pipe surface and again rechecking.

Depending on the consistency of the quality of the blasting OIL/PMC shall decide on changing the frequency of the above inspection.

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After blasting / inspection, the coating application will commence immediately. The blasted pipe shall not be exposed to atmosphere for more than 4 hours to prevent flash rusting of the steel surface. The blast cleaned surface should never be left un-primed overnight.

However, the above elapsed time between blasting and commencement of coating activities shall be reduced as per directions of OIL/PMC in case of high humidity in the air / trench. The surface temperature of the pipeline must be at least 3°C above the dew point temperature.

Coating contractor shall ensure that calibrated relative humidity / dew point measurement instruments and contact digital thermometers are available at each blasting location.

Blast cleaning shall not be conducted during times when the surface will become wet after blast cleaning or when ambient conditions are such that visible rusting occurs before coating. If any rust forms after blast cleaning, the surface shall be re-blasted before coating.

7.4.8 Coating application:

The coating application shall be a continuous operation starting with a properly prepared pipe surface. Three steps, which shall be performed consecutively, shall consist of (1) primer application; (2) application of the inner-layer tape directly onto the primed pipe surface; and (3) application of the outer-layer tape directly on top of the inner-layer tape.

Ensure that the relative humidity is below 85% and surface temperature of pipe is at least 3° C above the dew point temperature.

Application primer / filler mastic:

The liquid adhesive (primer) shall be thoroughly and continuously mixed and agitated during application to prevent settling in the original drum.

The primer shall then be taken out in a small container and the cover of the primer drum should be immediately closed and sealed to reduce evaporation loss. The small container must also have a cover to reduce evaporation loss when not in use. The container should be always in cleaned condition.

The liquid adhesive shall be applied in a uniform thin film at the coverage rate recommended by the coating manufacturer. The application of the primer over steel pipe shall be carried out manually using good quality paintbrush 150mm wide. After application, the brush shall be cleaned with suitable solvent for next day usage. Contractor will ensure that there are sufficient paint brushes available at every site. In case the paint brush holder becomes loose or the bristles of the paint become hard, the paint brush shall be replaced. Contractor shall indicate in the method statement the frequency of replacing the paint brushes for quality and consistent application of the coating primer.

While applying the primer the wet film thickness “WFT” shall be measured and recorded. The primer WFT shall be 75-100 microns and shall be as per coating manufacturer’s requirement. Coating has to be applied only when the primer is tacky to touch dry at ambient temperature or as recommended by the coating manufacturer. The typical tacky to touch dry time is about 5 ~ 10 minutes. The primer will become totally dry in less than 30 minutes and hence it has to be ensured that the coating is not applied after the primer has become completely dry or as recommended by the coating manufacturer

The liquid adhesive coat shall be uniform and free from floods, runs, sags, drips, or bare spots. Care must be taken to ensure that the pipe surface from 3 O’ clock to 6 O’ clock to 9 O’ clock position has been thoroughly covered by primer.

In case the primer has completely dried, over-coat time interval of the primer shall be as per coating manufacturer’s recommendation.

Liquid adhesive application shall be limited to the amount of surface area that can be wrapped during the same workday as application of the liquid adhesive; otherwise, the steel must be re-primed. After liquid adhesive application and before the tape is applied, care shall be taken to prevent the contamination of the primed surface by any foreign materials, such as dirt and moisture.

In case the primer gets contaminated with dust or rain, the primer shall be cleaned from the pipe surface as per recommendation of OIL/PMC. The liquid-adhesive-coated pipe surface (i.e. primed surface) shall be free of any foreign substances, such as sand, grease, oil, grit, rust particles, or dirt prior to application of the inner wrap.

Filler mastic putty shall be applied at weld seam/girth welds, circumferential welds and on dents in carrier pipe surface to get an even and smooth surface to avoid formation of air pockets between pipe and inner tape, as per manufacturing

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recommendations and as directed by OIL/PMC. During the training the coating manufacturer will demonstrate the application of the filler mastic which will be followed by the coating contractor during actual application.

Application of Inner / Outer tape

Coating contractor shall ensure that the width of the trench is sufficient to rotate the hand wrapping machine around the pipe.

Inner tape:

The inner layer tape roll shall be fitted in hand operated machine supplied by the coating manufacturer. The release liner of the inner tape shall be gripped in the take up roller when the tape is being applied on the pipe.

The wheels of the hand wrapping machine shall be adjusted so that it holds the pipe surface such that the tension on the tape while application is maintained. The angle of the hand wrapping machine shall be set to get a 50% spiral overlap of the inner wrap to the tacky dry surface of the primed steel.

The tension knob will be tightened so as to give sufficient neck down tension of 1-2% to the tape while wrapping. The coating manufacturer instruction shall be followed for maintaining the tension.

After a couple of wraps, the required 50% overlap shall be checked to ensure that the machine is set at the correct angle. Less overlap will imply reduced overall thickness of the coating on the pipe and more overlap will imply extra consumption of the tape.

The overlap shall constantly be checked during the coating application.

When a new roll of tape is started, the ends shall be overlapped at least 4 in. (100 mm), measured circumferentially. The end of the spiral wrap shall be cut on the downside at the 3 or 9 o'clock position on the pipe.

When the wrapping of inner layer is over, the coated surface should be checked by hammering mildly with the wooden hammer, which will indicate presence of void/loose contact or air pocket, if any.

Wrapping should be done carefully keeping required tension to avoid air pockets and wrinkles. Air pockets & wrinkles, if formed, should be repaired immediately, by puncturing air pockets and putting patch of tape over it.

If wrinkling is observed over a longer length, then tape shall be removed as per directions of the OIL / PMC and the new tape shall be applied over the re-primed steel surface.

The overlap of tapes on CTE / visco-elastic tape / petrolatum tape shall be at least 4 inch. (100mm) or as per manufacturer's required overlap if greater than 4 inch (100 mm).

Coating contractor shall ensure that coating supervisors/applicators understand the functioning / setting of the hand wrapping machine during the training imparted by the coating manufacturer at start of the job.

Coating contractor shall have to organize sufficient spares specially the tension rod from the coating manufacturer. All the cost of machine spares shall be to contractor's account.

Outer tape:

Once the application 3ply inner tape been wrapped on the primer coated pipe section, the application of outer mechanical protection layer 2ply tape shall be carried out with hand wrapping machine with recommended neck down tension 1-2%. The outer tape has to be applied smoothly on the 3ply inner layer tape surface without folding and air pockets. The minimum spiral overlap width shall be 50%. The outer tape has no plastic release liner.

Similar procedure in-line with the application of inner wrap is to be followed for application of outer layer two-ply tape coat.

The spiral overlap of the outer wrap shall not coincide with the overlap of the inner wrap.

The applied coating system shall have a minimum thickness of 2.5mm

Consumption pattern of the coating shall be as per the quantity mentioned later in this document along with tolerance value, however a consumption pattern will be established during trial run in presence of coating manufacturer along with applicable tolerance and this shall be adhered to by the contractor. Any consumption above the prescribed limit due to theft, wastage or repair of defect due to bad workmanship of the contractor personnel will be to the contractors account.

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7.5. VISCO ELASTIC COATING APPLICATION:

Visco-elastic coating- seal healing monolithic polymer wrap cold applied coating system shall be used to coat the sections of pipeline laid in swampy areas where the pipe surface can be dried but abrasive blasting is not possible. The pipe in the swampy area shall be exposed by dewatering the ground surface water and the water / sludge in the pipeline trench by use of sludge or dewatering pumps.

The visco-elastic tape system comprises of two layer as indicated below.

- The inner wrap shall consist of a non-crystalline (fully amorphous) low-viscosity (non-cross-linked) non-reactive polyolefin (e.g. poly-isobutylene, other polybutenes or atactic polypropylene) based compound layer with a direct bond to the substrate. The base compound layer shall be reinforced by fabrics. A non-sticking separators strip (release film) shall be provided in the roll to eliminate sticking.
- The second or outer layer wrap shall be a two-layer tape consisting of a polyethylene or polyvinyl chloride backing layer with a laminated pressure sensitive adhesive on one side. The outer-layer tape shall be compatible with the inner-layer tape. This second layer should have sufficient tensile strength to provide additional pressure in order to support cold flow of the inner coat. This layer should also provide mechanical protection.
- The applied coating system shall have a minimum thickness of 2.5mm

Surface Preparation

Surface conditioning: Pipe after removal of the coal tar coating/primer shall be made free from mud, mill scale, coal tar, oil, grease, condensed water or any other foreign material. Visible oil and grease spots shall be removed using a solvent in accordance with SSPC SP-1. Only solvents that do not leave a residue shall be used.

Surface preparation of the steel surface shall be carried out by means of wire-brush cleaning in accordance to a minimum degree of cleanliness of ISO 8501-1 grade St 2.

Dust contamination shall be grade 3 or better measured in accordance with ISO 8502-3.

Pipe surfaces shall be protected from conditions of high humidity, rainfall, or surface moisture

Pipe shall be dry prior to application of the coating. .

Prior to start of coating, the steel surface shall be carefully visually inspected for any sign of pitting corrosion and if found shall be further inspected by buffing the steel surface with an approved power tool, The thickness of the steel at pitting locations shall be measured as per approved procedure

In case of ground high water tables, de-watering the trench using suitably rated well point system may be deployed with approval of OIL / PMC to ensure water level is below the working depth for pipe coating.

Necessary arrangements for power supply and other utilities shall be made by the Contractor for the completion of the job.

Necessary testing and inspection facilities as per visco-elastic coat manufacturer recommendations shall be provided at site and shall be approved by the Engineer-in-Charge.

The inner-layer wrap (visco-elastic wrap) shall be applied directly onto the prepared pipe surface by hand with minimum tension to avoid wrinkles and as per coating manufacturer's application instructions. Air enclosures and voids shall be avoided. The release foil should not be removed completely before application of the visco-elastic tape. The foil should be removed just prior to application of the tape on pipe surface. The visco elastic tape will be wrapped spirally with a minimum overlap of 10mm.

The outer-layer wrap (PVC/PE) shall be applied spirally over the inner-layer tape by hand application with tension and as per coating manufacturer's application. The spiral overlap of the outer layer shall be minimum 50%.

The overlap of the outer-layer tape shall not coincide with the overlap of the inner layer tape.

The overlap of tapes on CTE / 3ply / 2 ply cold applied tape / petrolatum tape shall be at least 4 in. (100mm) or as per manufacturer's required overlap if greater than 4 inch(100 mm).

Consumption pattern of the coating shall be as per the quantity mentioned later in this document along with tolerance value, however a consumption pattern will be established during trial run in presence of coating manufacturer along with applicable tolerance and this shall be adhered to by the contractor. Any consumption above the prescribed limit

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due to theft, wastage or repair of defect due to bad workmanship of the contractor personnel will be to the contractors account

7.6. PETROLATUM TAPE COATING APPLICATION:

The cold applied petrolatum tape coating system shall be used to coat the sections of pipeline laid in submerged areas where the pipe surface cannot be dried and abrasive blasting is not possible. The pipe in the submerged area shall be exposed by dewatering the ground surface water and the water / sludge in the pipeline trench by use of sludge or dewatering pumps.

The petrolatum tape system comprises of:

- a. Petrolatum or wax paste
- b. An inner petrolatum or wax tape with PE / PP backing for corrosion protection.
- c. An outer self-adhesive PE or PVC tape (2ply) for mechanical protection.

The applied coating system shall have a minimum thickness of 2.5mm

Surface conditioning: Pipe after removal of the coal tar coating shall be made free from mud, mill scale,

Surface preparation of the steel surface shall be carried out by means of wire-brush cleaning.

Prior to start of coating, the steel surface shall be carefully visually inspected for any sign of pitting corrosion and if found shall be further inspected by buffing the steel surface with an approved power tool, The thickness of the steel at pitting locations shall be measured as per approved procedure

In case of ground high water tables, de-watering the trench using suitably rated well point system may be deployed with approval of OIL / PMC to ensure water level is below the working depth for pipe coating. The pipe surface need not be dry.

Necessary arrangements for power supply and other utilities shall be made by the Contractor for the completion of the job.

Necessary testing and inspection facilities as per Petroleum Tape coating manufacturer recommendations shall be provided at site and shall be approved by the Engineer-in-Charge.

Petrolatum paste shall be applied with a stiff brush or with a gloved hand on the entire surface of the pipe prior to application of the coating. The paste shall be applied to a thickness $> 75\mu$. The maximum temperature of the pipe surface shall not exceed 40°C during the application of the paste

The inner-layer petrolatum tape shall be applied spirally onto the petrolatum paste/primed pipe surface by hand with 50% overlap with required tension as recommended by the coating manufacturer. Air enclosures, creases and folds and voids shall be avoided.

The outer-layer wrap (PVC/PE) shall be applied spirally over the inner-layer tape by hand application with tension. The spiral overlap of the outer layer shall be minimum 50%.

The overlap of the outer-layer tape shall not coincide with the overlap of the inner layer tape.

The overlap of tapes on CTE / 3ply / 2 ply cold applied tape / petrolatum tape shall be at least 4 inch.(100mm) or as per manufacturer's required overlap if greater than 4.inch(100 mm)

Consumption pattern of the coating shall be as per the quantity mentioned later in this document along with tolerance value, however a consumption pattern will be established during trial run in presence of coating manufacturer along with applicable tolerance and this shall be adhered to by the contractor. Any consumption above the prescribed limit due to theft, wastage or repair of defect due to bad workmanship of the contractor personnel will be to the contractors account.

7.7. Inspection And Testing Of Applied Coating

Visual inspection

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The coated pipes shall be visually inspected for uniformity without any wrinkles, irregularities, overlapping width, cracks, trapped air, damage etc. Any repair arising out of visual inspection will be decided by OIL / PMC.

Thickness

Coating thickness has to be measured with a digital coating thickness meter, which shall be arranged by the Contractor. Digital coating thickness meter shall be magnetic, electromagnetic or ultrasonic measuring instrument, with $\pm 1\%$ reading accuracy, calibrated for the range of coating thickness being measured. The coating thickness shall be measured at 3,6,9 and 12 o clock locations at every 10 meters and shall be recorded in the field coating log book. OIL / PMC can increase the frequency of inspection of thickness to ensure quality application of the coating.

Peel test

Peel test shall be done to measure the peeling force per unit width between the applied coating and pipe surface or the existing good coating. Peel test shall be carried out using calibrated hand digital peel test gauge to be supplied by coating contractor.

Cut the applied coating down to the pipe wall in the shape of a rectangular strip of 25mm wide x 200mm long. Lift off one end of the strip from the pipe over a length of 20mm. The lift off part of the strip shall be secured in the clamp of the hand peel test gauge. The coating shall then be peeled off at a constant peeling rate of 10 mm/min perpendicular to the surface of the pipe.

Measure at least 10 readings (peel values) @ 6 seconds each over a peel length of 10mm. Take the arithmetic average of the readings and record.

The frequency of peel test will be one in day's work. It shall be done after 24 hours of application.

Type of coating system	Peel value (inner layer to pipe surface) as per ISO 21809 Part 3 (March 2016)	
	N/mm	Kg (for 25mm strip)
3ply / 2 ply cold applied tape @ 23°C	≥ 1	≥ 2.5
Visco-elastic @23°C	≥ 0.04 , Coverage $\geq 95\%$	≥ 0.1 , Coverage $\geq 95\%$
Petrolatum tape	Leave a film of compound on the substrate	

Holiday Inspection

Holiday testing shall be carried for detecting pinholes / porosity / discontinuities in the applied coating. The test shall be as per ISO 21809 March 2016 shall be carried after 24 hours of application or shall be as per manufacturer's recommendation.

- The holiday detector machine along with crest voltmeter shall be supplied by the coating contractor.
- The holiday detector shall be calibrated every day using the crest voltmeter prior to start of the testing.
- The test shall be performed only on a coating that is free from surface moisture.
- The holiday detector and earth shall be connected to the coated pipe. The scanning electrode shall be passed over the surface of the coating being inspected with a continuous, relative movement not exceeding 300 mm/s.
- Excessive voltages, slow survey speeds or multiple passes can damage the coating. The voltage should only be applied when the electrode is moving.
- Ring type electrode shall be used and will fit the required pipe size of 16" / 14" 12.75" and 10.75" respectively.
- At the time of the test, the voltage shall be set at a value depending on the material and minimum thickness of the coating.

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Type of coating	Holiday detection voltage
3ply / 2 ply cold applied tape @ 23 ⁰ C • Holiday testing to be done on inner + outer wrap • Test voltage=5KV +5KV/mm • Minimum thickness 2.5mm	17.5KV
Visco-elastic tape @23 ⁰ C • Holiday testing to be done on inner wrap • Test voltage=5KV +5KV/mm • Minimum thickness 1.5mm	12.5KV
Petrolatum tape • Holiday testing to be done on inner +outer wrap • Test voltage=5kV/mm • Minimum thickness 2.5mm	12.5KV

Holiday marking and repair: An electric spark between the electrode and the metal surface will indicate any holidays or missed places. All holidays or missed places so indicated shall be marked by chalk or crayon and repaired. The repair shall be carried as per the procedure given by the coating manufacturer.

All repairs shall be holiday tested as above.

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8. BACKFILLING, FINAL RESTORATION OF ROW AND MEASUREMENT

8.1. BACKFILLING

Backfilling of the excavated trench is to be carried out as per specification of this tender document. Contractor shall ensure satisfactory restoration of the respective pieces of land, after completion of work and will submit the same to the EIC along with the final bill.

The supervision of the work shall be carried out by OIL /PMC. In case of any ambiguity about quality of the job, decision of OIL/PMC shall be final.

The Contractor will take all protective measures to prevent damage of standing crops in vicinity of ROW & anywhere in the surrounding vicinity during execution of the work & transportation of the material/ machine/manpower etc. However, if any such damage of the crop occurs outside the ROW, it will be the responsibility of the contractor to compensate to the concerned farmers OIL /PMC will not be liable to any claim by farmers/land owners for any type of crop/other damage due to work & transportation of the material/ machine/manpower etc. by the contractor. All such claims will be borne by the contractor only.

While backfilling the trench after application of tape, special care needs to be taken to ensure that the coating surface is not damaged or pebbles/ hard particles do not penetrate the same. The back filling of trench gradually shall be done with selected soft earth or fine sand all around the pipe in full trench width up to 150mm height above the pipe. The decision of OIL /PMC with respect to back filling with soil or sand and compaction of soil /sand shall be final and binding.

Wherever there is a sloped terrain / trench, where pipeline bend is in line with ground profile, intermittent retaining walls are to be made with the help of filled polythene sand bags and pipe level is to be maintained. The job shall be done as per directions of OIL / PMC and no extra payment shall be made towards the same.

The balance excavated quantity of earth subsequent to provision of soft earth pad for the pipe by screening shall be used for providing original cover as it was before starting of the work. Sand bags used for support shall be retained to ensure that the pipe does not sag during backfilling and subsequent resettlement of soil. It is to be ensured that sand bags are punctured so that coated pipe does not get damaged.

In case the backfill material contains stones, pebbles, rocks etc, of sizes bigger than 50mm, the same shall be removed from excavated stack to obtain backfill free from such materials. The backfill material should not contain any such item that may damage the coating at the time of backfilling.

The backfilling operation shall be performed in such a manner as to provide support under the pipe and to avoid any damages to the new coating and also to pipe. The filling material used at bottom should be compacted to provide good support and prevent resting of pipe on sharp edges.

In all stretches of rocky area fine sand padding is to be carried out as approved by OIL / PMC. In other stretches, earth padding is to be carried out using soft soil. The soft soil used for earth padding should be free from lumps, stones, boulders, rocks, hard clay etc.

If soft soil is not available or unable to sieve at/near the site, the soil is to be imported from other area for earth padding.. OIL/PMC shall decide the stretch for sand padding or earth padding.

The excavated quantity of earth subsequent to complete backfilling shall be neatly centred over the ditch and neatly rounded there on to a minimum height of 0.30 meters above adjacent ground level (i.e. formation of crown over pipe trench).

Rocks/ boulders separated from back fill shall be disposed off suitably. The entire field/ ground shall be brought to the original level and conditions, which existed prior to taking up of the job. Also any additional backfill generated due to soft earth padding/sand shall be suitably disposed off in line with directions of OIL / PMC. Backfilling at top of trench shall be with original topsoil kept separately to maintain originality and fertility of topsoil.

All fencings, bunds and other structures shall be restored to their original condition and the damaged structures shall be restored to the Owner's satisfaction. i.e. entire ROW shall be smoothened to a manner satisfactorily to the OIL/PMC

Trenches excavated through small watercourses shall be backfilled with the same material excavated from it. If this is unstable, backfilling shall be done with suitable material. The backfilled earth shall be properly compacted so as to ensure that the no undue settlement takes place in the area.

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Effective measures (like putting sand bags at a prefixed interval or embankment protection and other civil protection works to arrest any soil or bank erosion, shall be provided The Contractor shall ensure that the trench is backfilled within 48hours of completion of coating activity on the pipeline, If the same is not done the Contractor may be asked to re-do the coating if the coating has got damaged at no extra cost to the Owner and the coating supply material cost shall be recovered.

Supply Of Free Issue Material Supply of Material: OIL's responsibility shall be confined to supply the following materials to the Contractor at free of cost from any of the nearby Owner's stores/ godowns:

- a. Pipes of requisite sizes for metallic sleeves.
- b. Coating materials (3ply/ 2ply cold applied system, visco elastic wrap, petrolatum coating system).
- c. Hand wrapping machines (as per availability)
- d. Pipes for fabrication of straight spool pieces for replacement of isolation flanges with monolithic isolation joints.

Materials shall be made available to the contractor from respective defined locations as specified in the tender.

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9. PROCEDURE FOR COATING REMOVAL/SURFACE PREPARATION OF BURIED BLOCK VALVES

There are 115 numbers block valves flood coated with coal tar installed either in concrete pits or directly buried which are required to be recoated by the EPC contractor;

1. The block valves at pump stations for 14”and 16” dia pipes are installed in concrete pits.
2. The block valves for 14”and 16”dia pipes along the ROW are directly buried in the soil with a valve box placed on top to enclose the extended operating spindle. Coating these buried block valves will involve removal of the MS valve box, digging for exposing the buried valve, recoating the valve and repair / replacement of the valve box. The chainage of these buried block valves is as per Annexure-3.

The recoating of these block valves has to be carried out by the EPC contractor using petrolatum / wax tape coating system to be free issued by OIL / PMC.

The coating system comprises of the following layers:

- Petrolatum or wax paste
- Profiling petrolatum or wax mastic
- An inner tape comprising of non-woven synthetic fabric carrier fully impregnated with a compound based on petrolatum or wax, Non-Toxic, Non-Carcinogenic, No VOC, containing fillers and water displacing agents. The tape shall be backed with PE or PP backing.
- An outer self-adhesive PE/PVC (2ply) for mechanical protection.

The coating shall be applied on the body of the block valve including the stem to a height just above the ground level such that soil / water does not come in contact with the block valves which are electrically continuous to the pipeline to prevent drainage of cathodic protection current.

Scope of work:

The broad scope of work shall include the following:

- Cleaning concrete valve chamber of water / soil / muck.
- Breaking of concrete chamber wherever required.
- Exposing the buried valve by excavation
- Supply and installation of insulating material(neoprene sleeves) etc. between the valve body and the valve support in concrete chamber
- Repairing concrete chamber at cracks including plastering of the walls / base of the concrete chamber as per direction of OIL / PMC
- Repair or replacement of valve box and other restoration works including CC flooring for block valves as per direction of OIL / PMC
- Removal of old coating / loose rust from the surface of the valve body using wooden / brass hammers & hand wire brushes.
- Recoating the block valves as per coating manufacturer’s procedure.
- Inspection and testing of the applied coating.

APPLICATION OF BLOCK VALVE TAPE COATING: GENERAL REQUIREMENTS

Coating application:

The coating application shall be a continuous operation starting with a properly prepared block valve surface including two flanges at either ends by hand wire brushing which shall be free of loose rust / old coating to surface finish of St-2 or St-3. Four steps, which shall be performed consecutively, shall consist of:

- Petrolatum / wax paste application by hand using painter’s knife / trowel.
- Petrolatum profiling mastic application at irregular shapes / sharp transition points / flange bolts by hand.

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- Petrolatum / wax tape to be applied spirally with 50% overlap on the petrolatum profiling mastic & block valve, flange surface by hand.
- Outer-layer PE / PVC tape directly on top of the inner-layer tape with a 50% overlap.

The representative of the manufacturer of the block valve coating shall demonstrate the application of the coating on each size of valve 14" and 16" and shall establish the consumption of the various components of the coating. The EPC contractor will have to ensure same consumption of material.

The representative of the manufacturer shall also train the applicators of the EPC contractor and shall issue training identity cards. Only applicators trained by the manufacturer shall carry out coating of the block valves.

Petrolatum / wax paste application:

The cleaned surface of the block valve and flanges at either ends shall be primed with petrolatum / wax paste applied to a thickness of 0.25 mm or as per manufacturer's recommendation. The application of the paste shall be done by hand using a painter's knife or trowel and will be applied with consistent thickness on the surface of the block valves. Care shall be taken that the paste is applied in sharp corners / transition points. The paste shall be supplied in containers weighing 2 to 5 kgs.

Prior to application of the profiling mastic, OIL / PMC shall inspect the primed surface of the block valve / flanges.

Application of Profiling Mastic

After the application of the petrolatum / wax paste application and as per time lag recommended by the manufacturer, cold applied, self-supporting profiling mastic application shall be carried out. The profiling mastic shall be applied by gloved hand to create a smooth profile over irregular shaped sections of the block valves & flanges. The profiling mastic shall be supplied in containers weighing 2 to 5 kgs.

Application of the inner Petrolatum / wax tape.

After the application of the profiling mastic to create a smooth profile, petrolatum wax tape shall be wrapped over the block valve body / stem, pipe surface, over the flanges at either ends and on to the pipe surface on either side extending at least 2" inside the concrete pit wall. The petrolatum wax tape shall be hand wrapped with a 50% overlap. The annulus space between the pipe and the concrete wall shall be filled with profiling mastic.

The petrolatum / wax tape shall be supplied in rolls of width 100mm and roll length 10 to 20 meter.

Application of Outer PE / PVC tape

After the application of the inner petrolatum / wax tape, outer PVC / PE tape shall be hand wrapped with a 50% overlap for mechanical protection. The PE / PVC tape shall be supplied in rolls of width 100mm and roll length 30 to 40 meters.

Inspection and Testing:

Visual inspection

The coated valve shall be visually inspected for uniformity without any wrinkles, irregularities, overlapping width, cracks, trapped air, damage etc. Any repair arising out of visual inspection will be decided by OIL / PMC.

Holiday Inspection

- Holiday testing shall be carried for detecting pinholes / porosity / discontinuities in the applied coating. The test shall be as per ISO 21809 March 2016 shall be carried after 24 hours of application or shall be as per manufacturer's recommendation.
- The holiday detector machine along with crest voltmeter shall be supplied by the EPC contractor.
- The holiday detector shall be calibrated every day using the crest voltmeter prior to start of the testing.
- The test shall be performed only on a coating that is free from surface moisture.
- The holiday detector and earth shall be connected to the coated pipe. The scanning electrode shall be passed over the surface of the coating being inspected with a continuous, relative movement not exceeding 300 mm/s.

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- Excessive voltages, slow survey speeds or multiple passes can damage the coating. The voltage should only be applied when the electrode is moving.
- Brush type electrode shall be used for valve inspection.
- Holiday test voltage shall be 12.5KV

Holiday marking and repair: An electric spark between the electrode and the metal surface will indicate any holidays or missed places. All holidays or missed places so indicated shall be marked by chalk or crayon and repaired. The repair shall be carried as per the procedure given by the coating manufacturer.

All repairs shall be holiday tested as above.

FINAL RESTORATION

After recoating the block valves, the excavated pits shall be backfilled with soft soil.

All the metallic frames / equipment above ground shall be coated with aluminium paint .The following details shall be painted

1. Valve number
2. Chainage
3. Company name (OIL India Limited)
4. Emergency Contact numbers

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Photograph of Typical Block Valve



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10. PROCEDURE FOR TESTING AND REPLACEMENT OF FLANGE INSULATION JOINT

REPLACEMENT OF FLANGE TYPE ISOLATION JOINTS:

In the repeater stations, flange isolation joints for pipe diameter 14" and 16" are installed only at one side of the above ground piping and at the other side there is no electrical isolation. Hence there is considerable protective CP current drain which shall compromise the integrity of the revamped cathodic protection system and the new refurbished coating. Further the installed flange isolation joints are all electrically shorted.

Accordingly at all repeater stations, the above ground piping and block valves on inlet and outlet sides shall be electrically isolated using monolithic isolation joints for 14" and 16" pipelines

A) Monolithic Isolation Joints:

The monolithic isolation joints shall be supplied by EPC contractor as per the approved vendor list appended to this tender. The monolithic isolation joints for 14" and 16" dia pipeline shall be supplied to meet the pipeline requirement as below:

Description	16" Line	14" Line
Parent Pipeline Size and wall thickness (Actual)	7.92, 9.53, 11.92mm	7.92, 9.53, 11.92mm
Parent Pipeline material and grade	API 5LX46 Seamless	API 5LX46 ERW
Design code	ASME B31.4	ASME B31.4
Design factor	0.72	0.72
Pipeline product	Crude Oil Flash Point <23 ⁰ C	Crude Oil Flash Point <23 ⁰ C
Pipeline class i.e. 150#, 300# or 600#	600 #	600#
Design Pressure	87 Kg/Cm2	97 Kg/Cm2
Design Temp. (Min. and max.)	5 and 50 ⁰ C	5 and 50 ⁰ C
Operating Pressure	8.43 MPa	9.9 MPa
Operating Temp.	25-40	25-40
Corrosion allowance	0.5mm	0.5mm
H ₂ S content in line	<0.5 % Sweet Crude	<0.5%

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The monolithic isolation joints shall be Class 600# and shall meet the following requirements

Pup piece details	Pipe dia 14"	Pipe dia 16"
Nominal size of pup piece	14"	16"
Wall thickness	11.92mm	11.92mm
ID of pup piece	331.76mm	382.56mm
Pup piece material	API 5L Gr.46	API 5L Gr.46
Length of pup piece on both the sides	300mm	300mm
Corrosion allowance	0.5mm	0.5mm
Weld end preparation	ANSI B16.25	ANSI B16.25
Materials of IJ construction		
Pup piece material	API 5L Gr 46	API 5L Gr 46
Forge ring material	ASTM A694 F46	ASTM A694 F46
Sealing gasket (O'ring)	VITON/NBR	VITON/NBR
Insulating ring material	ASTM D709 G10/G11	ASTM D709 G10/G11
Dielectric filler	Epoxy resin (cold cured)	Epoxy resin (cold cured)
Test lugs / Surge arrestor fitting	MS	MS
Inspection and testing		
Chemical and Mechanical testing	As per ASTM A370/API 5L	As per ASTM A370/API 5L
NDT	ASME Sec V.ASME Sec VIII Div01 & API 1104	ASME Sec V.ASME Sec VIII Div01 & API 1104
Hydro test pressure	151.5 barg for 15 mins.	151.5 barg for 15 mins.
Dielectric strength	5KV (AC)at 50 Hz for 1 min.	5KV (AC)at 50 Hz for 1 min.
Insulating resistance test	>25MΩ 1000V DC	>25MΩ 1000V DC

Note:-

Proper cleats for installation of surge divertor /isolation spark gap shall be provided on MIJ for protection. The spacing between the two cleats should not be more than 500mm.

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B) Temporary Isolation of the Pipeline section:

The replacement of isolation flange joints with monolithic isolation joints and installing new monolithic isolation joints shall be carried out by temporary isolation of the operating pipeline by hot tapping and installing stoppling fitting. The hot tapping and installation of the stopple fitting shall be carried out under “No flow” condition.

This activity will be carried out by the EPC contractor by engaging specialized agency as per approved vendor list appended to this tender.

B.1 Hot tapping and Stoppling works:

GENERAL:

The hot tapping agency has to mobilize the necessary Hot Tapping/stopple machine, Stoppling cutter, pilot drill, cutter holder, plug holder and other accessories, required skilled, semiskilled, unskilled manpower, including Supply of Line stopple fittings, split tees, Line Stopple Plug with scarfed nipple, Sealing Elements, 2" pressure equalization fittings, gas bag fittings, flanges, other tools and tackles, installation of the cutter housing, carrying out Hot tapping, stoppling, welding, insertion of the stopple plug and blocking flow in the pipeline section, installation of plug etc. for safe and successful completion of stoppling job under close supervision and as per the direction of OIL/PMC.

The Hot tapping shall be done through double stopple without bypass method in existing pipe section at designated location. A rectification work such as installation of isolation joint to be carried out by cold cutting as per site requirement & instruction of OIL/PMC.

The replacement of isolation flange joints with monolithic isolation joints and installing new monolithic isolation joints shall be carried out by temporary isolation of the operating pipeline by hot tapping and installing stoppling fitting. The hot tapping and installation of the stopple fitting shall be carried out under “No flow” condition.

This activity will be carried out by the EPC contractor by engaging specialized agency as per approved vendor list appended to this tender.

EPC contractor shall arrange to provide work front at each repeater station to the hot tapping agency for carrying out the job smoothly.

Hot tapping agency shall mobilize hot tapping, stoppling and plugging equipment, spares, manpower and any other required resources for carrying out the job at one repeater station at a time.

OIL shall arrange shutdown of the pipeline operation for carrying out the job. However, the duration between two successive shutdowns for repeater station locations will be approximately 10-15 days as determined by the refineries effected.

All works shall be carried with the best workmanship as specified herein and as instructed by the technical representative of the manufacturer.

The in service welder shall be qualified in accordance with API 1104 Appendix B and should have experience of welding minimum two jobs of same size and pressure rating or higher. The contractor shall submit proper WPS and PQR with supporting documents for the job in question.

The specialized agency shall deploy trained manpower with a Project Manager/Project Engineer/Site supervisor having a proven track record of carrying out hot tapping and stopple activities of a similar project and magnitude.

Hot tapping and Stoppling works:

The hot tapping and stoppling works shall be carried out as per the following latest Codes & Standards:

- ASME B 31.4 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols.
- API 1104 Standard for Welding Pipelines and Related facilities
- ASME Sec. II part C Specification for welding Electrodes and filler Materials
- ASME Sec. V Non Destructive examination
- API 2201 Procedures for Welding or Hot Tapping on Equipment-in Service

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1. The specialized agency scope shall be as follows:

Supply and Welding of stopple fittings:

- Supply line stopple fittings for 14” and 16” pipelines complete with equalization & gas bag fittings as per requirement.
- The design of Line Stopples fitting shall be such that there should not be any leak path through flange of fitting.
- Fitting shall have provision for not dropping the plug in line as safety precaution.
- Welding of stopple fittings on the line pipe using welders qualified as per API 1104. All the procedures for welding and hot tapping shall be as per API 2201. EPC contractor shall carry out the Welder Qualification test as per API 1104 for the welders and the same welders are to be used for the welding and hook up job.

Specification for 14” and 16” fittings

Description	16” Line	14” Line
Parent Pipeline Size and wall thickness (Actual)	7.92, 9.53, 11.92mm	7.92, 9.53, 11.92mm
Parent Pipeline material and grade	API 5LX46 Seamless	API 5LX46 ERW
Design code	ASME B31.4	ASME B31.4
Design factor	0.72	0.72
Pipeline product	Crude Oil Flash Point <230 C	Crude Oil Flash Point <230 C
Pipeline class i.e. 150#, 300# or 600#	600 #	600#
Design Pressure	8.9MPa	10.10MPa
Design Temp. (Min. and max.)	5 and 50	5 and 50
Operating Pressure	10 bar	10 bar
Operating Temp.	25	25
Corrosion allowance	0.5mm	0.5mm
H2S content in line	<0.5 % Sweet Crude	<0.5%

Services for hot tapping and Stopping:

- Services for conducting hot tapping & stopping including mobilizing and de-mobilizing of all specialized equipment at each repeater station consisting of the following:
 - Sandwich valves at stopple locations,
 - Ball valves at 2” equalization hot tap locations,
 - Hot Tapping machine at stopple locations and carry out tappings on pipeline,

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- Hot tapping at Equalization and Gas bag fitting locations.
- Installation of plugging machine at stopple location & insertion of plugging head through stopple fittings.
- Any other equipment required for stoppling.
- Checking for workable sealing.
- The workable sealing should be for minimum 72 hours.

After the spool piece with monolithic flange has been installed by EPC contractor, the specialized agency shall undertake the following services

- Retrieve plugging head
- Install plug without leak path into the stopple fitting using tapping machine.
- Install Thread- O-ring plugs onto 2” fittings
- Install Blind flanges on Stopple and gas bag fittings.
- Install caps on 2” Thread-O-ring fittings.

The specialized agency shall be responsible for submitting all the following documentation on award of contract:

- Product and technical data sheets of stopple fittings.
- Design calculations, drawings and ITP / QA & QC for stopple fittings and accessories. (Contractor shall supply details of stack up and weights of equipment while submission of hot tap procedure. PMC/OIL to check whether pipe can take that load and accordingly provide support).
- Submission of hot tapping procedures & method statements
- Requirements for weld inspection.
- PRCI calculation for fitting welding on in-service pipeline from a licensed software.
- Submission of data for hot tapping equipment / valves to be deployed complete with pressure rating and details of cutter.
- Any other technical detail as requested by OIL / PMC prior to start of the work.
- Work schedule per repeater station.
- HSE details Vendor shall deploy safety supervisor during the hot tapping & plugging and welding activity
- Safety policy, safety performance records of last five years, safety measurement and control mechanism.
- Procedure to isolate the work area in the event of failure, during hot tapping and plugging activity.
- Specialized agency shall have their own hot tapping and plugging equipment.

The specialized agency shall deploy trained manpower with a Project Manager/Project Engineer/Site supervisor having a proven track record of carrying out hot tapping and stopple activities of a similar project and magnitude.

Approved Vendor List:

- 1) TD Williamson
- 2) Plant Tech Industrial Services Ltd, Karnataka
- 3) Furmanite

B.3 Scope of the EPC Contractor:

Support Services to Specialized agency:

The EPC contractor shall be responsible for providing all support services to specialized contractor for hot tapping and installation of Stopple fitting which would include but not limited to following:

- Providing storing and security facility.

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- Transportation of the specialized agency equipment to various repeater stations in the particular project spread.
- Deployment of Firefighting equipment/fire tender etc
- Deployment of O₂, HC and H₂S detectors and explosimeter as required at site.
- Deployment of Hydra/crane-crawler mounted, JCB/Excavator with certified documents.
- Deployment of Dewatering Pumps at the site throughout the execution of job including the services of dewatering with supply of all necessary accessories"
- Handling equipment like belts ,D-shackles, chain blocks , wire ropes etc,
- Manpower for handling / movement activity like rigger/ supervisor, crane operator etc.
- Excavation, trenching, shoring, backfilling, barricading of the pipe trench.
- Supply of DG power and water
- Air compressor
- Welding machines, grinding machines, consumables spares and accessories with calibration certificate and appropriate documents.
- Fit up of hot tapping / stopple equipment onto the pipeline.
- NDT equipment for welding including radiography of welds.
- Removal of crude drained from the section of pipeline downstream of stopple plugging in a tanker as per direction of OIL / PMC. Polyethylene sheet will be laid in the pit to prevent seepage of crude in the ground.
- Mobilisation of Tanker of required capacity at site as stand by during the execution of the job and transport of evacuated crude in the tanker to nearby Pump Station
- Coating removal & surface cleaning,
- Temporary or Permanent access / approach Road to the hot tapping and stopple location.
- Approval and permits from local authorities as required
- Any other activity as requested by specialized agency

Cold Cutting of the line pipe:

After stopple fitting has been installed and plugging completed, EPC contractor will cold cut the pipe section, ensure that all the crude oil is drained in a pit lined with polyethylene liner and removed from the site in tanker to location as directed by OIL/PMC.

Fabrication of spool pieces (with LR bends and straight pipes) welded with monolithic isolation joints and hook up:

EPC contractor will do all pre-activity including preparation of engineering drawings per repeater station for the spool pieces and take approval from PMC / OIL.

After approval of engineering drawing from PMC, EPC contractor shall procure L R bends, 6D, 90°/45° as per attached Specification and QAP of LR Bend attached as Annexure-9.

Deploy experienced crew of fitters and welders to fabricate the pipe spool pieces fitted with monolithic isolation joints. Bare line pipe to be used in the straight section (other than LR bends) shall be free issued by OIL.

The EPC contractor will also be responsible for cold bending if required to fit the alignment of the fabricated spool piece and welding of tie-in joint of the spool piece with the mainline.

EPC contractor shall mobilize 2 separate teams for the above services on either end of the repeater station in order to complete the job within 48 hours and necessary arrangements for bypass of crude shall be kept in place for work extending beyond 48 hours, necessary machinery for fabrication of pipe spool piece and hook up comprising of welding machine, grinding machines, bevelling unit, dewatering pumps etc. All the weld joints shall be 100% radiographed

After the hook up, anti-corrosion coating-cold applied tape shall be applied on buried surface of pipe spool and fittings.

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11. MATERIAL HANDLING, TRANSPORTATION & MATERIAL CONSUMPTION AT SITE

The Cardboard boxes are to be stored with the arrow marked for the verticality, in a stack not higher than 1.2 meter. They are to be stored under a shed and away from the direct sun. No heavy item should be placed on the tape/paint boxes.

The primer drums are to be stored under a shed and away from the source of any flame/ spark/ fire.

11.1. Material transportation:

The Contractor shall be responsible for collecting the free issued coating material from the OIL Storage locations and to transport the same to the job site for placement/ utilization at his own cost, according to the terms of the contract.

11.2. Material Consumption:

The Contractor shall adhere to the consumption rate of materials as indicated by the manufacturer/OIL/PMC such as primer, tape coat and other coating material with accessories and pipes for sleeving as per format of consumption of materials attached. Materials shall be provided by OIL/PMC based on the quantities required spread wise on daily progress basis or as decided by Engineer-in-Charge.

However, materials consumption can be modified by the OIL/PMC, based on the field trials made at site and approved. Any additional requirement over and above the quantity arrived at as above will be charged by the Owner as per the rates given in this document

On completion of works or upon the early termination of the contract, the Contractor shall forthwith at his own risk & cost transport to the OIL's stores or otherwise as directed by PMC all surplus materials including but not limited to salvageable wastage remaining in the hands of the Contractor.

If in the opinion of the OIL/PMC any materials returned by the Contractor are not in good condition or is unusable, OIL/PMC may reject the same, in which event the Contractor shall be deemed to have failed to return and the charges of the same shall be deducted from the contractor.

The cost in lieu of all empty primer drums shall be deducted from the Contractor's bills at the uniform rate of Rs 10/- per 20 kg Primer drum. Primer remaining unused for the last drum while completing the work shall be accounted and no recovery shall be made for unused quantity of last drum. However, certification of PMC shall be required for the same.

All materials issued by the Owner to the Contractor shall be preserved against deterioration and corrosion due to poor or improper storage while under the Contractor's custody. Any damage/losses suffered, on account of non-compliance with the requirements stipulated herein shall be considered as losses suffered due to wilful negligence on the part of the Contractor and shall be charged.

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Minimum theoretical consumption of OIL supplied coating material / km.

3ply / 2 ply cold applied tape:

Pipe size inch	Inner tape, m ²	Outer tape, m ²	Primer L	Filler Kg
16"	2809.2	2860.3	183	28
14"	2458.1	2502.8	160	21
12.75"	2238.6	2279.3	146	20
10.75"	1887.5	1921.8	123	17

Viscoelastic tape:

Pipe size inch	Inner tape, m ²	Outer tape, m ²		
16"	1478.6	2860.3		
14"	1293.8	2502.8		
12.75"	1178.3	2279.3		
10.75"	994	1921.8		

Petrolatum tape for pipeline:

Pipe size inch	Inner tape, m ²	Outer tape, m ²	Paste (Kg)	
16"	2809.2	2860.3	447	
14"	2458.1	2502.8	392	
12.75"	2238.6	2279.3	357	
10.75"	1887.5	1921.8	301	

Petrolatum tape for Block valve:

Pipe size	Primer/Mastic (Kg)	Moulding Putty for Profiling (Kg)	Inner wrap (Sq m)	Outer Wrap (Sq m)
16"	10	350	32.5	65
14"	9	250	25	50

The above consumption levels are minimum theoretical.

Tolerance over the minimum theoretical consumption level shall be +5%.

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Consumption of material shall be verified at the PQT / PPT stage in the presence of Coating representative and a tolerance limit shall be set. Any extra consumption if any during the PQT / PPT shall be accepted only after due verification and acceptance of OIL / PMC.

Coating contractor, have to work within the tolerance limits. Any consumption over the accepted tolerance limit shall be recovered from running bills.

Deduction for excess consumption of coating material shall be as defined in SCC

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12. PROCEDURE FOR CATHODIC PROTECTION SYSTEM

Scope of work – Cathodic protection components

This specification defines the requirements of supply and installation of cathodic protection components as follows:

- FRP test stations – Type A, Type B, Type D, Type F, Type M, and Type E (Bond box)
- XLPE / PVC (FRLS) unarmoured copper cables of size 1x10mm² and 1x25mm²
- High potential Magnesium anodes at cased crossings
- Pin brazing
- Surge divertor

FRP Test stations:

Test station enclosure shall be manufactured from UV stabilized, moisture proof fiber reinforced plastic (FRP) of minimum thickness 4 mm with canopy. Test stations enclosure shall have degree of protection IP-65 with hinged lockable shutter. The test station will have bottom plate for access of CP cables inside the FRP enclosure. The FRP enclosure shall have suitable arrangement for mounting on FRP pipe post which shall be encased in concrete at site. The cable entry from the ground into the FRP pipe shall be sealed with silicone compound or visco elastic filler to prevent moisture entry. Also all cables entering the FRP enclosure shall also be sealed with silicone compound or visco elastic filler.

A nameplate of anodized aluminium with black back ground and white letters shall be fixed to the inner side of the test station. The nameplate shall carry the following minimum information:

- Chainage in km.
- Test station connection scheme.
- Distance from pipeline in meters
- Direction of product flow

On the front of the Test station the chainage in km with TLP no shall be painted using stencil.

Approved manufacturers FRP Junction Boxes:

HIM SURAJ ELECTRO FIBER PVT. LTD., Gujarat/ Arham Hi-Tech Design And Solution Pvt.Ltd,Mumbai/Pustron, Gujarat

Approved manufacturers- Cables

Icon cables/Suyog cables/ Netco cables/KEI

- Type A test station: Potential measurement test station. This test station is used for measurement of pipe to soil potential (PSP).
- Test station has to be installed every km.
- In this test station two measurement cables of size 1Cx10mm² copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation are terminated in the terminal plate.
- Minimum no of terminals: 4 nos.
- Type B test station: Current measurement test station
- This test station is used for measurement of pipe to soil potential and coating conductance..
- Test station shall be installed every 8 km.
- In this test station 2 sets of measurement cables of size 1C x 10 mm² copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation at spacing of 60 meters shall be terminated in the terminal plate.(each set of measurement cable comprises of 2 cable length from the pipeline)
- Minimum no of Terminals: 6 nos.
- Type D test station:

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- For termination of tail cables of High potential magnesium anodes & measurement cables installed at cased crossings
- Test Station shall be provided on one side or on both sides of the cased crossing depending on the length of the cased crossing.
- For cased crossing ≤ 10 meters – one test station with four high magnesium anodes of 20 kg each shall be installed.
- For cased crossing > 10 meter two TLP's with five high potential magnesium anodes of 20 kg each shall be installed at either ends.
- In this test station two potential measurement cables of size 1C x 10 mm² copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.
- Minimum no of Terminals: 12 nos.
- Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.
- Type E test station (Bond station): Foreign pipeline crossing or parallel pipelines
- Bond station shall be provided at every 5kms or as directed by OIL / PMC to interconnect pipelines in the common ROW
- In this test station bonding cable of size 1C x 25 mm² copper cored, XLPE insulated / PVC (FRLS) sheathed connected to each pipeline: parallel or crossing by pin brazing / epoxy encapsulation shall be terminated. Also from each pipeline, one potential measurement cable of 1Cx10mm² shall be terminated,
- Minimum no of Terminals: 12 nos. each terminal for terminating the bonding cable shall be fitted with shunt / variable resistor / diode.
- Type M test station High Tension transmission pipeline crossing –
- This test station shall be provided at high tension transmission line ≥ 66 kV , crossing or parallel within 30 meters of the pipeline

The dimension of the test station shall be designed to accommodate solid state decoupler (not to be supplied by EPC contractor)

- In this test station two potential measurement cables of size 1C x 10 mm² copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shall be terminated. Also two grounding cables of size 1C x 25 mm² copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shall be terminated for future connection to solid state decoupler and zinc grounding cell.
- Type “F” Isolation Joint Test station,
- This test station shall be installed at each monolithic isolation joint location.
- There shall be two isolation joints per repeater station and each isolation joint shall be provided with a test station.
- In this test station one potential measurement cables of size 1C x 10 mm² & one 1c x 25 mm² copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the each (protected/unprotected side) of the pipeline by pin brazing / epoxy encapsulation shall be terminated.
- .Minimum No of terminals: 10 nos.
- Each isolation joint shall be provided with a surge divertor for protection of the MIJ, also on the unprotected side of the pipeline, proper grounding shall be provided by plant earthing via a 1c x 25 m^{m2} copper cored, XLPE insulated / PVC (FRLS) sheathed cable,
- After application of new coating the contractor shall ensure that the TLP connection to the pipe is complete in all respects prior to backfilling and no extra payment shall be made for any additional works involved due to this delay.

High Potential Magnesium anode

High potential magnesium anodes shall be provided for protection of casing pipe and shall be connected to the casing pipe thru the test station. Magnesium anodes of net weight 20 Kgs shall be installed on one side or on both sides depending on the length of the cased crossing, the quantity is per table below:

Cased Crossing Length (meter)	Net Weight of Magnesium Anode	Number of Magnesium Anodes
≤ 10	20 kg	4 anodes
> 10	20 kg	10 (5 on each side)

The magnesium (Mg) alloy anode shall be packed in special back fill as per specification below:

The alloy of magnesium anode should be as per ASTM B-843:

Metallurgical composition	Requirement
Manganese	0.5-1.30% Max
Copper	0.02% Max
Silicon	0.05% Max
Aluminum	0.01% Max
Iron	0.03% Max
Nickel	0.001% Max
Other Metallic Elements	
Each	0.05% Max
Total	0.3% Max
Magnesium	Balance
Technical Properties	Requirement
Anode open circuit potential	-1.75 Volts w.r.to Cu-CuSO ₄ reference cell
Anode Core Size	As per manufacturing specification
Anode consumption rate	7.9 Kg/A Year. (Max)
Utilization factor	0.85
Current Capacity	1200 Amp Hrs/Kg

Fabrication drawing with dimensions and inspection test plan shall be provided by the EPC contractor from the anode manufacturer for approval of OIL / PMC.

1. Approved Manufacturers: Sargam Metals, Chennai / Scientific Metals and Fabricators , Chennai

Backfill material

A magnesium anode shall be packed in a cotton bag filled with backfill material of the following composition

Backfill material composition	Requirement
Gypsum	75%
Bentonite	20%
Sodium Sulphate	5%

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Weight of the backfill along with the inspection test plan shall be provided by the anode manufacturer.

Surge Diverter:

Spark gap surge diverter shall be connected across each monolithic isolation joint to protect it from high voltage surges. Surge diverter shall be provided for the protection of insulating joints located at the ends of the pipe line/at terminals & in between.

The total system including cable, cable termination, anodes/surge diverters shall be suitable for the anticipated fault current magnitude at the location of its installation.

Unless otherwise specified the minimum rating of surge diverter shall be as below:

-	Type	:	Spark gap
-	Lightning surge current rating (8X 20 μ s waveform)	:	100kA
-	Lightning surge current rating (10X 350 μ s waveform)	:	50 kA
-	Power frequency spark over voltage (50 hz)	:	≤ 1.2 kV
-	Rated impulse spark over voltage	:	≤ 2.5 KV
-	Make	:	Dehn/ OBO Betterman, Germany

CABLE TO PIPE CONNECTIONS

All cable connections to the pipeline including charged foreign pipeline (if any) shall be made using an (Owner) approved exothermic process e.g.: Pin brazing & in exceptional cases with prior approval of Owner cad welding.

The pin brazing to have the following characteristics:

Manufacturer	Safetrack or equivalent approved make
Extremely Low Contact Resistance	$\leq 0.1\Omega$ per brazed joint
Low transition resistance	7.5 to 14 $\mu\Omega$ per brazed joint
High mechanical Strength	Binding strength 490 N/mm ²
Shear Strength	245 N/mm ²
Brazing Temperature	650° C
Time per Braze	2 Seconds
Weather Effect	Suitable for all weather Operation
Life	40 Years
SEALING MATERIAL	
Epoxy Sealing Compound	DOBOFIL 60 or equivalent approved
Hardner	DOBOFIL 758 or equivalent approved
Make	Dr. Beck or equivalent approved make

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13. PROCEDURE FOR INSTALLATION OF METTALIC SLEEVES

SHELL (SLEEVE) FITTING ON PITTED SECTIONS OF MAINLINE

After inspection of pipeline and on the basis of thickness recorded in UT testing and pit guage, OIL/PMC shall decide whether the pipeline is to be repaired or defects are within prescribed tolerance limits as per code ANSI B- 31.4.

On severely corroded pipe sections with wall thickness less than prescribed tolerance limits as per code, metallic sleeves are required to be welded on the pipe to provide required mechanical support.

The Contractor may be required to carry out sleeving of mainline pipeline at certain locations where pitting/dents/defects are noticed. Inspection of the pipeline at such locations shall be carried out by OIL/PMC and the Contractor has to provide assistance by providing labourers, etc., without any extra cost. The contractor shall apply Belzonaresin/filler in the metal loss portions for increasing the strength of the pipe before application of metallic sleeves. The pipe for preparing the metallic sleeves shall be free-issued by OIL. All consumables (except pipe for sleeving) shall be in the scope of the Contractor, including but not limited to, fabrication of sleeves cutting, fitting, welding, testing(radiography), providing and operating of equipment like welding sets, compressors, oxygen/ acetylene cylinders and allied equipment, pipe line-up clamps, cutting/ bevelling machines, including additional excavation, if required etc. complete for installation of the sleeves as per codes and specifications.

OIL/PMC scope shall be limited to supply of the requisite pipe lengths from nearest stores and transportation of the pipes to the sites shall be within the Contractor's scope of work. Based upon availability, pipes shall be issued to the Contractor from the nearest store.

As the exact quantum of work can only be estimated on inspection of pipe after excavation and cleaning of existing coat & wrap, the quantity as indicated in SOR may vary depending on the actual site conditions after survey. The sleeving over the defective portion of the operative pipeline shall be as per approved procedure.

The payment for sleeving will be made as per rates indicated in SOR. Net length of the metallic sleeve installed over pipe shall be used for determining the quantity of sleeving work, duly certified by EIC/Site engineer for making payment to the Contractor.

The length over which sleeving is likely to be carried out shall be estimated on actual inspection in different locations along the entire pipeline route. However, the actual length of sleeving to be done could be ascertained only after inspection. The total sleeving may be any quantity deemed necessary subsequent to inspection of pipe during the course of coat and wrap repair work.

Length of the metallic sleeve shall be extend 50mm on either side of the defect. . The two halves of the metallic sleeve shall be but welded and the ends will be circumferentially welded.

No welding of sleeves with carrier pipe is to be done generally unless specifically instructed by EIC/ Site Engineer.

OIL/PMC proposes to provide Direct Welding types of Sleeves on mainline maintenance.

The type of sleeve to be provided is decided by EIC/ Site Engineer, based on ERF and metal loss. The procedure for calculation of ERF and selection criteria for type of sleeve will be handed over to EIC.

WELDING PROCEDURE FOR SLEEVE

THE FULL SLEEVE WELDING OVER LIVE PIPELINE IS TO BE DONE WITH E-6013 ELECTRODE OF MAKE ADVANI/OERLIKON/PHILIPS/ESAB/LINCOLN OF 2.5MM FOR ROOT RUN AND 3.15 MM FOR HOT PASS AND AS PER INSTRUCTIONS AND DIRECTIONS OF EIC/SITE ENGINEER. BEFORE USING THE ELECTRODES ON SITE DUE APPROVAL FOR ELECTRODES IS TO BE TAKEN IN WRITING FROM EIC.

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The sleeve fabrication and welding is to be carried out as per standard code of practice conforming to the following codes:

- a) **ANSI B.31.4** : Liquid petroleum transportation piping system standard for welding pipeline and related facilities.
- b) **API 1104** : Welding pipeline and related facilities.
- c) **API RP 1107** : Pipeline Maintenance welding practices.

Welds shall be carried out by qualified and approved high-pressure welders as per approved welding procedure.

Welder shall have competence certificate not more than six months old failing which he shall have to fulfil the requirements of API 1104 / API RP 1107.

The welds shall be tested/ inspected by the OIL/PMC by DP test and the Contractor shall make necessary arrangements for testing/ inspection of welds.

The Contractor should excavate the earth, if required, for making welding pit suitable for welder's movement wherever welding has to be carried out and no extra measurement for such excavation shall be considered.

Proper personnel protection equipment shall be required for all installation activities.

PROCEDURE FOR SLEEVE INSTALLATION

FULL ENCIRCLEMENT SHELL (SLEEVE) FITTING ON PITTED SECTIONS OF MAIN LINE

1. It is a direct welding sleeve. Two half of sleeve pieces are to be bevelled at ends and sides and fitted directly on carrier pipe at corroded area. The ends of sleeves to be circumferentially welded (fillet weld) to carrier pipe and two half sleeves are to be butt welded longitudinally at both sides.
2. The welding shall be tested with DP test. Supply of all equipment, consumables, labour etc. Required to complete the work in all respects as per the specifications and direction of the OIL / PMC
3. **Continuous Sleeve:** If continuous pitting is observed on main line pipe, then continuous sleeving is required to be done as decided by OIL / PMC

14. PROCEDURE FOR RECTIFICATION OF SHORTED CASED CROSSING

PROCEDURE FOR CASED CROSSINGS

SUPPORTING THE CARRIER PIPES AT EITHER ENDS OF THE CASED CROSSINGS WITH SAND BAGS OR UNEXCAVATED EARTH AS PER DIRECTIONS OF OIL / PMC:

- Checking for isolation of casing and carrier pipe by suitable means as per NACE SP0200-2014 "Standard Practice of Steel Cased Pipeline Practices. The checking for isolation shall be carried out by a trained NACE CP level 2 technician with 5 years' experience or technician with 15 years requisite experience in testing of cased crossings. In case of short, the EPC contractor shall determine the type of shorting – electrolytic or metallic short.

The test method to be used for determining isolation/ shorting, type of shorting, location of shorting will comprise either one or more of the following methods:

- Potential survey (ON/OFF survey)
- Internal resistance between carrier pipe and casing pipe.
- Cyclic rectifier
- A frame ACVG
- RF based casing / carrier isolation tester (make Tinker & Rasor / equivalent)
- Resistance measurement based casing / carrier isolation tester (make Universal Rectifiers USA Model NG-SCD-2 / equivalent)

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Trained crew will be deployed at site for operating the equipment's. Contractor shall make all efforts to check and correct the alignment of carrier pipe inside the casing pipe using all the tools required for such jobs, this may help in correction of shorting problems

After the healthiness of the cased crossing has been determined, EPC contractor will carry out the following activity:-

14.1. For Cased Crossing (Healthy / Isolated)

- 14.1.1. The casing end seals shall be removed.
- 14.1.2. The vent & drain pipes shall be fabricated and welded to the casing pipe and shall be painted as per procedure/drawings to be submitted by contractor and approved by PMC/OIL. The vent and drain pipes shall be supplied by EPC contractor.
- 14.1.3. The casing annulus will be flushed with water and subsequently cleaned by dry air and shall be free from dirt / muck and water. Compressor to be used for cleaning activity shall be of minimum capacity – 200CFM (5.6m³ / min)
- 14.1.4. The casing insulators installed at each end will be visually inspected for any damage / cracking & breaks etc. Minimum 2 casing insulators at either end will be required to be replaced where the annular space is adequate. Either ends will be photographed for future reference. It will be ensured that the pipe at both the ends is adequately supported with sand bags as per direction of OIL / PMC.
- 14.1.5. The carrier pipe coating inside the casing pipe to the extent possible will be visually inspected and holiday test with a brush detector shall be carried out at 3000V to check the healthiness of the coating. The test report shall be properly documented as per format approved by OIL/PMC.
- 14.1.6. The thickness of the casing pipe at the edges shall be measured at all the four axis by UT on both the sides. The thickness reading will be reviewed by OIL / PMC.
- 14.1.7. The thickness of the carrier pipe 50mm inside the casing pipe will be checked at all the four axis by UT on both the sides. At the locations coating removed for testing shall be repaired with visco-elastic wrap as per direction of OIL/PMC.
- 14.1.8. After the annulus is completely dry, the isolation of the casing / carrier will again be checked and
- 14.1.9. Thereafter the annulus between the casing and the carrier for a distance of 100mm at either ends from casing pipe edge shall be filled with visco-elastic filler to seal the annulus against ingress of water. Thereafter, heat shrinkable casing end seal shall be installed at either end. Supply and installation of visco elastic filler and reinforced heat shrinkable casing end seal and casing insulators shall be in the scope of EPC contractor. The approved vendors for visco- elastic filler are Canusa/ Viscotaq/ Stopaq.
- 14.1.10. CP cables for sacrificial cathodic protection of the casing pipe and CP cables for measurement of casing and carrier pipe to soil potential shall be pin brazed to the casing pipe and carrier pipe respectively. (Ref drawing no xx). CP cables / Pin brazing equipment shall have to be supplied by EPC contractor.
- 14.1.11. Test Lead post type 'D' on one side or on both sides of the cased crossing shall be installed. For cased crossing <10 meters – one TLP shall be installed. For cased crossing > 10 meter two TLP's on either side shall be installed. Supply and installation of TLP's including civil foundations shall be in the scope of the EPC contractor.
- 14.1.12. Magnesium anodes of size 20 Kgs shall be installed on one side or on both sides as per table below:

Cased Crossing Length (meter)	Net Weight of Magnesium Anode	Number of Magnesium Anodes
> 10	20 kg	10 (5 on each side)
<10	20 kg	4 anodes

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The magnesium anodes shall be supplied as per attached data sheet.

Supply and installation of magnesium anodes complete with backfill material shall be in the scope of EPC contractor.

- 14.1.13. Proper record / crossing highlighting the following shall be prepared by the EPC contractor for future reference and maintenance.
- Depth of the cased crossing
 - Length of the cased crossing
 - GPS co-ordinates of the cased crossing – both ends
 - Diameter of casing pipe / Wall thickness of casing pipe measured at the ends
 - Wall thickness of carrier pipe measured at the ends.
 - Photographs of either ends
 - Results of casing / carrier isolation testing.

14.2. For cased crossing (electrolytic short)

- 14.2.1. The heat shrinkable casing end seals shall be removed.
- 14.2.2. The vent & drain pipes shall be fabricated/ welded to the casing pipe and shall be painted as per specification. The vent and drain pipes shall have to be supplied by EPC contractor.
- 14.2.3. The casing annulus shall be flushed with water and subsequently cleaned by dry air and shall be free from dirt / muck and water. Compressor to be used for cleaning activity shall be of minimum capacity – 200CFM (5.6m³ / min)
- 14.2.4. The casing insulators installed at each end shall be visually inspected for any damage / cracking & breaks etc. Either ends shall be photographed for future reference. Minimum 2 casing insulators at either end will be required to be replaced where the annular space is adequate. It should be ensured that the pipe at both the ends is adequately supported with sand bags or proper earth support as per direction of OIL / PMC.
- 14.2.5. The carrier pipe coating inside the casing pipe to the extent possible should be visually inspected and holiday test with a brush detector shall be carried out at 3000V to check the healthiness of the coating. The test report shall be properly documented as per format approved by OIL/PMC.
- 14.2.6. The thickness of the casing pipe at the edges shall be measured by in all the four axis by UT on both the sides. The thickness reading will be reviewed by OIL / PMC
- 14.2.7. The thickness of the carrier pipe 50mm inside the casing pipe shall be checked at all the four axis by UT on both the sides. At the locations coating removed shall for testing shall be repaired with visco-elastic wrap as per direction of OIL/PMC.
- 14.2.8. After the annulus is completely dry, the isolation of the casing / carrier shall be checked to confirm removal of electrolytic short.
- 14.2.9. Contractor shall make all efforts to check and correct the alignment of carrier pipe inside the casing pipe using all the tools (jacking lifting etc for making proper alignment of the pipe inside the casing) required for such jobs, this may help in correction of shorting problems.
- 14.2.10. The two ends of the casing and carrier pipes shall be temporarily sealed for 7 days with a plastic sheet. It shall be ensured that there is no water entry from outside. After 7 days, the casing and carrier isolation shall be checked again. Once isolation is okay, contractor shall proceed with sealing of the annulus between the casing and the carrier for a distance of 100mm with visco-elastic filler against ingress of water. Thereafter, heat shrinkable sleeve shall be

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installed at either ends. Contractor shall make all efforts as per direction of OIL / PMC to remove the casing-carrier short

- 14.2.11. CP cables for measurement of casing and carrier pipe to soil potential shall be pin brazed to the casing pipe and carrier pipe respectively as per attached drawing CP cables / pin brazing equipment shall have to be supplied by contractor.
- 14.2.12. Test lead post type 'D' on one side or on both sides of the cased crossing shall be installed. For cased crossing <10 meters – one TLP shall be installed. For cased crossing > 10 meter two TLP's on either side shall be installed. Supply and installation of TLP's including civil foundations shall be in the scope of the contractor.
- 14.2.13. Magnesium anodes of size 20 kgs shall be installed on one side or on both sides as per table below:

Cased crossing length (meter)	Net weight of magnesium anode	Number of magnesium anodes
> 10	20 kg	10 (5 on each side)
<10	20 kg	4 anodes

The magnesium anodes shall be supplied as per attached data sheet.

Supply and installation of magnesium anodes complete with backfill material shall be in the scope of contractor.

- 14.2.14. Proper record / crossing highlighting the following shall be prepared by the contractor for future reference and maintenance.
- Depth of the cased crossing
 - Length of the cased crossing
 - GPS co-ordinates of the cased crossing – both ends.
 - Diameter of casing pipe / wall thickness of casing pipe measured at the ends
 - Wall thickness of carrier pipe measured at the ends.
 - Photographs of either ends
 - Results of casing / carrier isolation testing

14.3. For cased crossing metallic short

- 14.3.1. The heat shrinkable casing end seals shall be removed.
- 14.3.2. The vent & drain pipes shall be fabricated/welded to the casing pipe and shall be painted as per specification. The vent and drain pipes shall have to be supplied by contractor.
- 14.3.3. The casing annulus will be flushed with water and subsequently cleaned by dry air and shall be free from dirt / muck and water. Compressor to be used for cleaning activity shall be of minimum capacity – 200cfm (5.6m³ / min)
- 14.3.4. The casing insulators installed at each end will be visually inspected for any damage / cracking & breaks etc. Either ends will be photographed for future reference. Minimum 2 casing insulators at either end will be required to be

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replaced where the annular space is adequate. It will be ensured that the pipe at both the ends is adequately supported with sand bags as per direction of OIL / PMC.

- 14.3.5. The carrier pipe coating inside the casing pipe to the extent possible will be visually inspected and holiday test with a brush detector shall be carried out at 3000V to check the healthiness of the coating. The test report shall be properly documented as per format approved by OIL/PMC.
- 14.3.6. The thickness of the casing pipe at the edges shall be measured by in all the four axis by UT on both the sides. The thickness reading will be reviewed by OIL / PMC.
- 14.3.7. The thickness of the carrier pipe 50mm inside the casing pipe will be checked at all the four axis by UT on both the sides. At the locations coating removed for testing shall be repaired with visco-elastic wrap as per direction of OIL/PMC.
- 14.3.8. After the annulus is completely dry, the isolation of the casing / carrier will be checked to confirm if metallic short has been removed.
- 14.3.9. Contractor shall make all efforts to check and correct the alignment of carrier pipe inside the casing pipe using all the tools (jacking lifting etc for making proper alignment of the pipe inside the casing) required for such jobs, this may help in correction of shorting problems. Once the metallic short has been removed, contractor shall proceed with sealing of the annulus between the casing and the carrier for a distance of 100mm with visco-elastic filler against ingress of water. Thereafter, heat shrinkable sleeve shall be installed at either ends.
- 14.3.10. Contractor shall make all efforts as per direction of OIL / PMC to remove the casing-carrier short. CP cables for measurement of casing and carrier pipe to soil potential shall be pin brazed to the casing pipe and carrier pipe respectively. CP cables / pin brazing equipment shall have to be supplied by contractor.
- 14.3.11. Test lead post type “D” on one side or on both sides of the cased crossing shall be installed. For cased crossing <10 meters – one TLP shall be installed. For cased crossing > 10 meter two TLP’s on either side shall be installed. Supply and installation of TLP’s including civil foundations shall be in the scope of the contractor.
- 14.3.12. Magnesium anodes of size 20 kgs shall be installed on one side or on both sides as per table below:

Cased crossing length (meter)	Net weight of magnesium anode	Number of magnesium anodes
> 10	20 kg	10 (5 on each side)
<10	20 kg	4 anodes

The magnesium anodes shall be supplied as per attached data sheet.

Supply and installation of magnesium anodes complete with backfill material shall be in the scope of contractor.

- 14.3.13. In case filling the annulus space with low viscosity polymer / or hot applied petrolatum jelly filler is required, contractor will weld additional flanges on the casing pipe as per details given by the casing filler supplier. All the welding hot work on the casing pipe shall be done prior to sealing the annulus on either side with visco elastic filler and heat shrinkable sleeve. The specification of low viscosity polymer / hot applied petrolatum wax filler is as per attached specification.
- 14.3.14. Proper record / crossing highlighting the following shall be prepared by the contractor for future reference and maintenance.
- Depth of the cased crossing
 - Length of the cased crossing
 - GPS co-ordinates of the cased crossing – both ends.
 - Diameter of casing pipe / wall thickness of casing pipe measured at the ends

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- Wall thickness of carrier pipe measured at the ends.
- Photographs of either ends
- Results of casing / carrier isolation testing.

14.4. Casing Insulators

Scope

This specification covers the minimum requirements of design, material, manufacture and supply of casing insulators intended to be used for cased pipeline crossings.

Function

Pipeline insulators shall be used to support the carrier pipe inside the casing pipe and electrically isolate the carrier pipe from the casing pipe at the cased crossings.

The casing insulators shall:

- Resist cold flow and will not soften at design temperature.
- Resist corrosion
- Resist mechanical damage while being pulled into the casing.
- Have high electrical insulating value and low water absorption, thus preventing leakage and maintain electrical isolation between carrier and casing pipes
- Have high compressive strength in order to assure a permanent support to the carrier pipe.

Design

It shall be made in segments duly held together with cadmium plated bolts and nuts, to be supplied with casing insulators.

The number of segments shall be two for pipe diameters up to 12” (generally). For larger diameters, the number of segments may 3-4 nos, but their number shall be kept minimum.

The skid height shall be such that it is slightly less than the value obtained by following formula.

Casing internal dia-carrier outer dia²

Manufacturer shall obtain prior approval from COMPANY on casing insulators drawings/designs.

Material

Casing insulators shall be made of injection moulded high density polyethylene or other material equivalent or superior as approved by COMPANY and shall meet the following specifications:

Property	Value	ASTM Test Method
Dielectric strength	450-500 Volts/Mil	D-149
Compresssive strength	3200 psi	D-695i
Tensile strength	3100-5000	D-638, D-651
Impact strength	4.Oft. 1b./inch of notch	D-256
Water Absorption	0.01%	D-570

Inspection And Testing

Manufacturer shall furnish material test certificates of the components used in the assembly of casing insulations as per the requirements of clause 4.0 of this specification.

Approved Vendors: Pipeline Steel and Insulator, INC /V K Vikram India Pvt Ltd/Farwest Corrosion Control, USA/RACI, Italy

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14.5. Casing End-Seals

Scope

This specification covers the minimum requirements of design, material, fabrication and supply of casing end-seals intended to be used for pipeline cased crossings.

Function

Casing end seals are intended to be used for sealing the annular space between casing pipe and carrier pipe at casing ends so as to prevent ingress of moisture and water.

Design

The scale shall be suitable for the casing and carrier pipe diameters as applicable for each case.

The casing end-seal shall be flexible to cater for the expansion and contraction of carrier and casing pipes and shall be able to tolerate both angular and concentric misalignment of casing pipe without loss of sealing efficiency.

The design of the casing end-scale shall permit easy installation of the seal to the cased pipeline crossing.

It shall provide moisture-proof seals when installed for the entire anticipated life of the buried pipeline.

Manufacturer shall obtain prior approval from OIL/PMC on casing end seals design/drawings.

Material

The casing end-scale shall be made of heat shrink high density radiation crosslinked polyethylene with an adhesive having a melt point suitable for the pipeline service temperature and ambient temperatures foreseen during construction. End-seals material shall be resistant to heat, cold, vibration, impact, abrasion, corrosive fluids, disbanding, organic and bio-deterioration. Manufacturer shall confirm compatibility of end seals with carrier pipe coating.

Casing end seals shall meet following minimum property requirements:

<u>Property</u>	<u>Minimum Value</u>	<u>Test Method</u>
a) Backing (Sleeve and closure patch)		
Bursting Strength	2500 N	DIN 30672
Tensile strength	2200 psi	ASTM D-638
Ultimate Elongation	400%	ASTM D-638
Heat Shock	No visual cracks flow or drips (at 225°C, 4 hours),	ASTM D-2671
b) Adhesive		
Ring and Ball softening point	90°C	ASTM E-28
Lap Shear	60°C - 25 psi	ASTM D-1002
	23°C - 250 psi (2 inch/min)	
c) System (as applied)		
Peel strength (To casing and carrier pipe and closure patch)	5 pli (10 inch/min.)	ASTM D-1000

Inspection and Testing

Manufacturer shall furnish material test certificates of the components used in the assembly of casing end-seals as per the requirements of this specification.

APPROVED VENDORS: Pipeline Steel and Insulator, INC / Seal for Life India Pvt Ltd/Farwest Corrosion Control USA/Advance Products and Systems INC

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14.6. Casing Filler Requirements

The casing filler shall hot type designed to prevent corrosion in existing or new cased crossings and reduce current drainage through the shorted casings (to prevent electrolytic circuit and/or physical contact between the casing and carrier pipe)

The casing filler shall be a specially formulated petrolatum /visco-elastic based compound which is pumped in the annulus space from special designed heated containers by low pressure pumps or by gravity.

The casing filler shall be designed to displace water and oxygen in the annulus space and prevent water from re-entering thereby mitigating any further corrosion.

The properties of casing filler material shall be as follows:

Property	Test Method	Value
Congel Point	ASTM D-938	$\geq 41^{\circ}\text{C}$
Cone Penetration	ASTM D - 937	≥ 50
Density		790-1100 kg/m ³
Water absorption	ASTM D- 570	$\leq 0.05\%$
Specific electrical insulation resistance	ISO21809 Part 3 or equivalent ASTM	$\geq 10^6 \Omega \text{ m}^2$
Application temperature	-	$>15^{\circ}\text{C}$ to 80°C
Operational temperature	-	Up to 40°C

CASING FILLING GUIDELINES

The casing filling activities shall be performed by specialized agency supplying the casing filler material. The filler shall be pumped through casing vent pipes. For best results, the casing should have one top vent on the high end and one bottom on the low end or as recommended by the manufacturer.

Briefly the application procedure shall be as follows:

1. Remove water from the annulus by removing the end seals if any and blowing dry air in the annulus end to end to ensure that all the water/muck have been removed from the annulus.
2. Casing filling shall be carried out as per manufacturer's recommendation.
3. Casing filler coming out of the discharge vent is only a partial indicator of fill percentage. Water or air could be trapped in the casing, so it is important that the casing filling manufacturer representative train the contractor's crew to ensure that the casing filler has completely filled the annulus.

Marking

Following shall be marked clearly on the drums in ENGLISH.

- Type / trade name.
- Volume of the casing filler material.
- Reference number / batch number.
- Date of manufacturing, shelf life of material.
- Health hazards associated & handling instruction.

Testing And Inspection

All the properties mentioned in the specification shall be tested at manufacturer's works with their in-house test facilities and test certificate shall be verified by TPI.

APPROVED VENDORS- Royston/Stopaq/Trenton/Viscotag

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15. MINIMUM EQUIPMENT LIST

Sl No	Minimum Equipment List	Quantity in Nos.				
		Spread 1	Spread 2	Spread 3	Spread 4	Spread 5
1	Crawler type excavator with bucket size > 0.6 cubic meter and suitable depth of excavation. (ROW sections having multiple pipelines at depth of pipeline < 1 meter, the type of crawler excavator to be selected after discussion with OIL / PMC so that the weight of excavator does not damage the pipelines.)	3	3	3	3	3
2	Submersible type sludge or dewatering pump of rating 10 ~20 HP and discharge capacity of minimum 50 m ³ /hour or as per site conditions and as per OIL / PMC approval.	3	3	3	3	3
3	Well point dewatering system of capacity minimum 100 m ³ /hour or as per site conditions and as per OIL / PMC approval.	1	1	1	1	1
3	Abrasive blasting machine with DG driven air compressor of minimum capacity 200-250 CFM. Air compressor will be fitted with water trap / moisture and oil filter to ensure dry air. Abrasive blasting pot shall have a minimum capacity of 500Kg of copper slag. The Abrasive blasting machine shall also be fitted with air filters / moisture traps. The blasting crew shall be provided with blasting hoods / helmets with required personnel protective equipment (PPE)	3	3	3	3	3
4	Pulse type high voltage holiday detection machine with ring type electrode suitable for pipe dia 16" / 14" / 12.75" & 10.75" along with crest voltmeter (Make Spy USA /Tinker and Rasor , USA or equivalent as approved by PMC)	3	3	3	3	3
5	Digital coating thickness gauge -upto 5 mm (Elecometer 456 or equivalent)	3	3	3	3	3
6	Digital surface profile gauge (Electrometer 224 or equivalent)	3	3	3	3	3
7	Surface comparator (Elecometer 125 or equivalent)	3	3	3	3	3
8	Salt contamination meter (SCM 400 or equivalent)	3	3	3	3	3
9	Digital Thermometer with flat probe	3	3	3	3	3
10	Digital Hygrometer	3	3	3	3	3
11	Hand peel gauge for measuring coating adhesion.	3	3	3	3	3
12	Ultrasonic thickness gauge for measurement thickness of well pipe (Olympus 270 M or equivalent)	3	3	3	3	3
13	Digital Pit and depth gauge	3	3	3	3	3

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16. HSE SPECIFICATION

In case of any exigencies/disasters or leak during the execution of job, the Contractor shall keep all the required manpower, equipment and vehicles on Stand by for immediate containment and restoration.

Contractor shall prepare an Emergency Action plan based on OIL's Disaster Management plan and approved by PMC to meet any exigencies/disasters etc.

Please refer Document PTS-Health, Safety & Environment attached with the Tender.

17. CONTRACTOR'S OBLIGATION / RESPONSIBILITIES

17.1. Project Execution Related

1. **Project Updates:** The Contractor shall be solely responsible for submitting regular updates / progress reports to PMC / Owner for routine progress monitoring and control. The project update documents shall include but not be limited to following:-
 - Daily / Weekly / Monthly Project Reports
 - Logistics Updates
 - Project Progress Status Updates
 - Material Receipt / Storage / Issue Reports
 - Work Permits
 - Site Clean-up & Restoration Status
 - Site Handover status
 - Project HSE Plans/Status
 - Project Environment Plan/Status
 - Project Man-power / resource deployment Plan/Status
 - Community Engagement / Development Plan/Status
2. Contractor shall ensure that all levels of the Contractor management and site supervision personnel are fully aware of the following:
 - Health, Safety and Environmental (HSE).
 - Project Safety Objectives and Targets.
 - Planning and Scheduling.
 - Project Management and Control.
 - Quality Assurance and Control.
 - Construction Objectives.
 - Key Milestone and Completion Dates.
3. The CONTRACTOR shall prepare and submit a Risk Register which shall include all probable risks for the project execution/progress to achieve the target schedule. The project risk register shall be prepared and the risk categories (Low/Medium/High) shall be appropriately defined. The risk register shall be regularly updated based on the risks mitigation measures adopted during the course of execution. The risk register shall broadly cover the following items:-
 - Risks due to delay in approvals/clearances
 - Risks due to delay in deployment of resources / delay in mobilization

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- Risks due to delay in procurement / delivery of materials
- Risks due to delay in opening of Corridor
- Risks due to Work being undertaken in restricted Corridor / adjacent to existing operating pipelines / existing well pad facilities / inside processing terminal
- Risks due to delay in issuing of work-permits
- Risks due to Local / Community / Social unrest
- Risks due to natural calamities
- Risks in construction due to any failure of the existing pipelines / utilities.
- Risks / delays due to addition/expansion of existing rail/road/power infrastructure thus impacting the construction of proposed development facilities

The risk register shall be regularly updated and status briefed in Review Meetings.

4. The Contractor must draw up working methodologies including equipment, manpower and material needed for all phases of the construction.
5. All working methodology must get approved by the Owner before starting work.
6. Only approved working methodology will be strictly implemented at site during all construction stages. The Contractor shall deploy all equipment and material required to achieve the work as per his detailed methodology and agreed schedule.
7. To comply with the agreed work schedule the contractor may have to work in shift or extended hours without any cost implication.
8. If EPC contractor carries out any repair job after backfilling due to his bad workmanship or as per his plan, then the cost of preparing trench and all other requirement are to be met at the cost of contractor and no extra payment shall be made.

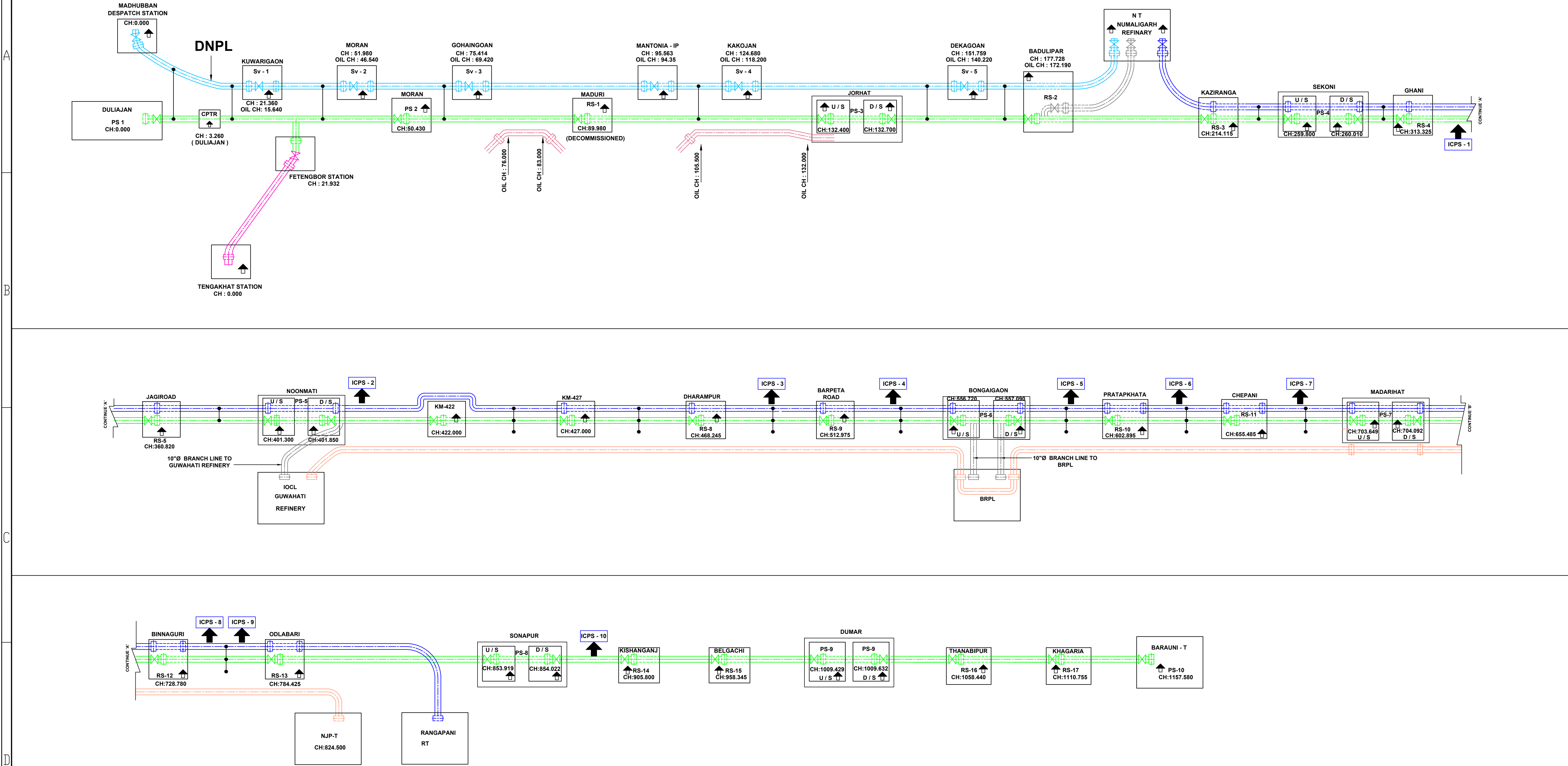
	SCOPE OF WORK & WORK PROCEDURE FOR PIPELINE REHABILITATION PROJECT – PHASE-I	P.010416 D-11075- 001

ANNEXURES

ANNEXURES

Annexure-I

SCHEMATIC LAYOUT FOR EXISTING PIPELINE IN COMMON ROW (OIL INDIA)

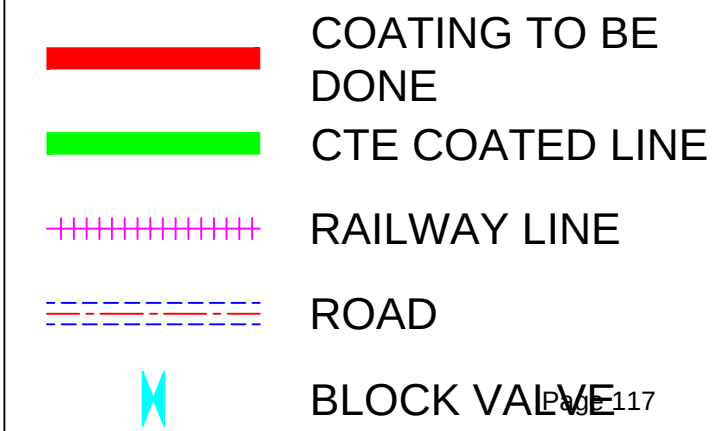
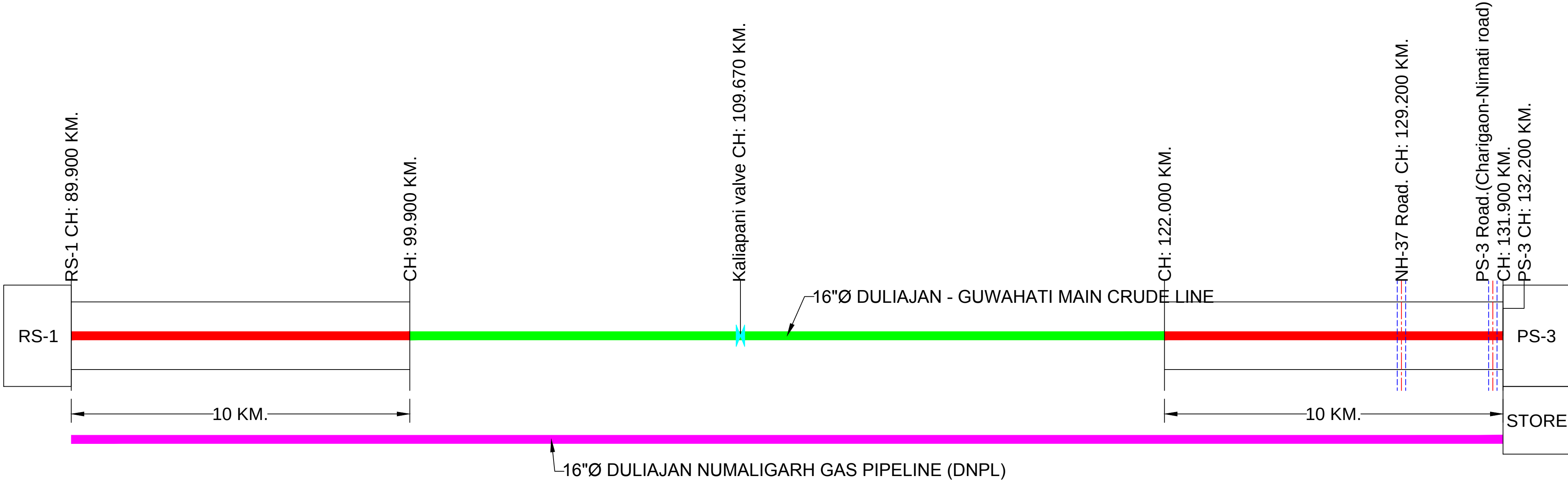
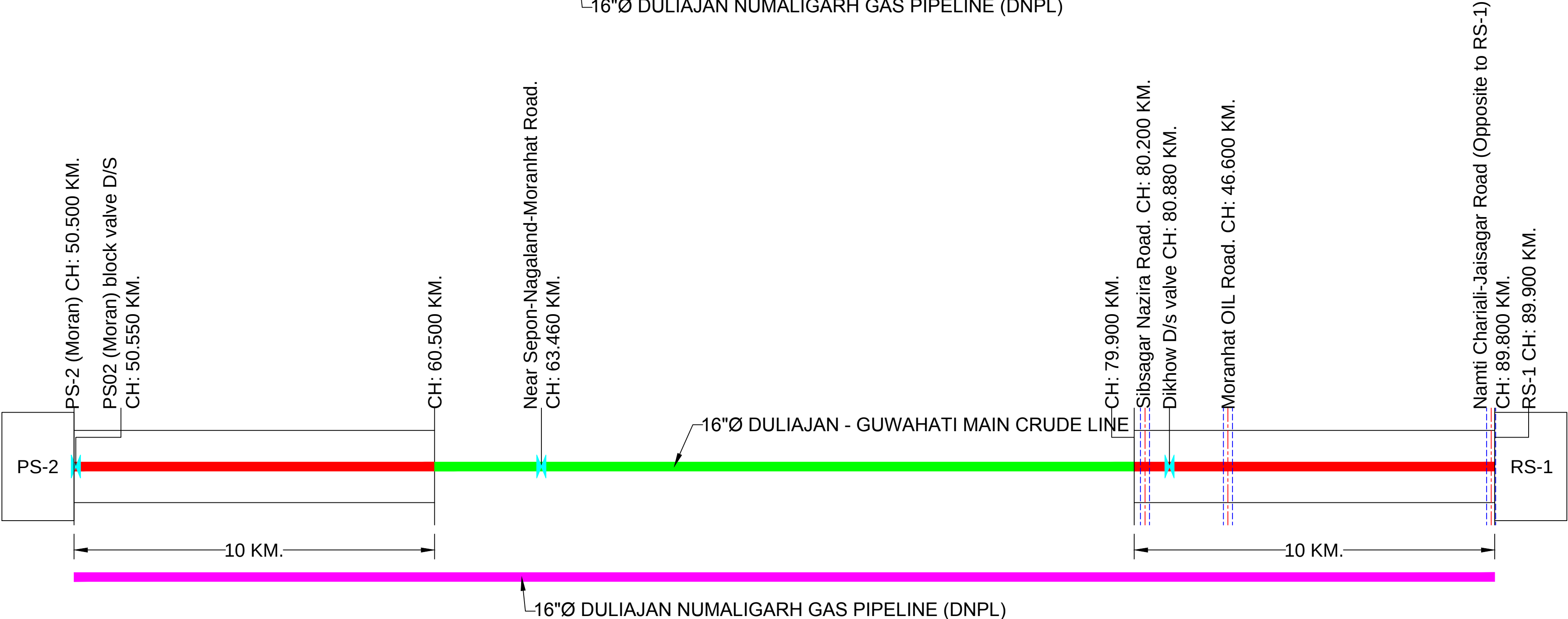
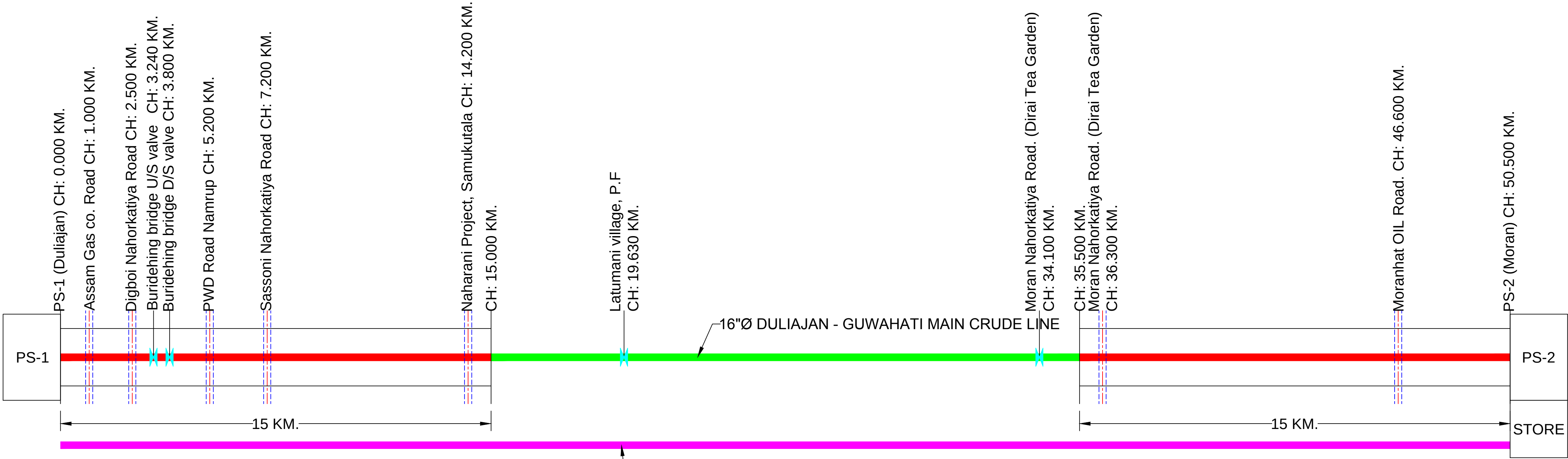


LEGEND:

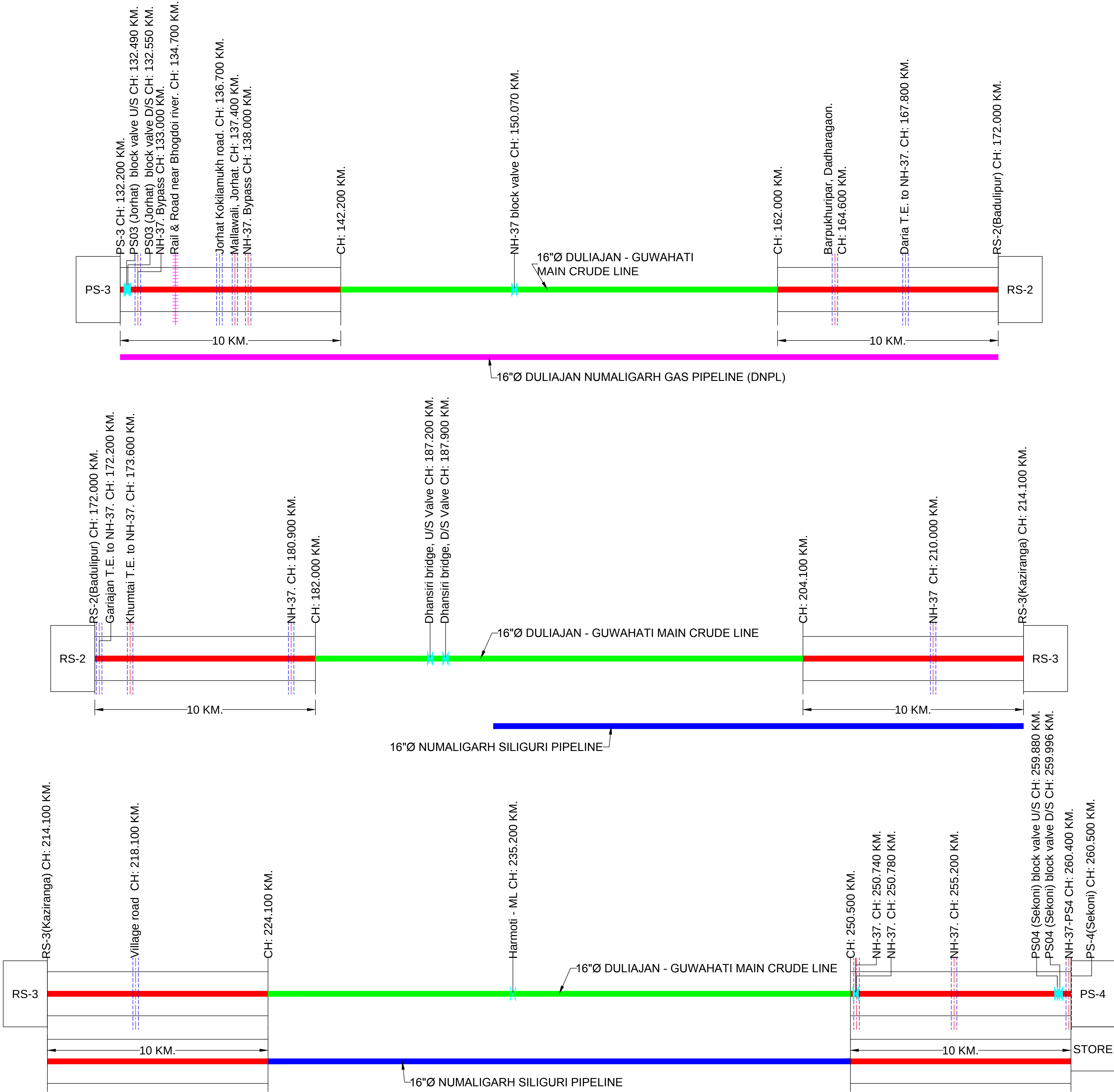
	BRANCH LINE
	DNPL 16"Ø
	NSPL 16"Ø
	MAINLINE 16" / 14"Ø
	GSPL 8"Ø
	ONGC - PL
	TSPL
	PROPOSED CP STATION
	MOV / HOV
	INSULATING JOINT
	CPTR
	BONDINGS

Rev.	00	31-03-2017	APPROVED FOR CONSTRUCTION.	Cheton	MK	NC	SKH
Discipline Code			Modifications	Drawn	Checked	Approved	Validated
CUSTOMER							
PROJECT	PIPELINE COATING REHABILITATION WORK DULIAJAN - BARAUNI CRUDE OIL PIPELINE (SIZE 16" / 14" X 1157 KM)						
SUBJECT	SCHEMATIC LAYOUT FOR EXISTING PIPELINE IN COMMON ROW (OIL INDIA)						
Size	A1	Scale	NTS	Sheet	1	of	1
Project No.	P.010416	Discipline Code	D	System Code	20704	Serial No.	001
TRACTEBEL Engineering pvt. Ltd.							

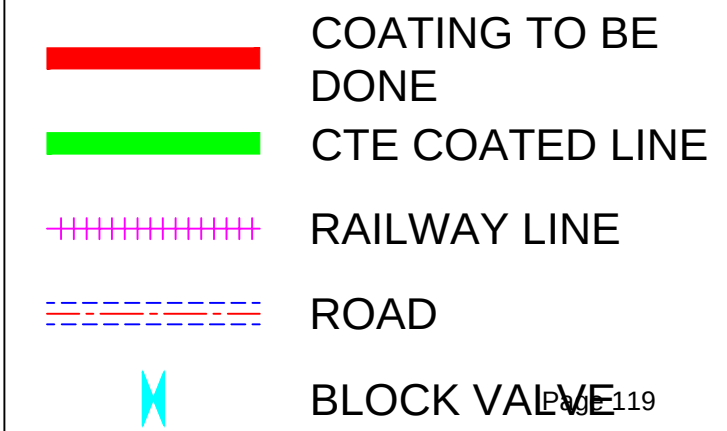
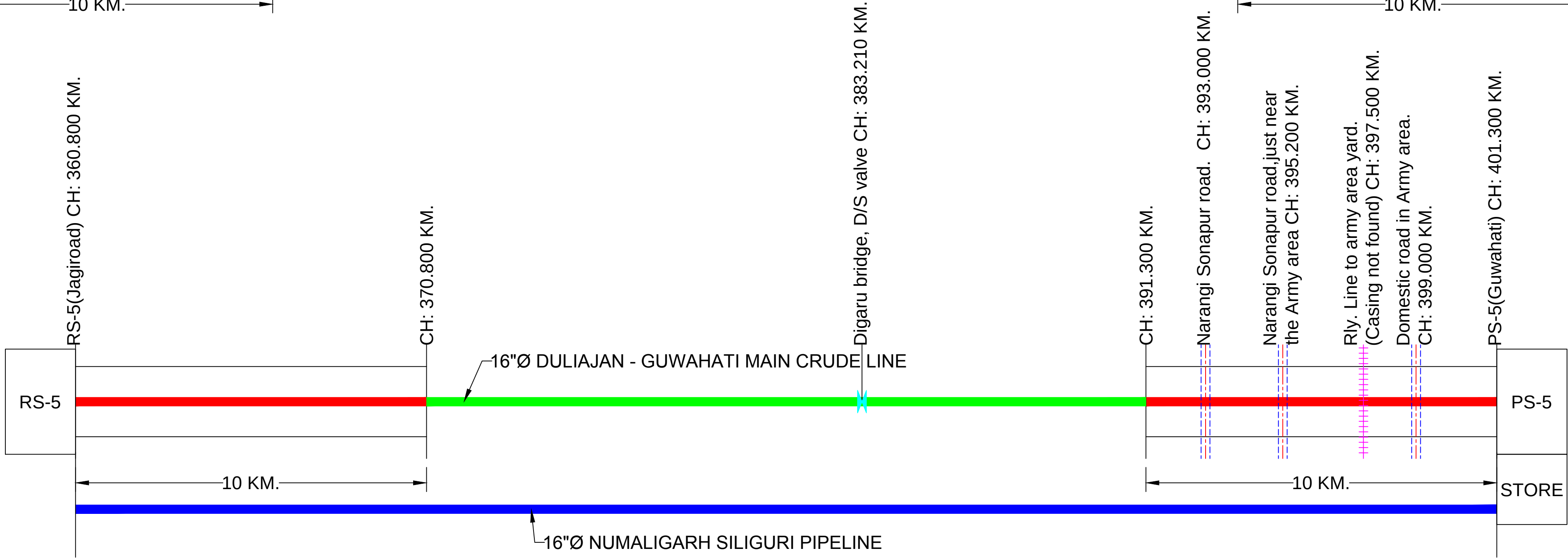
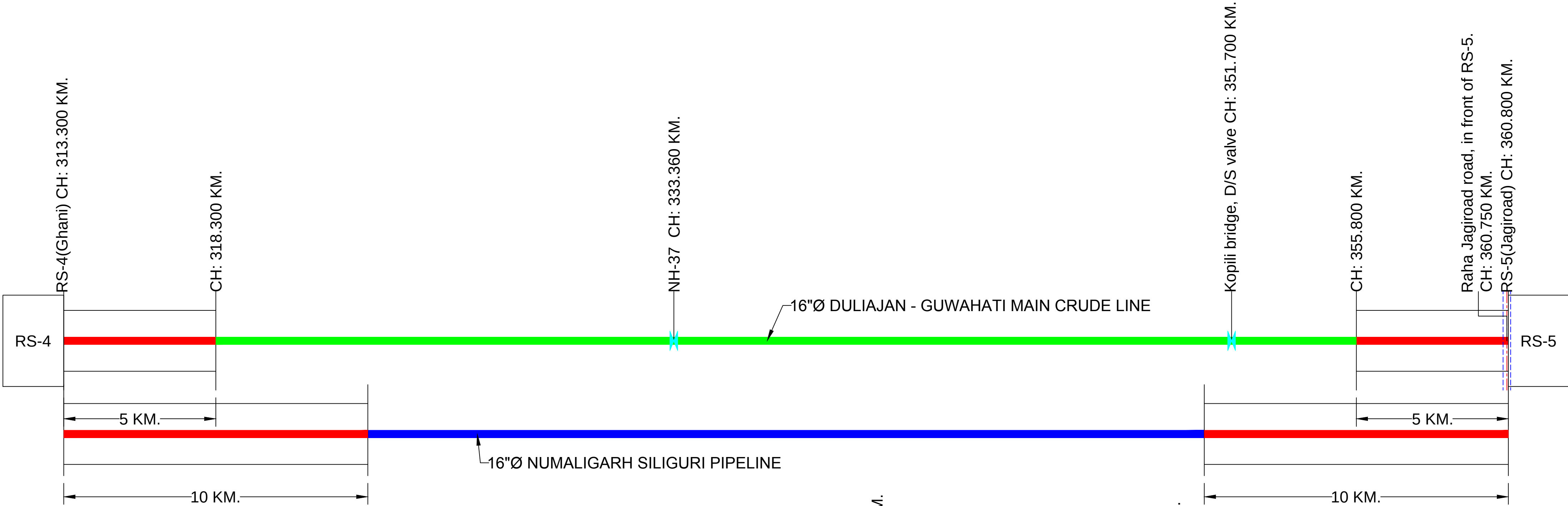
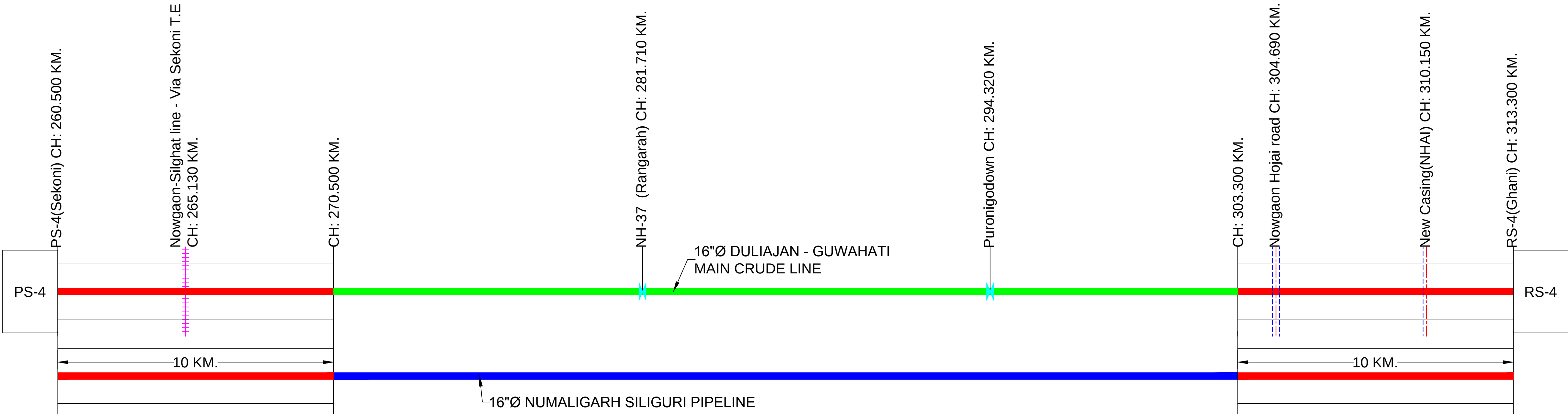
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DULIAJAN - BARAUNI CRUDE OIL PIPELINE (SIZE 16" / 14" X 1157 KM)



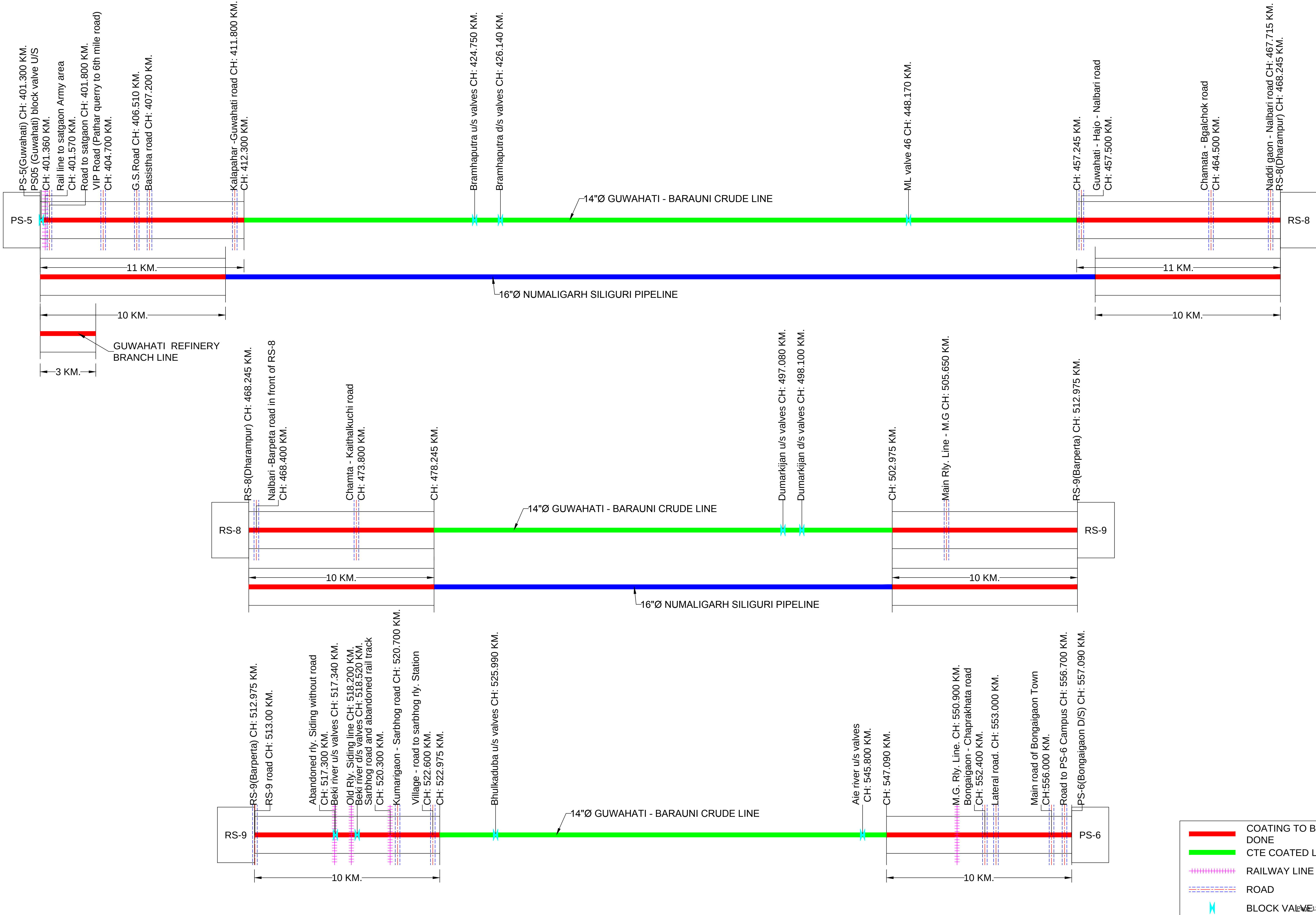
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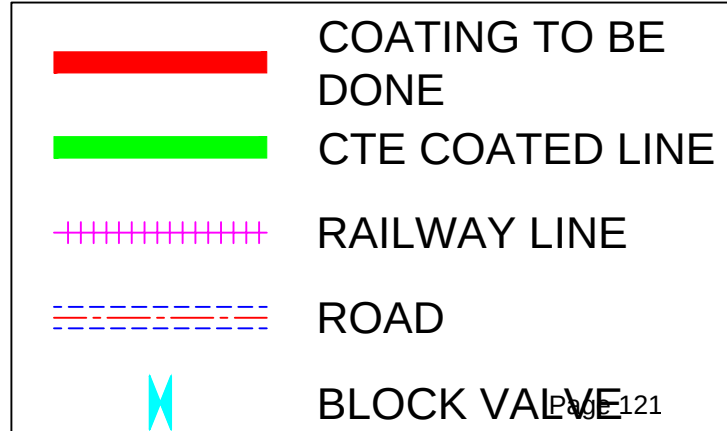
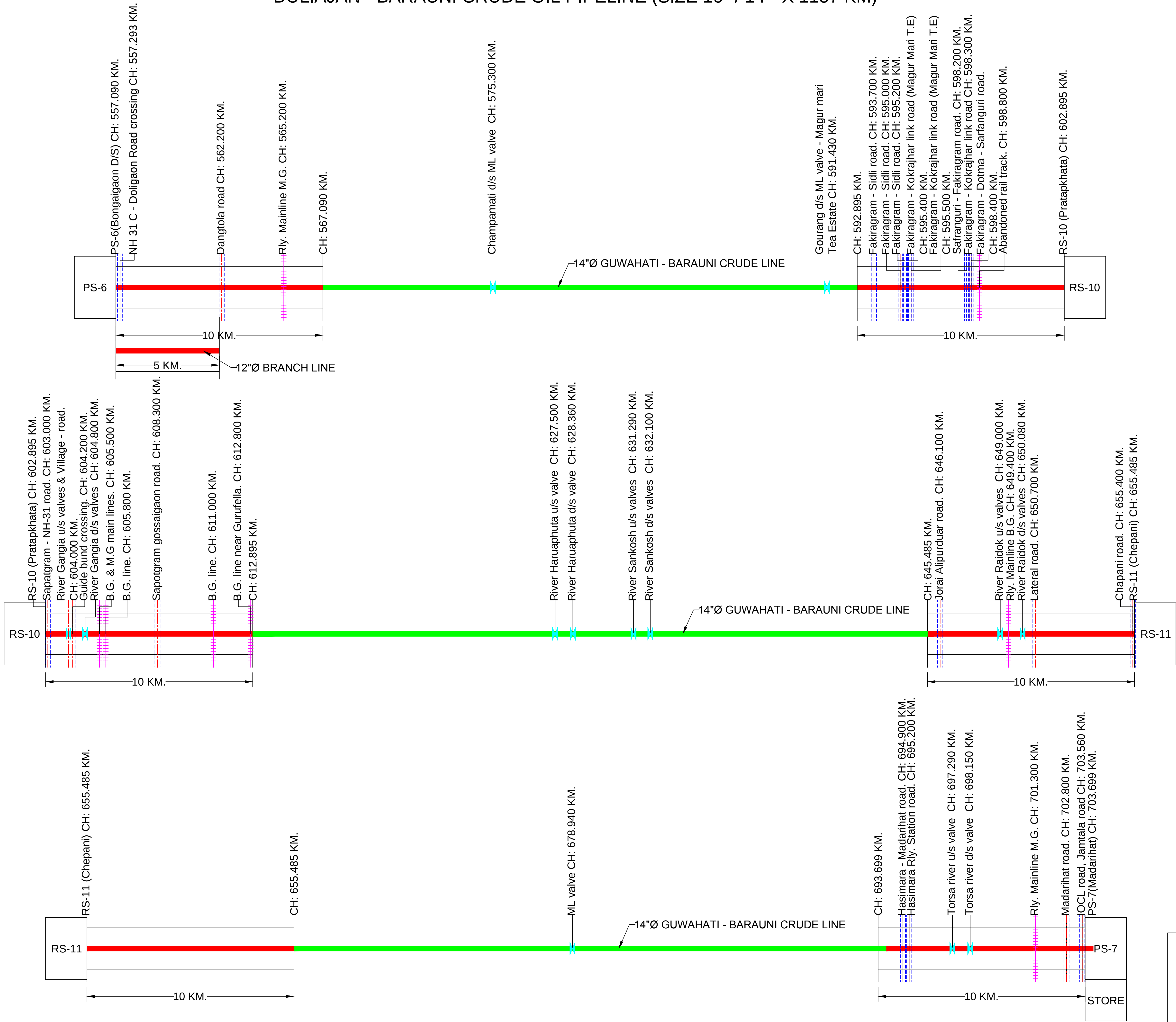
PIPELINE COATING REHABILITATION WORK
DULIAJAN - BARAUNI CRUDE OIL PIPELINE (SIZE 16" / 14" X 1157 KM)



PIPELINE COATING REHABILITATION WORK
DULIAJAN - BARAUNI CRUDE OIL PIPELINE (SIZE 16" / 14" X 1157 KM)



PIPELINE COATING REHABILITATION WORK
DULIAJAN - BARAUNI CRUDE OIL PIPELINE (SIZE 16" / 14" X 1157 KM)



PIPELINE COATING REHABILITATION WORK
DULIAJAN - BARAUNI CRUDE OIL PIPELINE (SIZE 16" / 14" X 1157 KM)

COATING TO BE DONE

CTE COATED LINE

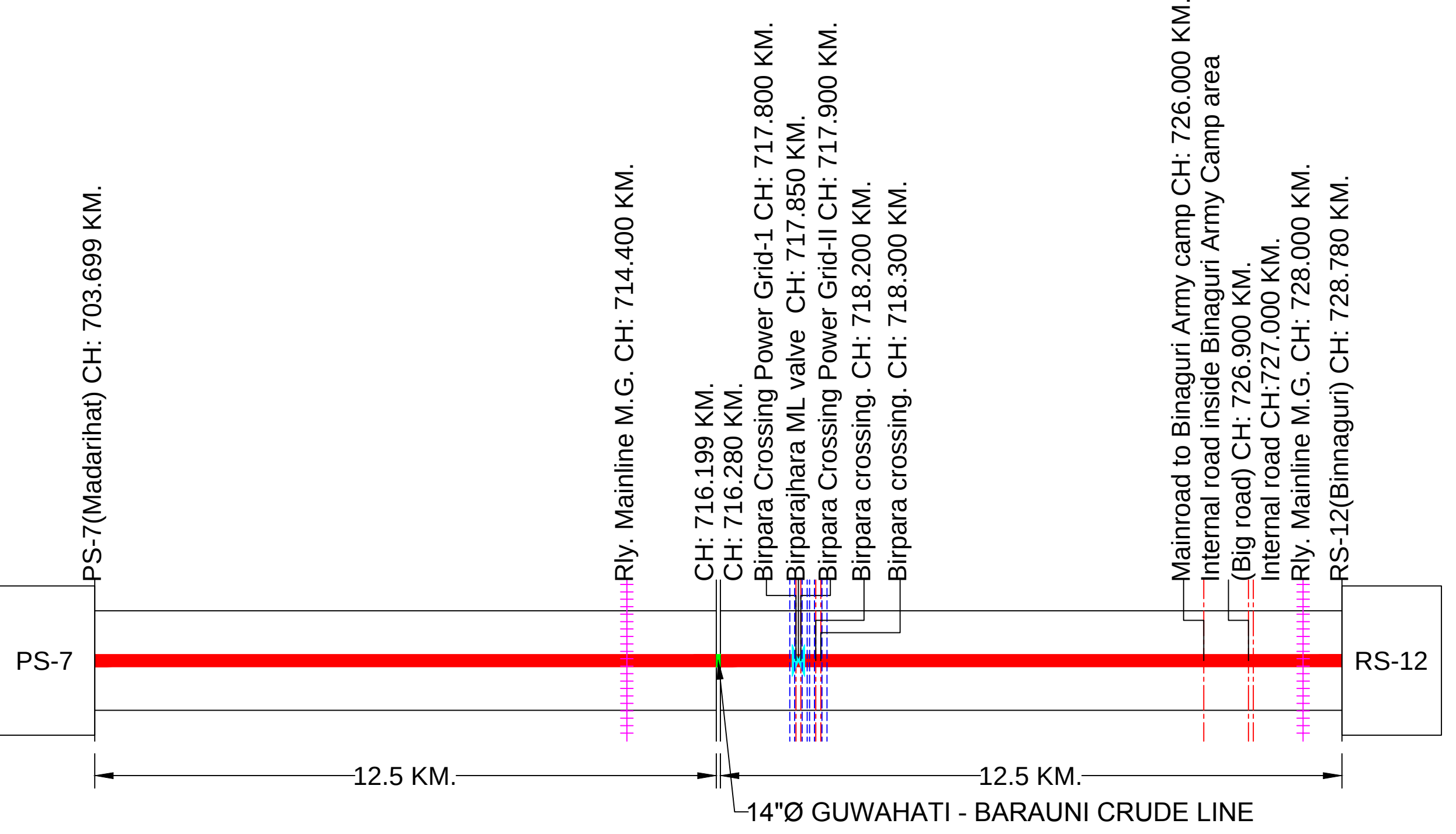
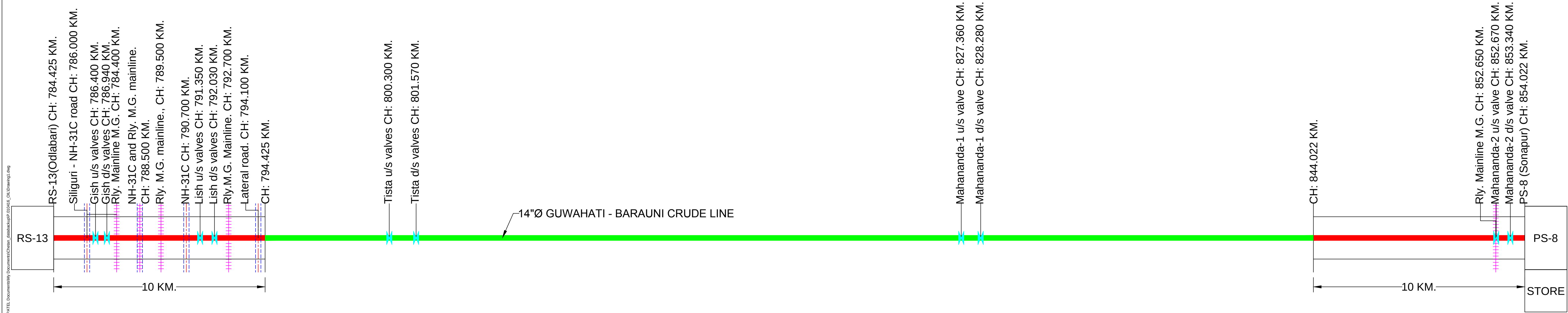
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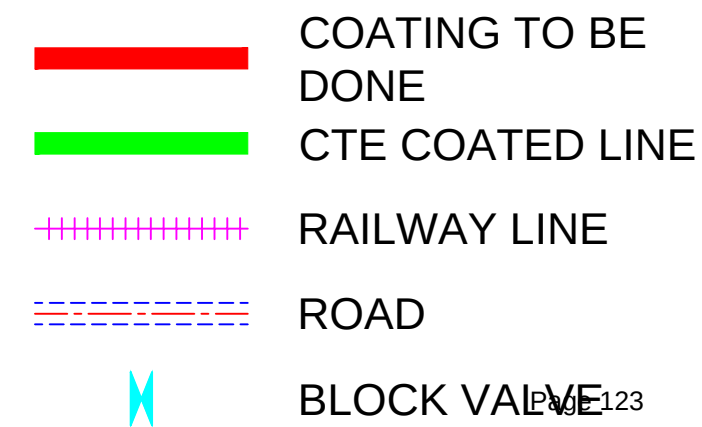
RAILWAY LINE

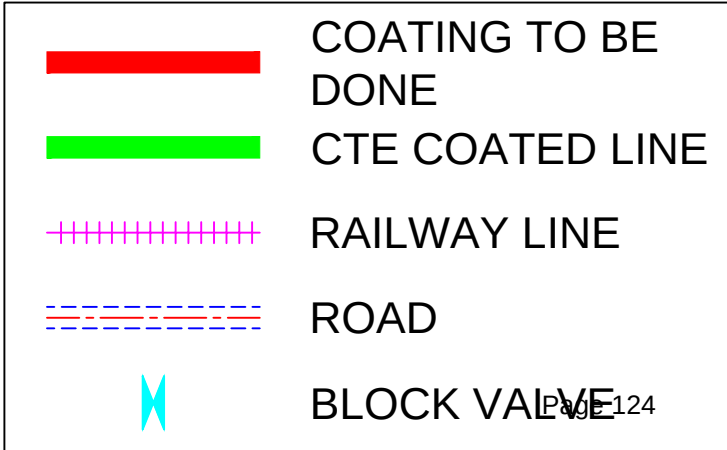
ROAD

⋈

BLOCK VALVE







Annexure-2									
Details of Coating Length									
Sl No.	Package/Spread	Section	Chainage	PipeLine details	Start Chainage in KM	End Chainage in KM	Width of strech / Crossing in KM	Total Coating Length in KM for respective package	State
1	Spread # 1	PS-1(Dulajjan) to PS-2(Moran)	Ch 0.00 to Ch 50.5	16" Dulajjan Guwahati Main Crude Line	0.00	15.00	15.00	130.00	Assam
2		PS-2(Moran) to RS-1(Maduri)	Ch 50.50 to Ch 89.90	16" Dulajjan Guwahati Main Crude Line	35.50	50.50	15.00		
3		RS-1(Maduri) to PS-3(Jorhat)	Ch 89.9 to Ch 132.00	16" Dulajjan Guwahati Main Crude Line	50.50	60.50	10.00		
4		PS-3(Jorhat)to RS-2(Badulipur)	Ch 132.20 to Ch 172.00	16" Dulajjan Guwahati Main Crude Line	79.90	89.90	10.00		
5		RS-2(Badulipur) to RS-3(Kaziranga)	Ch 172.00 to Ch 214.10	16" Dulajjan Guwahati Main Crude Line	89.90	99.90	10.00		
6		RS-3(Kaziranga) to PS-4(Sekoni)	Ch 214.10 to Ch 260.00	16" Dulajjan Guwahati Main Crude Line	122.00	132.00	10.00		
7	Spread # 2	PS-4(Sekoni) to RS-4(Ghani)	Ch 260.50 to Ch 313.30	16" Dulajjan Guwahati Main Crude Line	132.00	142.00	10.00	131.00	Assam
8		RS-4(Ghani) to RS-5(Jagiroad)	Ch 313.30 to Ch 360.80	16" Dulajjan Guwahati Main Crude Line	162.00	172.00	10.00		
9		RS-5(Jagiroad) to PS-5(Guwahati)	Ch 360.8 to Ch 401.30	16" Dulajjan Guwahati Main Crude Line	172.00	182.00	10.00		
10		PS-5(Guwahati) to (Jalukbari to Amingaon) to RS-8(Dharampur)	Ch 401.30 to Ch 468.240	16" Dulajjan Guwahati Main Crude Line	204.10	214.10	10.00		
11		RS-8(Dharampur) to RS-9 (Barpeta Rd)	Ch 468.245 to Ch 512.975	16" Dulajjan Guwahati Main Crude Line	214.10	224.10	10.00		
12		RS-9(Barpeta Rd) to PS-6 (Bongaigaon)	Ch 512.975 to Ch 556.720	16" Dulajjan Guwahati Main Crude Line	224.10	234.10	10.00		
13	Spread # 3	PS-6(Bongaigaon D/S) to RS -10 (Pratapkhata)	Ch 557.090 to Ch 602.895	16" Dulajjan Guwahati Main Crude Line	234.10	244.10	10.00	119.00	Assam
14		RS-10 (Pratapkhata) to RS-11 (Chepani)	Ch 602.895 to Ch 655.485	16" Dulajjan Guwahati Main Crude Line	244.10	254.10	10.00		
15		RS-11(Chepani) to PS-7(Madarihat)	Ch 655.485 to Ch 703.699	16" Dulajjan Guwahati Main Crude Line	254.10	264.10	10.00		
16		PS-7(Madarihat) to RS-12(Binnaguri)	Ch 704.092 to Ch 728.780	16" Dulajjan Guwahati Main Crude Line	264.10	274.10	10.00		
17		RS-12(Binnaguri) to RS-13(Odlabari)	Ch 728.780 to Ch 784.425	16" Dulajjan Guwahati Main Crude Line	274.10	284.10	10.00		
18		RS-13(Odlabari) to PS-8(Sonapur)	Ch 784.425 to Ch 853.919	16" Dulajjan Guwahati Main Crude Line	284.10	294.10	10.00		
19	Spread # 4	PS-8(Sonapur) to RS-14(Kishanganj)	Ch 854.022 to Ch 905.805	16" Dulajjan Guwahati Main Crude Line	294.10	304.10	10.00	115.00	West Bengal
20		RS-14(Kishanganj) to RS-15(Belgachi)	Ch 905.800 to Ch 958.340	16" Dulajjan Guwahati Main Crude Line	304.10	314.10	10.00		
21		RS-15(Belgachi) to PS-9(Dumar)	Ch 958.340 to Ch 1009.632	16" Dulajjan Guwahati Main Crude Line	314.10	324.10	10.00		
22		PS-9(Dumar) to RS-16(Thanahbihpur)	Ch 1009.632 to Ch 1058.440	16" Dulajjan Guwahati Main Crude Line	324.10	334.10	10.00		
23		RS-16(Thanahbihpur) to RS -17 (Khargaria)	Ch 1058.440 to Ch 1110.755	16" Dulajjan Guwahati Main Crude Line	334.10	344.10	10.00		
24		RS-17(Khargaria) to Barauni Pump Station	Ch 1110.775 to Ch 1157.580	16" Dulajjan Guwahati Main Crude Line	344.10	354.10	10.00		
								575.00	

Annexure-3								
List of Block Valve								
SL.NO.	Package	Section Details	Section Chainage details	Block valve details	Block valve Chainage details	Pipe Line Description	Block Valve No	
							16" Size	14" Size
1	Package I	PS-1(Duliajan) to PS-2(Moran)	Ch 0.00 to Ch 50.5	Valve - 1	3.20	16" Duliajan Guwahati Main Crude Line	16	
				Valve - 2	3.80	16" Duliajan Guwahati Main Crude Line		
				Valve - 3	19.60	16" Duliajan Guwahati Main Crude Line		
				Valve - 4	34.10	16" Duliajan Guwahati Main Crude Line		
2		PS-2(Moran) to RS-1(Maduri)	Ch 50.50 to Ch 89.90	Valve - 5	63.46	16" Duliajan Guwahati Main Crude Line		
				Valve -5 (a) New	80.78	16" Duliajan Guwahati Main Crude Line		
3		RS-1(Maduri) to PS-3(Jorhat)	Ch 89.9 to 132.00	Valve - 11	109.70	16" Duliajan Guwahati Main Crude Line		
4		PS-3(Jorhat)to RS-2(Badulipur)	Ch 132.20 to Ch 172.00	Valve - 12	150.07	16" Duliajan Guwahati Main Crude Line		
5		RS-2(Badulipur) to RS-3(Kaziranga)	Ch 172.00 to Ch 214.10	Valve - 18 (US Dhansiri)	187.29	16" Duliajan Guwahati Main Crude Line		
				Valve -19 (DS Dhansiri)	187.90	16" Duliajan Guwahati Main Crude Line		
6	Package 2	RS-3(Kaziranga) to PS-4(Sekoni)	Ch 214.10 to Ch 260.00	Valve -25L	232.00	16" Numaligarh Siliguri Pipeline	17	
				Valve - 25	235.20	16" Duliajan Guwahati Main Crude Line		
				Valve - 26L	246.80	16" Numaligarh Siliguri Pipeline		
				Valve - 26	250.74	16" Duliajan Guwahati Main Crude Line		
		PS-4(Sekoni) to RS-4(Ghani)	Ch 260.50 to Ch 313.30	Valve - 27L	275.00	16" Numaligarh Siliguri Pipeline		
				Valve -27	281.71	16" Duliajan Guwahati Main Crude Line		
				Valve - 28 & Valve - 28L	294.32	16" Duliajan Guwahati Main Crude Line 16" Numaligarh Siliguri Pipeline		
				Valve - 28LA	310.00	16" Numaligarh Siliguri Pipeline		
8		RS-4(Ghani) to RS-5(Jagiroad)	Ch 313.30 to Ch 360.80	Valve - 34	333.36	16" Duliajan Guwahati Main Crude Line		
9		RS-5(Jagiroad) to PS-5(Guwahati)	Ch 360.8 to Ch 401.00	Valve-36(DS Kopili)	351.70	16" Duliajan Guwahati Main Crude Line		
				Valve - 43 (DS Digaru)	383.21	16" Duliajan Guwahati Main Crude Line		
10	Package 3	PS-5(Guwahati) to (Jalukbari to Amingaon) to RS-8(Dharampur)	Ch 401.30 to Ch 468.240	Valve - 43 LA	406.50	16" Numaligarh Siliguri Pipeline	13	15
				Valve - 43 LB	416.00	16" Numaligarh Siliguri Pipeline		
				Valve - 44 L (US Brahmaputra)	424.00	16" Numaligarh Siliguri Pipeline		
				Valve - 44 (US Brahmaputra)	424.80	14" Guwahati -Barauni Crude Line		
				Valve - 45L (DS Brahmaputra)	426.00	16" Numaligarh Siliguri Pipeline		
				Valve - 45 (DS Brahmaputra)	426.14	14" Guwahati -Barauni Crude Line		
				Valve - 45LA (US Puthimari)	443.20	16" Numaligarh Siliguri Pipeline		
				Valve - 45LB	446.60	16" Numaligarh Siliguri Pipeline		
				Valve -46	448.17	14" Guwahati -Barauni Crude Line		
				Valve -46L (US Chaulkhowa)	453.20	16" Numaligarh Siliguri Pipeline		
				Valve - 46L (DS Chalkhowa)	454.20	16" Numaligarh Siliguri Pipeline		
		RS-8(Dharampur) to RS-9 (Barpeta Rd)	Ch 468.245 to Ch 512.975	Valve - 51LA	483.50	16" Numaligarh Siliguri Pipeline		
				Valve -51LB	490.90	16" Numaligarh Siliguri Pipeline		
				Valve - 52 & 52L (US Dumarkijan)	496.80	16" Numaligarh Siliguri Pipeline 14"Guwahati -Barauni Crude Line		
				Valve - 53 & 53 L (DS Dumarkijan)	498.10	16" Numaligarh Siliguri Pipeline 14"Guwahati -Barauni Crude Line		
				Valve 54 L	504.75	16" Numaligarh Siliguri Pipeline		
11				Valve 55 L	506.25	16" Numaligarh Siliguri Pipeline		

Annexure-3									
List of Block Valve									
SL.NO.	Package	Section Details	Section Chainage details	Block valve details	Block valve Chainage details	Pipe Line Description	Block Valve No		
12		RS-9(Barperta Rd) to PS-6 (Bongaigaon)	Ch 512.975 to Ch 556.720	Valve - 61 (US Beki)	517.34	14" Guwahati -Barauni Crude Line			
				Valve - 62 (DS Beki)	518.52	14" Guwahati -Barauni Crude Line			
				Valve -63 (US Bhalukaduba)	526.10	14" Guwahati -Barauni Crude Line			
				Valve -67 (US Aie) Shifted	545.80	14" Guwahati -Barauni Crude Line			
13		PS-6(Bongaigaon D/S) to RS -10 (Pratapkhata)	Ch 557.090 to Ch 602.895	Valve - 69	575.30	14" Guwahati -Barauni Crude Line			
				Valve - 70	591.43	14" Guwahati -Barauni Crude Line			
14			RS-10 (Pratapkhata) to RS-11 (Chepani)	Ch 602.895 to Ch 655.485	Valve - 76 (US Gangiya)	604.08	14" Guwahati -Barauni Crude Line		
					Valve - 77 (DS Gangiya)	604.80	14" Guwahati -Barauni Crude Line		
					Valve - 80 (US Haruaputa)	627.50	14" Guwahati -Barauni Crude Line		
					Valve - 81 (DS Haruaputa)	629.29	14" Guwahati -Barauni Crude Line		
					Valve - 82 (US Sankosh)	631.28	14" Guwahati -Barauni Crude Line		
					Valve - 83 (DS Sankosh)	632.09	14" Guwahati -Barauni Crude Line		
	Valve - 84 (US Raidok-II)				640.17	14" Guwahati -Barauni Crude Line			
	Valve - 85 (DS Raidok-II)				641.09	14" Guwahati -Barauni Crude Line			
15		RS-11(Chepani) to PS-7(Madarihat)	Ch 655.485 to Ch 703.699	Valve - 93	678.94	14" Guwahati -Barauni Crude Line			
Valve - 94 (US Torsa)				697.29	14" Guwahati -Barauni Crude Line				
16		PS-7(Madarihat) to RS-12(Binnaguri)	Ch 704.092 to Ch 728.780	Valve - 95 (DS Torsa)	698.13	14" Guwahati -Barauni Crude Line			
17	Package 4	RS-12(Binnaguri) to RS-13(Odlabari)	Ch 728.780 to Ch 784.425	Valve - 96	717.85	14" Guwahati -Barauni Crude Line			
				Valve - 102 (US Diana)	742.40	14" Guwahati -Barauni Crude Line			
				Valve - 103 (DS Diana)	743.39	14" Guwahati -Barauni Crude Line			
				Valve - 104 (US Jaldhaka)	754.97	14" Guwahati -Barauni Crude Line			
				Valve -105 (DS Jaldhaka)	755.97	14" Guwahati -Barauni Crude Line			
				Valve - 106 (US Murti)	761.50	14" Guwahati -Barauni Crude Line			
				Valve - 107 (DS Murti)	762.42	14" Guwahati -Barauni Crude Line			
				Valve - 108 (US Neora)	767.80	14" Guwahati -Barauni Crude Line			
				Valve - 109 (DS Neora)	768.56	14" Guwahati -Barauni Crude Line			
				Valve - 110 (US Mal)	770.00	14" Guwahati -Barauni Crude Line			
				Valve - 111 (DS Mal)	770.80	14" Guwahati -Barauni Crude Line			
				Valve - 112 (US Chel)	782.90	14" Guwahati -Barauni Crude Line			
				Valve - 113 (DS Chel)	783.55	14" Guwahati -Barauni Crude Line			
				18		RS-13(Odlabari) to PS-8(Sonapur)			Ch 784.425 to Ch 853.919
Valve - 120 (DS Gish)	786.95	14" Guwahati -Barauni Crude Line							
Valve - 121 (US Lish)	791.39	14" Guwahati -Barauni Crude Line							
Valve - 122 (DS Lish)	792.02	14" Guwahati -Barauni Crude Line							
Valve -123 (US Teesta)	800.90	14" Guwahati -Barauni Crude Line							
Valve - 124 (DS Teesta)	801.57	14" Guwahati -Barauni Crude Line							
Valve - 125 (US Mahananda I)	827.36	14" Guwahati -Barauni Crude Line							
Valve -126 (DS Mahananda I)	828.28	14" Guwahati -Barauni Crude Line							
Valve - 127 (US Mahananda-II)	852.67	14" Guwahati -Barauni Crude Line							
Valve -128 (DS Manananda II)	853.33	14" Guwahati -Barauni Crude Line							

Annexure-3								
List of Block Valve								
SL.NO.	Package	Section Details	Section Chainage details	Block valve details	Block valve Chainage details	Pipe Line Description	Block Valve No	
19		PS-8(Sonapur) to RS-14(Kishanganj)	Ch 854.022 to Ch 905.805	Valve - 129 (US Donk)	866.64	14" Guwahati -Barauni Crude Line		
				Valve - 130 (DS Donk)	867.11	14" Guwahati -Barauni Crude Line		
				Valve - 131	886.74	14" Guwahati -Barauni Crude Line		
20	Package 5	RS-14(Kishanganj) to RS-15(Belgachi)	Ch 905.800 to Ch 958.340	Valve - 137	912.14	14" Guwahati -Barauni Crude Line		17
				Valve - 138 (US Mahananda III)	943.48	14" Guwahati -Barauni Crude Line		
				Valve - 139 (DS Mahananda III)	944.92	14" Guwahati -Barauni Crude Line		
21		RS-15(Belgachi) to PS-9(Dumar)	Ch 958.340 to Ch 1009.632	Valve - 145	978.74	14" Guwahati -Barauni Crude Line		
				Valve - 146	996.18	14" Guwahati -Barauni Crude Line		
22		PS-9(Dumar) to RS-16(Thanahbihpur) NIL	Ch 1009.632 to Ch 1058.440	Valve - 147 (US Kosi)	1026.90	14" Guwahati -Barauni Crude Line		
				Valve - 148 (DS Kosi)	1027.96	14" Guwahati -Barauni Crude Line		
				Valve - 149	1044.38	14" Guwahati -Barauni Crude Line		
23		RS-16(Thanahbihpur) to RS -17 (Khargaria)	Ch 1058.440 to Ch 1110.755	Valve - 155	1072.22	14" Guwahati -Barauni Crude Line		
				Valve - 156	1090.62	14" Guwahati -Barauni Crude Line		
24		RS-17(Khargaria) to Barauni Pump Station	Ch 1110.775 to Ch 1157.580	Valve - 162. (US Burhigandak)	1116.00	14" Guwahati -Barauni Crude Line		
				Valve - 163 (DS Burhigandak)	1116.27	14" Guwahati -Barauni Crude Line		
				Valve (164)	1142.08	14" Guwahati -Barauni Crude Line		

Annexure-4										
Cased Crossings Detail										
Sl No.	Package	Section	Chainage	Cased Xing Chainage	Type of Cut	Type of Casing	Case Crossings Description	Main Line	Loop line	Nos of Cased Crossing
1	Package 1	PS-1(Duliajan) to PS-2(Moran)	Ch 0.00 to Ch 50.5	1.000	Casing	Road	Assam Gas co. Road	ML		25
				2.500	Casing	Road	Digboi Nahorkatiya Road	ML		
				5.200	Casing	Road	PWD Road Namrup	ML		
				7.200	Casing	Road	Sassoni Nahorkatiya Road	ML		
				14.200	Casing	Road	Naharani Project, Samukutala	ML		
				36.300	Casing	Road	Moran Nahorkatiya Road. (Dirai Tea Garden)	ML		
				46.600	Casing	Road	Moranhat OIL Road.	ML		
2		PS-2(Moran) to RS-1(Maduri)	Ch 50.50 to Ch 89.90	80.200	Casing	Road	Sibsagar Nazira Road.	ML		
				82.500	Casing	Road	Sibsagar Nazira Road.	ML		
				89.800	Casing	Road	Namti Chariali-Jaisagar Road (Opposite to RS-1)	ML		
3		RS-1(Maduri) to PS-3(Jorhat)	Ch 89.9 to 132.00	129.200	Casing	Road	NH-37.	ML		
				131.900	Casing	Road	PS-3 Road.(Charigaon-Nimati road)	ML		
				133.000	Casing	Road	NH-37. Bypass	ML		
4		PS-3(Jorhat)to RS-2(Badulipur)	Ch 132.20 to Ch 172.00	134.700	Casing	Road/Rail	Rail & Road near Bhogdoi river.	ML		
				136.700	Casing	Road	Jorhat Kokilamukh road.	ML		
				137.400	Casing	Road	Mallawali, Jorhat.	ML		
				138.000	Casing	Road	NH-37. Bypass	ML		
				164.600	Casing	Road	Barpukhuripar, Dadharagaon.	ML		
				167.800	Casing	Road	Daria T.E. to NH-37.	ML		
				172.200	Casing	Road	Gariajan T.E. to NH-37.	ML		
5		RS-2(Badulipur) to RS-3(Kaziranga)	Ch 172.00 to Ch 214.10	173.600	Casing	Road	Khumtai T.E. to NH-37.	ML		
				180.900	Casing	Road	NH-37	ML		
				201.100	Casing	Road	Bokaghat - Diffolo Road	ML		
				210.000	Casing	Road	NH-37	ML		
				218.100	Casing	Road	Village road	ML		
6		Package 2	RS-3(Kaziranga) to PS-4(Sekoni)	250.780	Casing	Road	NH-37	ML		27
				255.200	Casing	Road	NH-37	ML	NSPL	
7			PS-4(Sekoni) to RS-4(Ghani)	260.400	Casing	Road	NH-37- PS4 main gate	ML	NSPL	
				265.130	Casing	Rail	Nowgaon-Silghat line - Via Sekoni T.E	ML	NSPL	
				304.690	Casing	Road	Nowgaon Hojai road	ML	NSPL	
				310.150	Casing	Road	New Casing(NHAI)	ML	NSPL	
8			RS-4(Ghani) to RS-5(Jagiroad)	360.750	Casing	Road	Raha Jagiroad road, in front of RS-5.	ML	NSPL	
			RS-5(Jagiroad) to PS-5(Guwahati)	393.000	Casing	Road	Narangi Sonapur road.	ML		
				395.200	Casing	Road	Narangi Sonapur road,just near the Army area	ML		
				397.500	Casing	Rail	Rly. Line to army area yard. (Casing not found)	ML		
				399.000	Casing	Road	Domestic road in Army area.	ML		
				401.570	Casing	Rail	Rail line to satgaon Army area	ML	NSPL	
10		PS-5(Guwahati) to (Jalukbari to Amingaon) to RS-8(Dharampur)	Ch 401.30 to Ch 468.240	401.800	Casing	Road	Road to satgaon	ML	NSPL	
				404.700	Casing	Road	VIP Road (Pathar quarry to 6th mile road)	ML	NSPL	
				406.510	Casing	Road	G.S.Road	ML	NSPL	
				407.200	Casing	Road	Basistha road	ML	NSPL	
				411.800	Casing	Road	Kalapahar - Guwahati road	ML	NSPL	
				457.500	Casing	Road	Guwahati - Hajo - Nalbari road	ML	NSPL	
				464.500	Casing	Road	Chamata - Bgalchok road	ML		
				467.715	Casing	Road	Naddi gaon - Nalbari road	ML		
11		RS-8(Dharampur) to RS-9 (Barpeta Rd)	Ch 468.245 to Ch 512.975	468.400	Casing	Road	Nalbari -Barpeta road in front of RS-8	ML	NSPL	
				473.800	Casing	Road	Chamta - Kaithalkuchi road	ML	NSPL	
				505.650	Casing	Rail	Main Rly. Line - M.G	ML	NSPL	
				513.000	Casing	Road	RS-9 road	ML		
				517.300	Casing	Rail	Abandoned rly. Siding without road	ML		
				518.200	Casing	Rail	Old Rly. Siding line	ML		

Annexure-4										
Cased Crossings Detail										
Sl No.	Package	Section	Chainage	Cased Xing Chainage	Type of Cut	Type of Casing	Case Crossings Description	Main Line	Loop line	Nos of Cased Crossing
12	Package 3	RS-9(Barperta Rd) to PS-6 (Bongaigaon)	Ch 512.975 to Ch 556.720	520.300	Casing	Road/Rail	Sarbhog road and abandoned rail track	ML		43
				520.700	Casing	Road	Kumarigaon - Sarbhog road	ML		
				522.600	Casing	Road	Village - road to sarbhog rly. Station	ML		
				550.900	Casing	Rail	M.G. Rly. Line.	ML		
				552.400	Casing	Road	Bongaigaon - Chaprakhata road	ML	NSPL	
				553.000	Casing	Road	Lateral road.	ML		
				556.000	Casing	Road	Main road of Bongaigaon Town	ML		
				556.700	Casing	Road	Road to PS-6 Campus	ML		
13		PS-6(Bongaigaon D/S) to RS -10 (Pratapkhata)	Ch 557.090 to Ch 602.895	557.293	Casing	Road	NH 31 C - Doligaon Road crossing	ML		
				562.200	Casing	Road	Dangtola road	ML		
				565.200	Casing	Rail	Rly. Mainline M.G.	ML		
				593.700	Casing	Road	Fakiragram - Sidli road.	ML		
				595.000	Casing	Road	Fakiragram - Sidli road.	ML		
				595.200	Casing	Road	Fakiragram - Sidli road.	ML		
				595.400	Casing	Road	Fakiragram - Kokrajhar link road (Magur Mari T.E)	ML		
				595.500	Casing	Road	Fakiragram - Kokrajhar link road (Magur Mari T.E)	ML		
				598.200	Casing	Road	Safranguri - Fakiragram road.	ML		
				598.300	Casing	Road	Fakiragram - Kokrajhar link road	ML		
				598.400	Casing	Road	Fakiragram - Dotma - Sarfanguri road.	ML		
				598.800	Casing	Rail	Abandoned rail track.	ML		
14		RS-10 (Pratapkhata) to RS-11 (Chepani)	Ch 602.895 to Ch 655.485	603.000	Casing	Road	Sapatgram - NH-31 road.	ML		
				604.000	Casing	Road	Village - road.	ML		
				604.200	Casing	Road	Guide bund crossing.	ML		
				605.500	Casing	Rail	B.G. & M.G main lines.	ML		
				605.800	Casing	Rail	B.G. line.	ML		
				608.300	Casing	Road	Sapotgram gossaigaon road.	ML		
				611.000	Casing	Rail	B.G. line.	ML		
				612.800	Casing	Rail	B.G. line near Gurufella.	ML		
				646.100	Casing	Road	Jorai Alipurduar road.	ML		
				649.400	Casing	Rail	Rly. Mainline B.G.	ML		
				650.700	Casing	Road	Lateral road.	ML		
				655.400	Casing	Road	Chapani road.	ML		
15		RS-11(Chepani) to PS-7(Madarihat)	Ch 655.485 to Ch 703.699	694.900	Casing	Road	Hasimara - Madarihat road.	ML		
				695.200	Casing	Road	Hasimara Rly. Station road.	ML		
				701.300	Casing	Rail	Rly. Mainline M.G.	ML		
				702.800	Casing	Road	Madarihat road.	ML		
				703.560	Casing	Road	IOCL road, Jamtala road	ML		
16		PS-7(Madarihat) to RS-12(Binnaguri)	Ch 704.092 to Ch 728.780	714.400	Casing	Rail	Rly. Mainline M.G.	ML		
				717.800	Casing	Road	Birpara Crossing Power Grid-1	ML		
				717.900	Casing	Road	Birpara Crossing Power Grid-II	ML		
				718.200	Casing	Road	Birpara crossing.	ML		
				718.300	Casing	Road	Birpara crossing.	ML		
				726.000	Casing	Road	Mainroad to Binaguri Army camp	ML		
				726.900	Casing	Road	Internal road inside Binaguri Army Camp area (Big road)	ML		
				727.000	Casing	Road	Internal road	ML		
				728.000	Casing	Rail	Rly. Mainline M.G.	ML		

Annexure-4										
Cased Crossings Detail										
SI No.	Package	Section	Chainage	Cased Xing Chainage	Type of Cut	Type of Casing	Case Crossings Description	Main Line	Loop line	Nos of Cased Crossing
17	Package 4	RS-12(Binnaguri) to RS-13(Odlabari)	Ch 728.780 to Ch 784.425	729.000	Casing	Road	Road in front of RS - 12	ML		41
				731.800	Casing	Road	NH-31C to Bhutan Border.	ML		
				735.000	Casing	Road	NH-31C to Tea Estate.	ML		
				775.200	Casing	Road/Rail	Rly.M.G.mainline and NH-31C.	ML		
				775.300	Casing	Road	NH-31C	ML		
				778.200	Casing	Road	IBP petrol pump entrance	ML		
				778.210	Casing	Road	IBP petrol pump exit	ML		
				779.300	Casing	Road	Lateral road from NH-31C.	ML		
				780.700	Casing	Road	NH-31C	ML		
				782.500	Casing	Rail	Rly. Mainline M.G.	ML		
				782.700	Casing	Road	NH-31C	ML		
				783.700	Casing	Road	NH-31C	ML		
				784.000	Casing	Road	RS-13 road.	ML		
18	RS-13(Odlabari) to PS-8(Sonapur)	Ch 784.425 to Ch 853.919	786.000	Casing	Road	Siliguri - NH-31C road	ML			
			787.400	Casing	Rail	Rly. Mainline M.G.	ML			
			788.500	Casing	Road/Rail	NH-31C and Rly. M.G. mainline.	ML			
			789.500	Casing	Rail	Rly. M.G. mainline.,	ML			
			790.700	Casing	Road	NH-31C	ML			
			792.700	Casing	Rail	Rly.M.G. Mainline.	ML			
			794.100	Casing	Road	Lateral road.	ML			
			852.650	Casing	Rail	Rly. Mainline M.G.	ML			
19		PS-8(Sonapur) to RS-14(Kishanganj)	Ch 854.022 to Ch 905.805	860.200	Casing	Road	NH-31C	ML		
20	Package 5	RS-14(Kishanganj) to RS-15(Belgachi)	Ch 905.800 to Ch 958.340	908.700	Casing	Road	Road from Kishanganj to Garigaon.	ML		12
21		RS-15(Belgachi) to PS-9(Dumar)	Ch 958.340 to Ch 1009.632	1006.500	Casing	Road	NH-31.	ML		
22		PS-9(Dumar) to RS-16(Thanahbihpur)	Ch 1009.632 to Ch 1058.440							
23		RS-16(Thanahbihpur) to RS -17 (Khargaria)	Ch 1058.440 to Ch 1110.755	1060.500	Casing	Rail	Rly. Mainline M.G.	ML		
				1066.000	Casing	Road	Lateral road.	ML		
				1110.200	Casing	Road	Lateral road.	ML		
24		RS-17(Khargaria) to Barauni Pump Station	Ch 1110.775 to Ch 1157.580	1113.300	Casing	Road	Lateral road to Barauni.	ML		
				1113.600	Casing	Rail	Rly. Mainline M.G. & B.G.	ML		
	1150.500			Casing	Road	Road to Khargaria.	ML			
	1156.500			Casing	Rail	Rly.M.G. Mainline.	ML			
	1156.560			Casing	Road	Lateral road in front of Barauni Terminal.	ML			
	1156.600			Casing	Road	NH-31 in front of Barauni Terminal.	ML			
				1157.400	Casing	Road	Road in front of Barauni Pump Station	ML		

Annexure-5					
Monolithic Insulating Joint Details					
SI No.	Package	Repeater Station Name	Center Chainage in KM.	Isolation Flange Quantity	
				16 Inch	14 Inch
1	Package 1	RS-1(Maduri)	89.90	2	
2		RS-2(Badulipur)	172.00	2	
3		RS-3(Kaziranga)	214.10	2	
4	Package 2	RS-4(Ghani)	313.30	2	
5		RS-5(Jagiroad)	360.80	2	
6	Package 3	RS-8(Dharampur)	468.25		
7		RS-9(Barperta Rd)	512.98		
8		RS-10 (Pratapkhata)	602.90		
9	Package 4	RS-11(Chepani)	655.49		
10		RS-12(Binnaguri)	728.78		
11		RS-13(Odlabari)	784.43		
12	Packlage 5	RS-14(Kishanganj)	905.80		2
13		RS-15(Belgachi)	958.34		2
14		RS-16(Thanahbihpur)	1058.44		2
15		RS-17(Khagaria)	1110.78		2

Annexure-6 Summary of Spread							
SI No.	Package / Spread	Total Coating Length in KM for respective package	Block Valve Quantity (Nos) in Respective Package		Cased Crossing Quantity (Nos) in Respective Package	Isolation Flange Quantity in Respective Package	
			16" Size	14" Size		16 Inch	14 Inch
1	Package I	130	16	-	25	6 Nos. (At RS-1 , RS-2 & RS-3)	
2	Package II	131	17	-	27	2 Nos. (At RS-4 OR RS-5)	
3	Package III	119	13	15	43		
4	Package IV	115	-	37	41		
5	Package V	80	-	17	12		8 Nos. (At RS-14 ,RS-15 , RS-16 & RS-17)

Annexure-7
Storage Location

S.No	Storage	Chainage
1	Storage Location-1 (PS-2) Moran	50.50
2	Storage Location-2 (PS-3) Jorhat	132.00
3	Storage Location-3 (PS-4) Sekonii	260.00
4	Storage Location-4 (PS-5) Guwahati	401.30
5	Storage Location-5 (PS-6) Bongaigaon	557.09
6	Storage Location-6 (PS-7) Madarihat	703.70
7	Storage Location-7 (PS-8) Sonapur	853.92
8	Storage Location-8 (PS-9) Dumar	1009.63
9	Storage Location-9 Pump Station Baruni	1157.58

ANNEXURE- 8

Sl No	Chainage	Section	Max Rainfall based on last 5 years data (mm)												Maximum Workable days
			Jan	Feb	March	April	May	June	July	August	September	October	November	December	
1	Ch 0.00 to Ch 50.5	PS-1(Dulijan) to PS-2(Moran)	15.6	27.3	188.9	322.1	413.1	457.9	424.3	525.9	404.5	171.8	27.8	20	120
2	Ch 50.50 to Ch 89.90	PS-2(Moran) to RS-3(Maduri)	22.7	21.5	91.9	347.6	326.8	130.7	500.3	390.8	406.8	115.1	6.7	39.5	120
3	Ch 89.9 to Ch 132.00	RS-1(Maduri) to PS-3(Jorhat)	14.7	34	76.4	261.6	448.3	364.5	492.5	359.3	237.2	145.8	15.9	46.5	135
4	Ch 132.20 to Ch 172.00	PS-3(Jorhat) to RS-2(Badulpur)	17.8	31.2	76.7	258.20	308.30	273.4	490.1	327.9	244.4	143.3	13.8	28.3	135
5	Ch 172.00 to Ch 214.10	RS-2(Badulpur) to RS-3(Kaziranga)	9.8	31.8	31.6	120.10	205.30	243.2	279.6	341	286.6	168.5	6.9	8.7	150
6	Ch 214.100 to Ch 260.00	RS-3(Kaziranga) to PS-4(Sekoni)	9.8	31.8	31.6	120.10	205.30	243.2	279.6	341	286.6	168.5	6.9	8.7	150
7	Ch 260.500 to Ch 313.30	PS-4(Sekoni) to RS-4(Ghani)	9.8	31.8	31.6	120.10	205.30	243.2	279.6	341	286.6	168.5	6.9	8.7	150
8	Ch 313.300 to Ch 360.80	RS-4(Ghani) to RS-5(Jagroad)	23.9	18.6	30.80	182.30	224.20	277	394.4	404	477.6	97	13.6	16.4	150
9	Ch 360.8 to Ch 401.00	RS-5(Jagroad) to PS-5(Guwahati)	23.9	18.6	30.80	182.30	224.20	277	394.4	404	477.6	97	13.6	16.4	150
10	Ch 401.300 to Ch 468.240	PS-5(Guwahati) to Jalukbari to Amingaon) to RS-8(Dharampur)	23.9	18.6	30.80	182.30	224.20	277	394.4	404	477.6	97	13.6	16.4	150
11	Ch 468.245 to Ch 512.975	RS-8(Dharampur) to RS-9 (Barpeta Rd)	17.8	31.2	76.7	258.2	308.3	273.4	490.1	327.9	244.4	143.3	13.8	28.3	135
12	Ch 512.975 to Ch 556.720	RS-9(Barpeta Rd) to PS-6 (Bongaigaon)	8.1	29.3	140.7	288.50	544.40	1107.9	496.7	861.7	498.5	177.8	22.8	11.1	120
13	Ch 557.090 to Ch 602.895	PS-6(Bongaigaon D/S) to RS -10 (Pratapkhata)	14.2	23.1	119.40	373.70	567.60	1354.1	667.6	999.6	564.1	224.5	35.6	5	120
14	Ch 602.895 to Ch 655.485	RS-10 (Pratapkhata) to RS-11 (Chepani)	16.5	52.8	188	238.40	637.80	1507.2	812	1196.4	632.1	237.4	8.7	11.6	120
15	Ch 655.485 to Ch 703.699	RS-11(Chepani) to PS-7(Madarihat)	12.4	27.1	44.4	179.60	445.50	1057.3	1110.9	1012.1	598	202	30	7.2	150
16	Ch 704.092 to Ch 728.780	PS-7(Madarihat) to RS-12(Binnaguri)	12.4	27.1	44.4	179.60	445.50	1057.3	1110.9	1012.1	598	202	30	7.2	150
17	Ch 728.780 to Ch 784.425	RS-12(Binnaguri) to RS-13(Odlabari)	12.4	27.1	44.4	179.60	445.50	1057.3	1110.9	1012.1	598	202	30	7.2	150
18	Ch 784.425 to Ch 853.919	RS-13(Odlabari) to PS-8(Sonapur)	25.4	34.1	50.8	166.70	201.50	353.4	371.1	425.8	255.8	188.6	2.2	0.4	150
19	Ch 854.022 to Ch 905.805	PS-8(Sonapur) to RS-14(Kishanganj)	25.4	34.1	50.8	166.70	201.50	353.4	371.1	425.8	255.8	188.6	2.2	0.4	150
20	Ch 905.800 to Ch 958.340	RS-14(Kishanganj) to RS-15(Belgachi)	10.6	23	53.5	105.50	259.40	539.7	1029.5	694.3	584.2	121.4	39	2	150
21	Ch 958.340 to Ch 1009.632	RS-15(Belgachi) to PS-9(Dumar)	44	28.5	17.7	48.90	249.10	279.1	281.8	382.3	244.6	326.8	1.2	0	180
22	Ch 1009.632 to Ch 1058.440	PS-9(Dumar) to RS-16(Thanahbhipur)	44	28.5	17.7	48.90	249.10	279.1	281.8	382.3	244.6	326.8	1.2	0	180
23	Ch 1058.440 to Ch 1110.755	RS-16(Thanahbhipur) to RS -17 (Khargaria)	18.9	16.4	20.7	77.90	129.00	250.6	499.4	523.2	203.5	146.7	6.1	0	165
24	Ch 1110.775 to Ch 1157.580	RS-17(Khargaria) to Barauni Pump Station	50	17.6	39	60.10	233.90	377.5	545.5	431.3	203.9	224.8	0	0	165

Annexure-9

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TRACTEBEL ENGINEERING PVT. LTD.

**TECHNICAL SPECIFICATIONS
(LONG RADIUS BEND)**

DOC. NO. : P.010416D210259

0	06.09.2017	Issued as Standard Specification	GG	MS	SKH
Rev.	Date	Description	Prepared By	Checked By	Approved By

	PTS – LONG RADIUS BEND	P.010416 D21 0259

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1.0 SCOPE

This specification covers the minimum requirements for manufacture and supply of long radius bends made from Carbon Steel line pipes for use in onshore pipeline systems handling Crude oil.

2.0 REFERENCE DOCUMENTS

Reference has been made in this specification to the latest edition (edition enforce at the time of issue of enquiry) of the following codes, standards and specifications:

a) ASME B 31.4	:	Pipeline Transportation Systems for Liquids
b) ASME B 16.25	:	Butt welding Ends
c) API 5L	:	Specification for Line Pipe
d) ASTM A 370	:	Standard Test Methods and Definitions for Mechanical Testing Steel Products
e) MSS-SP-75	:	Specification for High Test Wrought Welding Fittings
f) ISO – 15590-1	:	Petroleum and natural gas industries – Induction bends, fittings and flanges for pipeline transportation systems – (Part 1 – Induction Bends).
g) ASME B16.49	:	Factory-made Wrought Steel, Butt welding Induction Bends for Transportation and Distribution Systems.
h) Specification of Line pipes for LR Bend	:	LSAW / SEAMLESS Size:16 Inch & 14 Inch

In case of conflict between the requirement of above reference documents and this specification; the requirements of this specification shall govern.

3.0 MATERIAL

- 3.1 Bends shall be fabricated from steel line pipe. The type of pipe to be used out of LSAW / SEAMLESS for fabrication of bends shall be informed to Owner / PMC for approval. Pipe with positive wall thickness tolerances shall be used for fabrication of bends.
- 3.2 Pipes used for bend fabrication shall be tested for chemical and mechanical properties in addition to review of test certificate of line pipes.
- 3.3 The line pipes for fabrication of bends shall be procured by contractor.
- 3.4 Heat treatment shall be carried out for all finished bends in case it is established during bending procedure qualification that heat treatment is required to meet the specification requirements. Heat treatment procedure shall be such that the mechanical properties and steel microstructure of the finished bends comply with the minimum requirements specified in the applicable line pipe specification referred under clause 2.0. When TMCP and OLAC steels and micro alloyed steels are used, specific approval of the proposed heat treatment shall be obtained before bending process is employed. The finished product shall be evaluated for mechanical properties and micro structural stability.
- 3.5 Mechanical testing of test bends performed during the bend manufacturing procedure qualification as per section 9.0 of this specification, shall ensure that all bends made according to the Client approved bend manufacturing procedure have the required mechanical properties and destructive testing of production bend is not required. However, company reserves the right to require destructive testing

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whenever production bending parameters or heat treatment parameters deviate from those established in the Company approved bend manufacturing procedure.

4.0 MANUFACTURE

- 4.1 Material grade, bend size, bend radius and bend angle shall be evaluated by contractor during detailed engineering and approved by Owner / PMC. Unless specified otherwise, the bending radius for bends shall be minimum six times the specified outside diameter.
- 4.2 Bends shall be manufactured by high frequency induction heating and forming method. Once the bending operation has commenced no stoppage shall be permitted until the entire bend has been completed. If bending temperature, bending rate, cooling medium volume or heat treatment temperature depart from the company approved bend manufacturing procedure, then the pipe shall be discarded and another bend shall be made in its place.
- 4.3 Hot Induction bends to be manufactured as per latest edition of standard ISO 15590-1 / ASME B16.49.
- 4.4 Except otherwise stated in this PTS and ISO-15590-1 / ASME B16.49 code; the testing, inspection methods and acceptance criteria for induction bends shall be as required for pipe of the same steel grade and type. Contractor may ask owner / owner's representatives for relevant documents in due time.
- 4.5 When bending SAW Pipes, the longitudinal seam shall be located in the plane of minimum deformation or neutral axis. Acceptable tolerance on location of the longitudinal weld seam shall be ± 50 .
- 4.6 All bends shall be provided with a tangent length at both ends. Tangent length shall be 500 mm or pipe outside diameter whichever is more.
- 4.7 Unless otherwise specified differently in the PO, the bevels at the ends shall be as per the relevant pipe specification.
- 4.8 Bends shall not have any circumferential joint.
- 4.9 No repair by welding is allowed on any part of the bends.
- 4.10 Bulges, dents and flat areas shall not appear within 100 mm front end of the bend. For the remaining part of the bend these deviations from the original contour of the pipe are permitted provided these deviations do not exceed 6.0 mm. The same shall not extend (in any direction) over a distance of more than 25 % of normal diameter of the bend.
- 4.11 The excess weld material at the inside of the bend in case of bends made from SAW pipes, shall be removed over a distance of 100 mm at both ends.

4.12 TOLERANCES

The dimensions of bends shall be controlled to make sure that they are manufactured according to the tolerances indicated below, in addition to the requirements of MSS-SP-75. However, the ends of finished pipe bend shall meet the dimensional tolerances of the relevant pipe specification referred in clause 2.0.

- 4.12.1 Following tolerances shall be applicable for bend angle and bend radius:

Bend Angle : $\pm 0.5^\circ$ from the specified angle

Bend Radius : $\pm 1\%$ of bending nominal radius (radius as indicated in Clause 4.1 above).

- 4.12.2 The manufacturer shall measure the wall thickness of the pipe before bending along both the inside and outside radii of the bend between and including the start and stop points of the bend arc angle, at intervals approximately equal to pipe diameter or 300 mm whichever is less. The wall thickness shall be measured ultrasonically after bending at the same locations as measured before bending. In addition, the wall thickness of the tangents shall also be measured. These measurements shall be taken at four equally spaced locations around the pipe circumference. The measured wall thickness shall be at least equal to:

$$T_{min} = 0.95 (t_{actual} - \Delta t)$$

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Where

T actual = Actual wall thickness of pipe used for bending

Δt = 0.35 mm for a wall thickness < 10 mm 0.5 mm for a wall thickness $\geq$ 10 mm

4.12.3 Out of roundness tolerance on the body and ends of the bend shall be as follows:

	Out of Roundness (mm)
Pipe Body	OD > 6" - 5 mm max.
Pipe Ends	OD > 6" - 3 mm max.

Note (1) : The inside diameter, based on circumferential measurement, over a length of 300 mm or approximately equal to pipe diameter (whichever is less) from the end shall comply with the tolerances specified in API Spec 5L/ISO 3183. Inside diameter is defined as ID = (OD-2WT.) where ID, OD & WT are the inside diameter, specified outside diameter and specified wall thickness respectively.

4.12.4 Off-Plane

Off-Plane of bends shall not exceed $(\theta/90) \times 10$ mm, where θ is the bend angle in degree or the tolerance limit specified in MSS-SP-75, whichever is less. The measurement shall be in accordance with MSS-SP-75.

5.0 BEND MANUFACTURING PROCEDURE QUALIFICATION

5.1 Prior to start of production bending, Manufacturer shall demonstrate the suitability of the proposed manufacturing procedures for producing pipe bends including the post-bending heat cycle, that meet the requirements of this specification, by mechanically testing additional bend(s) (test bends). The bending procedure shall be qualified in the presence of company representative.

5.2 Test bends shall be made by using the pipe specified in clause 2.0 of this specification. One test bend is required per 'heat-lot' where a heat lot is deemed to include all bends of the same diameter, wall thickness, mill heat number and bend forming parameters such as, bending temperature, bending rate, cooling medium volume & heat treatment temperature (excluding bend angle). The test bend shall be bent to an angle of 90° .

5.3 Inspection and Testing of Bends

5.3.1 All finished test bends shall meet the requirement of dimensional tolerances, inspection and non-destructive testing requirements specified in section 4.0 & 5.0 of this specification.

5.3.2 In addition all test bends shall be subjected to following mechanical testing to confirm that the bends manufactured meet all mechanical property requirements of relevant line pipe specification. Test procedure and acceptance criteria shall be in accordance with the relevant line pipe specification. The test specimen shall be taken from the bent portion of the bend only.

a) Tensile test

One tensile test shall be conducted on the base material of finished test bend, to establish yield strength, ultimate tensile strength and elongation. The specimen shall be taken longitudinal or transverse to the axis as specified in the relevant pipe specification. In case of bends of 450 mm (18") NB and larger, the specimen shall be taken at inside radius and one at outside radius of bend.

b) All Weld Tensile Test

In case of bends fabricated from SAW Pipes, an all weld tensile test shall be conducted to establish yield strength, ultimate tensile strength and elongation of weld material on bend.

c) Guided Bend Test/ Reverse Bend Test

For bends manufactured from SAW pipes one face and one root guided bend test shall be performed. For bends manufactured from EW pipes, reverse bend test shall be carried out. Test method and acceptance criteria shall be same as mentioned in applicable pipe specification.

d) Hardness Test

Hardness testing shall be performed “thru thickness” on a test ring removed from the middle of the bend. Four specimen shall be prepared one from each quadrant. In case of bends fabricated from SAW/EW pipes, one specimen shall have longitudinal weld seam in the middle. Hardness shall be checked for base metal, weld metal and HAZ. In addition, hardness test shall be performed at spots where dents, bulges or wrinkles have been formed on the bends. Hardness value shall be Max. 300 HV10 as per ISO 15590-1.

e) Fracture Toughness Test

Charpy - V notch test temperature shall be the same as specified in the relevant pipe specifications. Three base material specimens shall be taken longitudinal or transverse to the axis as specified in the relevant pipe specification. In case of bends fabricated from SAW and EW pipes, three transverse weld material specimens shall be taken with weld in the middle. In case of bends of 450 mm (18”) NB and larger, the base material specimens shall be taken at the outside radius of the bend.

The Charpy V-notch impact testing of LR bends (for API 5L material) as indicated shall be carried out as following:

Location	Impact Test Temp.	Impact Energy Absorption Value	
		Avg. Value	Individual Value
For Base	-20 °C	35 J	28 J
	0 °C	100 J	80 J
For Weld & HAZ Metal	-20 °C	35 J	28 J
	0 °C	40 J	32 J

Should test bends fail to comply with the above requirements, the bend manufacturing procedure shall be disqualified. The manufacturer shall revise the manufacturing procedure and re-qualify the same at his own cost and time. Upon completion of the successful procedure qualification, manufacturer shall provide a written bending procedure for each test bend. The submitted procedure shall indicate in addition to the details as per clause 8.3, tolerances on various controlling parameters.

6.0 INSPECTION & TESTS

6.1 The manufacture shall perform all inspection and tests as per the requirements of this specification and MSS-SP-75 prior to shipment, at his works. Such inspection and tests shall be as a minimum, but not limited to the following:

- Verify that the unfinished product arriving at Manufacture’s shop is in full compliance with the pipe specification as referred in clause 2.0 of this specification.
- Visual inspection
- Dimensional and tolerances check as per MSS-SP-75 and requirements of Section 4.0 of this specification.
- Check heat treatment, if carried out, as required and maintain its records.
- Temperature against time recorder charts for each induction heating.
- The non-destructive inspection on the finished bend shall be carried out as given below:
 - All seam welds of bends manufactured from SAW pipes shall be 100% radiographed tested. The acceptance criteria shall be relevant pipe specification.
 - The full circumference of both ends of each bend after bevelling shall be ultrasonically tested for laminations over a length of 25 mm and acceptance limits shall be as per pipe specification as per relevant pipe specification.
 - The finished bends shall be magnetic particle inspected on the outside and inside radii to include the area encompassed 30 degree either side of the line passing through the plane of bend. Acceptance criteria shall be as per ASME Sec. VIII Appendix 6.

- g) A check shall be performed on each bend by passing a gauging pig consisting of two discs having a diameter equal to 95% of the nominal internal diameter of the pipe, connected rigidly together at a distance equal to 500 mm. Details of the gauging pig, including its dimensions shall be approved by company.

6.2 Owner reserves the right to perform stage wise inspection and witness tests on all bends as indicated in Clause 5.1 at Manufacturer's works, prior to shipment.

Manufacturer shall give reasonable notice of time and shall provide without charge reasonable access and facilities required for inspection, to the Owner / PMC. Inspection and tests performed or witnessed by Owner / PMC shall in no way relieve the Manufacturer's obligation to perform the required inspection and tests. Under no circumstances any action of the Owner / PMC shall relieve the Manufacturer of this responsibility for the material and quality of bends.

7.0 TEST CERTIFICATES

The Manufacturer shall submit the following certificates:

- Test certificate of chemical analysis, Mechanical tests, heat treatment, NDT, dimensional inspection and hydrotest carried out on pipe used for fabrication of bend. These test certificates are not required when pipe is supplied as free issue by company.
- Certificates of non-destructive test/ examination carried out on bends.
- Records of heat treatment, if carried out for bends.
- Certified reports of dimensional tolerance of bends.
- Certificates of all other tests as required in this specification.

The Certificate shall be valid only when signed by Company's Inspector. Only those bends which have been certified by Company's Inspector shall be dispatched from Manufacturer's works.

8.0 MARKING, PACKING AND SHIPMENT

- All bends shall be marked as per MSS-SP-75.
- All loose and foreign material like rust, grease, etc. shall be removed from inside and outside of the bends.
- One coat of antirust paint shall be applied on the bends for protection during transit and storage. Type of paint shall be as agreed upon with the company.
- Both ends of all bends shall be suitably protected to avoid any damage during transit by means of metallic or high impact plastic bevel protectors.
- Package shall be marked legibly with suitable marking ink to indicate the following:
 - Order Number
 - Package Number
 - Manufacturer's Name
 - Size (Inches) and Wall thickness (mm)
 - Radius of bend (mm)

9.0 DOCUMENTATION

Documentation to be submitted by Manufacturer to Company is summarized below. Number of copies (Hard copies / soft copies etc.) shall be as indicated in CONTRACT document.

- All documents shall be in English language
- At the time of bidding, bidder shall submit the following documents:
 - Reference list of previous supplies of bends of similar specifications.
 - Brief description of manufacturing including heat treatment and quality control facilities of the

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Manufacturer's Works.

- 9.3 Within three weeks of placement of order, the manufacturer/ contractor shall submit bend manufacturing procedure including manufacturing, inspection, testing procedures, quality control manual and quality plans.

The Bend Manufacturing Procedure shall detail the following, as a minimum:

- a) Sequence of Operation
- b) Induction forming process including bending temperature, temperature Control, bending Rate, cooling rate and cooling procedure.
- c) Temperature measurement and calibration.
- d) Post bend heat treatment procedure including temperature and time.
- e) Dimensional control procedure.
- f) Pipe material used for bend manufacture
- g) NDT procedures
- h) Quality Control and Quality Plans

Upon successful completion of the bend manufacturing procedure qualification as per section 9.0 of this specification, Manufacturer shall submit the qualified procedure to company for approval. Regular production of bends shall commence only after the bend manufacturing procedure has been qualified and approved by company.

Once the approval has been given by Company any change in material and method of manufacture and quality control shall be notified to company whose approval in writing of all such changes shall be obtained before the bends are manufactured.

- 9.4 Within 30 days from the approval date, Manufacturer shall submit to Company the approved drawings, documents and specifications as listed in clause 8.3 above.

- 9.5 Prior to shipment, the Manufacturer shall submit test certificates as listed in section 6.0 of this specification.

XXX

TRACTEBEL ENGIE		QUALITY ASSURANCE PLAN HOT INDUCTION BEND				QAP No: P.010416/Q/93/0287		
						Date: 06.09.17		Rev.:0
						Prepared : GG		Checked : RP
						Approved : NC		
Sr.	ACTIVITY	Ref. Standard/ Specification	Min number of test	Procedure/Acceptance criteria	Document type	Scope of Inspection		
						Manufacturer	TPIA (By EPC Contractor)	Client / Consultant
1	Material	PTS P.010416/D21/0259 Clause No. 3	Each pipe	Hot induction bends shall be fabricated from carbon steel line pipe (LSAW / SEAMLESS) as per API 5L	Test Certificate	--	--	--
2	Inspection of Bare Pipes	PTS P.010416/D21/0259	Each pipe	As per Owner's specification for line pipes and MTC, Pipe receiveing Report shall be reviewed. Pipes with positive wall thickness shall be used for fabrication of bends.	Inspection Report	P	R	--
3	Weld Position	PTS P.010416/D21/0259 Clause No. 4.5	--	the longitudinal seam shall be located in the plane of minimum deformation or neutral axis. Acceptable tolerance on location of the longitudinal weld seam shall be ± 5°	--	P	R	--
4	Chemical Composition	PTS Linepipe	1 Per heat	Hot induction bends shall be fabricated from carbon steel line pipe (LSAW / SEAMLESS)	Inspection Report	P	R	
5	Tensile tests (YS, UTS, YS/UTS, %EL, RA, Bend etc. as applicable) (remark : marking transfer by TPIA)	PTS Linepipe	1 Per heat		Inspection Report	P	W	
6	Charpy-test at as per Mat. Spec. (Impact Energy & Shear Area) (remark : marking transfer by TPIA)	PTS Linepipe	1 Per heat		Inspection Report	P	W	
7	Forming of Bends							
7.1	Temperature	As per Approved Manufacturing Procedure	Each bend	As per Approved Manufacturing Procedure	Manufacturer's Report	P	RW	
7.2	Speed	As per Approved Manufacturing Procedure	Each bend	To be frozen after Test bend result . Variation allowed ±2.2mm/minute	Manufacturer's Report	P	RW	--
7.3	Heating	As per Approved Manufacturing Procedure	Each bend	Heating coil configuration. Induction heating frequency (tolerance ±20%)	Manufacturer's Report	P	RW	--
7.4	Cooling	As per Approved Manufacturing Procedure	Each bend	Instant cooling with air & water jet distributed uniformly across the circumference to heated Parameter annular Zone • Coolant flow rate & pressure variation allowed is ± 10%. • Coolant temperature variation allowed is ±15° C	Manufacturer's Report	P	RW	--
7.5	Bend Radius	PTS P.008776/D21/0259 Clause No. 4.12.1	Each bend	± 1% of Nominal Bending Radius (where nominal radius shall be 6D).	Manufacturer's Report	P	RW	--
7.6	Pyrometer Setting	As per Approved Manufacturing Procedure	Each bend	Temperature against speed record chart	Manufacturer's Report	P	RW	--

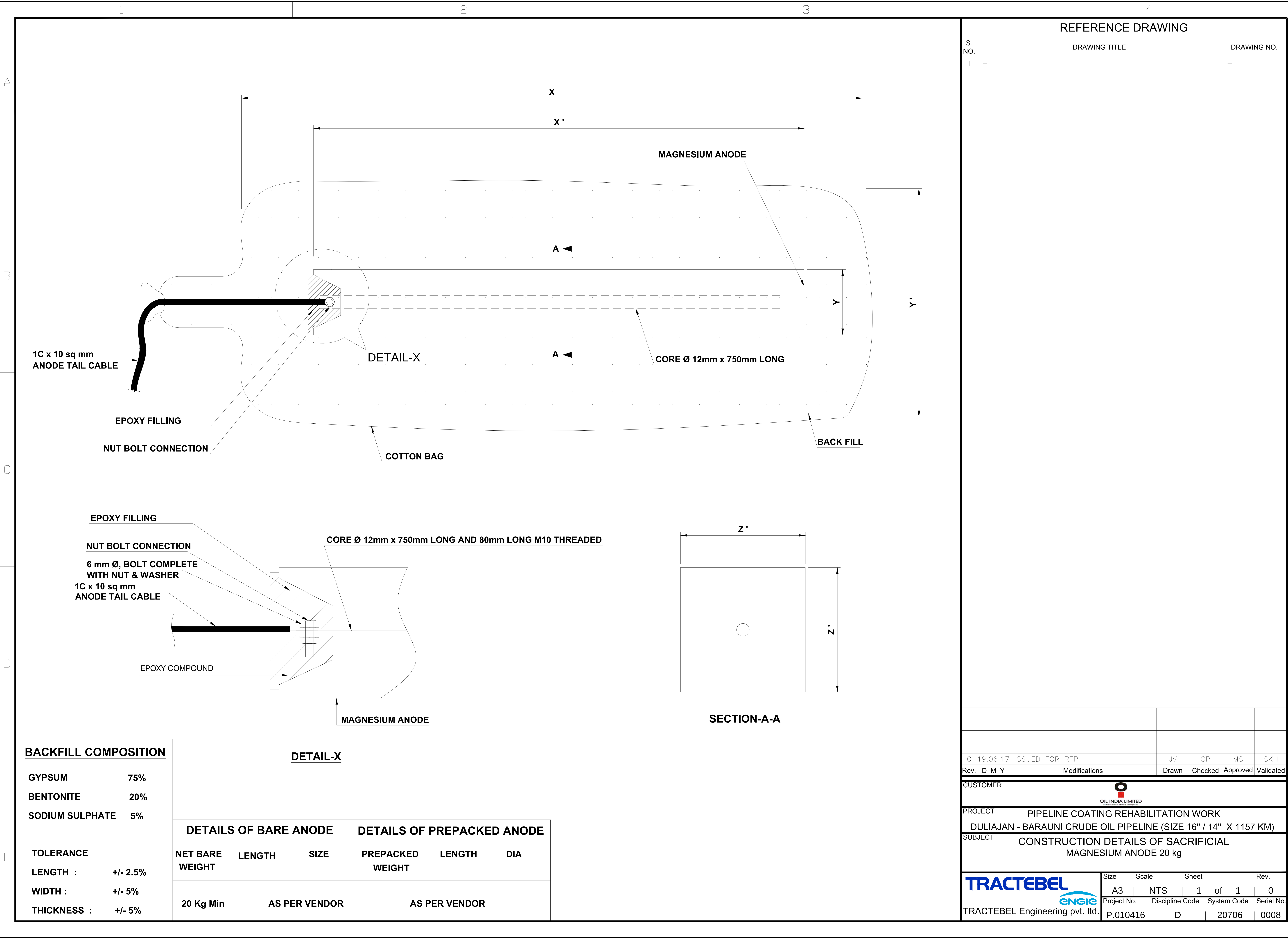
		QUALITY ASSURANCE PLAN HOT INDUCTION BEND				QAP No: P.010416/Q/93/0287		
						Date: 06.09.17		Rev.:0
						Prepared : GG		Checked : RP
						Approved : NC		
Sr.	ACTIVITY	Ref. Standard/ Specification	Min number of test	Procedure/Acceptance criteria	Document type	Scope of Inspection		
						Manufacturer	TPIA (By EPC Contractor)	Client / Consultant
8	Post Bending Heat Treatment/ Stress Relieving (Loading & Unloading shall be witnessed by TPIA, Power failure log shall be maintained)	As per Approved Manufacturing Procedure	--	Bends shall be supplied in as bend condition i.e without post bend heat treatment	--	P	RW	--
9	Sizing (Internal Exterenal)	As per Approved Manufacturing Procedure	Each bend	Cold forming or sizing without subsequent heat treatment is permitted provided the induced permanent strain does not exceed 1.5 %.	Log book	P	RW	--
10	Pig Gauge Trial	PTS P.008776/D21/0259 Clause No. 6.1.g	Each bend	By 2 gauging plates of diameter equal to 95% of the nominal internal diameter of the pipe, connected rigidly together at a distance equal to 500 mm.	Inspection Report	H	W	--
11	NON DESTRUCTIVE TEST							
11.1	Manual Ultrasonic Testing on Bend ends	As per Approved Manufacturing Procedure	Each bend	Circumferentially 25 mm wide band at each end including end preparation shall be ends for lamination and inclusion. Acceptance as per line pipe specification.	Inspection Report	H	W	--
11.2	X-Ray of Weld seam	As per Approved Manufacturing Procedure	Each bend	The complete seam welds of all finished fabricated from welded pipes shall be 100% inspected by X-Ray method. Acceptance as per line pipe specification.	Inspection Report	H	R (X-Ray film review)	--
11.3	Magnetic Particle Testing on Bend Body & Weld	PTS P.010416/D21/0259 Clause No. 6.1 f	Each bend	- On the Extrados & Intrados to include the area encompassed 30° either side of the line passing through the plane of the bend. - All Bevel Ends - Acceptance in accordance with WI for MPI / ASME Sec. VIII Appendix 6.	Inspection Report	H	W	--
12	Repair	PTS P.010416/D21/0259 Clause No. 4.9	Each bend	No repair by welding is allowed on any part of bends.	Repair Report	H	R	--
13	VISUAL & DIMENSION INSPECTION							
13.1	Bend Angle	PTS P.010416/D21/0259 Clause No. 4.12.1	Each bend	± 0.50 from the specified angle	Inspection Report	H	W	RW

		QUALITY ASSURANCE PLAN HOT INDUCTION BEND				QAP No: P.010416/Q/93/0287		
						Date: 06.09.17		Rev.:0
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Sr.	ACTIVITY	Ref. Standard/ Specification	Min number of test	Procedure/Acceptance criteria	Document type	Scope of Inspection		
						Manufacturer	TPIA (By EPC Contractor)	Client / Consultant
13.2	Wall Thickness	PTS P.010416/D21/0259 Clause No. 4.12.2	Each bend	Minimum wall thickness shall be equal to t min= 0.95 (tactual - Δt) where: t actual = Actual wall thickness of pipe used for bending Δt = 0.35 mm for a wall thickness < 10 mm 0.5 mm for a wall thickness ≥ 10 mm Wall thickness shall be measured along both the inside and outside radii of bend between and including the start and stop points of the bend arc, at interval approximately equal to pipe diameter or 300 mm whichever is less. Wall thickness shall be measured ultrasonically after bending at the same locations as measured before bending. In addition the wall thickness of the tangents shall also be measured.	Inspection Report	H	W	RW
13.3	Out of Roundness	PTS P.010416/D21/0259 Clause No. 4.12.3	Each bend	At End: 3.0 mm max (Out-of-roundness over a length of 100 mm from the end) At Body: 5.0 mm max	Inspection Report	H	W	RW
13.4	Bend Radius	PTS P.010416/D21/0259 Clause No. 4.12.1	Each bend	± 1% of Nominal Bending Radius (where nominal radius shall be 6D).	Inspection Report	H	RW	RW
13.5	Off-Plane (Plane of bends)	PTS P.010416/D21/0259 Clause No. 4.12.4	Each bend	Off-Plane of bends shall not exceed (θ/ 90) X 10 mm, where θ is the bend angle in degree or the tolerance limit specified in MSS-SP-75, whichever is less.	Inspection Report	H	W	RW
13.6	Tangent Length	PTS P.010416/D21/0259 Clause No. 4.6	Each bend & Both ends	500 mm or 1pipe OD whichever is more.	Inspection Report	H	W	RW
13.7	End Preparation	--	Each bend	Bends shall be supplied with Plane ends. Bevel Angle- 30. (+ 5°, -0°) Root Face - 1.6 mm (± 0.8 mm) Squareness- 1.6 mm Max	Inspection Report	H	W	RW
13.8	End Protection	PTS P.010416/D21/0259 Clause No. 8.4	Each bend	Both ends of all bends shall be suitably protected to avoid any damage during transit by means of metallic or high impact plastic bevel protectors.	--	P	M	RW

TRACTEBEL ENGIE		QUALITY ASSURANCE PLAN HOT INDUCTION BEND				QAP No: P.010416/Q/93/0287		
						Date: 06.09.17		Rev.:0
						Prepared : GG		Checked : RP
						Approved : NC		
Sr.	ACTIVITY	Ref. Standard/ Specification	Min number of test	Procedure/Acceptance criteria	Document type	Scope of Inspection		
						Manufacturer	TPIA (By EPC Contractor)	Client / Consultant
14	WORKMANSHIP							
14.1	Bend Irregularities	--	Each Bend , If any	Bulges dent and flat areas shall not appear within 100mm front end of the bend. For the remaining part these deviations from the original contour of the pipe are permitted provided these deviations do not exceed 6.0 mm. The same shall not extend (in any direction) over a distance of more than 25% of nominal diameter of the bend.	Inspection Report	H	RW	--
14.2	End Flushing	--	Each bend	External and internal reinforcements of longitudinal welds shall be ground flush for a distance of 100 mm from the ends of the Standard bend.	Inspection Report	H	RW	--
15	Manufacturing Procedure Qualification Test							
15.1	Hydrostatic Test		Test Bend	On minimum Bend wall thickness at Pressure as per MTC of mother pipe with holding time of 15 Minutes.	Inspection Report	H	W	--
15.2	A) Tensile Test	PTS	Test Bend	As per Line pipe specification.	Inspection Report	H	W	--
	B) Crossweld Tensile Test				Inspection Report	H	W	--
	C) Charpy V-Notch - Base Material - 2 sets of 3 specimen per lot - Weld & HAZ - 1 sets of 3 specimen per lot			- at -20°C, for Base/Weld/HAZ - 35J/cm²(Avg.), 28J/cm²(Ind.). - at 0°C, for Base - 100J/cm²(Avg.), 80J/cm²(Ind.), - at 0°C, for Weld/HAZ - 40J/cm²(Avg.), 32J/cm²(Ind.)	Inspection Report	H	W	--
	D) Hardness Test			Shall not exceed 300 HV 10	Inspection Report	H	W	--
	E) Guided Bend Test			As per API 5L	Inspection Report	H	W	--
	F) Metallographic Test			Grain size shall be 7 or finer	Inspection Report	R	W	--
	G) Chemical Test			As per Line pipe Specification	Inspection Report	H	R	--
16	Marking	PTS P.010416/D21/0259 Clause No. 8.5	Each bend on the inside surface at one end	Package shall be marked legibly with suitable marking ink to indicate the following: a) Order Number b) Package Number c) Manufacturer's Name d) Size (Inches) and Wall thickness (mm) e) Radius of bend (mm)	--	P	M	--
17	Coating	PTS P.010416/D21/0259 Clause No. 8.3	Each Bend	One coat of anti rust paint shall be applied on outer sarface of bends. Type of paint shall be as agreed upon with the company.	--	P	M	--
18	Documentation /Certification	PTS P.010416/D21/0259 Clause No. 9	--	All documentation shall be done as per specification P.010416/D21/0259 Clause 8	MTC / Test Reports / IRN	P	R	--

		QUALITY ASSURANCE PLAN HOT INDUCTION BEND				QAP No: P.010416/Q/93/0287		
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Sr.	ACTIVITY	Ref. Standard/ Specification	Min number of test	Procedure/Acceptance criteria	Document type	Scope of Inspection		
						Manufacturer	TPIA (By EPC Contractor)	Client / Consultant
	LEGEND:							
	R : Review	RW: Random Witness	M: Monitor	W:Witness				
	RT:Radiographic test							
TPIA: Third Party Inspection Agency		Control Authority : Owner/Engineer or their Authorised Inspection Agency						
	(*)	Tests to be specified by the vendor for approval of Owner/Owenr's representative while submission of QAP.						
Note:	1	The Above Testing and acceptance criteria are minimum requirements, however, manufacturer shall ensure and also comply to the additional requirements as per Technical specifications.						
	2	The supplier shall submit their own detailed QAP prepared on the basis of above for approval of Owner/Owner's representative and TPIA.						
	3	Supplier shall submit Calibration certificates of all Instruments/Equipment to be used for Inspection and Testing with relevant procedures and updated standards for TPIA review/Approval.						
	4	TPIA will have to Inspect all manufacturing activities on each day or as specified above.						
	5	TPIA along with Owner/Owner's Representative shall review/approve all the documents related to QAP/Quality manuals/Drawings etc.submitted by supplier.						
	6	Manufacturer shall submit detailed production and inspection schedule.						
	7	Certification requirements to comply with EN 10204 - 3.2.to be issues by TPIA appointed by manufacturer.						
	8	Vendor has to submit detailed QAP for Bend Manufacturing Procedure Qualification Production Test and Routine production seperately.						

DRAWINGS

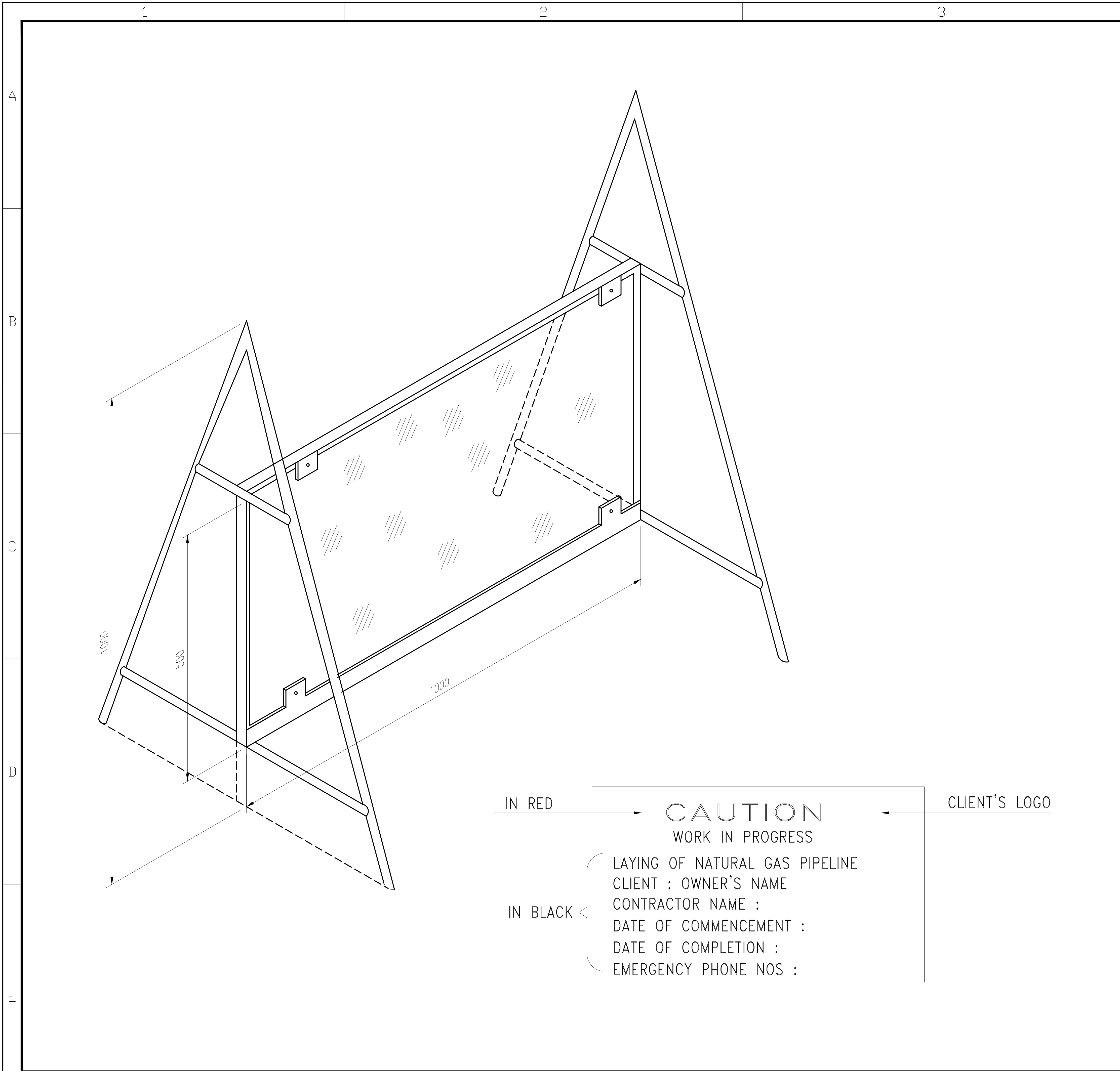


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Rev.	D	M	Y	Modifications	Drawn	Checked
					Approved	Validated

CUSTOMER					
OIL INDIA LIMITED					
PROJECT PIPELINE COATING REHABILITATION WORK					
DULIAJAN - BARAUNI CRUDE OIL PIPELINE (SIZE 16" / 14" X 1157 KM)					
SUBJECT CONSTRUCTION DETAILS OF SACRIFICIAL MAGNESIUM ANODE 20 kg					
TRACTEBEL		Size	Scale	Sheet	Rev.
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TRACTEBEL Engineering pvt. ltd.		Project No.	Discipline Code	System Code	Serial No.
		P.010416	D	20706	0008

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SUBJECT

CAUTION BOARD

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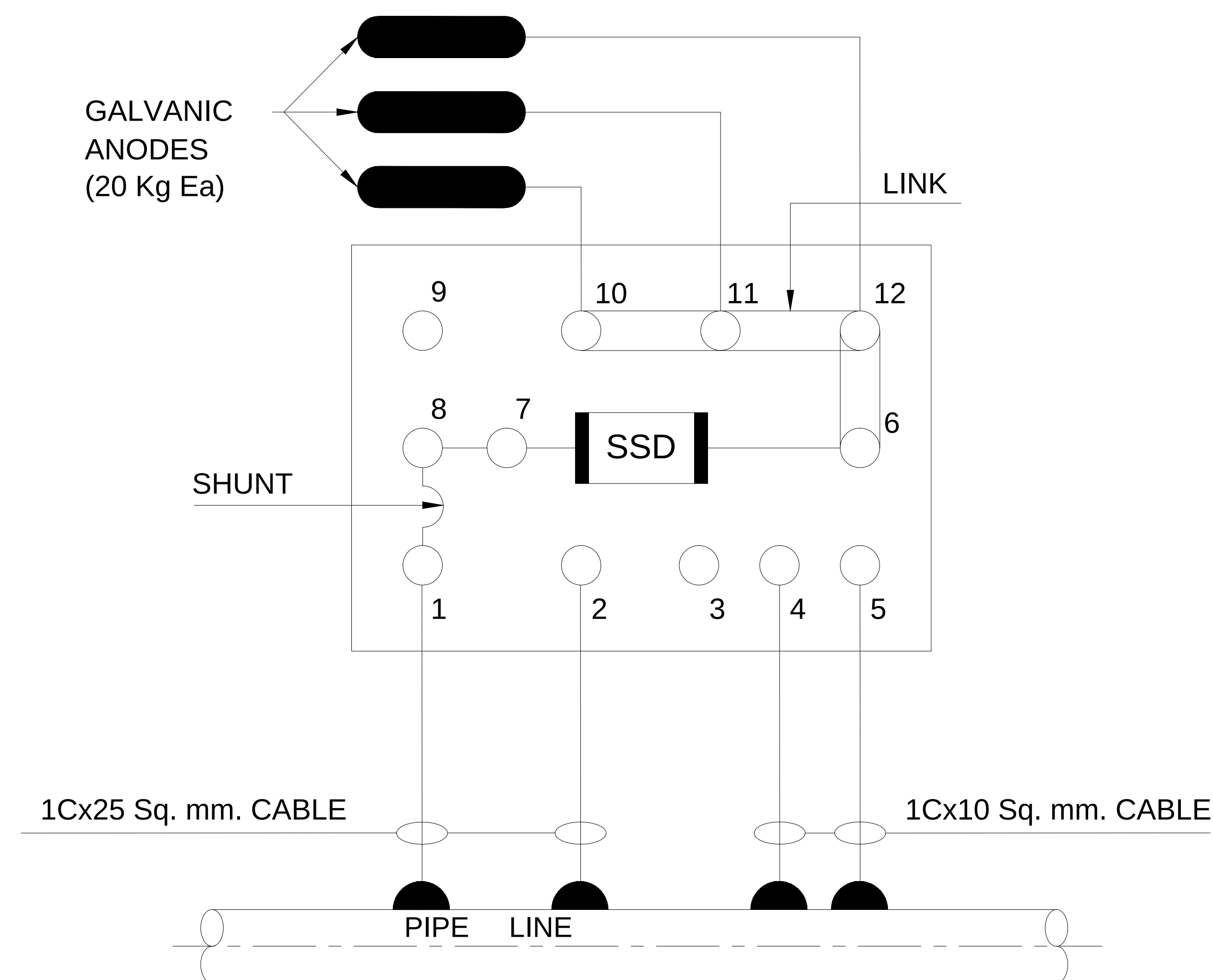
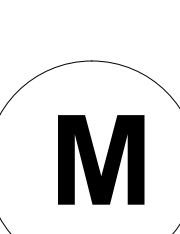
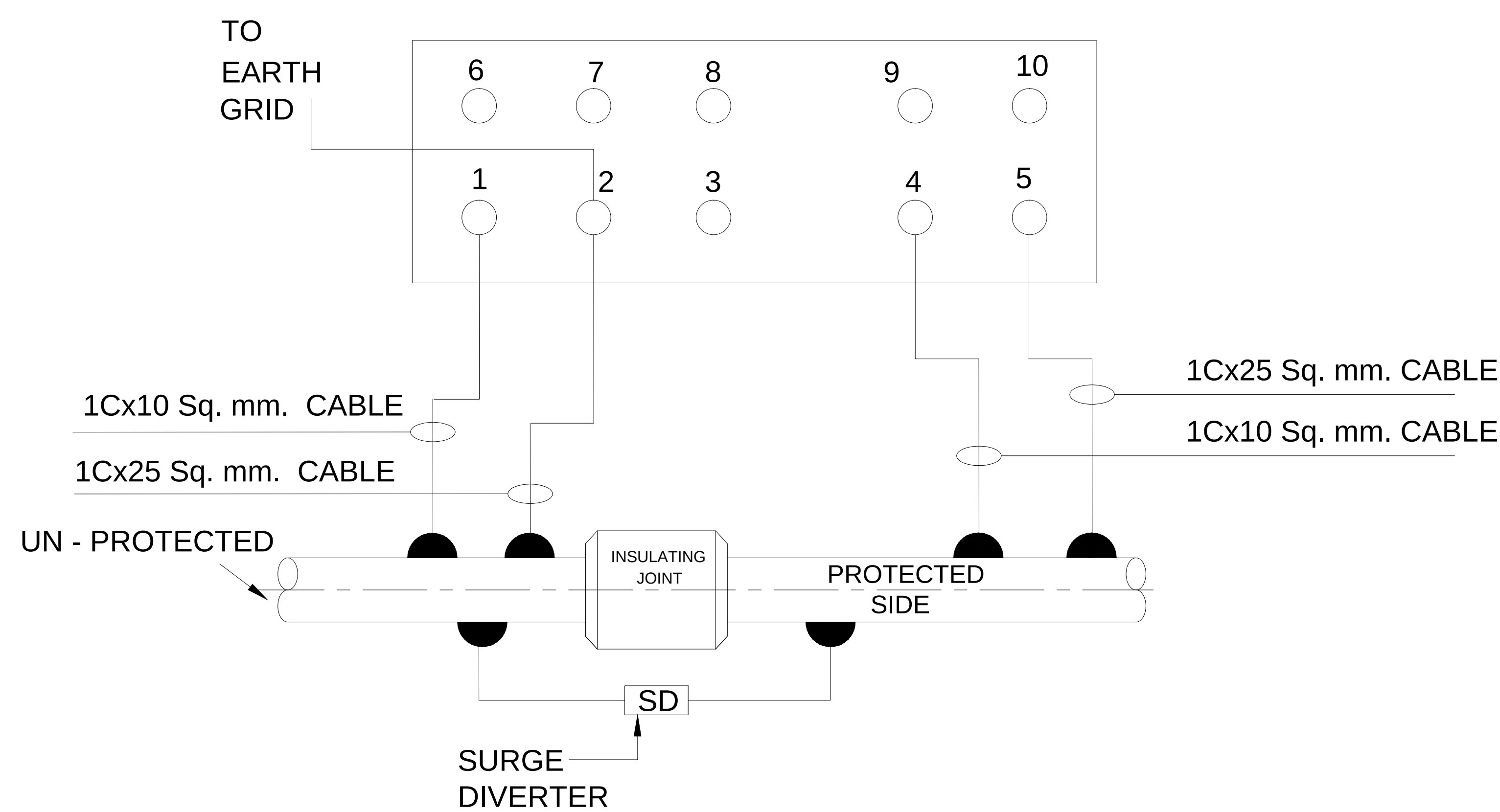
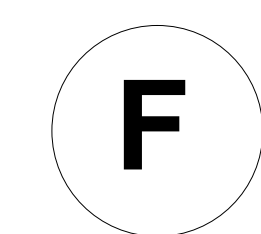
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CUSTOMER



(A Divisions of India Petroleum)

PROJECT	PIPELINE COATING REHABILITATION WORK
	DULIAJAN - BARAUNI CRUDE OIL PIPELINE (SIZE 16" / 14" X 1157 KM)

SUBJECT	STANDARD DRAWING FOR TEST STATION CONNECTION SCHEME



TRACTEBEL Engineering pvt. Ltd.

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PTS-HSE



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PTS::HEALTH, SAFETY & ENVIRONMENT



Our ref.: Document No. P.010416 D 11075 002

Imputation: Project No.P.010416

EXTERNAL

Client : «OIL India Ltd.»

Project : **Pipeline Rehabilitation Project-Phase I of 575 Km**

Subject : **Project HSE Specification**

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OIL INDIA LIMITED

Pipeline Rehabilitation Project-Phase I of 575 Km

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1. INTRODUCTION

OIL INDIA LIMITED (OIL), is a Government of India “NAVARATNA” Category Enterprise, engaged in the business of Exploration, Production & Transportation of Crude Oil, Petroleum Products and Natural Gas and Production of LPG in India with participating interest in E&P sector in various overseas projects.

The Pipeline Department of Oil India Limited deals with transportation of hydrocarbons to different refineries and thus operates a total of 1860 Km of Hydrocarbon pipelines, which comprises of 1206 Km of Crude oil trunk pipeline and 654 KM Product pipeline. For this purpose, it owns a 1157 Km long x 18 m/14 m wide Right-of-way [ROW] from Duliajan, Assam, India to Barauni, Bihar, India. This ROW has multiple hydrocarbon pipelines viz. crude, product & natural Gas, all protected from a common Impressed Current Cathodic Protection (ICCP) system owned and maintained by OIL. Out of these pipeline in the ROW, the 406 mm (16”) and 355 mm (14”) crude oil pipelines, totalling 1161 Km are more than 50 years old and 249 km of NSPL and another refinery delivery line of 5 Km are approx. 40 years old. Thus, a total of 1415 km of currently operating hydrocarbon pipelines are beyond or nearing completion of their design life.

In order to ensure continued safe and reliable operation of the pipelines and also to enhance the life of the pipeline system by another approx. 30 years, it is proposed to Rehabilitate 575 Km of the said 1415 Km pipelines in patches under Phase-I of the Project in the states of Assam, West Bengal and Bihar

2. PURPOSE

Purpose of this document is to spell out clear requirements of planning, execution, checking, auditing and review for execution and to communicate the minimum requirements that will be adhered to by CONTRACTOR and their Sub-Contractor for Pipeline Rehabilitation Project and to comply with Owner policies and HSE management system to achieve ultimate target “Goal ZERO”

CONTRACTOR shall be responsible for development of detailed HSE Plan covering all minimum requirements given in this document. HSE Plan by contractor will be reviewed and approved by Owner which will be audited for HSE implementation.

This document shall be considered as a main document for HSE Control as well as coordination of the Contractor’s HSE Management.

Intended Audience

The target audience would be CONTRACTOR staff/ workers, visitors (Contractors, Subcontractor and Vendors) and other subcontractor as may be appointed directly by CONTRACTOR.

3. SCOPE AND FIELD OF APPLICATION

This PTS-HSE&S shall be applicable for Pipeline Rehabilitation Project from planning phase to commissioning phase. It is responsibility of the Contractor and their Subcontractor to implement the HSE Plan throughout the project.

Any deviation may lead to a penalty action.

4. DEFINITIONS

The following definitions and terms are applied in this document.

Accident

Undesired event giving rise to death, ill health, injury, damage or other loss.

Audit

Systematic examination to determine whether activities and related results conform to planned procedures and whether these procedures are implemented effectively and are suitable for achieving carried the organization's policy and objectives.

Confined Space

Any enclosed or partially enclosed space that is not primarily designed as a work area, and satisfies one or more of the following criteria:

- Has restricted access or egress,
- Is at atmospheric pressure during occupancy,
- Has the potential to contain a toxic or flammable atmosphere,
- Has the potential to be oxygen deficient or enriched,
- Or has the potential to create an engulfment situation,

A space that satisfies one or more of these criteria is a confined space. Examples include pits, trenches, pipes, sewers, tanks, silos, drains.

Environment

Surroundings in which an organization operates, including air, water, land natural resources, flora, fauna, humans, and their interrelation.

First Aid Cases

A minor work related injury that requires a single treatment by a qualified first aider or doctor and the injured person is able to return to work after treatment.

Medical Treatment Cases (MTC's)

A minor work related injury that requires hospital treatment by a Physician and which results in the injured person returning to work on the day of the accident or the first work day after the day of the accident.

HSE

Health, Safety Environment.

HSE Management

The part of the overall management system that includes organizational structures, planning activities, responsibilities, practices, processes and resources for developing, implementing, achieving, reviewing and maintaining the HSE policy.

Hazard

Source of situation with a potential for harm in terms of injury or ill health, damage to property, damage to the work place environment, or a combination of these:-

Hazard Identification

Process of recognizing that a hazard exists and defining its characteristics.

Hot Work

Any work involving the use of an ignition source such as welding, gas cutting and grinding.

Incident

Event that gave rise to an accident or had the potential to lead to an accident.

Note: An incident where no ill health, injury, damage, or other loss occurs is also referred to as a "Near-Miss". The term "Incident" includes "Near-Misses".

Lost Time Incident (LTI's)

Work related injuries that cause incapacity for work on the next day or shift. All accidents, which result in one or more day(s) lost time shall be regarded as a LTI.

Objectives

Overall HSE goal, arising from the HSE policy, that an organization sets itself to achieve, and which is quantified where practicable.

Note: Objectives must be as quantifiable as possible.

Occupational Health

Conditions and factors that affect the well-beings of employees, temporary works, CONTRACTOR and its subcontractor's personnel, visitors and any other in the work place.

Occupational Illnesses

Work related abnormal condition or disorder, other than that resulting from a work injury caused by or mainly through exposure at work. Whether a case involves a work injury or occupational illness is determined by the nature of the original event or exposure that caused the case and not by the resulting condition. Work injuries are caused by a single event in the working environment: cases resulting from anything other than a single event area considered occupational illnesses and are recordable as such.

Examples of occupational illness incidents would be where an employee was identified as suffering from noise induced hearing loss, or an employee's hearing re-assessment shows their condition has worsened comparatively per record after 6 monthly assessments.

Performances

Measurable results of the HSE Management System related to the Organization's control of health, safety and Security risk and environmental aspects, based on HSE policy and objectives.

Policy

Statement by the organization of its intentions and principles in relation to its overall HSE&S performance which provides a framework for action and for the setting of its HSE objectives and targets.

Safety

Freedom from unacceptable risk of harm

Target

Detailed performance requirement applicable to the organization or parts thereof, quantified where practicable, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.

5. HSE&S MANAGEMENT SYSTEM REQUIREMENT

5.1. Policy Strategy and Goal

5.1.1. Policy Statement

All work under Pipeline Rehabilitation Project will be under Owner operation control and HSE Policy of Owner will be applicable for this project. All agencies including Contractor and their Sub Contractor shall honour and follow the same.

The Contractor shall have HSE policy statements that are the key document that define the management commitment towards HSE issues. The HSE policy shall be in compliance with the national/International standard and legal and other requirement of the country concern. The management policies shall be supported by an HSE management system structure comprising of supporting processes and procedures and plans, which clearly define activities and outline responsibilities of all personnel.

5.1.2. Strategy

Contractor and sub-contractor shall develop the strategy to achieve the highest possible health, safety and environmental standards throughout the project. Contractor and their Sub contractor shall be expected to follow the below mentioned strategy. The strategy is:

- Project Management and Supervision will be vetted to ensure their suitability and competence in HSE Management.
- The HSE Plan will be fully explained to all personnel and implemented accordingly.
- A message from the contractor and sub-contractor senior management to all new starters regarding the Projects HSE requirements.
- Responsibilities for HSE shall be clearly defined and personnel shall be held accountable for all HSE matters within their area of work and authority. Failure to observe HSE requirements will lead to disciplinary action/penalty.
- The Contractor shall have a Disciplinary Procedure for breach of HSE policies, procedures and practices which will be fully explained to all and vigorously administered by all levels of Management and Supervision.
- All levels of Management, including those of Sub-contractors shall have a Personal Safety commitment. The Contractor HSE Manager shall audit the implementation of these Personal Safety Commitment.
- All Contractor Personnel must acknowledge the HSE officer/Advisers position and authority through actively supporting and acting upon their decisions.
- Sub-contractors & Supervision shall be assessed on their performance and approach to HSE Management throughout the duration of the project. The Contractor Project Manager and HSE Manager/Adviser shall carry out this assessment.

- All Contractor Management, including those of Sub-contractors shall be seen to be visible and play an active role in HSE Management on site.
- All potential sub-contractors shall be required to complete an HSE questionnaire, including details of their HSE management system, which shall form part of the pre-award assessment, and where appropriate pre-award audits shall be conducted by the HSE department.

The Contractor HSE Manager will give a presentation on the agreed HSE Strategy to all Contractor Project Management

5.1.3. Goal

Key health, safety environmental and Security goals have been set to give drive and direction to owner activities and improvement plans. The Contractor and their Subcontractor shall adopt these goals as a minimum.

Key goals are:

- Minimize the impact on the environment.
- Eliminate, reduce or control risks to ALARP.
- Fully comply with applicable standards and legislation.
- Incur no incidents resulting from their activities.

5.2. Planning

5.2.1. HSE Plans

Prior to the commencement of contractual activity, the contractor shall submit a written Project-specific HSE plan to Owner for review and approval. Contractor shall prepare the Project HSE plan addressing their work activities, hazards and risk controls, training needs identification, audits and safety promotional activities. Purpose of the project HSE plan is to provide assurance of effective working of the interface between the HSE Management Systems of company and contractor's at specific project level.

Contractor shall prepare training plan addressing the number of training programs, training elements, number of training personnel to be trained. Contractor shall prepare Occupational Health plan addressing periodic medical examination, specific medical examination plan like crane operators medical fitness test etc.,

Method Statements:

Method statements shall be prepared for all critical jobs like excavation, hot works in hydrocarbon premises, work at height, heavy lifts, confined space entry, waste collection & disposal, or any non-routine works.

5.2.2. Hazard Identification, Risk Assessment and determining Control

5.2.2.1. GENERAL

The Contractor and their Subcontractor shall ensure that Hazard Identification and Risk Assessments are carried out to identify all the hazards and risks associated with work for the Project and that information is communicated to the staff and workers who are required to carry out the work. Upon commencement of employment on the Project, the Contractor and their sub-contractor shall ensure that all staff is issued with a pack of generic risk assessments covering the main activities, they will be requested to carry out during their employment. During the preparation of the Work the Contractor shall identify whether the activity can be adequately controlled by the generic risk assessment or whether a specific risk assessment is required. Where task specific risk assessments are identified, it shall be the responsibility of Contractor to produce the task risk assessment (HAZAN) and ensure that it is issued with the relevant Work Pack/Method Statement prior to the commencement of activities. Commissioning Procedures and Risk Assessments shall be prepared by the Contractor and subject to review by Owner prior to commissioning activities being allowed to proceed, a Permit to Work request shall be submitted. This shall be accompanied by a Hazard analysis / Safety Checklist which will determine the hazards and risks associated with the activity and controls required to ensure the effective and safe application of the activity / process at the time. The Hazard analysis / Safety Checklist shall be used in conjunction with the information contained within the Material Safety Data Sheets (MSDS) Commissioning Procedures and Commissioning Risk Assessments. A safety talk (documented) discussing the Hazard identification and risk assessment shall be given by the Contractor to each person prior to starting of work on each shift.

5.2.2.2. PROJECT EXECUTION PHASE

Prior to commencement of work, it is absolutely necessary that the Contractor and their subcontractor identify the possible hazards associated with its site activities. Owner view and guidance can be taken in identifying possible hazardous activities.

Depending on nature and possible harmful impact of the risk, control measures are decided to eliminate or mitigate the impact of the risk with within level.

It is the responsibility of the contractor and their sub-contractor to perform risk analysis for their activities as per their own standard in line with the Owner standard.

The procedure for hazard identification and risk assessment shall takes into account:

- Routine and non-routine activities.
- Activities of all persons having access to the work place (including contractors and visitors).
- Human behaviour, capabilities and other human factors.
- Identified hazards originating outside the work place capable of adversely affecting the health and safety of persons under the control of the organization within the work place.
- Hazards created within the vicinity of the work place by work-related activities under the control of the organization.
- Infrastructure, equipment and materials at the work place, whether provided by the organization or others.
- Changes or proposed changes in the organization, its activities or materials.
- Modification to HSE management system, including temporary changes, and their impacts on operations, processes, and activities.
- Any applicable legal obligations relating to risk assessment and implementation of necessary controls.
- The design of work areas, processes, installations, machinery/equipment, operating procedures and work organization, including their adaptation to human capabilities.

5.2.2.3. OFFICE ACTIVITIES

Possible hazard associated with the office/ project office activities shall be identified. Depending on nature and possible harmful impact of the risk, control measures are decided to eliminate or mitigate the impact of the risk within level. The risk assessment shall be reviewed periodically. It is the responsibility of the HSE Manager or nominated person to perform the risk analysis.

5.2.2.4. INTERFERENCE RISK PREVENTION PLAN

The parties (Contractors and Sub Contractors) should jointly establish a written Interference Risk Prevention Plan defining the measures taken by each company with a view to preventing risks of interference between activities, installations and equipment, as well as the measures taken to ensure compliance with the Life-Saving Rules.

5.2.2.5. HIERARCHY OF CONTROL

While determining the control measures, or considering to the existing control, consideration shall be given to reducing the risks according to the following hierarchy:

- Elimination.
- Substitution.
- Engineering control.
- Signage / warning and / or administrative controls.
- Personal Protective Equipment.

5.2.3. Legal and Other requirement

Contractor shall identify the applicable legal and other requirement and shall be evaluated periodically. Following list outlines the minimum applicable Indian regulations related to Safety and Environment that will apply throughout the Project and an update and status monitoring register shall be maintained.

Environment:

- The Water (Prevention & Control of Pollution) Act 1974 and Rules,
- The Air (Prevention & Control of Pollution) Act, 1981 and Rules,
- Environment (Protection) Act, 1986 amended 1991 and Environment Protection Rules,
- The Hazardous Wastes (Mgt. & Handling) Rules, 1989 and amendments,
- Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989 and amendments,
- Noise (Pollution & Control) rules 2000 and amendments,
- Ground Water (Regulation, development and Management) Act 2005,

Safety:

- OISD Guidelines,
- The Petroleum Act 1934 and Rules 1976,
- Gas Cylinders Rules, 1981,
- Motor Vehicles Act 1988 and Rules,
- Explosives Act and Rules,
- Indian Electricity Act and Rules,
- The Public Liability Insurance Act, 1991 and Rules,
- National Building and Other Construction Act 1996 and Rule 1998 and amendments,

5.3. Objective/Target

5.3.1. Objective

Project has the following key objectives:

- Promote Health, Safety & Environmental management as a company priority.
- Consolidate and improve the health, safety and environmental performance.
- Develop a culture of reporting without fear of blame.
- Actively involve everyone in providing a safe, healthy and secure environment.
- Take ownership of HSE responsibilities.

The Contractor shall adopt these objectives in their HSE&S plan

5.3.2. Target

The following minimum HSE target shall be followed:

Indicator	Target
Fatality	Zero
Frequency Rate	Zero
Severity Rate	Zero

Environmental Damage	Zero
Occupational Illness	Zero
Induction, Training, Inspection, Audit	As per plan
Legal compliance	100%

Contractor shall submit the Weekly/ Monthly HSE Report to the Owner.

5.4. Implementation and Operation

5.4.1. Organization

The Contractor HSE organization chart with CV of key personnel assigned for the project shall be submitted to Owner for approval

5.4.2. Resources

Contractor and their Subcontractor shall provide adequate resources to ensure proper supervision skills and competent manpower without overburdening the staff.

The foundations of health, safety, environmental control rely heavily on human factors for their success. Contractor shall ensure that systems, which operate to manage the human element in the company, have HSES considerations built into them. The following five "Human Resources" elements shall be addressed in the Contractor's management system:

- Recruitment of competent personnel,
- Training of personnel,
- Medical fitness,
- Assessment of attitudes to Health, Safety, Environmental and Security matters,
- Disciplinary measures associated with infringement of HSE standards,

Competence of project personnel can affect the health, safety, environmental and wellbeing of themselves, co-workers and the community. The competence and fitness of personnel shall be assured in three ways:

- By ensuring that those employees who have been hired to carry out a particular job are competent to do so and possess the necessary qualification and references as validation.
- By ensuring that employees are assessed, trained and supervised in order to become and remain competent.
- By ensuring that employees are medically fit to do their work.

5.4.3. HSE Resources

- Contractor shall ensure adequate HSE resources are provided to execute the job
- Typically the requirement of HSE personnel for the site is as follows :

Employee Strength (Including sub-contractor)	Minimum Strength of HSE personnel required
No. of Employees < or = 50	1 no. HSE Supervisor with background and knowledge of HSE issues
No. of Employees 51 – 100	2 no. HSE Supervisor with at least one supervisor with environmental management background / experience
No. of Employees 101 – 500	1 no. HSE Supervisor for every 50 employees + 1 no. HSE Engineer

The minimum standard for Contractor HSE personnel should be:

HSE Supervisor:

- Should be a Diploma holder in Engineering (3 years college course graduate with Chemical / Mechanical / Electrical / Civil) or Science Graduate (Chemistry / Physics / Mathematics) with 3 years' experience as supervisor in Oil & Gas / Refinery / Petrochemicals or Bulk Chemical Manufacturing companies or Large Construction sector. Degree / Diploma Correspondence course studies are not accepted. He / she must be able to communicate, write and read English. And

- Safety Diploma from any recognized Institute.

HSE Engineer:

- Should be a graduate Engineer (Chemical / Mechanical / Electrical / Civil) or a Science Graduate from a recognized university with more than 5 years' experience as supervisor / safety in-charge in Oil & Gas / Refinery / Petrochemical / Bulk Chemicals Industry / large construction sector. Correspondence course studies are not accepted and
- Diploma or PG diploma in Safety from any recognized institute. He / she must possess site safety leadership attributes.
- Contractor shall submit scrutinized CVs as per requirement prior to the job. Owner HSE shall evaluate the CVs and conduct personal interview of the proposed candidates. Only Owner approved Contractor HSE personnel are permitted to work at site. In case of replacement of approved Contractor HSE Personnel, the contractor should plan in advance and follow the above procedure.

5.5. Roles, Responsibility, Authority and Accountability

Contractor and their Sub contractor shall define the Roles, Responsibility, Authority and Accountability of an individual associated with this project in their HSE Plan related to Health Safety Environment and Security. The more defined minimum responsibilities of key personnel are highlighted as below.

5.5.1. Project Manager (PM)

The Contractor Project Manager shall: -

- Ensure the Contractor Project HSE Plan is implemented throughout the project
- Monitor progress towards achieving the objectives and be responsible for making arrangements to amend project HSE Plan to achieve these objectives.
- Satisfy himself / herself as to the competence of all of his project staff.

- Arrange for the pre-planning and preparation of work procedures where required, including the involvement of Sub-contractors.
- He shall ensure that the necessary resources are available on time for the effective implementation & supervision
- Ensure that Contractor systems are in place whereby work related hazards are identified, evaluated and controlled prior to task commencement.
- Ensure that all Sub-contractors meet their obligations under current legislation, codes of practice, Owner HSE Policy or procedures and all conditions set out in contractual documents. He shall also ensure that copies of the Sub-contractors HSE Policy statement, means of implementation, employer's liability insurance certificate and the name of the person responsible for HSE on the contract have been received and are available.
- Keep abreast of current relevant legislation, codes of practice and industry standards.
- Carry out monthly HSE inspections along with the Project HSE Manager/Adviser, Construction Engineers and the Owner.
- With the assistance of the HSE Manager/Adviser allocated to the project receive, collate and analyse HSE documentation which is presented weekly in the standard format.
- Attend regular meetings with his Company counterpart (and Subcontractors representative where relevant) to promote Accident Prevention and Safe Working practices.
- Initiate and assist in the investigation of any accident / incident or near miss and make any arrangements necessary to allow the project / company to fulfil its statutory obligations.

5.5.2. Construction Manager

The Contractor Construction Manager shall:-

- Assist the Project Manager, Integration Manager and Construction Engineers in promoting HSE and providing a safe working environment for all personnel involved in this Project.
- Assist in the implementation of the Contractor Project HSE Plan.
- Chair the monthly health, safety and environmental committee meeting involving management, supervision, workforce, safety representatives and sub-contractors.

- Participate in health, safety and environmental audits and inspections
- Monitor progress towards achieving the objectives and be responsible for making arrangements to amend project HSE Plan to achieve these objectives.
- Satisfy himself/herself as to the competence of his supervisory staff.
- Arrange for the pre-planning and preparation of work procedures where required, including the involvement of Sub-contractors.
- Ensure that systems are in place whereby work related hazards are identified, evaluated and controlled prior to task commencement
- Communicate HSE requirements to all the disciplines and involved parties.
- Monitor, Control & Report all construction activities and ensure compliance to governing Authorities of India, State, Municipal, Local or other regulations applicable at the location of work.
- View Understand, adopt and implement Permit to Work system and implement all control majors protectively.
- Update the HSE Plan and periodically to incorporate recommendations, improvements, any statutory/ legal requirement and communicate the same to all concern for compliance.
- Coordinate effectively with the company for managing, implementing, monitoring, controlling & reporting HSE Plan requirements.

5.5.3. Contractor Construction Engineer

The Contractor Engineers shall:-

- Familiarise himself / herself with the Project HSE Plan requirements.
- Co-operate and assist the Project Manager/Construction Manager in achieving the project objectives.
- Ensure that safe working procedures and practices are implemented by those under his control and ensure that sufficient plant and equipment is made available and properly maintained to enable any operation to be carried out safely.
- Ensure that adequate welfare facilities are provided and maintained as required by legislation.
- Ensure that all statutory, project forms and registers are maintained.
- Acquaint himself / herself on the competency of site personnel to carry out their duties.

- Make himself / herself aware of existing legislation, codes of practices and project HSE procedures which relate to the operation and consult with Project HSE Adviser in respect of any HSE&S problem.
- Assist in the investigation of any accident / incident or near miss and make any arrangements necessary to allow the project / company to fulfil its statutory obligations.
- Be part of the Project HSE Team.
- Assist, where necessary with the monthly HSE inspections with the Project HSE Manager/ Adviser, Project Manager and Owner HSE Representative.

5.5.4. Contractor Project HSE Manager

The Contractor Project HSE Manager shall: -

- Assist and advise the Project Manager and Supervisors in meeting the project objectives.
- Ensure that all project personnel are conversant with their obligations relating to HSE in accordance with both the project HSE plan and the requirements of the Owner and current legislation.
- Make himself / herself aware of all current Occupational Health, Safety and Environmental Legislation, codes of practice and procedures.
- Monitor compliance with the Project Health, Safety and Environmental Plan and Owner HSE&S procedures, make regular site inspections and prepare detailed reports of site performance. Copies of such reports and inspections will be sent to Project Manager.
- Establish a working relationship with Owner HSE group and their services and facilities when required.
- Establish a working relationship with supervisors/foremen and where appropriate consult with them on aspects of HSE.
- Liaise with Health, Safety and Environmental enforcing authorities and local fire officers, to ensure compliance with all legislation and approved codes of practice.
- Ensure that all statutory reports are compiled and forwarded to the appropriate departments.
- Monitor, in line with the HSE Management System / Project HSE Plan - Audit Schedule, the HSE performance of the Company during the tenure of the project.

- Where appropriate identify, in conjunction with the Project Manager / Training Department, any necessary HSE Training and if required assist the Training Department with the development of training programme to meet the requirements of the project.
- When required review and update the Project Health, Safety & Environmental Plan.
- Examine trends and propose actions to prevent recurrence of incidents, accidents & near misses.
- Advise Project Management on current and future legislation affecting work done under the contract.
- Liaise with Company and Sub-contractors counterparts and attend meetings as required.
- Attend regular HSE meetings with Project Management and other interested parties with respect to safe working by Company, Contractors and Sub-contractors engaged on the project.
- Evaluate potential hazards on new types of equipment or processes and assist in the preparation and implementation of new policies and procedures. Monitor the site and report HSE violations or unsafe working conditions immediately to supervisors, Project Manager and Operations Manager, where necessary.
- Monitoring and reviewing quality of JSA's/Risk Assessments for quality and compliance.
- Collate and analyse all accident, incident and near miss reports and other HSE information relating to Company employees, Contractors and Sub-contractors on the project.
- Highlight HSE issues, make recommendations and/or issue instructions (based on reports, audits and accident analysis) which will be implemented in order that HSE performance may be enhanced.
- Co-ordinate and ensure implantation of Company security & gate pass requirements.
- Conduct & coordinate all HSE communication activities at site level.
- Coordinate and ensure carrying out of initial inspection & periodic inspection of all the equipment, machineries, tools, tackles and generate / maintain records/ reports.
- Ensure availability of quality PPEs in sufficient quantity. And maintain records of the same. .

- Coordinate & ensure identification of Permit to Work requirements, plan and apply for the permits in advance.
- Drive the behavioural based observation program throughout the project.

5.5.5. Contractor Supervisors

The Contractor Supervisors in charge of particular operations have the day to day responsibility for HSE within their area of operations. They shall:-

- Familiarise themselves fully with the Contractor Project HSE Plan and relevant Owner HSE Policies and procedures.
- Carry out risk assessments for the work activities they supervise.
- Carry out pre-job inspections prior to the commencement of work.
- Conduct tool box talk briefings with their workforce and keep a register of attendees.
- Ensure the provision of special equipment and techniques where appropriate for their work activities.
- Ensure that personnel under their Supervision are competent and adequately trained in the use of equipment and machinery which they may be required to use and they are fully aware of any associated or potential hazards.
- Ensure that all personnel wear the appropriate personal protective equipment in accordance with Owner policy and statutory requirements.
- Ensure that potential HSE hazards are reported and appropriate arrangements made to deal with them.
- Ensure Good Housekeeping is maintained at all worksites and that machinery / equipment is correctly maintained and inspected to the required standard.
- Consult with Contractor Management with regard to implementation of the Owner HSE Policy, HSE Legislation & Safe systems of work, etc.
- Ensure all personnel are aware of and understand all actions necessary in the event of emergencies.
- Bring to the attention of the Owner HSE Representative any contentious matter which cannot be resolved at HSE Meetings or items that may require action by Project Management.

5.5.6. Contractor Employees

All employees shall:-

- Take reasonable care for the Health and Safety of themselves and other persons who may be affected by their acts or omissions at work.
- Co-operate with the Company and with fellow employees in order to enable them to comply with all relevant HSE legislation.
- Not interfere with any item of equipment or machinery for which they are not duly authorised to operate, maintain or otherwise work upon.
- Wear the required safety clothing at all times or safety equipment where necessary
- Observe all signs and notices, report all hazards they observe.
- Acquaint themselves with all actions necessary in the event of site emergencies or alerts.
- Comply with all legislative and site HSE instructions pertaining to their area of employment.
- Comply with and participate in current and future HSE initiatives which are or may be implemented by their Company or Owner.
- Work safely and in a manner which does not involve "short cuts."
- Report all accidents, incidents and near misses in which they have been involved or have witnessed.

5.6. Training and awareness

As part of a pro-active approach towards maintaining the highest level of HSE performance, the Contractor shall develop and implement procedures and training programmes designed to meet changes in legislation, procedures, work practices and new technology for all personnel and in particular new personnel, or personnel transferred to new assignment. This ensures that all personnel are suitably qualified in terms of education, knowledge, skills, capabilities and fitness as appropriate to their positions.

All training information, records and certificates shall be properly documented, kept and made available for verification

A training matrix shall be developed for all levels of employee to ensure that the minimum levels of HSE training are identified and personnel are trained and competent to do their job. Such training shall include but not be limited to use of grinders, PPE, blasting and cleaning equipment, manual handling, lifting operations and welding.

Additional training may be necessary as site conditions change or new HSE procedures are introduced.

Contractor and their subcontractor personnel shall participate in any additional training, which may be provided or organized by the Owner.

5.6.1. Supervisory Training

A supervisory training course shall be designed to provide a positive introduction and appropriate knowledge to enable supervisory staff to provide leadership and contribute to effective safety management throughout all phases of the project. There should be a strong emphasis on behavioural safety in the course. New Supervisors shall commence training at the earliest opportunity once their appointment has been confirmed.

The aims and objectives of the training are to provide all supervisory staff with skills and knowledge to establish a safe system of work within their area of responsibility.

5.6.2. Job Safety Analysis/Risk Assessment Training

The Contractor and their Sub contractor shall ensure that, personnel assigned to the Project receive training in Risk Assessment / Job Safety Analysis.

The training shall provide the basic knowledge of hazard identification and will take for risk reduction.

5.6.3. Induction Training

The Contractor shall ensure that all personnel (including Contractor, staff, manual workforce, Sub-contractors, vendors and commissioning personnel) involved in the construction and commissioning of the project will attend an Induction course prior to commencement of work and record shall be maintained.

Contractor's Project HSE Manager shall conduct the inductions. Language will be English / Hindi and regional (depending on audience).

The induction course may be tailored to suit the current status of the project, and will always cover the main course headings shown below:

- Welcome and Introduction
- Driving and Operating
- Equipment on Site
- Entering the Site
- Personal Protective Equipment
- Security and Awareness
- Injuries and Emergencies
- Policy, Law and Information
- Use of Equipment
- Manual Handling
- Safety Systems
- Safety in Practice
- Hazards and Detection
- Safety in an Emergency
- Environmental Care
- Systems Implementation
- Health & Hygiene Rules
- Disease prevention
- Security System

After the induction there will be a short assessment and the results will be communicated within 1 working day. If a participant fails they must re-attend the safety induction on next day.

As a part of the induction process all personnel working on the site will be given a familiarization tour by their supervisor.

In certain circumstances such as short term visitors or day visitors to the project, the requirement to attend an interactive induction may be replaced with a requirement for the visitor / vendor to attend a short induction which includes details of what to do in the event of emergency, minimum standards of PPE etc. In such circumstances, the visitors / vendors must be accompanied at all times when in construction areas and must not conduct any physical hands-on work. If there is any doubt regarding the requirements for inductions for visitors, guidance should be sought from the Owner HSE Department.

As soon as it is practicable, orientation signs shall be erected on the site to help personnel easily find their way around.

5.6.4. Tool Box Talks

5.6.4.1. DAILY TOOL BOX TALKS

Objective & Agenda:

To ensure adequate & correct communication of work planned, location of work, hazard involved and control required to be implemented for safe execution of particular activities to all involved. Prime objective is to embark on work with clear understanding and with clear identification of all hazard and control plan in place.

Responsibility to deliver daily tool box talk : Contractor and their Subcontractor HSE Manager / Site Supervisor

Site Supervisor for specific work location shall conduct a tool box at the commencement of work on daily basis. If different team is working in different area, separate tool box talk covering location and hazard involved shall be carried out.

Each toolbox meeting shall cover the following agenda:

- Discuss safety issues from the previous day.
- Brief description of activities planned for the day & associated hazard.
- Information & resources required to put controls in place.
- Location specific hazard and instructions.
- Requirement of PPEs.

It is responsibility of supervisor to convey PPE requirement to all workers and ensure compliance to the same and shall be checked during tool box talk before embarking on work.

Tool box talk report shall be prepared and kept at site within one hour of talk and it must be signed by all attendee to ensure participation of all in the talk.

5.6.4.2. TEAM TALKS

Responsibility of Team Talk: CONTRACTOR HSE Manager

Team talks to be given prior to start of any new activity. It is a discussion with the work party about the activity to be carried out and should include minimum of the following:-

- Details of the activity and hazards that may arise.
- Details of Permit to Work (PTW).
- Work Method/Job Hazard Analysis (JHA)/Risk Assessment.
- Personnel Protective Equipment requirements.
- Equipment and Tools to be used.
- Emergency Response.
- Standby rescue equipment (fire extinguisher, emergency eye wash / shower...)
- Feedback from the working party about the method of work.
- Feedback of the safety learning points from the previous day.

Depending on the size of the work group Mass Tool Box Talk meeting and Team talk can be combined into one.

Record note or report of the above meetings shall be submitted to Owner within 3 working days.

5.7. Communication, participation and Consultation

5.7.1. Internal Communications

- HSE Inductions/ Training Sessions.
- Risk Assessment/JSA.
- Internal Correspondence.
- Internal coordination meetings.
- Monthly HSE reports.
- Toolbox meetings/Pre-Start briefings.
- Project HSE Committees.

- Office HSE Meetings.
- Site Management Inspections / Walks.
- HSE alerts.

5.7.2. External Communications

- Notification of government and statutory authorities.
- Company Correspondence.
- Second and Third Party Audits.
- Client Performance Surveys.
- Public and Industry Exhibitions/ Presentations.
- Outside publications.

5.7.3. Participation and consultation

The participation of employees shall be ensured by their:

- Appropriate involvement in hazard identification, risk assessments and determination of controls;
 - Appropriate involvement in incident investigation;
 - Involvement in the development and review of HSE policies and objectives;
 - Incident investigation and presentation of fact finding and preventive actions initiated to be discussed in MOM with a copy to Owner HSE Manager.
 - Employee shall be informed about their participation arrangements, including who is their representative(s) on HSE matters.
- a. It will be the responsibility of contractor to involve their subcontractor and worker.

5.8. Documentation and Record

5.8.1. Documentation

The HSE management system documentation shall include:

- HSE Policy and objective.
- HSE Plan/Manual.
- Hazard Identification and Risk assessment & Job Safety Analysis.

- Environmental Aspect & Impact Analysis.
- Emergency Management Plan.
- Journey Management Plan.
- Environmental Management Plan.
- Security Management Plan
- Legal and Other Requirement guidelines or other document as required.

5.8.2. Records

- HSE Induction Record.
- HSE Training Record.
- Tool Box Talks Record.
- HSE Inspection Report.
- HSE Audit Report.
- HSE Meeting Report.
- Test Certificates of Lifting tools and Tackles.
- Fitness certificate of vehicles and equipment.
- Vehicle paper.
- Health Check-up Record.
- Environmental Monitoring Report.
- HSE performance Report.
- Incident/Accident Record.
- First Aid Case/Medical case record or other record as required

5.9. General Promotions

The Contractor shall implement forums, meetings and communication structures to provide the knowledge and awareness which promote a strong Health, Safety, Environmental culture.

The Contractor may utilize incentive schemes, periodicals, posters, bulletins, mail shots and promotions as a constant reminder of the commitment to health, safety and environmental issues.

5.9.1. Sub-contractors

All Proposed Sub-contractors shall be vetted for their suitability and competence. The results of this vetting process shall be evaluated by the Project Manager / HSE Manager and HSE Adviser and an HSE audit shall be carried out prior to contract award.

All Sub-contractors shall demonstrate the suitability of their Management and Supervision in managing HSE during the Project. On Site Sub-contractors shall be assessed on the performance and approach to health, safety and environmental management throughout the duration of the project.

All Project Management, including those of Sub-contractors shall play an active role in HSE Management on site. Off Site Sub-Contractors premises surveillance by the HSE Department shall be conducted at regular intervals during the project, in accordance with an agreed schedule or when there is concern over their HSE performance / commitment.

Owner has the right of access at all reasonable times. All findings shall be corrected by the Contractor and their Subcontractor at their own cost.

6. OPERATION CONTROL

6.1. HSE Meetings

Contractor HSE meetings will be held on a monthly basis as a minimum and will include a review of the Project Weekly Reports, previous minutes and action points. Site level HSE implementation & control issues for each area / block, Safety learning points, HSE concerns, coordination requirements arising from field audit or inspections...etc. shall also be discussed. Attendees will include:-

- Project Manager or Construction Manager.
- HSE Manager /Advisor
- Sub-contractors Site Management.
- Site Supervisor.
- Commissioning Representative.
- Owner Representative Staff.

- Worker representative

The Project Manager or Construction Manager shall chair the meeting, which shall be minuted. Action points will be noted on the standard format. Persons will be nominated to carry out actions and a target completion date will be set. The Project Manager shall ensure that those personnel nominated to carry out an action are given the resources necessary to carry out the action and that they are carried out within the agreed time scale.

6.2. HSE Forums

Contractor shall hold an HSE Forum at quarterly intervals to which Safety Representatives are invited together with Supervision, workforce and Owner representative with a view to joint problem solving and the development of a constructive working relationship to enhance and promote HSE on the Project.

6.3. Permit to work

The permit-to-work system is an administrative control and communication system designed to clearly identify the various scopes of work to be carried out on the Project site and their associated hazards to prevent accidents, fire and equipment damage.

The permit-to-work system of Contractor shall be applicable for the construction activities as per the approved HSE Plan of the project.

When working at Owner Facility contractor shall adopt the Owner Permit to Work System.

The Contractor Project Site In-charge has the overall responsibility to ensure that the permit-to-work system is practiced in accordance with its purpose and intent and to review the system periodically to assess the effectiveness of the system and make necessary adjustments to improve the system.

During commencement of equipment testing and commissioning activities the Owner Permit to Work procedure shall be used.

Personnel involved in the administration and operation of the permit to work system shall receive training and information appropriate to their responsibilities and duties as set out in the permit to work procedure. To ensure that conflicting/simultaneous operations are identified, daily permit co-ordinator's meetings will be held with all relevant area authorities.

Supervisors shall also ensure that pre-job inspections of worksites are undertaken and Task Risk Assessments carried out prior to work being commenced. Job orientated tool box talk briefings shall be utilised as a further aid to ensure safe working systems are in use during the project and shall be conducted and recorded by the worksite Supervision whenever a permit is initiated.

Permit to Work checks and regular site monitoring shall be undertaken during the validity period of the permit. Employees shall be encouraged to provide positive feedback and comment on the Permit to Work System and working practices at HSE Meetings and tool box talk HSE briefings. Compliance with Permit to Work procedures shall form part of this Project HSE Plan / HSE Management System audit and inspection program.

6.3.1. Types of permits

- Hot work permit.
- Height work permit.
- Confined Space work Permit.
- Excavation work permit.
- Electrical Work Permit.
- Lifting Permit

6.3.2. Permit Application

The Site Engineer who is responsible for the inspection work which requires a work permit will fill out the APPLICATION part of the permit from stating the scope of work, work location, etc. Prior discussion with the site engineers who are performing the inspection work must be held to ensure that they understand the job scope and safety precautions.

6.3.3. Permit Approval

The Permit Approving Authority (may be Site in Charge or another person nominated by Site In charge) will review the application with the site engineer before issuing the permit. If the work has a potential to expose hazards in the Project site such as welding job, the Permit Approving Authority shall specify all necessary safety precautions to be taken and visit at the work site to ensure that all such requirements are complied with before issuing the permit.

6.3.4. Confirmation and Acceptance of Permit Conditions

The Permit applicant and the Approving Authority must arrange for a site visit to confirm that all preparation works are completed and the permit conditions have been maintained. General conditions such as adequate emergency escape route, Fire fighting equipment, personal protective equipment etc. shall be confirmed.

6.3.5. Job Completion and Acceptance

It is essential that when the job is completed, the permit applicant must sign off the work permit and returns it to the Approving Authority indicating whether the job has been completed safely & satisfactorily.

6.3.6. Permit Validity

Work Permits should only be valid for a specific period of time as mentioned in permit and in all cases be expired at the end of one working shift from the time of approval. The expired Work Permit can only be extended if the safety conditions are maintained through physical confirmation.

Work Permits to be allowed to run up to six days so long as they are closed on last working week day whichever is earlier.

6.3.7. Permit Suspension and Cancellation

If there is an emergency such as fire outbreak in the site, all work permits issued will be automatically suspended and work must be stopped until clearance is given by the permit approving authority before work can be resumed. If the safety conditions established have changed due to the emergency, the work permit should be treated null and void and a fresh one should be re-issued if work is to be resumed after the emergency is called off.

Approving authority, HSE Manager or any responsible person can suspend / cancel the permit if it is perceived to be in violation with the conditions stipulated in the permit. A fresh permit has be issued before work can resume again with due precautions.

6.4. Hazardous Material Safety Data Sheet (MSDS)

The identification of hazardous substances and control of risks must be comprehensive and systematic. This starts with how containers of chemicals are received and distributed throughout the facility and the maintenance of MSDS records. Material Safety Data Sheets (MSDS) shall be available and maintained for all chemicals used in the workplace. Employees should be trained on their use and MSDS shall be readily available in the work area. It is responsibility of store in charge or designated personnel to ensure obtaining and timely communication of information about MSDS to all personnel and safe keeping of all material including segregation and labelling as per guidelines and recommendation of MSDS.

6.5. Personal Protective Equipment (PPE)

Mandatory PPE for site and Temporary site, allocation of PPE should be based on the risk assessments related to the particular tasks to be undertaken.

6.5.1. Mandatory PPE

The Contractor and their Subcontractor shall observe and comply with all legislative safety requirements (The Building and Other Construction Workers Rules 1998 and BIS standards listed) regarding the issue and type of personal protective equipment and shall ensure that such equipment is issued to personnel. The equipment and clothing shall be of a type suitable for working conditions and appropriate to the respective trades and shall be of a standard which complies with legislative requirements. All PPE will meet the IS or BS or EN standards. In addition to the mandatory PPE for site, allocation of PPE shall be based on the risk assessments related to the particular tasks to be undertaken.

Employees required to work on site will be provided with: -

- Safety Helmets.
- Hearing Protection.

- Safety Boots.
- Overalls long sleeves fire resistant.
- Safety Glasses.
- Gloves.

In addition to mandatory PPE, other PPE specific to task or hazard is required to be provided.

It should also be noted that loose clothing, long hair, necklaces rings and safety harness with unattached lanyard, should not be worn around rotating machinery or energized conductors.

The following equipment shall also be available on site as required.

- Safety Harness with dual shock.
- Welding Screens.
- Protective Leathers absorber lanyards.
- Safety Goggles.
- Safety Visors.
- Burning Goggles.
- Specialist Gloves.
- Welders helmet-hood.
- Knee Pads.
- Respiratory Protective Equipment.
- Compressed Air Fed Screens.
- Battery Powered Air Fed.
- Screens.
- Prescription Safety Glasses or
- Inertia Reels.
- Oversize safety glasses.

Respiratory PPE Fitness: Personnel required to wear respiratory protection on a regular basis (i.e. insulation workers) are to be certified medically fit to wear the equipment by the CONTRACTOR Managing Physician

Where necessary, and only when other control measures are deemed inadequate, employees shall be provided with respiratory protective equipment of an approved type.

The selection of the appropriate type will be made after consultation with the Health, Safety & Environmental Department. The Health, Safety & Environmental Department will make recommendations for the Selection, Use and Maintenance of Respiratory Protective Equipment.

Where required, HSE personnel will provide training & instruction in the use of Respiratory Protective Equipment (RPE) to supervisors and operatives.

The use of self-contained or airline fed respirators may be considered for use by suitably trained personnel for working within vessels or other confined spaces where impure air or air deficient in oxygen may be present.

All visitors must meet the minimum requirement of approved safety helmet, boots, gloves, eye protection, high visibility waist coat, hearing protection and gloves if proceeding onto the work site. It is the responsibility of personnel arranging for visitors to attend site to notify them of this requirement, and to ensure that they comply with the requirement.

The Contractor shall ensure that the issue, maintenance and inspection of all PPE equipment, where applicable is in accordance with the relevant legislation requirements.

All Supervisors and members of the workforce shall receive training / instruction in the use of Protective Equipment which they may be required to use in pursuance of work related activities or for Emergency Purposes.

The nature and detail of such training shall be appropriate to the type of equipment, the nature of the perceived hazard and the HSE Responsibilities of the person involved.

All PPE shall meet Owner HSE site management's approval prior to usage.

Owner shall have the right to instruct any contractor's personnel not using the designated PPE to leave the site immediately. No claims from Contractor will be accepted by company if this action is taken

6.6. Child Labour

The CONTRACTOR shall comply with the Owner policy on child labour and accordingly, ensure that neither it or its agents nor its Sub-Contractors shall employ or utilize the services of a person below the age of eighteen (18) years in the provision of the Services. Proof of age to be furnished along with application for entry permission

6.7. Drugs and Alcohol

It is strictly forbidden to bring in / work under the influence of alcoholic drinks or illegal drugs in site, office and company premises. Random testing will be carried out without any advanced notice.

The CONTRACTOR shall ensure that none of its personnel including those of its Sub-Contractors shall perform any part of the Services while under the influence of alcohol or any illegal drug or substance.

6.8. Horseplay and Fighting

Horseplay and Fighting are defined as physical striking or unauthorized manhandling of personnel.

As a GENERAL POLICY, fighting at site or at yard or within offices is an offence that shall not be condoned. On reporting /observing such act, CONTRACTOR shall take immediate appropriate action and report to Owner.

6.9. Smoking Policy

Smoking is not allowed in the area under operational control including vehicle. The Contractor shall have a formal policy relating to smoking in the interests of the health and safety of its employees. Failure to comply shall result in disciplinary action.

6.10. Fire Arms

Firearms and explosives of any description are not permitted at site or offices. Failure to comply shall result in disciplinary action.

6.11. Sexual Misconduct

Personnel found or caught participating in acts of a sexual nature at site or offices shall be immediately terminated from the project.

6.12. Cell Phone Usage

Cell phones are NOT allowed on controlled Gas Fence Area. All contractor personnel are required to surrender cell phones to designated Safety Coordinator /HSE Manager prior to commencing work or going for work inside the gas fence. Usage of Cell phone while driving is violation to LSR and will subject to immediate disciplinary action including termination.

6.13. Substance Abuse

Owner has implemented a formal Substance Abuse Policy in the interest of the health and safety of its employees. Failure to comply shall result in disciplinary action.

6.14. Life Saving Rule (LSR)

Lives saving rules are mandatory to be complied with during all work execution within area of operational control. All the contractor, and subcontractor persons shall undergo a mandatory induction of LSR and sign off that they have understood the rules. If anyone chooses not to follow the LSR, they choose not to work for the project and with OWNER. . Maximum appropriate disciplinary action will be taken after investigation.



For Group employees, temporary
workers and personnel from
external companies

OUR LIFE- SAVING RULES

Target: **zero** fatal accident



Do not walk or stand
under a load.



Do not perform hot work
unless the fire or explosion
risks have been eliminated.



Stay out of the path
of moving vehicles,
plant and equipment.



Verify that there is no
live energy (mechanical,
chemical, electrical,
fluids under pressure, etc.)
before starting work.



Clip on your harness
when working at height.



Do not handle your phone
or any other communication
device when driving.



Only enter a trench
if the appropriate wall
supports are in place.



Do not drive under
the influence of alcohol
or drugs.



The atmosphere must be
tested safe before entering
a confined space and
monitored as you work.

Design & Layout: Lucie Edwards/Designation - May 2015



6.15. Signs and Warning Barricades

When hazardous work is to be performed, the appropriate signs, symbols and barrication must be posted by the Contractor and their Subcontractor prior to starting work and must be removed or covered promptly when the hazards no longer exist. Non Compliance shall be reported to the Owner

Danger signs must be used where a hazard exists. Caution signs must be used only to warn against potential hazards or to caution against unsafe practices. Traffic signs to control travel of mobile equipment, vehicles and pedestrians shall be posted throughout the job site. Various safety signs made of material that will withstand weather conditions are displayed throughout the job site.

Warning barricades must be erected and maintained at least two (2) meters from the edge of an excavation or opening. Hard barrication shall be done for the existing facilities nearby to protect from any damage due to construction activities and also water blanketing arrangement shall be done. Warning barricades shall immediately be removed once the hazard is eliminated. No one shall remove safety signs, barricades and tags unless so directed by the proper authority.

6.16. Tools and Equipment

All tools and equipment provided for use on the Project for Contractor and Sub-Contracting personnel shall meet the requirements of current Legislation (The Building and Other Construction Workers Rules 1998) and BIS standards.

Monthly and quarterly maintenance checks shall be conducted for all heating / burning / welding gas equipment. Electrical equipment, power tools and safety equipment will be tested and inspected in accordance with Contractor Procedure and/or Owner SOP.

Lifting & Rigging Equipment shall be complete with current certification. Lifting / rigging equipment and containers will be examined and colour coded at 3 month intervals and re-tested and certified when required in accordance with legal requirements. They shall also be visually inspected prior to each & every use.

Scaffolding shall have current inspection certificates. Steel wire stings ropes and hawsers shall all be inspected monthly along their entire length.

6.17. Fire Prevention and Protection

Firefighting equipment shall be inspected on a regular basis and maintained in good order. In addition, Construction activities shall be catered for by the provision of sufficient numbers and types of fire extinguishers at various locations throughout the working areas.

These extinguishers shall be regularly inspected and maintained by qualified personnel. The Contractor shall follow the Project Emergency Response Plan for dealing with fires on site or in accommodation camps.

Personnel should be trained to use extinguishers and fire hose. Flammable materials shall be stored in properly labelled containers and away from the source of ignition.

Accumulation of trash, oily rags, combustible materials and similar fire hazards of any nature will not be permitted. All welding and cutting torches must be equipped with fire arrest valve.

All alleyways, driveways, roads, stairway, ladder and transformers shall be kept clear of hazardous material and equipment.

Refuelling of diesel equipment shall be done only in prescribed areas and with approved equipment. Contractor shall take all measures to minimize spills and to clean up immediately any spills, which may accidentally occur. Refuelling equipment with the engine running is strictly prohibited.

During any hot work operation, a pressurized fire hose and fire extinguisher, filled in 10Kg dry chemical powder, must be provided at place of hot work.

Fire Watcher / Stand-by Man shall be assigned at any work place where any heating, welding, spark and flame producing is involved.

6.17.1. Deployment of Fire Extinguishers.

Contractor should ensure that adequate numbers of portable fire extinguishers are installed at various locations of the project area. The quantity and location of portable fire extinguishers shall be designed as per the Project fire hazard / fire protection requirement. DCP, Form, and CO2 Fire extinguishers of sufficient Quantity should be kept at all prime locations which are easily accessible for extinguishing the initial fire.

6.17.2. Maintenance of Fire Protection Equipment

The Site HSE Coordinator/ Officer and supervisors are responsible to maintain their own fire extinguisher in operational condition. All fire extinguishers shall be checked every month and confirmed on each sticker or inspection tag. The Site HSE Officer will check this sticker and record will be kept.

6.18. Lock out Tag out (LOTO)

LOTO is a system to manage the risk of exposure of people to energy and hazardous substance by safe isolation of equipment and locking movable device and placing tag at each point of isolation.

6.19. Housekeeping

The Contractor shall maximise good housekeeping by: -

- Regular monitoring of the worksites by Supervision.
- Discussion at HSE Meetings.

The need for good housekeeping practices shall also be discussed at project meetings, HSE induction, tool box talks and HSE forums. Housekeeping inspections will be included in regular inspections / audits conducted by Contractor. The comments and recommendations as a result of the inspection / audit will be allocated to departments or individuals to be either investigated or rectified within an allocated time scale.

As a minimum the Contractor and Sub-contractors housekeeping standards shall involve daily checks to ensure: -

- Overall site cleanliness and tidiness.
- The avoidance of walkway obstructions and tripping hazards.
- Escape routes are maintained free of obstruction at all times, identified and illuminated.
- Access to emergency equipment is not impeded by tools, materials or debris.

- All tools onsite are in good condition and suitable for the job in hand. Tools, surplus materials or debris are removed from the worksite as soon as they are known to be surplus to requirements.
- Appropriate stacking of construction materials and safe storage of all hydrocarbons and other chemicals.
- Posting safety notices in all hazardous areas and in Public places.

Housekeeping is the one of the most important items influencing the efficiency and safety. It is the responsibility of all employees, supervisors and workmen alike to practice good housekeeping.

- Securing of clear access;
- Elimination of potential fire causes;
- Maintaining a safe work environment;
- Maintaining a healthy work environment;
- All supervisors at site of Contractor will give daily inspections instructions. In addition to these inspections;
 - Periodic management inspections and joint inspection by the Site Safety Committee will be organized and conducted by the Contractor;
 - Site Safety committee will establish a scheme to promote a house keeping program;
 - Jointly conduct housekeeping audit and instruct their work areas.

6.20. Control of Substances Hazardous to Health

The Contractor shall ensure that all substances classified as hazardous to health which are transported, used or created during work on the Project are controlled in such a way as to minimise the risk to the health of staff and others and to the environment, in accordance with Indian Regulations. Work conducted by the Contractor and its Sub-contractors that involves the use of hazardous substances shall comply with all the requirements of legislation. Hazardous material related activities shall be monitored by the Contractor to ensure all requirements of the regulations are satisfied. The Contractor shall not accept any materials on site unless accompanied with the Supplier's / Manufacturer's Material Safety Data Sheet documentation. A complete list of all hazardous substances shall be held within the Health, Safety and Environmental Department and a duplicate copy shall be held within the Medical Centre for use in an emergency.

6.20.1. Ionising Radiation

The Contractor shall provide advice and information on radiography as required under the Ionising Radiation Regulations and shall conduct all work in accordance with BIS - IS 2598 - 1966 for Radiography and the Owner Permit to Work system. Suitably qualified personnel shall carry out the work in accordance with the requirements of the regulations and will be subject to routine HSE audit and inspections. The Contractor shall publish and circulate contingency plans for dealing with emergencies involving radioactive isotopes and all radiographers shall be trained in isotope retrieval techniques. Notices shall be displayed on project notice boards and work areas giving details of times and areas where radiography will be taking place and key project personnel shall be given copies of notifications in person.

6.21. Adverse Weather

In the event of adverse weather, the Contractor shall conduct a tour of the worksites to determine if they are safe. Where there is a disagreement, then the ultimate decision whether a site is safe or not will lie with Owner. Owner shall not be responsible for the stoppage of work due to adverse weather. Where adverse weather is forecast, then suitable contingency measures will be implemented before work commences.

Weekly weather forecasts shall be provided by the Contractor.

6.21.1. Heat Stress

Heat stress, from exertion or hot environments, places workers at risk for illnesses such as heat stroke, heat exhaustion or heat cramps. Contractor shall ensure the awareness program on adverse weather and preventive measures.

To prevent heat stress drink plenty of water; at least eight glasses per day and more if involved in vigorous activity.

Prevention-

Learn to recognize the symptoms of heat stress. Pace the work, taking adequate rest periods (in shade or cooler environment).

Use adequate fans for ventilation and cooling, especially when wearing personal protective equipment (PPE).

Site workers have to wear regulation overalls and hardhats. Always try to keep shaded from direct sunshine when possible. Your hardhat will not only protect your head from falling objects and such, but will also protect your head from direct sunshine.

Drink plenty of water. In hot environments the body requires more water than it takes to satisfy thirst. Small quantities taken at frequent intervals, about 150-200 mL of water every 15 to 20 minutes is an effective method for body fluid replacement

Heat Stroke

A condition that occurs when the body becomes unable to control its temperature, and can cause death or permanent disability.

Symptoms

- High body temperature
- Confusion
- Loss of coordination
- Hot, dry skin or profuse sweating
- Throbbing headache
- Seizures, coma

First Aid

- Request immediate medical assistance.
- Move the worker to a cool, shaded area.
- Remove excess clothing and apply cool water to their body.

Heat Exhaustion

The body's response to an excessive loss of water and salt, usually through sweating.

Symptoms

- Rapid heart beat
- Heavy sweating

- Extreme weakness or fatigue
- Dizziness
- Nausea, vomiting

6.22. First Aid and Medical Facility

Contractor shall provide a first aid facility that will be adequately equipped to meet with regulatory requirements. A qualified medical attendant will attend the facility on a 24 hour basis.

Other serious injuries in case of lost time accidents shall be evacuated to the designated hospital for receiving proper treatment according to the Project Emergency Contact Organization.

The Contractor shall ensure that a suitable number of personnel receive formal first aid training on every work site in the ratio of 1 trained first aide to every 50 men on sites

6.22.1. Medical Evacuations

The decision to evacuate an injured person will rest with the qualified Medical Attendant. Evacuation for medical reasons may be for one of the following;

- Injury as a direct result of an accident.
- Ill Health or a recurrence of an illness not associated with an accident.
- In all instances the Medical Attendant will give the advice.

6.23. Occupational Health and Hygiene

The Contractor and their Subcontractor shall ensure that all their Personnel are medically fit to perform the Services. If applicable, the Contractor and their Subcontractor shall adhere to the government regulations and Owner guidelines for medical surveillance or occupation health hazards monitoring. The Contractor and their Sub contractor shall ensure that their personnel shall maintain the highest standards of hygiene. The Contractor and their Sub contractor shall comply with the Company standards for sanitation, sewage, water supply, food canteen, and laundry and garbage disposal.

CONTRACTOR shall be responsible for setting up of temporary wash room/ toilet facilities at site including arrangement of water and daily cleaning and keeping it hygiene. Contractor and Subcontractor personnel found to be littering outside washroom/ toilet facility shall subject to disciplinary action up to termination

Certain work and the handling of some substances may cause dermatitis or other skin diseases, unless the skin is in a healthy condition, kept clean and the appropriate protective clothing and barrier creams are utilised. Washing hands before taking food is essential in all cases, particularly when work involves handling toxic chemicals and other substances.

Care shall be taken to ensure that employees clothing does not become soiled or contaminated to a dangerous extent. Clothing which hazardous substances have contaminated shall be removed immediately.

The Contractor shall make efforts to improve employee's awareness in areas such as:

- Vibration,
- Noise,
- Hazardous substances,
- Lifestyle Health,

All food handlers shall require undergoes specific personal hygiene and food preparation induction. Annual medical examination of food handler shall be ensured. Separate toilet facilities shall be provided for food handlers. Contractor shall ensure the applicable requirement as per FSSAI (Food Safety and Standard Authority of India) guidelines

All personnel shall observe the personal hygiene controls implemented as part of the site canteen preventative disease controls. E.g. the disinfecting of hands prior to entry to canteen facilities is mandatory. Hand disinfectant dispensers shall be made available at all canteen entry points. All staff shall be inducted in their use and reasons for such use in the prevention of illnesses such as "Winter Sickness" disease, Noro virus and other hygiene related illnesses.

6.24. Control of Interface Management

All interfaces between construction and commissioning activities shall be controlled by the permit to work system. The Contractor shall develop a system to control the handover of systems from construction to commissioning for Owner approval.

6.25. Water Abstraction/Discharge

Consultation shall take place with the Owner to determine what licences or consents are required if the project requires extract/discharge water from/to the site water reservoir in excess of the amount permitted.

6.26. Shift Handovers

To reduce the risk of poor communications and lack of appreciation of ongoing activities, which could result in personal injuries, equipment damages etc. the shift handovers have to be effective. Measure to ensure their effectiveness shall include:

- Minuted written handovers,
- Permit reviews at shift end,
- Walk round job sites at shift end,
- Status reports on leak/pressure testing, isolation changes etc.

6.27. Lighting

Sufficient lighting (BIS Standard - IS: SP70 -2000) shall be provided during construction to enable personnel to work safely. All access/egress ways shall be clearly lit.

6.28. Manual Handling / Lifting

The requirements for manual handling shall be minimised and wherever possible, supported by mechanical aids wherever practicable. Specific training in manual handling instruction shall be included within the Health, Safety and Environmental induction programme.

6.29. Shot blast / High Pressure Water Jetting / Coating / Painting

Shot blasting & High Pressure Water Jetting shall be carried out in controlled areas and conditions. Only authorized personnel shall be allowed into these areas whilst blasting / jetting / painting is taking place. Cleaning of shot blast debris and ultimate removal shall be carried out on a regular basis. All personnel working in the blast sheds shall be provided with the appropriate Personal Protective Equipment (PPE) and Respiratory Protective Equipment (RPE) dependent upon the type of operation being carried out and materials being used.

6.30. Access/Egress

Due to the nature and scale of the construction activities, there is increased risk arising from increased and sometimes unauthorised traffic and personnel movements. This could result in personal injury/death, equipment damage and increased pollution.

To reduce the risk the following shall be introduced:

- One-way traffic system, where practicable;
- Barrier protection around vulnerable equipment;
- Ensure all plant drivers are fully trained in the vehicle usage e.g. Crane, Excavator, Fork Lift Trucks, mobile access platforms etc.

6.31. Pressure/Leak Testing

All pressure/leak testing activities shall be controlled by the permit to work system and procedure. Demonstrably competent personnel only shall carry out such operations. Test sites shall be adequately barrier and warning signs placed.

6.32. Lifting Operations & Lifting Equipment

A Rigging Supervisor shall allocate and control all lifting operations, and be assisted by experienced designated Riggers. All ground areas over which cranes/side boom will operate shall be inspected prior to operations. Crane/side boom operators shall be selected from a cadre of experienced operators who have the required experience and certification.

For routine, non-routine lifts or lifts that present potential problems due to their geometry, a lift study shall be conducted by the Contractor design department to identify any risks associated with the activity. The information from the study shall form the basis of tool box talks which will explain the procedure and controls to all personnel involved in the lift.

The Contractor and subcontractor shall ensure the lifting permit shall be obtained prior to start any lifting operation.

The Contractor shall conduct the tool box talk prior to the commencement of the lift. Heavy lifts shall have detailed lifting method statements developed e.g. use of adjustable lifting frame. In order to coordinate between the various authorities who will be carrying out lifting activities, a lifting superintendent shall be appointed. Regular monitoring and auditing of cranes/side boom and their necessary certification shall be carried out by the Contractor's HSE Department. Lifting supervisors and superintendents shall be competent in the control and specifying of rigging equipment and lifting operations. All such personnel shall be approved by Owner. All lifting tackles, slings etc. shall have unique identification numbers permanently marked on them. Contractor shall maintain a register of all lifting tackle, slings, stoops etc. All lifting tackles, slings etc. shall be regularly inspected and have current inspection certificate

All the Safety Requirement related to Lifting and Hoisting shall be implemented and followed throughout the project as mentioned below:

6.32.1. Risk Assessment

Prior to commencing any lifting operations a risk assessment shall be carried out to identify associated hazards, their severity and likelihood of occurrence and should form the basis of the risk assessment process, with the objective of ensuring that all tasks have Low Risk through elimination or adequate control.

All risk assessments shall be formally documented.

The risk assessment shall address but not limited to the following aspects and activities:

- Communication and language difficulties;
- Weight, size, shape and centre of gravity of load;
- Availability of approved lifting points on load;
- Method of slinging/attaching/detaching the load;
- Overturning/load integrity/need for tag lines;
- Suitability and condition of Lifting Equipment to be used;
- Initial and final load positions and how it will get there;
- Lifting over live equipment; If any,
- Number and duration of lift(s);
- Conflicting tasks in area;
- Environmental conditions including weather and permissible limits;
- Lighting in the pick-up and lay-down areas;
- Proximity hazards, obstructions, path of load (e.g. potentially live electrical, hydraulic or pneumatic lines, underground conduits, bridges and overhead structures);
- Working under suspended loads;
- Access and emergency escape routes for the Lifting Appliance Operator and load handlers (e.g. Banks man, Slinger);
- Experience, competence and training of personnel;
- Number of personnel required for task;
- Pre Visibility of the load shall be maintained at all times by either the Lifting Appliance Operator or the person guiding the load (Banks man / Signaller), who shall maintain communication with the Operator at all times either via hand signals, radio or a relay Signal Banks man.-Use Inspection of equipment by Operator;

6.32.2. Define the Lift

If a risk assessment and Lift Plan do exist then they shall be assessed to confirm that they are still applicable (e.g. changes to personnel, equipment, site layout or work environment could all result in the need for re- assessment of hazards). Assuming that significant changes have not taken place then lifting operations may proceed under the requirements of the Lift Plan subject to approval.

If the lifting operations have not been carried out before, a competent person of contractor (with adequate practical and theoretical knowledge and experience of planning lifting operations) shall be appointed and approved by Owner to prepare a Lift Plan – this person may or may not be involved in executing the lift. In defining the lift the following parameters shall be established:

- Load weight, shape, centre of gravity and availability of adequate lifting points;
- Initial and final load positions and how it will get there;
- The environment in which the Lifting Equipment will be used.

Inspection of Lifting Equipment-Inspections shall be carried out by a qualified inspector and shall comply with local Controlling Documents identifying the inspection frequency and acceptance/rejection criteria.

Periodic Inspections-A qualified inspector shall inspect all Lifting Equipment periodically.

Inspection intervals should not exceed the time limit and in any case shall not exceed 12 months. Inspections shall also be conducted if the integrity of the equipment may have been affected due to:

- Involvement in an incident;
- Exposure to overloads;
- Modification or repair;
- Change in condition of use.

Records of all inspections shall be maintained and shall be available for inspection.

6.32.3. Pre-Use Inspection

Prior to each use all items of Lifting Equipment shall be visually inspected by the competent person. It is in a good state of repair and safe to carry out the lifting activity. All the lifting tools and tackles shall be inspected by the third party in accordance with State Factory Rule

A register recording the following data shall be maintained for all Lifting Equipment:

- Manufacturer and description;
- Identification number;
- SWL;
- Date when the equipment was first taken in use;
- Particulars of defects and steps taken to remedy them;
- Dates and numbers of certificates of tests, inspections, and examinations, and name of person who performed these;
- Due dates for previous and next periodic inspection or periodicity of inspections;
- Maintenance Log.

A Lift Plan shall be prepared for every lift. The Lift Plan shall identify:

- The competent person planning the lift;
- Equipment required;
- Personnel required and their particular roles;
- Step-by-step instructions;
- Communication methods to be used;
- Contingency and rescue plans.

All Lift Plans – generic, specific or engineered – shall be developed, reviewed and approved by persons competent to do so as approved by Owner. For example:

- Routine or simple plans could be reviewed and approved by a Crane or Rigging Supervisor;
- Complicated plans by the Site Manager.
- Heavy Lift Plans by a qualified, specialist engineer.

6.32.4. Execution Communication of Lift Plan

- Prior to starting of lifting operations a competent person shall hold a Toolbox Talk with all Personnel assigned to carry out the lift.
- The Person-in-Charge (PIC) shall be clearly identified and made known to all members of the lift team and personnel in the proximity.
- All personnel involved in the lifting operation shall have their individual responsibilities clearly allocated.
- All personnel should have the opportunity to review the findings of the risk assessment and the details of the Lift Plan to ensure that everyone clearly understands and agrees with the methods and control measures to be used.
- Lifting operations shall be conducted in strict accordance with the approved Lift Plan. Any variation from the agreed Lift Plan shall result in the job being stopped and reassessed to ensure continued safe operation.
- The Lifting Appliance Operator shall obey an emergency stop signal at all times, no matter who gives it.
- When lifting operations need to be controlled by signals, a designated signal person shall be assigned. Signals between the Lifting Appliance Operator and the designated signal person (Banks man / Signaller) shall be discernible - audibly or visually - at all times.
- The appropriate load-radius chart for the Lifting Appliance configuration in use shall be visible to the operator.
- Load to be lifted shall be confirmed to be within the rated capacity of the Lifting Equipment and attached by means of suitable Lifting Accessories.
- The Operator of the Lifting Appliance shall not leave the operating controls while the load is suspended unless suitable risk management controls have been put in place for ensuring security of the load and site (e.g. restraining the boom and load hoist, telescoping and slewing (swinging); outrigger function; providing notices and barriers).

6.32.5. Points to remember for a Safe Lifting

- Is everyone aware of and do they fully understand the lifting and hoisting procedures applicable to the lift?
- Does the operator and crews are competent to take up the Task
- Has everyone attended the toolbox talk?

- Has a pre-use inspection of the Lifting Equipment been carried out and are the Lifting Accessories tagged or marked with:
- Ensure Safe Working Load of slings and equipments
- A unique identification number
- A valid third party inspection certification.
- Have the Yellow colour code to demonstrate passed inspection
- Are all safety devices working?
- Does everyone know the Person-in-Charge of the lift?
- Is everyone competent and aware of his or her tasks?
- Is there a current Lift Plan and JSA/RA and does everybody understand the job and precautions?
- Does the Person-in Charge know the load bearing capacity of the crane parking area before lifting?
- Does everyone know the environmental limits (e.g. maximum permissible wind speed) for the lift?
- Is the lift area controlled and is everyone clear if the load falls or swings?
- Are signalling methods and communication agreed and clear to you?

6.32.6. Colour Coding

- Colour-coding entails marking each item with a clearly visible and durable patch of the appropriate colour on quarterly basis.
- For equipment on a quarterly schedule, the color-coding is detailed in the inspection departments' procedure for the control of lifting gear.
- Notices must be prominently displayed around the Site indicating the color(s) 'in date' at the time.
- Where color-coding is also used for ladders, steps or trestles, the same colors and system of coding applies.

6.32.7. Wire Ropes and Slings

Wire ropes and slings must be removed from service if any one or more of the following defects are observed:

- There are more than two broken wires in any single leg.
- The rope diameter has been reduced to less than 95% of its nominal value.
- The rope is distorted due to kinking or crushing, or from core collapse.

- There is any damage or distortion immediately adjacent to the termination.
- There is any damage, apart from superficial surface marking, to the ferrule on a ferrule- secured eye-terminated sling.
- The thimbles are loose or deformed.

6.32.8. Lowering Operation

- Risk assessment shall be carried out before lowering and effective communication should be done among all involved personals.
- Lowering calculation must be exercised and deployment of the lowering crane (side booms) must be done as per appropriate requirement.
- Signalling shall be done by authorised foreman only.
- Ensure appropriate measures are taken for overhead hazards.
- Persons are not allowed towards trench side / under the boom at the time of lowering.

Note- Hydra crane is not permitted to do the lifting operation.

6.33. Welding and Gas Cutting

Gas equipment shall be regularly inspected and a thorough system of inspection / maintenance is to be in place. All gas equipment used shall have flash back arrestors fitted. Personnel carrying out any of the above activities shall be issued with all Personal Protective Equipment (PPE) required including Respiratory Protective Equipment (RPE) and hearing protection.

In addition all Welders shall be issued with fire retardant coveralls.

Flame retardant fire blankets must be used to minimize the possibility of personal injury / damage to equipment by sparks etc. created from welding / burning activities.

Fire extinguishers shall be available throughout the project sites and fire extinguishers shall be positioned close by when carrying out any welding or burning activities for use in the event of an emergency. Gas cylinders shall be securely mounted in the vertical position and shall not be allowed into enclosed areas. Coated / primed surfaces shall be carefully assessed to ascertain whether extra precautions are required.

Contractor shall develop the Hot Work Procedure in line with requirement stated in this PTS.

6.33.1. Hazards

The particular hazards arising from welding, gas cutting and grinding are:-

- Burns from radiation, hot metal splatter or the accidental handling of hot objects
- Damage to the eyes from radiation or flying particles.
- Toxic fumes from the hot work, particularly when working in confined spaces or with contaminated objects.
- Welding and cutting fumes contain nitrogen oxides and ozone from the air, metal oxide fumes from the burning of the base metal and the welding rods, and fumes produced from the burning of the fluxes and any coatings or deposits present.
- Oxygen deficiency from welding or flame cutting in confined spaces.
- Noise from hammering, chiseling and from certain types of welding process.
- Electric shock from certain types of equipment.
- Fire or explosion from hot work or unattended, open and not properly earthed electric currents in areas containing flammable or combustible materials.
- Damage to equipment caused by stray electric currents.
- Fire or explosion from inadequate control of the welding or cutting gases used.
- Spurious activation of flame detectors by radiation disturbing plant controls or protective systems.

6.33.2. Precautions during Electric Arc Welding

- The metal frames and cases of mains-powered welding rectifiers, transformers and voltage regulators and of engine driven welding machines must be positively earthed locally throughout the work.
- Welding leads and return leads must be protected against physical damage.
- Insulated electrode holders and cable lugs / protectors must be used.

- The return lead must be attached to the work piece as close as reasonably practicable to the welding point.
- If mains power is used, the work piece must be positively earthed using a well-protected earth wire connected at both ends by bolted lugs or secure screw clamps.
- Bolted joints in pipelines and structures must not be relied upon to provide adequate electrical continuity for welding currents.
- Electric arc welding should not be carried out on equipment suspended from a crane because of the risk of damage to lifting wires from uncontrolled stray currents.
- Welders must not wear metal rings, bracelets or necklaces during the work as induced currents from the welding equipment might heat these.
- Dry, non-conductive gloves should be worn.
- All Welders shall be issued with fire retardant coveralls.
- The welder must always disconnect the electrode holder from the supply before attempting to replace an electrode.
- The welder should not lean against an earthed conductor whilst manipulating live electrodes.
- Welders working with electrodes fed from different phases of a three-phase supply should not work in close proximity to one another.
- Flame retardant fire blankets must be used to minimize the possibility of personal injury / damage to equipment by sparks etc. created from welding / burning activities
- Fire extinguishers shall be available throughout the project sites and fire extinguishers shall be positioned close by when carrying out any welding or burning activities for use in the event of an emergency

6.33.3. Precautions during Flame Welding and Gas Cutting

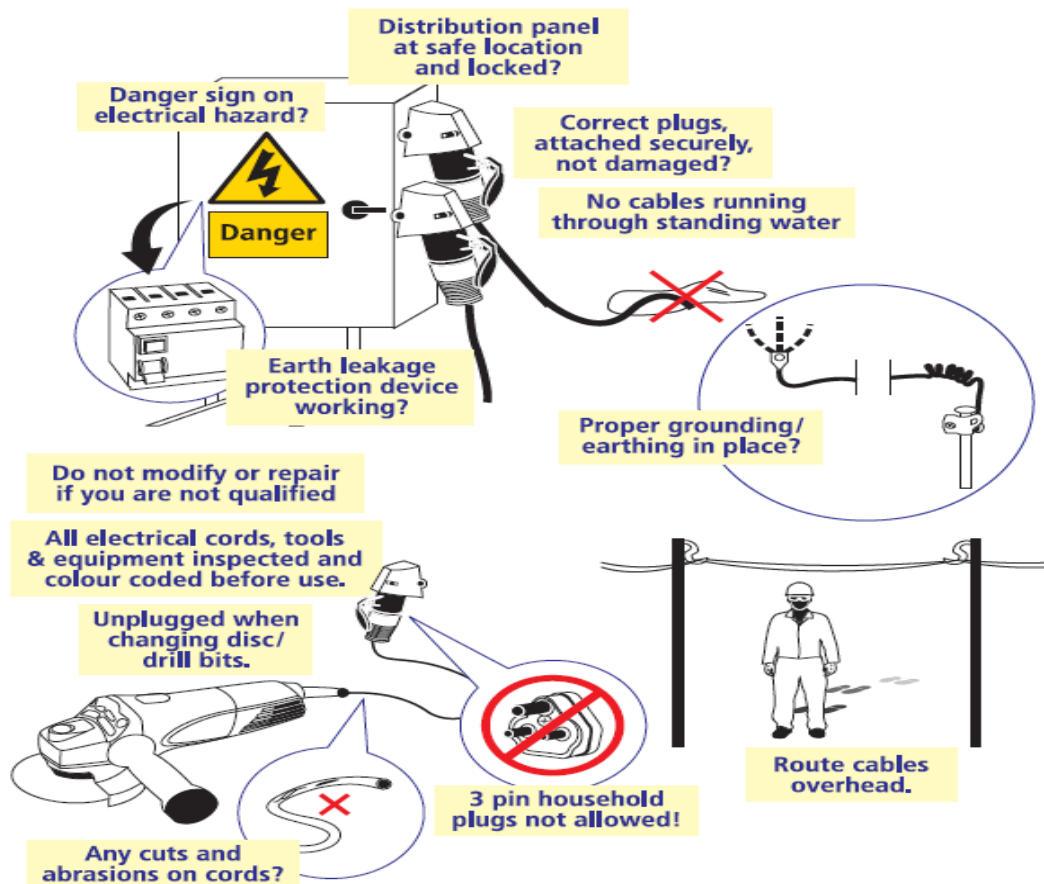
- Gas equipment shall be regularly inspected and a thorough system of inspection / maintenance is to be in place. All gas equipment used shall have flash back arrestors fitted
- Compressed gas cylinders must be kept on the trolley when it is use.
- Gas cylinders must be secured in the vertical position to prevent them being knocked or pulled over.
- Long lengths of hose should be avoided, but; -

- Cylinders must be kept far enough away from the welding or cutting operations to prevent contact with sparks, flames and metal splatter.
- Cylinders must be placed where they are unlikely to be damaged by stray electric currents or falling objects.
- Cylinders must not be taken into confined spaces.
- The torch must always be lit from a lighter provided for the purpose. There should be no attempt to light it from hot metal.
- Fire extinguishers shall be available throughout the project sites and fire extinguishers shall be positioned close by when carrying out any welding or burning activities for use in the event of an emergency

6.34. Electrical Safety

All portable and permanent electrical equipment and appliances used within the Project site buildings shall be checked and certified as required by the Electrical Regulations. The items shall be recorded in the inspection register, and tags are fitted to provide visual evidence that they have been tested, the date of the next test and the fuse rating for the equipment.

All workers who will work with electrical activities shall adhere to Electrical Safety Rules as shown in the picture.



6.35. Radiography

RADIATION is energy in transit in the form of high speed particles and electromagnetic waves. Effects of an exposure to radiation:

- Radiation can cause cancer.
- It may also cause other adverse health effects, including genetic defects in the children of exposed parents or mental retardation in the children, exposed during pregnancy.

Following basic precautions must be observed for radiography operations and transportation:

- Only personal from the recognized inspection organization are authorized to use or transport radioactive sources for testing purposes.
- The Radiography Permit must be completed and signed by the appropriate personnel before work is allowed to commence.
- The radiography area must be barricaded; a blinking light must be active with audible siren while operation is under progress.
- The display of warning sign must be placed at appropriate place to radiography area.
- Throughout the entire duration of testing with radioactive sources, a safety guard will be posted, in addition to the warning signs. The decisions and orders of these safety guards must be strictly adhered to at all the times.
- All primary containers in which radioactive materials is used or stored must be labelled with an approved label showing:
 - The words “Caution Radioactive Material”
 - Identification of the radioactive substance.
 - The amount of radioactivity.
 - The date labeled.
- No individual is to undertake work with radioactive materials or radiation sources without prior sufficient knowledge and training.
- Eating, drinking, smoking and the application of cosmetics are forbidden in work areas where radioactive material is stored or used.
- Return unused radioactive material and radiation sources to proper storage when not in use.
- All authorized personnel are subject to a regular medical checkups and continual medical monitoring; a copy of such medical shall be available for inspection.

Transportation of Radioactive Material:

- Only authorized personnel will be allowed to transport sealed source.
- Radiation warning signs must be fitted to the vehicles carrying the sealed source.
- The source will be located inside a suitable container.
- The container will be secured in the cargo compartment of the vehicle and shall be securely fixed.
- The source will not be transported inside the personnel area of the vehicle.

- The vehicle should never be left unattended when the source is in the vehicle.

6.36. Confined Space Work

A Confined Space is a fully or partially enclosed space that is not designed and constructed for continuous human occupancy, which has limited or restricted means of entry or exit, and where there is a safety or health Risk. Contractor shall develop the Confined space procedure in line with the requirement stated in this PTS.

6.36.1. Common Precautions for Confined Space Entry

Whether or not breathing apparatus is to be worn, the precautions for the entry of personnel into a confined space must include protection of the working atmosphere:

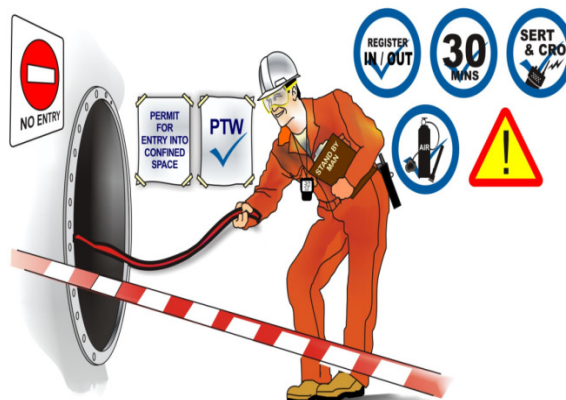
- Clearance of asphyxiant atmospheres from the confined space, except where an inert gas atmosphere is specially required for the work.
- Clearance of vapors or materials that might be flammable or which may release flammable vapors including any coating blisters, which might conceal volatile flammable materials, which is hazardous to health.
- Wind sails, fans or air eductors with fresh air may supplement adequate natural ventilation, except where inert gas conditions are specifically required. Under no circumstances may Oxygen gas be used in an attempt to correct oxygen deficiency in a confined space. The equipment is appropriately selected and properly earthed to avoid any possible source of ignition where there is risk of flammable atmospheres.
- Safeguards against contamination of the space from the surrounding area.
- Any action to be taken in the event of a change in wind direction should be clearly specified.
- Protection against leakage, within the confined space, of any welding or cutting gases used. Provision for safe disposal of any gas or fume produced within the space by the equipment used for the work. Fume extraction facilities may be required.

- Where pneumatic tools are used special care is necessary to ensure that they are not coupled up to Nitrogen supplies by mistake, or to (instrument) air systems and/or without using oilers.
- The initial tests and any re-tests after a period when the space is believed to have become contaminated must be carried out personally by the authorized competent person. Routine monitoring and re-tests after breaks in the work may be delegated to Authorized Gas Testers.
- If electrical equipment is needed inside the Confined Space (e.g. lighting) use low voltage equipment if available. If low voltage equipment is not available, an earth leakage current device or ground fault circuit interrupter must be used to protect entrants against electric shock.

6.36.2. Attendants

Attendant must be present at all times while entrants are in the Confined Space.

The duties of the trained attendant(s) outside the confined space are:



- Prevent unauthorized Entry and take action if conditions change.
- Maintain a record of numbers and names of people in the Confined Space.
- To maintain contact with the person(s) inside and to be able to communicate with other persons in the case of an emergency.
- When breathing apparatus is in use, to ensure that the air supply from outside is maintained and safeguarded against contamination.

To assist in any rescue that might be necessary but not to enter the confined space leaving the outside unattended.

Where language differences exist, at least one attendant must be capable of communication in English and in any other language necessary to be understood by all the persons in the confined space.

In circumstances where it is not possible for the attendant(s) to keep the person(s) inside under continuous observation, suitable personal alarms must be used to maintain continuous communication.

Stop the work and evacuate the Confined Space if ventilation systems fail, contaminants exceed agreed limits, conditions become unsafe, or other emergencies at the site require evacuation.

Activate the emergency response team in the event of emergency.

The Attendant must not attempt a rescue unless it is conducted as defined in the rescue plan.

Arrangements must be made for any necessary recovery operation to be carried out without leaving the space unattended from the outside.

6.36.3. Confined Area (Not Confined Space)

Due to the simultaneous presence of construction and operations it is likely that space on the sites, near facilities, will be congested and confined. This is likely to result in increased risk of personal injury, and equipment damage. Mitigation that should be considered to reduce the risks could include the following:

- Physical segregation of the activities with adequate space and area management controls introduced;
- Implementation of a Simultaneous Operations procedure;
- Introduce traffic routes and controls;
- Introduce pedestrian routes to separate them from vehicle traffic;
- Cross project management and permit meetings;
- Materials storage area;

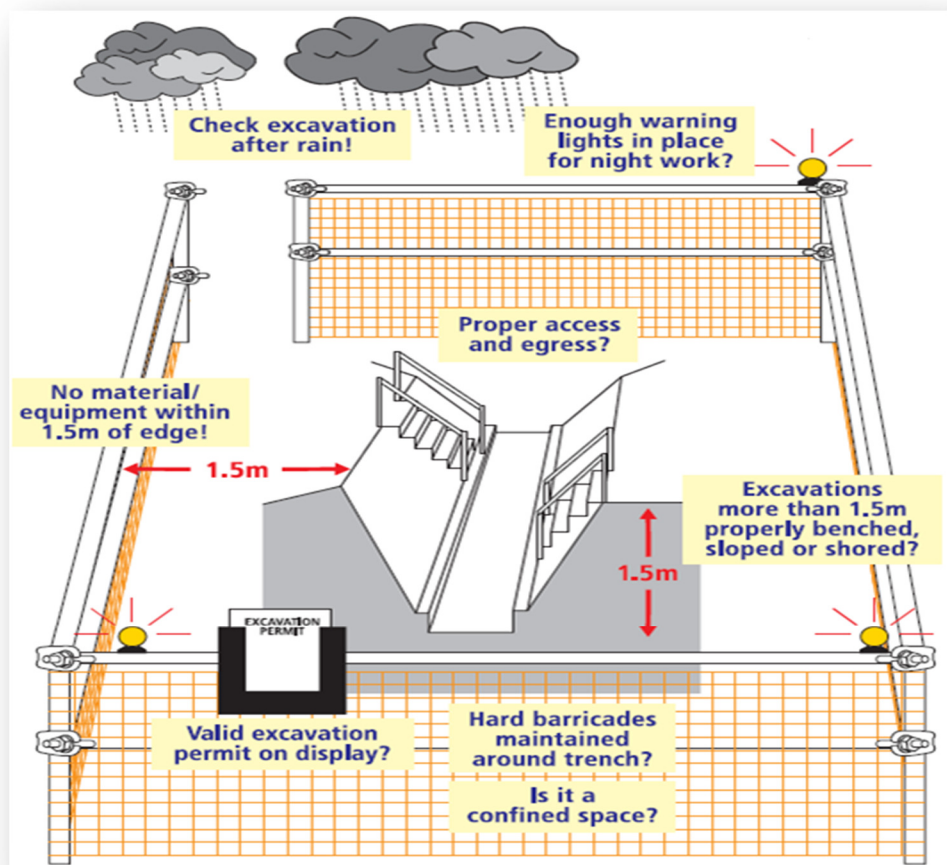
6.37. Excavations

An Excavation is any man-made cut, cavity, trench or depression in the earth's surface, formed when earth is removed. Excavation means any breaking of ground more than 0.5M deep or cutting into floors. It includes the driving of piles, stakes or posts into the ground. It will normally also include breaking/drilling into walls, floors or ceilings. Excavation below 1.2 M must be considered as confined space and shall be supported by Job Safety Analysis/Risk Assessment.

Permit Holder shall be responsible for attaching the underground facilities drawings with permit to work.

Excavation is applies to:

- Excavations on dry land greater than 0.5 meter.



6.37.1. Hazards

During excavation, whether or not below ground, the particular hazards are:-

- Production of sparks in hazardous areas when using power driven or un-wetted tools, or when breaking concrete.
- Damage to buried electric cables.
- Damage to instrument cables.
- Damage to buried pipes or equipment containing hazardous materials.
- Damage to structures of foundations.
- Any noise produced which might drown the sound of emergency alarms.
- Injury to personnel from shock burns etc.

Additionally when working below ground, hazards can arise from:-

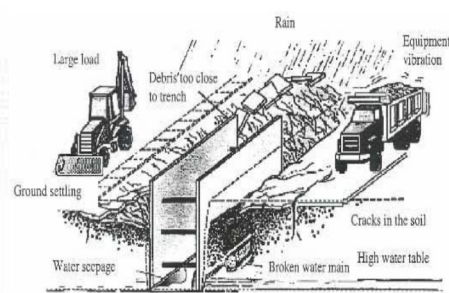
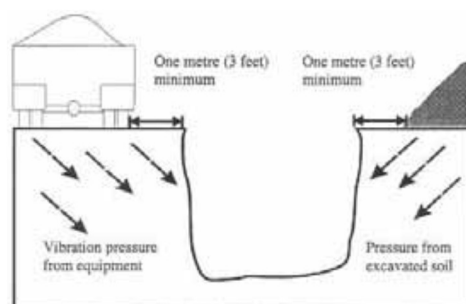
- Accumulation of liquids or vapors, which might lead to explosion, asphyxiation or harm to the health of personnel.
- Collapse of the walls due to inadequate shoring or to over loading around the edges of the excavation. (By close proximity of materials or vehicles)
- Subsidence to adjacent areas.
- Flooding the excavated pit.
- Objects falling into the workings/excavation.

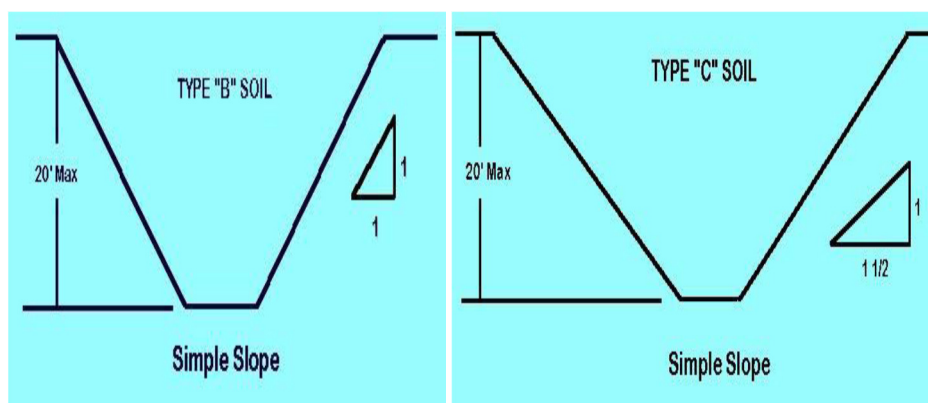
6.37.2. Safety Precautions during Excavation

Following precaution must be taken during the excavation work. These must include provision for:-

- Obtain excavation work permit before starting the work.
- Constraints on the types of tools and the equipment allowed.
- Limitation of the extent of the excavation.
- Action in the unexpected discovery of a cable, cable covers to process pipe.
- Any excavation more than 1.5m deep shall have an excavation protection system. Excavations more than 1.2m deep designated for main access shall have atmospheric monitoring. Excavations more than 6m deep shall have a protection system designed by a Professional Engineer.

- Protection of persons below ground from caving in and falling objects, particularly where excavations are deeper than 1.2 meters.
- Safe access and egress for personnel and vehicles to, and around the excavation.
- Temporary crossing over excavations. These should be constructed at least 0.7 meters wide and be sufficiently strong for the span. There must be a railing on one side if there could be a fall of more than one meter or if the trench is more than 0.7 meters wide.
- Adequate shoring of the sides of the earthworks.
- Avoidance of excessive super loading on the sides of earthworks. A minimum distance between the toe of any earth pile and the edge of the trench is required. This should be at least 1.5 times the depth of the trench.
- Dewatering and avoidance of flooding
- Adequate gas testing and ventilation.
- Daily inspection of earthworks.
- Clearance of unauthorized personnel from the area and the erection of suitable warning signs and barriers.
- Personal protective clothing (including head protection)
- All service crossing the excavation must be supported. Underground service detectors or metal detectors may also be used, giving due regard to the appropriate electrical certification. At points where vehicles may approach the excavation, stop logs must be placed at a safe distance.





6.38. Mechanical Equipment/Machinery Safety

All drivers and operators of mobile plant/mechanical equipment shall be in possession of the appropriate license for the class of vehicle/equipment.

The only safe way of using mechanical equipment is to have properly trained operators, running equipment that is well maintained and carrying out the work for which it was designed.

Training and retraining program of safety for Equipment operator shall be developed.

6.38.1. General Requirements

Maintenance schedule shall be established for each piece of equipment and strictly followed.

At the start of each shift, the operator must check oil, water, fuel, hydraulic levels, that all gauges are operating and that the machine is functioning smoothly. Safety equipment (e.g. guards, limit switches, governors) must be checked daily. Checking log sheets shall be maintained and may be reviewed by Owner.

A competent and trained attendant must be in a position to direct and assist the operator and also mobile heavy equipment such as concrete mixture trucks, dumpers and dump trucks, excavators, graders, dozers, scrapers, and loaders must be installed back-up alarm audible for a distance of 60 meters.

A register shall be maintained for all the mechanical equipment, inspection / test certificates at site.

6.38.2. Compressors

Never use compressed air to dust off clothing or machinery. Horseplay with compressed air must be strictly forbidden. When compressed air is used in special cleaning/purging tasks, goggles and full face shield must be worn.

Before start up, a daily check should be made of the compressor's pressure relief valve, fuel, oil and water levels and the air reservoir should be drained of trapped water. The operating manual for the particular type of compressor used should be strictly followed.

Pressure relief valve shall be tested regularly by an independent examiner.

6.38.3. Excavators

Operators of excavator must possess a valid license for the machine.

Outriggers must be fully extended when operating a mechanical excavator so fitted. A competent and trained attendant must be appointed and be available at all times during excavation to assist and guide any fixed object.

6.38.4. Generators

A competent electrician shall be made available to ensure that electrical connections are properly made. The operator should be responsible only for the mechanical function of the machine. All pulleys, belts, and fans must be totally enclosed or otherwise guarded.

The side panels to the engine cover are designed to give access to the machinery for maintenance or repair. They must be closed at all times when the engine is running. The machine must be properly grounded before each use.

Generator and compressors shall be fully maintained and noise insulated to Best Practical Means. All such equipment shall be carefully sited to reduce noise and fume nuisances, and be regularly maintained. Drip trays shall be used to contain spillages

6.38.5. Fire Prevention Guide for Portable Generators

The following is a typical check list of the major items to look for. There may be other potential fire hazard not listed, therefore a thorough inspection must be made.

- Repair all fuel leaks.
- Check hose and pipe connections for wear and cracks.
- Clean up all fuel spills and place clean sand around area when required.
- Clean up all combustible trash around the generator.
- Sheds constructed of combustible materials placed around generators and wooden base frames are prohibited.
- Exhaust piping system shall be kept away from work areas and combustible materials.
- Generator sets shall be located at least 50 feet from building or materials that may catch fire.
- Inspect all wiring for damage or improper splices/repairs.
- Electrically ground all generator sets (system and frame ground).
- Fire extinguishers must be readily accessible.
- Conduct daily inspections of all generator sets using this guide.
- Two adequate type of fire extinguisher shall be provided.

6.39. Gas Cylinders (Compressed Gas Cylinders)

The transportation, storage, handling and use of compressed gas cylinders should be done with due care. Strictly follow the rules and regulations mentioned in “The Gas Cylinders Rules, 2004”

6.39.1. Safe work practices: General

- Gas cylinders should only be used for the purpose for which they are intended and not as rollers or work supports.
- The cylinders should be stored and handled in such a way that their mechanical strength is not reduced (e.g., by severe corrosion, sharp dents, cuts and so on).
- Only the necessary number of gas cylinders should be kept in working areas or occupied buildings. It is preferable for them to be kept near doors and not in emergency escape routes or difficult-to-reach areas.
- Any cylinders that have been exposed to fires should be clearly marked and returned to the filler, since the cylinders’ may have become brittle or lost their strength.
- All cylinders should be stored in cool, dry, well-ventilated surroundings and away from all flammable materials including oil and greases.

- Cylinders should not be stored in damp areas, or near salt corrosive chemicals, fumes, heat or direct sunlight.
- All cylinders should be properly fastened and supported by chains to prevent them from falling.
- Gas content should be positively identified before use.
- Cylinders should only be connected to equipment meant for the particular service
- Connection should be kept clean and in good order; their condition should be checked at regular intervals.
- Valves should be kept closed when cylinders are not in use.
- Do not repair damaged cylinders yourself.
- Cylinders or connected equipment should be removed from confined spaces when not in use (even during short breaks).
- Each regulator valve should be inspected periodically.
- Cylinders should be protected against contamination from pressurized equipment, since backflow of other gases may lead to serious accidents. Proper non-return valves should be used.
- Empty cylinders should be returned to the filler with the valves closed and the caps in place. A little residual pressure should always be left in the cylinder to prevent contamination with air and moisture.
- Acetylene should only be used at a correctly reduced pressure.
- Flame arrestors should only be used in acetylene lines where acetylene is used with compressed air oxygen.
- Fire extinguishers and heat-protecting gloves should be available with gas welding equipment.
- Liquid gas cylinders should be stored and used in an upright position.
- Poisonous and irritating gases, such as chlorine, should be, handled only by well-trained operators with personal safety equipment.
- Unidentified cylinders should not be kept in stock.

6.39.2. Storage

Valid test certificate of Gas cylinders prior to use must be obtained. The Cylinders, whether empty or full, shall be stored under cover for protection against the elements. The storage place shall be detached from any other building and constructed of non-combustible material.

The building shall be fenced-off and signs shall be displayed both in English and Hindi language: “No Smoking-Naked Lights Prohibited within This Area”, and relevant symbols, e.g. “Flammable Gas”.

Natural ventilation points should be positioned at both high and low levels. Lighting fixtures shall be of an explosion-proof type.

6.39.3. Handling of Cylinders

Cylinders should not be dropped or allowed to come into violent contact with each other. They should be stored and used in an upright position, thus preventing the liquid passing through the regulator and into the equipment. They should not be placed near excavations or any low level areas. They should be placed on level ground and secured to prevent accidental tipping over. Care should be taken that the valve assemblies are not damaged. The main valve should be closed and the valve cap in position when the cylinder is not in use. Smoking should not be permitted when handling cylinders. Compressed gas cylinders must be kept on the trolley when it is in use.

6.39.4. Leakages

Cylinders, valves, connections, hoses, and piping should be regularly inspected for damage or leakage. Small leaks may be confirmed by using soapy water. Leaking cylinder should be immediately removed to an open space, clear of all buildings and people or any potential source of ignition. The cylinder should be placed with the leak uppermost. Supplier should be notified immediately. A detailed emergency response procedure shall be in place for in case of LPG leakage. Employees shall be trained in LPG storage, handling and the emergency response procedures, and drills.

6.39.5. Transportation

Full or empty cylinders which are loaded on vehicles must be placed in an upright position, be adequately secured to prevent movement, and have valve cap in place. The vehicle shall have fire fighting and first aid equipment. The vehicle must also display all the necessary warning notices.

6.39.6. Action in Case of fire

When cylinders are exposed to severe fire conditions and are engulfed in flames, no attempt should be made to extinguish the fire. In such condition, cylinders are likely to explode immediately.

The action to be taken in such an instance is to evacuate the area immediately and call the fire Station. Cylinders which have been exposed to fire conditions must be adequately cooled with water before any attempt is made to remove them. If cylinders are equipped with automatic relief valves and the fire exposure is severe, ignited jets of gas from these valves can extend as far as 6 meters.

In the case of small fire arising from gas leakage, it is possible to extinguish the fire by immediately turning off the cylinder valve. The cylinder should be approached from the opposite direction to the source of fire.

If a fire does not directly involve other cylinders in the vicinity, reserved water in a water tank placed in the vicinity played on those cylinders will prevent increased internal pressure and minimize the risk of explosion. All cylinders which have been involved in a fire must be returned immediately to the supplier.

6.39.7. First Aid

If LPG has inhaled, the affected person must be removed from the area, kept warm and rested, and not allowed to move about. If the affected person is not breathing, mouth-to-mouth or mouth-to-nose resuscitation should be applied.

No attempt should be made to give an unconscious person anything to drink. If the person is breathing, oxygen must be administered by a competent person. If liquid has gone to the eyes, they must be thoroughly washed out with water. Medical aid must be obtained as soon as possible.

6.39.8. Proper Handling of Fuels

- Never use gasoline to start a fire.
- Do not wash clothing or rags in gasoline.
- Gasoline should be handled and transported only in closed cans. It should never be stored inside a closed building.
- Never refuel an engine while it is running or while it is still hot.
- Always use a funnel when refuelling to prevent spilling.

- Never smoke in the vicinity of fuels.
- Always use an electric light or flask light when handling fuels.
- Never use an open flame for lighting purposes.
- Never use a fire when thawing lines or heating engines before starting.
- Keep all flammable materials away from exhausts and repair all fuel lines as soon as any leak is discovered.

6.40. Removal and reinstallation of coating

To perform the safe execution of the work on charged pipeline the following precaution shall be taken:

- Permit to work shall be taken to work on charged line.
- Hazard and risk associated with this activity shall be communicated among the working crew.
- Emergency response shall be explained and periodic mock drill shall be conducted to ensure the preparedness.
- Pipeline depth shall be assessed through pipe locator and maximum 1/3 of the depth can be excavated mechanically. Rest 2/3 of depth shall be excavated manually.
- Emergency response team of Owner as well as contractor shall be well informed in advance prior to execute the work so that necessary isolation and other precaution can be taken in case of sudden release of Gas/Oil.
- Work area must be barricaded to prevent unauthorised entry. Information of activity and potential risk must be communicated to the nearby habitat/community.
- Emergency evacuation provision shall be ensured in case of Gas/Oil release.
- Tools and equipment must be checked prior to start the work and also on periodical basis.
- Work shall be done on exposed pipe line only, not under the hanging or suspended pipeline.
- Removed coating shall be collected and stored separately in storage area to make the work area free from any obstruction.
- Leakage test or leakage monitoring shall be done while doing the recoating of pipeline.

6.41. Holiday detection

- Ensure appropriate PPEs are worn by operator.
- Effective earthing shall be provided to pipe.
- Walking on, Cross over or holding of the pipe by hand during the holiday test is not allowed.
- Keep safe distance from pipe layers while carrying holiday test during lowering.
- Don't pass under suspended pipe for holiday test / set up

7. WORK ENVIRONMENT

7.1. Illumination

To perform the work during night / late evening hours; it shall ensure that the work shall not be carried out unless adequate lighting provided for safe work. Working place, access and stairways must be well illuminated.

Prior approval must be taken from the Owner for working at night or late evening hours.

7.2. Drinking Water

The Contractor shall make in every place where building or other construction work is in progress, effective arrangements to provide and maintain at suitable points conveniently situated for all persons employed there in, a sufficient supply of wholesome drinking water. All Such points shall be legible marked "Drinking Water" in a language understood by a majority of the person employed in such place and no such point shall be situated within six metres of any washing place, Urinal or latrine. Portable containers used for dispensing of drinking water shall have tight fitting lids and be equipped with a tap. These shall be kept clean and free from contamination.

The Water at various locations shall undergo periodic test as per IS: 10500.

7.3. Latrines & Urinals

- Suitable nos. of latrines & urinal shall be provided at site.
- Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have a proper door and fastenings.
- The latrines and urinals shall be adequately lit and shall be maintained in a clean and sanitary condition at all times.
- Latrines and urinals other than those connected with a flush sewage system shall comply with the requirements of the Statutory Authorities.
- Water shall be provided by means of tap or otherwise so as to be conveniently accessible in or near the latrines and urinals.

7.4. Sanitation-Disposal of excreta

Unless otherwise arranged for by the local sanitary authority, arrangements for proper disposal of excreta at the work place shall be ensured by the contractor.

7.5. Medical Facility

7.5.1. First Aid and Medical Provision and Treatment

Adequate first aid facilities, equipment and qualified paramedics/Site Medic for work site shall be provided. A medical room shall be established as per the following specs.

7.5.2. Specifications for field medical Porta-cabin

- Dimension: 20 ft X 8 ft (W) X 10 ft. (H).
- A partition separating doctor's examination chamber and patient treatment section.
- Two fowler beds.
- One examination couch
- A hand washbasin in doctor's chamber.
- A sink in treatment section with a toilet (WC and shower).
- Patient waiting area with chairs / bench.
- Sufficient locker space and shelves for storing medicines, equipment, oxygen cylinder, stretcher etc.

- Covered /shaded ambulance parking area (Separate from the porta cabin).

1.1.1.1.1. Contents of First Aid Box

Sl. No.	ITEMS	Quantity
01	Small size roller Bandage, 1Inch Wide	06 pc.
02	Medium size roller Bandage, 2 inch Wide	06 pc
03	Large size roller Bandage 4 inch Wide	04 pkt.
04	Large size burn dressing	04 pkt.
05	Cotton Wool	04 pkt.
06	Antiseptic Solution Dettol / Savlon	01 Bottle
07	Mecurichrome Solution	01 Bottle
08	Sal Ammonia	01 Bottle
09	Scissors	01 pc
10	Adhesive Plaster	01 spool
11	Eye Pad	04 nos.
12	Tourniquet	01 no.
13	Safety Pins	01 Dozen
14	Tin. Iodine	01 Bottle
15	Burnol	01 No.
16	Wash cup for washing eyes	01 No.
17	Potassium Per magnate	01 pkt.
18	Tine Benzoine	01 Bottle
19	Triangular bandages	02 Nos.
20	Band aid Dressing	06 pc
21	Iodex 25gm.	01 Bottle
22	Tongue Depressor	01 No.
23	Boric Acid Powder 20 gm.	01 pkt.
24	Sodium bicarbonate	01 pkt.
25	Dressing Powder	01 Bottle
26	Medicinal Glass	01 No.
27	Duster	01 No.
28	Soap	01 No.
29	Toothache Solution	01 Bottle
30	Eye Ointment	01 Bottle

31	Vicks 22grm.	01 Bottle
32	Forceps	01 No.
33	Cotton Buds	01 pkt.
34	Note Book (Hindi & English)	01 No.
35	Splints	04 Nos.
36	Lock	01 No.
37	Life saving /Emergency/over-the counter	

7.5.3. Emergency Vehicle

One fully equipped Advanced Life Support ambulance shall be available at site with PARAMEDICS/SITE MEDIC. A mutual tie-up with local hospital shall be established.

7.5.4. First Aid Treatment

Facilities shall be readily available to all personnel and at all times at site. First Aid training shall be considered for some of the supervisory personnel. Regardless of work situations, personnel who are trained and designated for first aid shall be made responsible for taking care of the situation and respond to extend first aid treatment. Contractor and their Subcontractor shall ensure that the adequate no. of first Aider must be available at site.

7.5.5. Medical Examination

Every worker employed in the company shall be produced for medical examination by a qualified medical practitioner in the following manner:

- Once before employment, to ascertain his physical fitness to do the job
- Once in a period of twelve months to ascertain his health status in respect on the occupational health hazards to which he is exposed or at a shorter interval
- The details of pre-employment and periodical medical examination carried out as aforesaid shall be recorded by the concern person in the health register or format.

8. HAZARD WARNING SIGNS, BARRICADES AND SIGNALS

Hazard warnings come in different forms, which include signs, tags, permits, barriers etc. and are primarily meant to caution/educate all personnel and visitors. Explain these with proper narration of SIGNS.

Appropriate and adequate quantity of signs; barricades and signaling supplies are shall be made available by the Contractor and their Sub contractor.

Site supervisor shall make sure that signs, barricades and signals are used, erected and maintained as required to ensure the safety and health of site personnel.

9. STOP WORK ORDER

Contractor shall ensure that any HSE non-compliance observed which may lead to an incident/accident, Stop work order must be issued and work will resume after taking the corrective action.

If contractor fails to ensure, Owner and his representative has the right to issue the Stop Work order. Owner and his representative will not be responsible for the delay in work.

10. DRIVING AND TRANSPORTATION

The Contractor and their Sub-contractors and suppliers shall implement a comprehensive transport plan. The plan shall minimize as far as reasonably practical the potential of vehicular accidents.

Contractors are directly responsible for Road Transport Safety management within their businesses. A road transport policy directive and Journey Management Plan (JMP) shall be a part of the contract for operating vehicles.

Contractors shall perform their activities in a safe manner, adhering to all the points contained in Indian Government Legislation plus the Road Transport Safety and HSE requirements specified in the contract. The Contractor shall communicate the road transport policy directive and JMP requirements to all their drivers. The policy is applicable to the following:

- Contractor owned vehicle, contracted passenger vehicles and drivers or personal vehicle operating on company roads and premises, Public road and in public area or for project work purpose.
- All company contracted heavy vehicle transport on a long term contract i.e. > 3 months.

In the event of a conflict between these guidelines and a relevant law or regulation of the government, the relevant law or regulation shall be followed. If the Standard creates a higher obligation, it should be followed as long as full compliance with the law or regulation is also achieved.

10.1. Evaluation and Risk Management of Land Transport

A systematic and comprehensive hazard identification and risk assessment of land transport operations covering all routes used for normal business travel should be performed at the earliest opportunity and at suitable intervals thereafter, by experienced and suitably qualified personnel and/or agency.

10.1.1. Vehicle Life-cycle

Light vehicles older than 4 years (from the date of its first registration) or have completed a running distance of more than 200,000 km shall be taken out of service. Heavy vehicles older than 10 years shall not be used.

10.1.2. Equipment required in light Vehicles

Vehicles shall be fit for purpose based on an assessment of usage, and be maintained in a safe working order in line with the manufacturers' specifications and local legal requirements. All vehicles must meet the emission specifications as per Motor Vehicle Act, 2008.

All Vehicles shall be fitted / provided with following equipment:

- Head restraints for all seats (may not be available in rear middle seat).
- An electric horn capable of giving audible and sufficient warning (No multi-toned horn giving succession of different notes, harsh, shrill, loud or alarming noise).
- Seat belts.
- Fire extinguisher.
- First aid kit.
- Driver & passenger side mirrors.
- Reversing alarm.
- Suitable spare wheel.
- Fog lamps (In case of hilly terrain or notified by the State Government or prevalence of foggy conditions).
- Flash light/torch.
- Disabled vehicle marker (warning triangle).

Air bags should be fitted for the front seat occupants wherever possible. It is recognized that some utility vehicles or passenger vehicles designated as Commercial vehicles may not have air bags. These vehicles should only be used for operations within the Company operated area only. Vehicles used for intercity travel shall have air bags fitted.

Wherever the risk assessment indicates that vehicle rollover is probable, appropriate roll-over protection shall be installed. Vehicles shall not have any non-original equipment added on for crash protection i.e. Bull bar, additional bumpers or other equipment that changes the front profile of a vehicle. These items create a danger to vehicle occupants, other road users and pedestrians. Items i.e. Perfume bottles, photo frames etc shall not be fixed on dashboards as they can come loose in case of an accident with the potential to cause serious injury to passengers.

10.1.3. Heavy Vehicles

In addition to the above, the following equipment shall be installed / provided in heavy vehicles:

- Side and rear under-run protection.
- Single-piece rims (as available).
- Wheel chocks.

- All bulk liquid HGVs shall be fitted with hatches and fittings that are secure and do not leak in the event of a rollover.
- All vehicles shall be fitted with mudguards and mud flaps.
- All electrical systems shall be in sound condition, securely fastened and with connections in appropriate junction boxes.
- Retread tyres shall not be used on steer axles.
- All delivery vehicles shall be fitted with securing points installed as per the manufacturer's specification so that loads can be secured.

10.1.4. Documents required in the vehicle

All vehicles shall have minimum following documents:

- Certificate of registration.
- Certificate of Insurance.
- Certificate of taxation.
- Driving license.
- Certificate of fitness and permit.
- Pollution under control certificate.
- Emergency contact numbers.
- Route map.
- VHF radio operating instructions (If fitted).

10.1.5. First Aid kit

The Content of the First Aid kit shall be;

- 10 adhesive dressings (Band-Aids) in assorted sizes.
- Six medium sterile dressing.
- Two large sterile dressing.
- One extra large sterile dressing.
- Two sterile eye pads.
- 05 Triangular bandages.
- 05 safety pins.
- One Pair of disposable gloves.
- One elastic crepe bandage 4" size.
- Two roller bandages each of 2.5 cms, 5 cms, 7.5 cms, 10 cms size.
- Six sterilized gauge- each of medium & large size.

- One small bottle of antiseptic solution i.e. Savelon / Dettol etc.
- One small tube of Soframycine antiseptic cream.
- One Pain relieve spray canister e.g. Moov, Rally etc.

10.1.6. Load Arrangements

Loose items shall not be carried in the passenger compartment of any vehicle. Vehicles with non-segregated storage shall be equipped with a cargo net or equivalent to separate the storage area from the passenger area.

Any heavy article carried inside the cabin of a pick-up truck or cargo vehicle, such as, jacks, fire extinguishers, etc shall be firmly secured (e.g. clamped behind the seat).

All loads transported in a pick-up (or utility) truck or other cargo vehicle shall be securely fastened, and shall not exceed the manufacturer's specifications and legal limits of the vehicle.

10.1.7. Condition of Tyres

The Non-Skid Depth (NSD), of all tyres including the spare shall not be less than 1.6 mm, below the Tread Wear Indicator (TWI) embedded in tyres at the time of manufacturing. This applies to the whole area of the tyre.

10.1.8. Seat Belts

Occupants of any vehicle shall use seatbelts at all times

All vehicles (Owned, Contracted, Hired or leased), shall be fitted with seat belts for all seats. Passengers should not occupy such seats if seatbelts are not fitted or functional.

Drivers with passengers shall not move their vehicle without ensuring all occupants of the vehicle are wearing their individual seat belts and continue to wear the seat belt while the vehicle is in motion.

Seat belts for front seat occupants and rear seat outboard passengers shall be of 3-point configuration inertia reels (viz., automatic retraction and deceleration activated emergency locking mechanism). Where there are more than two seats in a row (with exception of front seats), lap belts are acceptable for centre seat passengers.

Use of spot-hire vehicles not properly fitted with seat belts for all passengers shall be avoided when alternatives are available.

The specifications of Safety Belt Assemblies and Safety Belt Anchorages in motor vehicles shall conform to AIS: 005-2000 and AIS: 015-2000 specifications, respectively as amended from time to time.

10.1.9. Side Facing Seats

Side facing seats in the rear of vehicles are not be used for passengers.

10.1.10. Cellular Telephones and Two-way Communications Devices

Drivers shall neither initiate nor answer a mobile telephone call, while driving a vehicle. This includes the sending and reading of text messages. Hands-free devices shall also not be used.

The driver should safely leave the road and bring the vehicle to a complete and safe stop before answering any mobile telephone call.

10.1.11. Speed Limits

Speed limits will be observed in all cases. In exercise of the powers conferred by Motor Vehicles Act, 1988, the Central Government fixed the maximum speed limits in respect of class of motor vehicles. For vehicles registered as a commercial light/medium/heavy motor transport vehicle the maximum speed limit is 65 kph or lesser speed where indicated by road signage and for articulated vehicles (viz., trailers) the limit is 50 kph or lesser speed where indicated by road signage. Leased passenger cars are classified as commercial vehicles and are therefore restricted to the 65 kph limit or lesser speed where indicated by road signage. The speed limit while driving in villages is 30 kph or lesser speed where indicated by road signage and near schools is 15 kph or lesser speed where indicated by road signage. Driving speed shall be reduced when driving in hilly areas or during rainy / foggy conditions and negotiating blind spots as appropriate for the conditions such that the driver is able to maintain full control of the vehicle at all times.

10.1.12. Maintenance of Vehicle

Periodical maintenance of vehicle shall be ensured as follows:

- Daily Routine Inspection.

- Regular Servicing.

The aforesaid maintenance shall be ensured by the vendor if provided by them and by the employee themselves if company leased vehicle provided to them.

10.1.13. Self Driving

Employee must possess valid driving license issued by the relevant public authority for the class of vehicle being operated. It is the employees' responsibility to keep her/his license up-to-date.

10.1.14. Drivers (Contractor/Vendor)

All drivers must possess valid driving license issued by the relevant public authority for the class of vehicle being operated. It is the drivers' responsibility to keep her/his license up-to-date. The driving license should be routinely checked to ensure their status and validity.

In addition, drivers should:

- Have at least 3 years driving experience for the type of vehicle to be driven
- Possess good driving skills, with knowledge of defensive driving skills. These should be evaluated by a test drive of at least 90 minutes duration.
- A comprehensive understanding of road traffic signs which will be tested.
- A driving record free of serious offences i.e. there should be no record of rash or negligent driving etc.
- Knowledge of the major road network in areas to be operated and be able to read a map
- Background will be verified through:
 - Interview.
 - Reference checks.
- Be completely free from drugs and alcohol dependency.
- Be able to read and write.

10.1.15. Drivers Training

Contractor shall ensure that all his employees opt for self driving and Vendor's driver either regular or hired shall complete defensive driving training conducted by a competent agency within one month of commencing driving on Company business. Those drivers not demonstrating adequate knowledge will be re-trained and re-assessed at the Owner/Company discretion and shall not be permitted to drive the vehicle until adequate knowledge is shown. Spot-hire drivers shall have a minimum understanding of defensive driving techniques which shall be ensured by the person responsible for road transport operations

The refresher training and assessment shall be held every year following initial training.

Defensive driving instructions should include the following:

- Defensive driving techniques.
- Tiredness and fatigue management.
- Effects of medication and substance abuse.
- Vehicle restraint systems and safety equipment.
- Pre-journey checks and proper seating position.
- Local driving hazards, regulations and culture.
- Assessment of driving skills and behaviour.

Vendor shall ensure that the special training shall be provided to all drivers who are required to operate specialized vehicles or in the mountains, desert terrain and in high risk environments.

10.1.16. Training Records

Training records of employees/drivers on roll shall be maintained by HR department and Admin to procure training record of drivers provided by vendor/contractors and shall include the following:

- The drivers name.
- Name and duration of the training done.
- Details of the subjects covered and training material used to conduct the training.
- The name and address of the person / organization providing the training.
- Result of the learning measurement exercise.

Contractors will give Owner full access to all records of training conducted.

10.1.17. Driver Fitness and Alertness

Vendor shall ensure the pre-hire medical examination. It shall be carried out to ascertain fitness to work. Vendor shall also ensure that the all regular drivers shall have a medical assessment every two years for those below 40 years of age and every year for those above 40 years.

A driver who has suffered serious illness or injury shall undergo a medical checkup to ascertain fitness before resuming duties.

Prior to a journey the driver fitness shall be checked for the following:

- Hours rested.
- Hours worked.
- No alcohol consumed (Breath analyzer test may be conducted in case of doubt).
- Any ailment or illness or any medication being used.

Drivers must not operate vehicles unless appropriately rested and alert. Drivers must inform management if they have a disability or condition that could prevent them from driving safely

Drivers shall have the absolute right to refuse to drive when they feel that they are not fully rested or alert. Drivers shall have right to pull over at a safe location when they feel sleepy; a minimum 15 minute nap should be allowed. If the driver is still feeling tired, further rest should be given or an alternative driver requested.

Employees shall themselves responsible for medical assessment every two years for those below 40 years of age and every year for those above 40 years

10.1.18. Driver's duty hours and rest breaks

It must be ensured that the drivers have sufficient rest hours and off periods to enable safe driving. Drivers should have a minimum rest period of 8 hours per day.

Drivers shall have a 15 minutes break for every 2 hours of driving.

10.1.19. Alcohol, drugs, narcotics or medications

Drivers shall not operate a vehicle while under the influence of alcohol, drugs, narcotics or medication that could impair the driver's ability to safely drive the vehicle. Testing may be carried out randomly for alcohol and drugs.

10.1.20. Briefings

A safety briefing should be conducted by the Contractor's supervisor or Road Safety Officer on a regular basis. Some of the issues recommended to be covered in the briefing are:

- Lapses noticed.
- Any road safety related incidents.
- Speed limits.
- Communication procedures.
- Use of fire extinguisher.
- First aid.
- Emergency procedure.
- Any local government orders or road safety drives.
- Weather conditions and precautions to be taken.

10.1.21. Journey Management Plan

Any practical and effective alternatives to the journey should be examined beforehand, such as the use of mail, e-mail, audio equipment or video-conferencing.

If the employee's journey is really necessary, the choice of transport and itinerary must take into account an assessment of the risks involved. Generally speaking, public transport (whether on the ground or by air) is preferable to car travel.

The use of motorized two-wheelers (mopeds and motorcycles, including those with three wheels) for work purposes should be prohibited. However, an Owner may authorize it for operational reasons, provided it prescribes appropriate preventive measures.

Managers at every level are empowered to question the need for journeys, always searching to eliminate the journey or find an alternative means to achieving the journey objective. Where a journey is necessary, all risks will be assessed and a journey management plan (JMP) implemented. Journeys within city boundaries (anywhere in India) do not require a JMP.

In Field locations, all journeys shall be managed by following the Journey Management Plan and Procedure. Periodic audits shall be conducted on the system to assess effectiveness.

The JMP form to be issued to all vehicles in local language and English prior to commencement of the journey.

10.1.22. Night Driving

Night driving outside of city limits is prohibited. In emergency situations, permission for night driving may be granted by the Contractor designated authority:

In situations where night working is essential e.g. projects or operations with 24 hours activities, night driving shall be allowed where necessary with the appropriate JMP in place.

10.1.23. Hitch-hikers

Hitch-hikers are not allowed to travel in company hired vehicles and self –driven vehicle. The Policy explicitly prohibits drivers on Company business from providing lifts for hitch-hikers.

10.1.24. Smoking

Smoking inside vehicles is strictly prohibited.

10.1.25. Spot Hire Vehicles

Use of spot-hire vehicles not meeting the above requirements is to be avoided. Spot hire vehicles are only to be used as a last resort when all other options have been eliminated. Approval for exemption from the policy shall be obtained from the respective Head of Department of Contractor. To minimize travel risk when travelling in spot hire vehicles it is recommended that the front passenger seats are not used, and that passengers are requested to stay seated throughout the journey and to sit well back in their seat

10.1.26. Use of Personal Vehicles

Contractor shall ensure that the personal vehicles used on company business should be consistent with the above specifications. All people working for the Company and commuting to offices on two wheelers shall (including pillion) wear crash helmets. Helmets should be replaced when damaged.

10.1.27. Movement of Vehicles within Plant Premises

Vehicles meeting the above requirements shall be permitted to enter Company controlled sites and shall follow the site specific vehicle safety regulations.

10.1.28. Site Traffic Plan

Every site where there is a risk of collision between pedestrians and vehicles or between different vehicles must have a formalized traffic plan. This traffic plan must include at least the following:

- A description of, and measures to organise, the flows of pedestrians and different types of vehicle using the site, either regularly or occasionally
- If necessary, a site zoning plan showing zones for loading, unloading, driving, parking, vehicle operations, etc is produced.
- A description of how the zones are indicated on the ground and the signage that is in place (including signs relating to local road traffic regulations)
- Safety instructions for people moving around the site, including speed limits and instructions for pedestrians.
- The name of the person responsible for the traffic plan.

The traffic plan must be displayed at the entrance to the site and explained to new employees, visitors and staff from outside companies.

10.1.29. Incidents / Accidents

Accidents or Incidents shall be reported immediately in accordance with Owner procedures. Road safety and procedure for reporting near miss and accident shall be discussed in the project meeting periodically. Drivers shall be trained in the emergency response procedures associated with travel.

10.1.30. Monitor, Audit and Review

Contractor and their sub-contractor admin department will continue to monitor the compliance of Road Safety Norms. A system of planned and systematic audits of land transport operations together with management reviews of performance should be established and maintained as an integral part of road transport operations.

The requirements of the Road transport safety policy guidance will form part of the basis of the audits protocols to be used by the Safety Audit. Noncompliance of the policy guidance may be subject to the disciplinary action/penalty procedure.

11. EMERGENCY MANAGEMENT

General

Emergency Management Plan during the construction and commissioning phase will be prepared by contractor in line with the Owner Emergency Plan and approved by Owner comprising

- An Emergency Response Plan and
- An Emergency Evacuation Plan

Emergency Response Plan

The Emergency Response Plan must cover different types of incidents that may endanger human life, material or the environment and where immediate action is required.

Especially in case of:

- Fire / Explosion
- Sudden release of Gas/oil
- Collapse of trenching
- Strikes
- Mob attack by villagers
- Severe weather/flood and other natural disasters.
- Customer operation hazardous events (existing line)
- Bomb attack/ Bomb threat

The plan must cover procedures regarding to the above mentioned subjects.

The Emergency Telephone List must be provided at Site and must be kept updated at any time.

Emergency escape route shall be marked and assembly point shall be fixed as site locations are changed and this is explained to workers during toolbox talks.

The CONTRACTOR shall ensure that their personnel are familiar with the essential emergency equipment, such as breathing apparatus, fire extinguishers etc., the use of which shall be demonstrated and practiced in drills.

The CONTRACTOR shall monitor & review Emergency Management Plan continuously including the location and condition of the emergency equipment. If it found to be unsatisfactory or not fully for the services, it shall take steps to immediately improve them

11.1. Site Emergency Preparedness and Response

Personnel must be instructed of the actions to take in the event of serious personal injury, gas or toxic release, fire, explosion, heavy rains, wind storms, flooding, chemical spillage, land slide, scaffolding or structure collapse, critical damage to operating equipment, etc. and other emergency situations during the induction training and other ongoing training sessions.

These situations may demand adequate rescue and relief measure to handle such events quickly and effectively.

In an emergency or on hearing the alarm, ensure the following;

- All work is stopped at once.
- All equipment vehicles and tools are shut down (all sources of ignition).
- All men are evacuated to a pre-determined Muster point.
- A roll call is taken and every man is accounted for.
- No one is permitted to return to work until notification has been received from the OWNER representative that it is safe to do so.

11.2. Emergency Preparedness

The basic and essential features of any emergency Preparedness are to analyses and plan for the potential risk. This includes;

- Establishing and maintaining effective communications.
- Liaison with local emergency services and authorities.
- Action Procedure (evacuation routes and assembly points etc.)
- Appoint of key personnel and specifying their duties and responsibility.
- Emergency Response Drills.

11.3. Emergency Response Drills

Effectiveness and comprehensiveness of Emergency Response Plan must be tested on a min quarterly basis. Drills which reflect the conditions induced from the more likely emergency occurrences must be conducted.

This shall include:

- Plan, coordinate and execute emergency drills which effectively test existing emergency response procedures.
- Basic drills for fire evacuation form site support facilities and offices shall be conducted.
- Specific Emergency drills (confined space rescue, weather etc.) should be conducted. All emergency drills, exercises and responses to actual incidents shall be fully documented and followed by a complete review and when necessary, procedure revision process.
- Initiate any required procedural changes, and initiate the dissemination of any lessons learned through the Site HSE&S communication system.

12. ENVIRONMENTAL PROTECTION AND MANAGEMENT

Environmental issues shall be highlighted in Contractor's Construction Environment Management Plan. Pollution, contamination and environmental damage is a major focus area and every effort shall be made, to have effective control measures in place to avoid pollution of Air, Water, and Land and associated life. Waste disposal shall be in accordance with the statutory requirements.

Any chemical including solvents and paints, required for construction shall be stored in designated areas at the site and records of hazardous waste shall be registered in accordance with the Hazardous Waste procedure.

The main objectives are: -

- To assess the environmental condition of the area where the construction is carried out.
- To provide timely indication if any environmental control measure fails.
- To achieve laid down/acceptable standards.
- To monitor effectiveness of environmental mitigation measures.
- Ensure compliance with regulatory requirements, Pollution Control Act and similar laws and codes as applicable for control of environment pollutants (such as dusty air, noise, dirty water as applicable).

Plant and Equipment

Plant and equipment are potential sources of pollutants, so it is important to be concerned of the location and role of the plant equipped. Potential source of the air pollution

The main pollutants, which will come out from different construction activities would be suspended particulate matter (SPM). The main sources of air pollution are:-

- Exhaust coming out from different equipment.
- Dust generated as the result of different construction activities.
- Dust and suspended particles during transportation of material.

12.1. Mitigation measures including contingency plans

Transportation of material from one place to another generates air pollution, which degrades the atmosphere of the area. To minimize the pollution, precaution will be taken to minimize visible particulate matter from being generated by restricting speed of vehicles on off road.

Dust Control

Water spraying shall be undertaken to control dust in case heavy transportation over non-mettle roads generate dust in the camp or pipe yard. Restricted speed of vehicles on off road shall be maintained to minimize dust generation. Dust mask shall be provided to workmen working in dusty zone.

Contingency Plan

If any emission or discharge into the environment exceeds the limiting value (either accidental or through inadequate implementation of mitigation measures), the cause will be quickly identified and remedial action shall be taken immediately.

Noise Monitoring & Control Plan (NMCP)

The noise monitoring and control plan shall contain the source of noise pollution on construction site. It also contain the mitigation measures to be taken.

Source of Noise Pollution

The noise generated during the running of the different equipment.

- Noise generated during truck loading and unloading and hauling operations.
- Noise generated due to generator.
- Noise generated at site during operation of crane, dozer, welding, grinding etc.
- Noise generated due to vehicular movement.

Noise Control Measures (PPE): Earplug / Ear muff shall be provided to personnel working in noisy area.

Mitigation Measures

To the extent required, meeting the noise limits, efforts will be made to reduce the noise pollution. The following steps will be taken to minimize construction noise emission level.

- Scheduling truck/trailer loading, unloading and hauling operation so as to minimize noise impact near noise sensitive location and surrounding communities.
- Locating stationary equipment so as to minimize noise impact on the community.
- Equipment and plant are stopped when not in use.
- Use of only well maintained machinery at site, all equipment & vehicles will be serviced as per the maintenance schedule.
- Silencers and mufflers on all noise generating equipment shall be properly fitted and maintained.
- Schedule the work to avoid simultaneous activities that would generate high noise levels.
- Construction of temporary physical noise barriers wherever required.
- Diesel Generator sets will be provided with acoustic enclosures.

Water pollution control

- Discharged wastewater arising from site offices, canteens, etc. shall be discharged into sewer after obtaining permission from concerned authorities.
- Wastewater from the residential blocks in the camp will be treated in a Sewage Treatment Plant prior to disposal. The STP would have a tertiary treatment so that the treated wastewater could be reused for toilet flushing, thus reducing wastewater generation.
- All drains shall be cleaned daily & settlement tanks shall be cleaned every week or earlier as per site requirements.

Cesspool collection of all site toilets/office/workshop toilets will be transferred to STP collection of camp. Treated discharge is either to a sub surface absorption system or to a surface absorption system and performed in a manner that avoids erosion. The STP in the camp would be equipped with a treatment facility such that the treated wastewater can be recycled and reused for toilet flushing within the camp.

In the event of any spillage, the principle is to recover as much material as possible before it enters a drainage system and to take all possible action to prevent spilled materials from running off the site. Contractor shall use appropriate clean-up techniques.

12.2. WASTE MANAGEMENT PLAN

The contractor shall identify and record wastes that will be generated during construction and shall arrange for their disposal in compliance with applicable regulations and best practices.

The impact of waste shall be reduced through segregated collection. During mobilization, construction, demobilization, the subcontractor shall minimize the waste through material selection.

Waste handling shall be in compliance with applicable Legislation and clients requirements. All waste shall be stored in such a way that it is not accessible to unauthorized persons. Contractors shall register all chemicals on stock at the Construction site. Waste registration shall include as a minimum:

- The type (e.g. chemical waste)
- The amount
- The composition
- The source of origin
- The destination
- The method of transport
- Hazardous to health.

WASTE COLLECTION

- Waste shall be categorized as follows: wood, metal, chemicals, coating scrap, paper, plastic and household garbage.
- Chemical waste disposed off during the construction site activities shall be registered in Waste log
- No waste, regardless of composition, shall be drained to process sewers, trenches, ditches or channels.
- A sufficient number of containers shall be provided on site to store trash and debris resulting from any construction operations
- Any uncontrolled emission shall be reported immediately.

WASTE SEGREGATION

Waste segregation exercise shall involve sorting and separating waste on the basis of its characteristics. Waste materials shall be segregated at source by providing colour and marked bins for storing the waste.

Special plastic lined corrugated box type containers shall be used for medical waste

WASTE DISPOSAL

- Sufficient containers and scrap disposal area should be allocated.

- All scrap bin and containers should be conveniently located.
- Provide self-closing containers for flammable/spontaneously combustible material.
- Keep drainage channels free from choking.
- Make schedule for collection and disposal of waste.
- No toxic, corrosive or flammable substance discarded into public sewage system.
- Waste disposal shall be in accordance with best practice.

Where reuse or recycling is not possible for non-hazardous waste streams, disposal of non-hazardous waste will be at the recognised Landfill, which is a designated by legal authority.

All hazardous waste generated at the site will be transferred to government approved waste disposal party.

WARNING AND SIGNS

All waste bin / containers shall be properly labelled in local and English language. Containers for hazardous waste and medical waste would have the proper warning signage on it.

WASTE TRANSPORTATION

Solid waste shall be collected in specially marked containers, as previously identified. Solid waste shall be collected regularly by collection trucks and transported to the disposal site. Sanitary waste will be transported to the sewage plant by an under ground sewer collection system where possible. Contaminated soils shall be collected by earth moving equipment loaded on to trucks, and transported to disposal site.

WASTE WATER DISPOSAL

Wastewater shall be treated to render it acceptable for discharge. Sanitary wastes generated within site office area may be transported by vacuum cars or diverted through the sanitary sewer. It shall be ensured that the effluent from the toilets and other wastes are treated in the Sewerage treatment Plant at the camp to meet the local municipal effluent criteria. A portion of treated wastewater shall be recycled and reused for toilet flushing within the camp.

Raw sewage and other wastewater shall not be discharged into soil or surface water without treatment.

12.3. Spill Response

The Contractor shall have a spill prevention programme and provide spill kits to deal with any spill. Should spills of chemicals, hydrocarbons or other potentially damaging materials occur or be observed by Contractor or Subcontractors staff, the following actions must be taken: -

- Attempt to contain spills to minimise potential pollution where practicable.
- Spillage response kits shall be positioned at strategic locations around the project, dependent upon the potential risk.
- Inform Owner Project Management / Supervision / HSE Management.
- Where necessary, report the spill to the Emergency Services, local authorities, Environmental Agency etc.
- Once the incident is under control, the Supervisor shall complete an incident report, with the assistance of the Contractor HSE Manager, which will be copied to the Project Manager.
- The Contractor shall fully comply with all statutory and Company requirements relating to the environment. The Contractor shall comply with all legislation regarding the disposal of waste materials such as Hazardous waste management and handling rules 1998; Manufacture, storage, and import of hazardous chemical rules 1998; Bio Medical waste rules 1998; Municipal solid waste rules 1998; Batteries rules 2001; Ozone depleting substances rules 2000.

13. CHECKING

13.1. Performance measurement and monitoring

13.1.1. Evaluation of Vendor /Sub Contractor HSE Performance

Vendor/Sub contractor HSE performance shall be evaluated during bid evaluation process as well as after completion of the work awarded.

13.1.2. HSE Performance Monitoring and Reporting

Contractor shall be responsible to provide the HSE data based on the Objective and Target to the Owner on Monthly Basis.

13.1.3. Implement, Monitor and Control

The Contractor HSE Management System shall follow the Plan-Do-Check-Act cycle as an integral mechanism in the implementation of management system control. This forms the first level of continuous performance improvement and should be affected directly by the personnel who operate the process. The effectiveness of the HSE controls within the management system should be evaluated by the use of:

- Active monitoring which measures compliance with standards and achievement of objectives.
- Reactive monitoring which measures accidents, incidents, ill health, hazard and non-conformance reports.
- Continuous improvement.
- Measures used for both active and reactive monitoring shall be supported by formal procedures which ensure that suitable corrective and as necessary preventative actions are identified.

13.1.4. Active Monitoring

Active Monitoring carried out shall include:

- Pre-use inspection of plant equipment and tools.
- Inspection of premises / sites, plant and equipment by supervisors, and other employees to ensure the continued operation of hardware controls.
- Materials and workmanship inspection.
- Inspections and examinations carried out by external organizations as legally required arrangements for the preventative maintenance of plant and equipment e.g. pressure vessels, lifting equipment, scaffolds, local exhaust ventilation etc.
- Conducting task based risk assessment and periodic review of same.
- Observation of work and behavior by first line supervisors to assess compliance with procedure rules and systems.

- Assessment of employee's attitudes to safety.
- Assessment of individual performance by means of employee workplace assessments as part of a competence assurance system.
- Monitoring of compliance with defined procedures - standards and targets e.g. Tool Box Talks, Safety Meetings, Inspections.

1.1.1.1.2. Reactive Monitoring

Reactive monitoring includes recognition, consideration and reporting of:

- Injuries and cases of ill health.
- Other loss events e.g. property damage, fire.
- Incidents including "near misses" with the potential to cause injury, ill health, damage, loss or harm to the environment.
- Hazards.
- Weakness or omissions in the company arrangements.
- Complaints.

Formal procedures shall exist to ensure the systematic recording of accidents, incidents, defects and hazards so that causes and potential losses may be analysed, corrective actions identified and implemented. Investigation to determine underlying causes should also highlight negative aspects of the operation of the Management System; however, these should be viewed as "learning opportunities" allowing improvements to be made and the direction or resources and attention towards safety and environmental priorities thus strengthening the Management System

13.2. Site HSE Inspection/ Audit

13.2.1. Audit

The Site HSE Inspections/Audit shall be planned and conducted by the Contractor HSE Manager / Officer and follow up shall be done in their area of operation. HSE audits shall be conducted to an agreed audit schedule by a combined Contractor and Owner audit team to evaluate compliance with the HSE Management System and Project Health, Safety & Environmental Plan. This audit shall be conducted by the Contractor HSE and Owner Personnel. The aim is to perform the audits as the relevant activities are being carried out in order to maximize the benefit of the audit and have the opportunity to implement corrective actions when the function is taking place.

13.2.2. Inspection

Supervisors and HSE Officer shall be responsible for carrying out daily inspections of the workplace where fabrication and construction activities are being undertaken.

Comprehensive inspection of the site shall be conducted on the Monthly basis and compliance status shall be discussed with the party concern.

All operators must check their equipment before starting the work. They should carry out a thorough visual check, recording all defects in equipment daily operation check list. On completion of the check they must report his deficiencies to their immediate supervisor and record.

At the start of his work period the supervisors must inspect the area for which he is responsible. He should conduct a thorough visual check of all tools, equipment and site. On completion of the inspection the defects must be corrected immediately.

13.2.3. Evaluation of compliance

The applicable legal and other requirement shall be evaluated periodically for their compliance. HSE Manager/ Officer of the contractor and their subcontractor shall evaluate in their area of operation.

14. INCIDENT INVESTIGATION, NONCONFORMITY, CORRECTIVE ACTION AND PREVENTIVE ACTION

14.1. Accident / Incident Prevention

To prevent injury and damage, it is necessary to recognize potential hazards and take action to control or eliminate them. This involve systems of control, which shall include safe methods of work, adequate supervision, planned maintenance, machinery guarding, personal protection and personal HSE awareness.

14.2. Accident / Incident Reporting & Investigation

The Contractor shall immediately notify the OWNER of all accidents or near-miss incidents after getting the information from the subcontractor or witnessing directly with grave potential resulting in: -

- Fatality and other lost time injury.
- Comparable injury to third party.
- Damage to plant or equipment.
- Loss of containment.
- Actual or potential damage to the environment and outbreak of fire

Contractor shall follow the timelines for notification as mentioned below based on the severity of the incident.

Incident Severity	Report by	Report to	Report within	Report via
Fatality Recordable Illness or Injury	Const. Manager or Site Rep.	Project Director/ Head of Project / PM Construction	ASAP 6 hrs	Phone Initial Incident Notification Report
Serious Accident	Project Director	Owner General Management	12 hrs	Initial Incident Notification Report
High Potential Incident	Const. Manager or Site Rep.	Project Director / Head of Project / PM Construction	ASAP 6 hrs	Phone Initial Incident

				Notification Report
	Project Director	OIL General Management	12 hrs	Initial Incident Notification Report
All other incidents & Near Miss	All personnel	Line Supervisor	ASAP	Verbal, followed by appropriate report

The Contractor shall develop the Incident Reporting and Investigation Procedure. All injuries must be reported to the Medical Centre. In addition all accidents and incidents, whether or not they cause injury, loss or damage shall be reported to the person's immediate supervisor in accordance with the Incident Reporting and Investigation Procedure. The Project HSE Adviser/Manager and the Construction Engineers will carry out a preliminary investigation into the accident / incident and will use the "Potential Matrix" system to determine the level of investigation required.

The Potential Matrix system has been developed to ensure all accident / incidents are investigated to determine what the full potential of an accident / incident in terms of injury to personnel, loss / damage to equipment / assets and harm to the environment.

The potential of an accident / incident will determine the level of investigation required and the members of the Investigation Team. The teams will typically include, but not be limited to:-

Investigation level	Investigation Team
Level 1	Project HSE Adviser/Manager
Level 2	Line Supervisor / Construction Engineers / Safety Representative / Project HSE Adviser
Level 3	Line Supervisor / Construction Engineers / Safety Representative / Project HSE Adviser / Project Manager / HSE Manager
Level 4	Line Supervisor / Construction Engineers / Safety Representative / Project HSE Adviser / Project Manager / HSE Manager / General Manager

The Contractor Project Manager shall ensure that all accidents / incidents are fully investigated in accordance with the above procedure and corrective actions to prevent recurrence implemented immediately. Investigation findings shall be reported back to the workforce via Safety Representatives and Supervisors.

All accidents involving Contractor and Sub-contractors personnel shall be reported to the Medical Centre and shall be recorded by the Medical Attendant in the daily accident log, the Accident Book and Accident / Incident and Occupational Illness Report form.

14.2.1. Accident / Incident Reports

The Contractor Health, Safety and Environmental Department shall collate information and statistics which shall be used in the preparation of reports and which shall be submitted to the Project Manager and other interested parties. Reports shall be produced on a monthly basis and shall include details of all accidents / incidents and near misses that have occurred during the last month.

Any accident, incident or hazardous situation linked to failure to comply with Life-Saving Rules shall be analysed by level 4 team and documented.

The Contractor must, as soon as possible, implement the relevant corrective measures. Specifically, if necessary, the safety guidelines and health and Interference Prevention Plans in question shall be revised. In case of any fatality contractor shall inform to local police immediately and other govt. Officials like labour commissioner etc. within 24 hours with consultation with the Owner

All the incident/accident shall be investigated and analyzed to identify the underlying causes and provide opportunity for the corrective and preventive action and communicate the result of such investigation.

Actual and potential non-conformity of the process shall be identified and corrective and preventive action shall be taken to mitigate their HSE consequences. Corrective and preventive action taken shall be communicated.

15. CONTROL OF RECORDS

Contractor shall follow the Owner procedure for the identification, storage, protection, retrieval, retention and disposal of records.

Records shall remain legible, identifiable and traceable.

16. MANAGEMENT REVIEW

Reviews shall include assessing opportunities for improvement and the need for changes to the HSE Management system (if required). Records of the management reviews shall be retained.

Input to management reviews shall include:

- HSE Plan.
- Results of internal audits and evaluations of compliance with applicable legal requirements and with other requirements to which the organization subscribes;
- The results of participation and consultation.
- Relevant communication(s) from external interested parties, including complaints;
- HSE performance;
- The extent to which objectives have been met;
- Status of incident investigations, corrective actions and preventive actions;
- Follow-up actions from previous management reviews;
- Changing circumstances, including developments in legal and other requirements related to HSE; and
- Recommendations for improvement.

The outputs from management reviews shall be consistent with the organization's commitment to continual improvement and shall include any decisions and actions related to possible changes to:

- HSE performance;
- HSE policy and objectives;
- Resources; and

- Other elements of the HSE management systems;

Relevant outputs from management review shall be made available for communication and consultation

Site has to conduct monthly HSE committee meeting. Record of the MOM shall be made and signed off by the chairman of the committee.

The Company reporting procedure shall be used to provide the basis for monitoring HSE performance and the assessment of improvement measures. Contractor shall report near miss incidents and property damage as a significant contributing factor to a pro-active HSE program.

17. PENALTIES

All contractors / subcontractors and contractor employees working in this project shall comply with HSE procedures, guidelines and safe work practice. Warning shall be given in case of violation followed by penalties which may be from Rs.10000 to Rs. 50000 as per owner discretion.

18. FORMATS

Contractor shall develop the project specific formats to ensure the various inspection, auditing and monitoring process. Contractor shall also develop the various formats for HSE performance, first aid, incident/accident, mock drill, training, induction, tool box talks etc.

All the forms and formats developed for this project shall be duly reviewed and approved by the owner.

PART – III
SPECIAL CONDITIONS OF
CONTRACT

	SPECIAL CONDITIONS OF CONTRACT	P.010416 R11050 002

OIL INDIA LTD
SPECIAL CONDITIONS OF CONTRACT
(PART-III)

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1.0 DEFINITIONS AND INTERPRETATIONS

In addition to meaning ascribed to certain initial capitalised terms in “GCC”, following initial capitalised terms shall have the meaning as ascribed to such term hereunder. In case any term defined hereunder is also defined in “GCC”, the meaning ascribed to such term hereunder shall prevail.

1.1 Definitions

Bid Documents shall mean documents issued to the bidder pursuant to Forwarding letter.

Effective Date shall mean the date on which Contractor’s obligations will commence and that will be the date of Fax of LOA/ Notification of Award..

2.0 INTERPRETATIONS

- 2.1 Where any portion of the GCC is repugnant to or at variance with any provisions of the SCC then, unless a different intention appears, the provisions of the SCC shall be deemed to govern the provisions of the GCC and SCC provisions shall prevail to the extent of such repugnancy, or variations exist.
- 2.2 In Contract Documents unless otherwise stated specifically, the singular shall include the plural and vice versa wherever the context so requires.
- 2.3 All headings, subtitles and marginal notes to the clauses of the GCC, SCC or to the Specifications or to any other part of Bid Document are solely for the purpose of giving a concise indication and not a summary of the contents thereof, and they shall never be deemed to be part thereof or be used in the interpretation or construction thereof.
- 2.4 The terms fully capitalized and/or initial capitalized shall be interchangeable and shall have the meaning as assigned to fully capitalized term or initial capitalised term.

3.0 SCOPE OF WORK

- 3.1 Scope of work shall be as defined in Part- II.
- 3.2 The contractor shall allow weekly rest and daily working hours to his personnel/ workmen as per the relevant Act/ Law and Rules made there under. However, contractor shall ensure that no work shall be left incomplete/ unattended on any holiday/ weekly rest.
- 3.3 The contactor shall make own arrangements to provide all facilities like boarding and transport etc. to his employees/ workers engaged by the contractor.
- 3.4 Contractor shall maintain proper record of his working employee’s attendance and payment made to them.
- 3.5 All the jobs mentioned under Scope of Services and Price Schedule shall be carried out as per the work procedures, documentations, recommendations of the manufacturer and as per guidelines / directions given by Engineer-in-Charge or his authorized representative to Contractor’s Supervisor from time to time. In general, the work performed by the contractor shall conform to relevant standards and best engineering practices.
- 3.6 For complete scope of work, all parts of tender document are to be read.

4.0 INSPECTIONS AND TESTS

- 4.1 During execution of work, the works shall be inspected by the Company or its authorised representative for acceptance of the same.
- 4.2 The Company / Consultant or its representative shall have the right to inspect and/ or to test the material to confirm their conformity to the specifications.

5.0 STATUTORY VARIATIONS IN TAXES

- 5.1 The entire work covered under this contract shall be treated as works contract services. Bidder shall be required to quote their unit rates for all the items of Price Schedule as defined in Preamble to Price Schedule. Any statutory variation in the GST, during the scheduled completion period only shall be considered by the company against documentary evidence.

6.0 TERMS AND MODE OF PAYMENT

6.1 Advance

6.1.1 The Company will not pay any advance.

The Payment terms shall be as follows:

The CONTRACTOR has to raise the RA bill on monthly basis and payment shall be made as per the following terms: -

6.1.2 For all SOR items

- i) 90 % progressively on completion of work as certified in monthly progress bill.
- ii) 10 % on completion of material reconciliation and acceptance thereof by EIC and Contract closure.

7.0 PAYMENT METHODOLOGY

7.1 The contractor shall raise invoices on monthly basis for works carried out duly certified by Engineer-in-Charge in triplicate. The contractor to ensure that the invoices of completed work should be raised & duly certified by Engineer-in-charge within one month to avoid any statutory penalties on delay in paying taxes.

7.2 The payment shall be released within 30 days from the date of receipt of invoice, if found to be in order and duly certified by Engineer-in-charge.

7.3 Company will release payment as per Part V.

7.4 The Payment shall be released through RTGS only.

8.0 COMPENSATION FOR IDLE TIME

8.1 The Company shall make every reasonable effort to have free issue materials available so as not to delay site activities. No Idle time claim shall be entertained under any circumstances.

9.0 HEALTH SAFETY AND ENVIRONMENT (HSE)

9.1 The Contractor will strictly adhere to Health Safety and Environment policy as stated in tender document and/ or the policies followed by the Company.

9.2 All the safety rules and regulations prevailing and applicable from time to time at the installations as directed by Company will be strictly adhered to by the Contractor.

9.3 Contractor has to ensure the safety of man and machine all the times. Damages to OIL's equipments/ installations due to bad workmanship/negligence will be recovered as per the decision of Engineer-in-Charge, which will be final and binding upon the contractor.

9.4 The contractor shall supply all the protective safety equipments like helmets / hard head hats, gumboots / safety shoes, hand gloves, safety belts, eye protection, ear protection etc. to his workmen at his own cost as required by operations.

9.5 Carrying / striking of matches, open flames, lighters or smoking or other such acts, which may cause fire hazards at the work site / in the terminals / installations, is strictly prohibited.

9.6 Tobacco/ Ghutka chewing or other such acts, are strictly prohibited at the site.

9.7 In addition to the Liquidated Damages clause (Clause no. 8 of GCC), penalties for violation of HSE shall be imposed as per clause 24 of SCC.

10.0 PROVIDENT FUND

10.1 The Contractor shall strictly comply with the provisions of Employees Provident Fund Act applicable in India and register themselves with Regional Provident Fund Commission (RPFC) before commencing the work. The Contractor shall deposit employees and contractor contributions to the RPFC every month. The Contractor shall furnish along with each running bill, the challan / receipt for payment made to the RPFC for the preceding months.

- 10.2 In case the RPFC's challan / receipt, as above, is not furnished, Company shall deduct 5% (Five percent) of the payable amount from Contractor's running bill and retain the same as a deposit such retained amount shall be refunded to Contractor on production of RPFC Challan /receipt for the period covered by the related running bill.

11.0 POWER AND WATER CONNECTION

- 11.1 The Company/ Consultant will not provide any power and water during construction period. Contractor shall apply and obtain necessary power and water connection from relevant authority and will pay its uses charges or arrange the same from the other sources.

12.0 CONSTRUCTION AIDS, EQUIPMENTS, TOOLS & TACKLES

- 12.1 CONTRACTOR shall be solely responsible for making available for executing the WORK, all requisite CONSTRUCTION EQUIPMENTS, Special Aids, Cranes and the like, all Tools, Tackles and Testing Equipment and Appliances.

13.0 CONDITIONS FOR ISSUE OF MATERIALS

- 13.1 Whenever any material is issued by Company, following conditions in addition to other conditions as specified in the contract shall be applicable.
- 13.2 Necessary indents will have to be raised by the Contractor as per procedure laid down by the Engineer-in-charge from time to time, when he requires the above material for incorporation in permanent works.
- 13.3 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 materials to Company's storage points to be designated by the Engineer-in-charge etc. No separate payment for such expenditure will be made.
- 13.4 No material shall be allowed to be taken outside the Company's store without a gate pass.
- 13.5 The contractor shall be responsible for proper storage, preservation and watch & ward of the materials.
- 13.6 All free issue materials shall be issued to contractor against submission of Indemnity Bond (as per OIL's Format attached in bid document) for 150% landed value of free issue materials.
- 13.7 In case of any manufacturing defect found in free issue materials, same shall be communicated to Engineer-In-Charge in writing within 15 days from the date of issue of such material and return the same at COMPANY store within 30 days from the date of issuance.

14.0 BUILDING AND OTHER CONSTRUCTION WORKERS (BOCW), ACT 1996

- 14.1 Applicability – the said act is applicable to every establishment which employs or had employed on any day often preceding twelve months, 10 or more building workers in any 'Building or other construction work' (Building or other construction work means the construction, repairs, maintenance or demolition of or in relation to building , streets, roads, railways, tramways, airfields, drainages, embankment, transmission and distribution of power, water works, oil and gas installations, pipeline etc.(refer section 2(d) of the act). It does not include any building and other construction work to which the factory act 1948 and the mines act 1952 is applicable).

15.0 CONTRACTOR'S OBLIGATION AT SITE

- 15.1 Contractor shall establish site office in respective areas and have necessary/adequate office infrastructure for effective communication and documentation purposes.
- 15.2 Contractor shall provide as and when required a wagon(s) suitable for soil removal and for the transport of coating materials to and from site.
- 15.3 Contractor shall provide transport for their technical staff and operatives to move from site to site, and to move tools and equipment from site to site.
- 15.4 Contractors shall make appropriate arrangements to ensure that their supervisor(s) are adequately mobile and can attend sites or meetings with COMPANY, other authorities without any undue delay.
- 15.5 Company will not allow switching/swapping of key personnel of any contractor working at site from one contractor to another during the continuity of the contract.

- 15.6 Any change in key persons working at site shall be informed to the Company promptly.
- 15.7 Contractor shall submit Insurance policies and Labour licence to Engineer-in-charge before start of work. In absence of these documents, contractor will not be allowed to start the work.

16.0 RECONCILIATION OF COMPANY SUPPLIED MATERIALS

- 16.1 Company will issue coating materials, Line Pipes for installation of Insulating joint etc. as defined in bid document.
- 16.2 The contractor shall submit an account for all materials issued by Company, consumption and physical verification report of remaining materials in the proforma prescribed by the Engineer-in-charge on monthly basis. On completion of the work, the contractor shall submit "Material Appropriation Statement/ Reconciliation Statement" for all materials issued by the Company in the proforma prescribed by the Engineer-in-charge.
- 16.3 All unused materials shall be the property of the Company and shall be returned by the Contractor at his cost to the Company's designated store yard (s). In case the Contractor fails to do so or exceeds the limits of allowances specified below for unaccountable wastage, then recovery for such quantities not returned as well as returned in excess of permitted limit by the Contractor will be done at the penal rate i.e. 150% of landed cost at the time of final bill/ closing of contract by Engineer-in-charge shall be effected from the Contractor's bill (s) or from any other dues of the Contractor to the Company.
- 16.4 Unaccountable wastage for Coating materials shall be NIL. However consumption rate of coating materials will be freeze at the time of coating qualification in presences of Company, Consultant and coating material supplier.
- 16.5 Unaccountable wastage for Line pipe shall be 0.1%.

17.0 COMPLIANCE WITH LAW

- 17.1 Contractor shall abide by all prevailing Laws of India including but not limited to:
- 17.1.1 Apprentices Act.
 - 17.1.2 Contract labour (Regulation & Abolition) Act.
 - 17.1.3 Employers Liability Act.
 - 17.1.4 Environment Protection Act.
 - 17.1.5 Factory Act.
 - 17.1.6 Industrial Dispute Act.
 - 17.1.7 Minimum Wages Act.
 - 17.1.8 Payment of Wages Act.
 - 17.1.9 Workman Compensation Act.
 - 17.1.10 Building and Other Construction Workers (Regulation of Employment and Condition of service) Act, 1996
 - 17.1.11 Any other Statute, Act, Law as applicable.

18.0 INSURANCE

- 18.1 Contractor shall at his own expense arrange, secure and maintain insurance with reputed insurance companies to the satisfaction of the Company as may be necessary and to its full value for all such amounts to protect the works in progress and his personnel from time to time and the interest of Company against all risks as detailed herein. The form and the limit of such insurance as defined herein together with the under writer works thereof in each case should be as acceptable to the Company. However, irrespective of work acceptance, the responsibility to maintain adequate insurance coverage at all times during the period of Contract shall be that of Contractor alone. Contractor's failure in this regard shall not relieve him of any of his responsibilities and obligation under the Contract.
- 18.2 All costs on account of insurance liabilities covered under this Contract will be to Contractor's account and will be included in Contract Price.

18.3 Contractor as far as possible shall cover insurance with Indian Insurance Companies.

19.0 SITE CLEANING

19.1 Contractor shall clean and keep clean (Housekeeping and cleanliness) the work site always to the satisfaction of the Engineer-in-charge for easy access to work site and to ensure safe passage, movement and working.

19.2 The Contractor shall dispose of the materials, debris etc. to any area, as decided by the Engineer-In-Charge.

19.3 No extra payment shall be paid on this account.

20.0 WORKMANSHIP

20.1 Regarding work completion, the decision of the Engineer-in-Charge will be final and binding.

21.0 PENALTIES

COMPANY shall have right to levy following penalties on the Contractor and deduct applicable amount from the Contractor's Running Bills:

21.1 In case proper barricading, along the trench and pits is not provided, the work shall be immediately suspended till such time proper barricading and penalty will be levied as per SCC clause 21.3.

21.2 In case required numbers of safety equipments like Safety Harness belts, helmets, fluorescent jackets etc as per the Technical Specifications and Special conditions of the contract of the tender, could not be provided by the contractor during execution, work shall be suspended and penalty will be levied as per SCC clause 21.3.

21.3 Either of the case as in clause 21.1 & 21.2 above shall attract penalty of Rs. 1000.00 per instance. Any subsequent instance shall attract penalty of Rs. 5000.00 per instance with a notice to contractor. Subsequent non-compliance within 5 days shall lead to a deduction of upto 5% from RA bill at the discretion of the EIC and may also lead to black listing of the contractor for future jobs.

21.4 In case of complete compliance of HSE norms throughout the contract period the contractor shall be issued a letter of appreciation by the Company on recommendation by the consultant.

21.5 In case of delay in mobilization of manpower, machinery & labour from agreed schedule, penalty will be imposed @ Rs. 50,000/- per completed week basis.

21.6 In case contractor fails to complete the back filling within agreed schedule, penalty @ Rs. 5,000.00 per day shall be imposed.

21.7 Contractor shall take utmost care in implementing the work so that the OFC cable laid over the pipeline RoW should not be damaged. In case of any damage or OFC cut occurs during execution of the project, penalty @ Rs. 2,50,000/- (Rupees Two Lacs Fifty Thousands only) per cut / damage shall be imposed.

22.0 COMPLETION DOCUMENT

22.1 As defined in Scope of Work and Technical Specification, Part II of tender document.

23.0 TIME LIMIT FOR CLAIMS

23.1 Under no circumstances whatsoever, shall the contractor be entitled to any compensation from Company on any account unless the contractor shall have submitted claim pertaining to the contract in writing to the Engineer-in-Charge within 30 days of cause of such a claim occurring. Contractor shall be deemed to have waived off its rights to claim the same, if the claim is not raised within this period.

24.0 EXECUTION OF WORK

24.1 The CONTRACTOR shall be responsible for ensuring that works throughout are executed in the most substantial, proper and workmanlike manner with the quality of material and workmanship in strict accordance with the SPECIFICATIONS and to the entire satisfaction of the ENGINEER-IN-CHARGE. The CONTRACTOR shall provide all necessary materials equipment labour etc. for execution of work till the completion of Contract.

25.0 DEFECT LIABILITY PERIOD

- 25.1 The Contractor warrants that the work carried out under the Contract are meeting the requirement of the Bid document and will rectify/ repair any defective work on receipt of instructions from Engineer-in-charge.
- 25.2 The Engineer-in-charge shall promptly notify the Contractor in writing of any claims arising under Defect Liability period.
- 25.3 Upon receipt of such notice, the Contractor shall, within a reasonable period, repair or replace the defective Goods or parts thereof, free of cost to the Company. The Contractor may take over the replaced parts/ Goods at the time of their replacement. No claim whatsoever shall lie on the Company for the replaced parts/ goods thereafter. In the event of any correction of defects or replacement of defective material during the defect liability period, the warranty for the corrected / replaced Goods or item or material shall be extended to a further period of twelve (12) Months from the date of such repair/replacement if put to use immediately or eighteen (18) Months. Defect liability period shall be 12 months from the date of handing over of the system to Company.

If the Contractor, having been notified, fails to remedy the defect(s) within a reasonable period, the Company may proceed to take such remedial action as may be necessary, at the Contractor's risk and expense and without prejudice to any other rights which the Company may have against the Contractor under the Contract / Agreement.

26.0 LIMITATION OF LIABILITY

- 26.1 Except in cases of wilful negligence or wilful misconduct, and in the case of infringement, the Contractor shall not be liable to the Company, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits provided that this exclusion shall not apply to any obligation of the Contractor to pay LD to the Company and the aggregate liability of the Contractor to the Company, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

27.0 THE ENGINEER-IN-CHARGE

- 27.1 Issue the contractor from time to time during the running of the Contract such further instructions as shall be necessary for the purpose of proper and adequate execution of the Contract and the Contractor shall carry out and bound by the same.
- 27.2 During the currency of this Contract, Company can increase and / or decrease the number of the services required & quantity of work /services shown in from the Schedule of Rates.
- 27.3 Order the Contractor to remove or replace any workmen whom the Company considers incompetent or unsuitable and opinion of the Company representative as to the competence of any workman engaged by the contractor shall be final and binding on the Contractor. Key personnel can be deployed at site only after getting approval from the Company/ Consultant.

28.0 RIGHT TO GET SERVICES CARRIED OUT THROUGH OTHER AGENCIES

- 28.1 Nothing contained herein shall restrict Company from accepting similar services from other agencies at its sole discretion and at the risk and cost of the contractor, if the contractor fails to provide the said services any time not up to the satisfaction of Engineer-in-Charge.

29.0 DEFENCE OF SUITS

- 29.1 If any action is brought before a Court, Tribunal or any other Authority against the Company or an officer or agent of the Company, for the failure, omission or neglect on the part of the CONTRACTOR to perform any acts, matters, covenants or things under the CONTRACT, or damage or injury caused by the alleged omission or negligence on the part of the CONTRACTOR, his agents, representatives or his SUB-CONTRACTOR's, or in connection with any claim based on lawful demands of SUB-CONTRACTOR's workmen or employees, the CONTRACTOR, shall in such cases indemnify and keep the Company and/or their representatives harmless from all losses, damages, expenses or decrees arising out of such action.

30.0 INSURANCE FOR FREE ISSUE MATERIAL

- 30.1 Contractor shall at his own expense arrange, secure and maintain insurance cover for Company's supplied free issue materials as defined in Bidding Document. Contractor's quoted price shall be inclusive of all costs on account of insurance liabilities covered under the Contract. Contractor shall note that the beneficiary of insurance cover shall be Oil India Ltd. (OIL) in this case. The insurance cover of the free issue material shall be for the period from the date of handing over the material to Contractor from Company's designated place of issue to date of handing over the completed work to Company.

The value of free issue materials, spread wise, shall be as below,

Spread # 1- Rs. 29.00 Crores

Spread # 2- Rs. 29.22 Crores

Spread # 3- Rs. 26.60 Crores

Spread # 4- Rs. 25.70 Crores

Spread # 5 – Rs. 17.88 Crores

31.0 COMPANY MAY DO PART OF WORK

- 31.1 Upon failure of the Contractor to comply with any instructions given in accordance with the provisions of this Contract, the Company has the alternative right, instead of assuming charge of entire WORK, to place additional labour force, tools, equipments and materials on such parts of the work, as the company may designate or also engage another contractor to carry out the work. In such cases, the company shall deduct from the amount which otherwise might become due to the contractor, the cost of such work and material with ten percent (10%) 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 company.

32.0 GENERAL

- 32.1 All personnel of the contractor entering on work premises shall be properly and neatly dressed and shall wear uniform badges while working on premises of the Purchaser including work sites.

Contractor shall provide all labour and necessary supervision to carry out the work as per the scope of work as defined in tender document, which forms part of this contract in accordance with the conditions of the contract laid down in this part of contract read in conjunction with General Conditions of Contract

33.0 ADDRESS FOR CORRESPONDENCE

COMPANY:

A. THE PROJECT MANAGER

Oil India Ltd.,

Address , Phone no. etc.

B. CONSULTANT:

The Project Manager,

Tractebel Engineering Pvt. Ltd.

Intec House, 37, Institutional Area

Sector 44, Gurgaon- 122 002,

Haryana

Telephone : +91 (0124) 469 8500 Ext. 672

Email : sk.hussain@tractebel.engie.com

C. Engineer-in-charge

Tractebel Engineering Pvt. Ltd

Address & phone no. will be provided to later on.

PART – IV
PRICE SCHEDULE / SCHEDULE
OF RATES

OIL INDIA LTD
PRICE SCHELU
(PART -II)

	PRICE SCHEDULE	P.010416 R11050 002

PART- II – PRICE SCHEDULE

“Please do not quote here”

Description of Service: Coating Refurbishment Work for Oil Pipeline in the State of Assam, West Bengal and Bihar

PREAMBLE TO PRICE SCHEDULE

- 1 A Price schedule shall be read in conjunction with General Conditions of Contract, Special Conditions of Contract, Scope of work & Technical Specification, Instructions to Bidders of this Bid document.
- 2 Basis of Prices

Bidders to quote rates as per Price Schedule. Quoted unit rates for various activities shall be inclusive of all cost, risk and expense, overhead, profit and/or fee related to the satisfactory performance and completion of the Work inclusive of all taxes and duties except Goods & Service Tax (GST) in specific column of Price Schedule.

The quoted price shall include performance of all activities though not specifically mentioned in tender, but otherwise required for overall completion of the project.
- 3 GST will be paid extra as per Government notification during execution of contract.
- 4 Bidders to quote for all the five spreads. Incase bidder quotes for lesser spreads, bid shall be summarily rejected.
- 5 The items would be operatable as per job requirement, and quantities may vary on +/- sides.
- 6 The scope as mentioned in the Price Schedule is of indicative nature only and shall include all activities as detailed in the relevant clauses of the specifications.
- 7 The quantities are tentative and may vary depending upon site conditions, methodology adopted as per site requirement with due approval of Owner / Consultant.
- 8 Any other material & activities not mentioned/covered in Price Schedule but otherwise required for satisfactory completion /safety of work as defined in tender has to be supplied / done by contractor within specified schedule at no extra cost to owner.
- 9 The item details shall be read along with the relevant clauses of tender document.
- 10 Errors And Omissions

Bidders shall ensure that there are no errors or omissions in the Priced Bid. All the columns of the price bid are mandatory to be filled –up. In case, there is no amount, “0” (zero) needs to be mentioned. In case any omissions are noticed in the Priced Bid, the Bid is liable to be rejected.

SUMMARY SHEET PIPELINE COATING RAHABILITATION WORKS IN ASSAM, WEST BENGAL & BIHAR		Tender No. : CGI5616P18 Dated 07.09.2017
SL NO.	DESCRIPTION	TOTAL AMOUNT IN RS. (FIGURES)
1	SPREAD # 1	
2	SPREAD # 2	
3	SPREAD # 3	
4	SPREAD # 4	
5	SPREAD # 5	
Total of Groups (In Figure)		
Total of Groups (In Words)		
SEAL & SIGNATURE OF BIDDER		

PRICE SCHEDULE					
SPREAD # 1 DULIAJAN BARAUNI PIPELINE DIA : 16" PIPE LENGTH -120 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -10 KMS (From Chainage 0.00 (PS-1 Duliajan) to 224.10.50(RS-3: Kaziranga))					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
1	2	3	4	5	6
	LOCATION OF ROW : ASSAM STATE				
1	COATING OF PIPELINE				
1.1	COATING AND WRAPPING IN DRY AREA/ WET AREA DURING RAINY SEASON	116526	M		
1.1.1	3ply/2ply cold applied system at Dry Areas/ Wet Area during Rainy season :- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 m to 2.5 mtr depth (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) . The rates are inclusive of shoring, shuttering, de-watering of surface water and water in pipeline trench & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preperation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				
1.2	COATING AND WRAPPING IN SWAMPY AREA	7750	M		
1.2.1	Visco elastic coating in swampy area:- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at a depth of 1.5 mtr to 2.5 mtr. (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) .The rates are inclusive of for shoring, shuttering, de-watering of surface water and water in pipeline trench area & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m. The size of the trench, width and depth will be suitable for ensuring hand application of the visco-elastic inner and outer tape. The visco ealastic tape to be used where surface can not be prepared by Sa 2 1/2 , however surface can be dried. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preperation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL/PMC. (e.1) Applying visco-elastic inner layer with 10mm overlap with hand application followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe.During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				

PRICE SCHEDULE					
SPREAD # 1 DULIAJAN BARAUNI PIPELINE DIA : 16" PIPE LENGTH -120 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -10 KMS (From Chainage 0.00 (PS-1 Duliajan) to 224.10.50(RS-3: Kaziranga))					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
1.3	COATING AND WRAPPING IN SUBMERGED AREA	5050	M		
1.3.1	Petrolatum/wax tape coating in submerged area:- In submerged section the trenching shall be done after de watering the ground water using dewatering / sludge pumps and making necessary bund to prevent flow of water. (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 mtr to 2.5 mtr Depth (The depth may vary near road/ rail/nala/ cart track crossing or at locations where subsequent filling has taken place) including keeping top layer of soil separately, shoring shuttering etc. The rates are inclusive of shoring, shuttering, de-watering & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring hand application of the petrolatum putty, inner and outer tape. The petrolattum tape shall be used in pipeline trenches where the pipe surface is wet. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preperation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL. (e.1) Apply mastic/putty on the pipe area with hand such as to create a smooth profile to tape wrapping. (e.2) Apply petrolatum tape coating material with 50% ovelapwith hand application on the mastic followed by an outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. Top layer of soil kept separately, shall be back filled properly at the top of the trench including formation of the crest to take care of settlement, if any, so as to form the original top layer of the soil. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				
2	Cutting / excavation of roads, in locations where the trench is cut across roads including shoring, shuttering and providing temporary bridges / suitable bypass of adequate strength & proper construction to allow the passage of normal traffic with minimum of inconvenience and interruptions. The contractor should make good and restore such roads etc. to its original condition without any extra cost. a) During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the road to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC. The above ativity shall be applicable for the following types of Road:-				
2.1	Asphalted Road	636	M		
2.2	Concrete Road	20	M		
2.3	Gravel Road	18	M		
3	Extra excavation for depth beyond 2.5 mtr and upto 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring, shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 2 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 2 mtr depth (from top of pipe to surface level) of pipe.	2566.4	CUM		
4	Extra excavation for depth beyond 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring,shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 3 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 3 mtr depth (from top of pipe to surface level) of pipe. Average depth considered up to 6 mtr.	1283.2	CUM		
5	Pumping out of water from ponds/depressions /trench s using deWatering pumps of capacity greater than 50 m3/hr and/or installation of wellpoint systm of capacity greater than 100 m3/hr only after getting approval of OIL/PMC. (The item will be operated in case of dewatering of excessive water as per approval from OIL/PMC)				
5.1	Deployment of dewatering pump of capacity greater than 50 m3/hr	1500	Hour		

PRICE SCHEDULE					
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Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
5.2	Deployment of well point system of capacity greater than 100 m3/hr	1500	Hour		
6	Fabrication, fittment and welding for full encirclement sleeves from OIL supplied 16"/14"/12"/10" dia pipes over pitted sections of the exposed pipeline including testing / inspection (DP test), supply of all equipment, consumables, labour etc. required to complete the work in all respects as per the specifications and directions of OIL/PMC. Pipes will be supplied by OILfrom OIL's nearest Store Yards and shall be transported to site at the Contractor's risk & cost for sleeving of 16"/14"/12"/10" dia line.	30	M		
7	Repair of cased crossings: Excavation of cased crosings at either ends to check shorting of cased crossings, if required. In case of shorting of cased crossings, the heat shrinkable end seals shall be removed, the pipe shall be lifted at the edges to remove the shorting. The vent pipes and Ground Pot shall be new, fabricated and welded. Supply and installation of casing end seals, insulators and filler.Dry air shall be flushed to remove all muck, water from the annulus of casing filling. Supply and installation of heat shrinkable end seals. Refer Work Procedure attached in Tender Document.	27	NOS		
8	Supply of Monolithic Isolation joints for the 16 inch pipeline , as per tender specification	6	NOS		
9	Supply of 16 Inch 90 ⁰ LR bends , bend radius- 6D , wall thickness- XX mm, tangent length- 500 mm	6	Nos		
10	Supply of 16 inch 45 ⁰ LR bends , bend radius- 6D , wall thickness- XX mm, tangent length- 500 mm	6	Nos		
11	Stopple plugging application for fitment of pipeline section with MIJ at repeater stations by hiring specialised agency as mentioned in the tender.	6	Locs		
12	Design including preparation of pipe section replacement drawing , fabrication and installation including 100% radiography of pipe section comprising of 90/45 ⁰ LR bends and OIL free issued straignt pipe fitted with MIJ. The scope would also include taking delivery of free issue pipe from OIL's store, cold cutting of existing pipe spool piece, hook up, alignment and welding and safe disposal of the crude.The hook up /installation activity to be completed within 48 hours at both up stream & downstream of the repeater station.	6	Locs		
13	Coating repair of Block valves with Petrolatum/wax tape coating system:- The broad scope of work shall include the following : -Cleaning and digging the under ground valve installed in the soil in the ROW/ in concrete chamber - Chipping the concrete chamber at least 3" in depth and at least 2" radially around the pipe. - Repairing concrete chamber at cracks including plastering of the walls / base of the concrete chamber as per direction of OIL / PMC. - Repair / Painting of existing MS Valve Box - Removal of old coating / loose rust from the surface of the valve body using wooden / brass hammers & hand wire brushes. - Recoating the block valves as per procedure . - Installation of pre-packed Zinc anode of net weight 10Kg – 1 no. which will be connected to the pipeline thru TLP type V. - Inspection and testing of the applied coating. Refer detailed scope of work , as indicated in the Tender document.	14	Nos		
13.1	Fabrication, installation and painting of new MS Valve Box of dimension (1mtr x 0.6 mtr x 1.2 mtr) with 5mm MS plate	6	Nos		
14	Supply and installation of FRP type Test station.Test station enclosure shall be manufactured from UV stabilized, moisture proof fiber reinforced plastic (FRP) of minimum thickness 4 mm with canopy. Test stations enclosure shall have degree of protection IP-65 with hinged lockable shutter.The test station will have bottom plate for access of CP cables inside the FRP enclosure. The FRP enclosure shall have suitable arrangement for mounting on FRP pipe post which shall be encased in concrete at site . The cable entry from the ground into the FRP pipe shall be sealed with silicone compound or visco elastic filler to prevent moisture entry. Also all cables entering the FRP enclosure shall also be sealed with silicone compound or visco elastic filler. and all other materials required forerecting the test lead point over concrete foundation (TLP grouting)with cement concrete mixture 1:2:4 (Cement:Sand: Grit of 20mm nominalsize), making cable connection to the pipe with necessary excavation,complete in every respect as per drawing, specifications and instructions of OIL / PMC inclusive of the cost of all labour, materials etc.				
14.1	TLP- Type A Potential Measurement Test station(to be installed every one kilometer) (The scope includes supply and installation of TLP with two cables of 1c x 10 sq mm from pipeline to the test station. The minimum number of terminals on the terminal plate is four (4). Two for connection of cable and two spare.The scope includes the supply of cable and pin braazing on the pipeline)	57	Nos		
14.2	TLP Type - B Current Measurement Test Station(to be installed at CP stations and every 8 km) (The scope includes supply and intallation of Test station with 2 sets of measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation at spacing of 60 meters shall be terminated in the terminal plate.(Each set of measurement cable comprises of 2 cable length from the pipeline). The supply and installation of cable and pinbrazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate is six (6). Four for connection of cables and two spare.	18	Nos		
14.3	TLP Type D - Cased Crossing of length ≤ 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above five number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm ² cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is twelve (12). Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	14	Nos		
14.4	TLP Type D - Cased Crossing of length > 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above ten number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm2 cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is ten (12).Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	13	Nos		

PRICE SCHEDULE					
SPREAD # 1 DULIAJAN BARAUNI PIPELINE DIA : 16" PIPE LENGTH -120 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -10 KMS (From Chainage 0.00 (PS-1 Duliajan) to 224.10.50(RS-3: Kaziranga))					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
14.5	TLP Type M- High Tension line Crossings (At all HT line locations≥ 66 kV) The dimension of the test station shall be designed to accommodate solid state decoupler (not to be supplied by EPC contractor). In this test station two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shal be terminated.Also two grounding cables of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by p brazing / epoxy encapsulation shal be terminated for future connection to solid state decoupler and zinc grounding cell. • Minimum no of Terminals : 12 nos	22	Nos		
14.6	TLP Type E-Foreign Pipeline Crossing Test Station/Bond Box (At every 5 km for bonding the parallel pipelines and at every pipeline crossing) The scope includes supply and installation of bonding cable of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to each pipeline: parallel or crossing by pin brazing / epoxy encapsulation shall be terminated for bonding with resistors and shunts. Also from each pipeline, one potential measurement cable of 1Cx10mm2 shall be terminated in the test station. The supply and installation of cable and pinbrazing shall be included in th scope of contractor.The minimum number of terminals on the terminal plate are twelve (12).	26	Nos		
14.7	TLP Type F - Isolation Flange Joint at Repeater stations (At Isolation Joint location) This scope includes supply and installation of one potential measurement cables of size 1C x 10 mm2 & one 1c x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the each (protected / unptotected side) of the pipeline by pin brazing / epoxy encapsulation shall be terminated. Minimum No of terminals : 12 nos	6	Nos		
15	Surge divertor , EXFS- 300 mm to be mounted on monolithic isolation joint	6	Nos		
	TOTAL				
	GOODS & SERVICE TAX @ 18% ON TOTAL AMOUNT				
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN FIGURE)				
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN WORD)				

PRICE SCHEDULE					
SPREAD # 2 DULIAJAN BARAUNI PIPELINE DIA : 16" PIPE LENGTH -60 KMS/14" PIPE LENGTH -11 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -60 KMS (From Chainage 250.00 (PS-4: Sekoni)) to 411.30 (PS- 5: GUWAHATI))					
Bidder Name :					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
1	2	3	4	5	6
	LOCATION OF ROW : ASSAM STATE				
1	COATING OF PIPELINE				
1.1	COATING AND WRAPPING IN DRY AREA/ WET AREA DURING RAINY SEASON	111556	M		
1.1.1.	3ply/2ply cold applied system at Dry Areas/ Wet Area during Rainy season :- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 m to 2.5 mtr depth (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) . The rates are inclusive of shoring, shuttering, de-watering of surface water and water in pipeline trench & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Surface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				
1.2	COATING AND WRAPPING IN SWAMPY AREA	9700	M		
1.2.1	Visco elastic coating in swampy area:- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at a depth of 1.5 mtr to 2.5 mtr. (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) .The rates are inclusive of for shoring, shuttering, de-watering of surface water and water in pipeline trench area & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m. The size of the trench, width and depth will be suitable for ensuring hand application of the visco-elastic inner and outer tape. The visco ealastic tape to be used where surface can not be prepared by Sa 2 1/2 , however surface can be dried. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Surface preperation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL/PMC. (e.1) Applying visco-elastic inner layer with 10mm overlap with hand application followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe.During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				
1.3	COATING AND WRAPPING IN SUBMERGED AREA	8650	M		

PRICE SCHEDULE					
SPREAD # 2 DULIAJAN BARAUNI PIPELINE DIA : 16" PIPE LENGTH -60 KMS/14" PIPE LENGTH -11 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -60 KMS (From Chainage 250.00 (PS-4: Sekoni)) to 411.30 (PS- 5: GUWAHATI))					
Bidder Name :					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
1.3.1	Petrolatum/wax tape coating in submerged area:- In submerged section the trenching shall be done after de watering the ground water using dewatering / sludge pumps and making necessary bund to prevent flow of water. (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 mtr to 2.5 mtr Depth (The depth may vary near road/ rail/nala/ cart track crossing or at locations where subsequent filling has taken place) including keeping top layer of soil separately, shoring shuttering etc. The rates are inclusive of shoring, shuttering, de-watering & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring hand application of the petrolatum putty, inner and outer tape. The petrolattum tape shall be used in pipeline trenches where the pipe surface is wet. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preperation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL. (e.1) Apply mastic/putty on the pipe area with hand such as to create a smooth profile to tape wrapping. (e.2) Apply petrolatum tape coating material with 50% ovelapwith hand application on the mastic followed by an outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. Top layer of soil kept separately, shall be back filled properly at the top of the trench including formation of the crest to take care of settlement, if any, so as to form the original top layer of the soil. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				
2	Cutting / excavation of roads, in locations where the trench is cut across roads including shoring, shuttering and providing temporary bridges / suitable bypass of adequate strength & proper construction to allow the passage of normal traffic with minimum of inconvenience and interruptions. The contractor should make good and restore such roads etc. to its original condition without any extra cost. a) During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the road to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC. Types of Road crossing shall be as below:-				
2.1	Asphalted Road	798	M		
2.2	Concrete Road	20	M		
2.3	Gravel Road	276	M		
3	Extra excavation for depth beyond 2.5 mtr and upto 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring, shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 2 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 2 mtr depth (from top of pipe to surface level) of pipe.	2598.56	CUM		
4	Extra excavation for depth beyond 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring,shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 3 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 3 mtr depth (from top of pipe to surface level) of pipe. Average depth considered up to 6 mtr.	1299.28	CUM		

PRICE SCHEDULE					
SPREAD # 2 DULIAJAN BARAUNI PIPELINE DIA : 16" PIPE LENGTH -60 KMS/14" PIPE LENGTH -11 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -60 KMS (From Chainage 250.00 (PS-4: Sekoni)) to 411.30 (PS- 5: GUWAHATI))					
Bidder Name :					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
5	Pumping out of water from ponds/depressions /trench s using deWatering pumps of capacity greater than 50 m3/hr and/or installation of wellpoint systm of capacity greater than 100 m3/hr only after getting approval of OIL/PMC. (The item will be operated in case of dewatering of excessive water as per approval from OIL/PMC)				
5.1	Deployment of dewatering pump of capacity greater than 50 m3/hr	1500	Hour		
5.2	Deployment of well point system of capacity greater than 100 m3/hr	1500	Hour		
6	Fabrication, fitment, and welding for full encirclement sleeves from OIL supplied 16"/14"/12"/10" dia pipes over pitted sections of the exposed pipeline including testing / inspection (DP test), supply of all equipment, consumables, labour etc. required to complete the work in all respects as per the specifications and directions of theOIL/PMC. Pipes will be supplied by OILfrom OIL's nearest Store Yards and shall be transported to site at the Contractor's risk & cost for sleeving of 16"/14"/12"/10" dia line.	30	M		
7	Repair of cased crossings: Excavation of cased crosings at either ends to check shorting of cased crossings, if required. In case of shorting of cased crossings, the heat shrinkable end seals shall be removed, the pipe shall be lifted at the edges to remove the shorting. The vent pipes and Ground Pot shall be new, fabricated and welded. Supply and installation of casing end seals, insulators and filler.Dry air shall be flushed to remove all muck, water from the annulus of casing filling. Supply and installation of heat shrinkable end seals. Refer Work Procedure attached in Tender Document.	30	NOS		
8	Supply of Monolithic Isolation joints for the 16 inch pipeline , as per tender specification	2	NOS		
9	Supply of 16 Inch 90 ⁰ LR bends , bend radius- 6D , wall thickness- XX mm, tangent length- 500 mm	2	Nos		
10	Supply of 16 inch 45 ⁰ LR bends , bend radius- 6D , wall thickness- XX mm, tangent length- 500 mm	2	Nos		
11	Supply of stopple plug alongwith all accessoris including stopple plugging application for fitment of pipeline section with MIJ at repeater stations by hiring specialised agency as mentioned in the tender.	2	Locs		
12	Design including preparation of pipe section replacement drawing , fabrication and installation including 100% radiography of pipe section comprising of 90 ⁰ /45 ⁰ LR bends and OIL free issued strainght pipe fitted with MIJ. The scope would also include taking delivery of free issue pipe from OIL's store, cold cutting of existing pipe spool piece, hook up, alignment and welding and safe disposal of the crude.The hook up /installation activity to be completed within 48 hours at both up stream & downstream of the repeater station.	2	Locs		
13	Coating repair of Block valves with Petrolatum/wax tape coating system:- The broad scope of work shall include the following : -Cleaning and digging the under ground valve installed in the soil in the ROW/ in concrete chamber - Chipping the concrete chamber at least 3" in depth and at least 2" radially around the pipe. - Repairing concrete chamber at cracks including plastering of the walls / base of the concrete chamber as per direction of OIL / PMC. - Repair / Painting of existing MS Valve Box - Removal of old coating / loose rust from the surface of the valve body using wooden / brass hammers & hand wire brushes. - Recoating the block valves as per procedure . - Installation of pre-packed Zinc anode of net weight 10Kg – 1 no. which will be connected to the pipeline thru TLP type V. - Inspection and testing of the applied coating. Refer detailed scope of work , as indicated in the Tender document.	11	Nos		
13.1	Fabrication, installation and painting of new MS Valve Box of dimension (1mtr x 0.6 mtr x 1.2 mtr) with 5mm MS plate	6	Nos		
14	Supply and installation of FRP type Test station.Test station enclosure shall be manufactured from UV stabilized, moisture proof fiber reinforced plastic (FRP) of minimum thickness 4 mm with canopy. Test stations enclosure shall have degree of protection IP-65 with hinged lockable shutter.The test station will have bottom plate for access of CP cables inside the FRP enclosure. The FRP enclosure shall have suitable arrangement for mounting on FRP pipe post which shall be encased in concrete at site . The cable entry from the ground into the FRP pipe shall be sealed with silicone compound or visco elastic filler to prevent moisture entry. Also all cables entering the FRP enclosure shall also be sealed with silicone compound or visco elastic filler. and all other materials required forerecting the test lead point over concrete foundation (TLP grouting)with cement concrete mixture 1:2:4 (Cement:Sand: Grit of 20mm nominalsiz), making cable connection to the pipe with necessary excavation,complete inevery respect as per drawing, specifications and instructions of OIL/PMC inclusive of the cost of all labour, materials etc.				

PRICE SCHEDULE					
SPREAD # 2 DULIAJAN BARAUNI PIPELINE DIA : 16" PIPE LENGTH -60 KMS/14" PIPE LENGTH -11 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -60 KMS (From Chainage 250.00 (PS-4: Sekoni)) to 411.30 (PS- 5: GUWAHATI))					
Bidder Name :					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
14.1	TLP- Type A Potential Measurement Test station (to be installed every one kilometer) (The scope includes supply and installation of TLP with two cables of 1c x 10 sq mm from pipeline to the test station. The minimum number of terminals on the terminal plate is four (4). Two for connection of cable and two spare.The scope includes the supply of cable and pin braazing on the pipeline)	46			
14.2	TLP Type - B Current Measurement Test Station(to be installed at CP stations and every 8 km) (The scope includes supply and intallation of Test station with 2 sets of measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation at spacing of 60 meters shall be terminated in the terminal plate.(Each set of measurement cable comprises of 2 cable length from the pipeline). The supply and installation of cable and pinbrazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate is six (6). Four for connection of cables and two spare.	10			
14.3	TLP Type D - Cased Crossing of length ≤ 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above five number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm ² cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is twelve (12). Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	9			
14.4	TLP Type D - Cased Crossing of length > 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above ten number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm2 cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is ten (12).Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	9			
14.5	TLP Type M- High Tension line Crossings (At all HT line locations ≥ 66 kV) The dimension of the test station shall be designed to accommodate solid state decoupler (not to be supplied by EPC contractor). In this test station two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shal be terminated.Also two grounding cables of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shal be terminated for future connection to solid state decoupler and zinc grounding cell. • Minimum no of Terminals : 12 nos	9			
14.6	TLP Type E-Foreign Pipeline Crossing Test Station/Bond Box (At every 5 km for bonding the parallel pipelines and at every pipeline crossing) The scope includes supply and installation of bonding cable of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to each pipeline: parallel or crossing by pin brazing / epoxy encapsulation shall be terminated for bonding with resistors and shunts. Also from each pipeline, one potential measurement cable of 1Cx10mm2 shall be terminated in the test station. The supply and installation of cable and pinbrazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate are twelve (12).	27			
14.7	TLP Type F - Isolation Flange Joint at Repeater stations (At Isolation Joint location) This scope includes supply and installation of one potential measurement cables of size 1C x 10 mm2 & one 1c x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the each (protected / unptotected side) of the pipeline by pin brazing / epoxy encapsulation shall be terminated. Minimum No of terminals : 12 nos	4	Nos		
15	Surge divertor , EXFS- 300 mm to be mounted on monolithic isolation joint	4	Nos		
	TOTAL				
	GOODS & SERVICE TAX @ 18% ON TOTAL AMOUNT				
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN FIGURE)				
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN WORD)				

PRICE SCHEDULE					
SPREAD # 3 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH: 81 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -30 KMS LOOP LINES DIA: 12.75" PIPE LENGTH - 5 KMS/LOOP LINES DIA: 10.75" PIPE LENGTH - 3 KMS (From Chainage 457.240 (RS- 8: DHARAMPUR)) to 612.895 (RS-10 (Pratapkhata))					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 07.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
1	2	3	4	5	6
	LOCATION OF ROW : ASSAM STATE				
1	COATING OF PIPELINE				
1.1	COATING AND WRAPPING IN DRY AREA/ WET AREA DURING RAINY SEASON	106658	M		-
1.1.1.	3ply/2ply cold applied system at Dry Areas/ Wet Area during Rainy season :- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 m to 2.5 mtr depth (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) . The rates are inclusive of shoring, shuttering, de-watering of surface water and water in pipeline trench & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-
1.2	COATING AND WRAPPING IN SWAMPY AREA	6900	M		-
1.2.1	Visco elastic coating in swampy area:- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at a depth of 1.5 mtr to 2.5 mtr. (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) .The rates are inclusive of for shoring, shuttering, de-watering of surface water and water in pipeline trench area & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m. The size of the trench, width and depth will be suitable for ensuring hand application of the visco-elastic inner and outer tape. The visco ealastic tape to be used where surface can not be prepared by Sa 2 1/2 , however surface can be dried. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preperation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL/PMC. (e.1) Applying visco-elastic inner layer with 10mm overlap with hand application followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe.During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-
1.3	COATING AND WRAPPING IN SUBMERGED AREA	4750	M		-

PRICE SCHEDULE					
SPREAD # 3 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH: 81 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -30 KMS LOOP LINES DIA: 12.75" PIPE LENGTH - 5 KMS/LOOP LINES DIA: 10.75" PIPE LENGTH - 3 KMS (From Chainage 457.240 (RS- 8: DHARAMPUR)) to 612.895 (RS-10 (Pratapkhata))					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 07.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
1.3.1	Petrolatum/wax tape coating in submerged area:- In submerged section the trenching shall be done after de watering the ground water using dewatering / sludge pumps and making necessary bund to prevent flow of water. (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 mtr to 2.5 mtr Depth (The depth may vary near road/ rail/nala/ cart track crossing or at locations where subsequent filling has taken place) including keeping top layer of soil separately, shoring shuttering etc. The rates are inclusive of shoring, shuttering, de-watering & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring hand application of the petrolatum putty, inner and outer tape. The petrolattum tape shall be used in pipeline trenches where the pipe surface is wet. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL. (e.1) Apply mastic/putty on the pipe area with hand such as to create a smooth profile to tape wrapping. (e.2) Apply petrolatum tape coating material with 50% ovelapwith hand application on the mastic followed by an outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. Top layer of soil kept separately, shall be back filled properly at the top of the trench including formation of the crest to take care of settlement, if any, so as to form the original top layer of the soil. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-
2	Cutting / excavation of roads, in locations where the trench is cut across roads including shoring, shuttering and providing temporary bridges / suitable bypass of adequate strength & proper construction to allow the passage of normal traffic with minimum of inconvenience and interruptions. The contractor should make good and restore such roads etc. to its original condition without any extra cost. a) During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the road to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC. Types of Road crossing shall be as below:-				-
2.1	Asphalted Road	624	M		-
2.2	Concrete Road	20	M		-
2.3	Gravel Road	48	M		-
3	Extra excavation for depth beyond 2.5 mtr and upto 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring, shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 2 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 2 mtr depth (from top of pipe to surface level) of pipe.	2347.36	CUM		-
4	Extra excavation for depth beyond 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring,shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 3 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 3 mtr depth (from top of pipe to surface level) of pipe. Average depth considered up to 6 mtr.	1173.68	CUM		-
5	Pumping out of water from ponds/depressions /trench s using deWatering pumps of capacity greater than 50 m3/hr and/or installation of wellpoint systm of capacity greater than 100 m3/hr only after getting approval of OIL/PMC. (The item will be operated in case of dewatering of excessive water as per approval from OIL/PMC)				-
5.1	Deployment of dewatering pump of capacity greater than 50 m3/hr	1500	Hour		-
5.2	Deployment of well point system of capacity greater than 100 m3/hr	1500	Hour		-
6	Fabrication, fitment, and welding for full encirclement sleeves from OIL supplied 16"/14"/12"/10" dia pipes over pitted sections of the exposed pipeline including testing / inspection (DP test), supply of all equipment, consumables, labour etc. required to complete the work in all respects as per the specifications and directions of theOIL/PMC. Pipes will be supplied by OILfrom OIL's nearest Store Yards and shall be transported to site at the Contractor's risk & cost for sleeving of 16"/14"/12"/10" dia line.	30	M		-

PRICE SCHEDULE					
SPREAD # 3 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH: 81 KMS NUMALIGARH SILIGURI PIPELINE DIA : 16" PIPE LENGTH -30 KMS LOOP LINES DIA: 12.75" PIPE LENGTH - 5 KMS/LOOP LINES DIA: 10.75" PIPE LENGTH - 3 KMS (From Chainage 457.240 (RS- 8: DHARAMPUR)) to 612.895 (RS-10 (Pratapkhata))					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 07.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
7	Repair of cased crossings: Excavation of cased crosings at either ends to check shorting of cased crossings, if required. In case of shorting of cased crossings, the heat shrinkable end seals shall be removed, the pipe shall be lifted at the edges to remove the shorting. The vent pipes and Ground Pot shall be new, fabricated and welded. Supply and installation of casing end seals, insulators and filler.Dry air shall be flushed to remove all muck, water from the annulus of casing filling. Supply and installation of heat shrinkable end seals. Refer Work Procedure attached in Tender Document.	42	NOS		-
8	Coating repair of Block valves with Petrolatum/wax tape coating system:- The broad scope of work shall include the following : -Cleaning and digging the under ground valve installed in the soil in the ROW/ in concrete chamber - Chipping the concrete chamber at least 3” in depth and at least 2” radially around the pipe. - Repairing concrete chamber at cracks including plastering of the walls / base of the concrete chamber as per direction of OIL / PMC. - Repair / Painting of existing MS Valve Box - Removal of old coating / loose rust from the surface of the valve body using wooden / brass hammers & hand wire brushes. - Recoating the block valves as per procedure . - Installation of pre-packed Zinc anode of net weight 10Kg – 1 no. which will be connected to the pipeline thru TLP type V. - Inspection and testing of the applied coating. Refer detailed scope of work , as indicated in the Tender document.	31	Nos		-
8.1	Fabrication, installation and painting of new MS Valve Box of dimension (1mtr x 0.6 mtr x 1.2 mtr) with 5mm MS plate	6	Nos		
9	Supply and installation of FRP type Test station.Test station enclosure shall be manufactured from UV stabilized, moisture proof fiber reinforced plastic (FRP) of minimum thickness 4 mm with canopy. Test stations enclosure shall have degree of protection IP-65 with hinged lockable shutter.The test station will have bottom plate for access of CP cables inside the FRP enclosure. The FRP enclosure shall have suitable arrangement for mounting on FRP pipe post which shall be encased in concrete at site . The cable entry from the ground into the FRP pipe shall be sealed with silicone compound or visco elastic filler to prevent moisture entry. Also all cables entering the FRP enclosure shall also be sealed with silicone compound or visco elastic filler. and all other materials required for erecting the test lead point over concrete foundation (TLP grouting)with cement concrete mixture 1:2:4 (Cement:Sand: Grit of 20mm nominalsize), making cable connection to the pipe with necessary excavation,complete in every respect as per drawing, specifications and instructions of OIL/PMC inclusive of the cost of all labour, materials etc.				-
9.1	TLP- Type A Potential Measurement Test station (to be installed every one kilometer) (The scope includes supply and installation of TLP with two cables of 1c x 10 sq mm from pipeline to the test station. The minimum number of terminals on the terminal plate is four (4). Two for connection of cable and two spare.The scope includes the supply of cable and pin brazing on the pipeline)	9			-
9.2	TLP Type - B Current Measurement Test Station (to be installed at CP stations and every 8 km) (The scope includes supply and installation of Test station with 2 sets of measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation at spacing of 60 meters shall be terminated in the terminal plate.(Each set of measurement cable comprises of 2 cable length from the pipeline). The supply and installation of cable and pin brazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate is six (6). Four for connection of cables and two spare.	14			-
9.3	TLP Type D - Cased Crossing of length ≤ 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above five number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm ² cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is twelve (12). Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	29			-
9.4	TLP Type D - Cased Crossing of length > 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above ten number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm2 cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is ten (12).Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	29			-
9.5	TLP Type M- High Tension line Crossings (At all HT line locations ≥ 66 kV) The dimension of the test station shall be designed to accommodate solid state decoupler (not to be supplied by EPC contractor). In this test station two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shall be terminated.Also two grounding cables of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shall be terminated for future connection to solid state decoupler and zinc grounding cell. • Minimum no of Terminals : 12 nos	11			-
9.6	TLP Type E-Foreign Pipeline Crossing Test Station/Bond Box (At every 5 km for bonding the parallel pipelines and at every pipeline crossing) The scope includes supply and installation of bonding cable of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to each pipeline: parallel or crossing by pin brazing / epoxy encapsulation shall be terminated for bonding with resistors and shunts. Also from each pipeline, one potential measurement cable of 1Cx10mm2 shall be terminated in the test station. The supply and installation of cable and pin brazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate are twelve (12).	23			-
9.7	TLP Type F - Isolation Flange Joint at Repeater stations (At Isolation Joint location) This scope includes supply and installation of one potential measurement cables of size 1C x 10 mm2 & one 1c x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the each (protected / unprotected side) of the pipeline by pin brazing / epoxy encapsulation shall be terminated. Minimum No of terminals : 12 nos	6	Nos		-
10	Surge divertor , EXFS- 300 mm to be mounted on monolithic isolation joint	6	Nos		-
	TOTAL				-
	GOODS & SERVICE TAX @ 18% ON TOTAL AMOUNT				-
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN FIGURE)				-
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN WORD)				

PRICE SCHEDULE					
SPREAD # 4 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH -115 KMS (From Chainage 645.485(U/s RS-11: CHEPANI) TO 905.805 KM(RS-14 KISHANGANJ)					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
1	2	3	4	5	6
LOCATION OF ROW : WEST BENGAL					
1	COATING OF PIPELINE				
1.1	COATING AND WRAPPING IN DRY AREA/ WET AREA DURING RAINY SEASON	112430	M		-
	3ply/2ply cold applied system at Dry Areas/ Wet Area during Rainy season :- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 m to 2.5 mtr depth (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) . The rates are inclusive of shoring, shuttering, de-watering of surface water and water in pipeline trench & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-
1.2	COATING AND WRAPPING IN SWAMPY AREA	1550	M		-
	Visco elastic coating in swampy area:- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at a depth of 1.5 mtr to 2.5 mtr. (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) .The rates are inclusive of for shoring, shuttering, de-watering of surface water and water in pipeline trench area & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m. The size of the trench, width and depth will be suitable for ensuring hand application of the visco-elastic inner and outer tape. The visco ealastic tape to be used where surface can not be prepared by Sa 2 1/2 , however surface can be dried. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL/PMC. (e.1) Applying visco-elastic inner layer with 10mm overlap with hand application followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe.During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-
1.3	COATING AND WRAPPING IN SUBMERGED AREA	300	M		-
	Petrolatum/wax tape coating in submerged area:- In submerged section the trenching shall be done after de watering the ground water using dewatering / sludge pumps and making necessary bund to prevent flow of water. (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 mtr to 2 mtr Depth (The depth may vary near road/ rail/nala/ cart track crossing or at locations where subsequent filling has taken place) including keeping top layer of soil separately, shoring shuttering etc. The rates are inclusive of shoring, shuttering, de-watering & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring hand application of the petrolatum putty, inner and outer tape. The petrolattum tape shall be used in pipeline trenches where the pipe surface is wet. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preperation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL. (e.1) Apply mastic/putty on the pipe area with hand such as to create a smooth profile to tape wrapping. (e.2) Apply petrolatum tape coating material with 50% overlapwith hand application on the mastic followed by an outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. Top layer of soil kept separately, shall be back filled properly at the top of the trench including formation of the crest to take care of settlement, if any, so as to form the original top layer of the soil. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-

PRICE SCHEDULE					
SPREAD # 4 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH -115 KMS (From Chainage 645.485(U/s RS-11: CHEPANI) TO 905.805 KM(RS-14 KISHANGANJ)					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
2	Cutting / excavation of roads, in locations where the trench is cut across roads including shoring, shuttering and providing temporary bridges / suitable bypass of adequate strength & proper construction to allow the passage of normal traffic with minimum of inconvenience and interruptions. The contractor should make good and restore such roads etc. to its original condition without any extra cost. a) During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Surface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the road to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC. Types of Road crossing shall be as below:-				-
2.1	Asphalted Road	600	M		-
2.2	Concrete Road	24	M		-
2.3	Gravel Road	96	M		-
3	Extra excavation for depth beyond 2.5 mtr and upto 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring, shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 2 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 2 mtr depth (from top of pipe to surface level) of pipe.	2272.16	CUM		-
4	Extra excavation for depth beyond 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring,shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 3 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 3 mtr depth (from top of pipe to surface level) of pipe. Average depth considered up to 6 mtr.	1136.08	CUM		-
5	Pumping out of water from ponds/depressions /trench s using deWatering pumps of capacity greater than 50 m3/hr and/or installation of wellpoint systm of capacity greater than 100 m3/hr only after getting approval of OIL/PMC. (The item will be operated in case of dewatering of excessive water as per approval from OIL/PMC)				-
5.1	Deployment of dewatering pump of capacity greater than 50 m3/hr	1500	Hour		-
5.2	Deployment of well point system of capacity greater than 100 m3/hr	1500	Hour		-
6	SAND PADDING (IN HARD ROCKY AREAS) Supplying, providing and filling fine sand in trenches in stretches other than normal soil and hard rock / boulder around mainline pipe for providing a minimum padding thickness of 150 mm on top as well as at bottom of the mainline pipe.Item to be operated under specific instructions from Engineer-in-Charge.	35000	mtr		-
7	Fabrication, fitment, and welding for full encirclement sleeves from OIL supplied 16"/14"/12"/10" dia pipes over pitted sections of the exposed pipeline including testing / inspection (DP test), supply of all equipment, consumables, labour etc. required to complete the work in all respects as per the specifications and directions of theOIL/PMC. Pipes will be supplied by OILfrom OIL's nearest Store Yards and shall be transported to site at the Contractor's risk & cost for sleeving of 16"/14"/12"/10" dia line.	30	M		-
8	Repair of cased crossings: Excavation of cased crosings at either ends to check shorting of cased crossings, if required. In case of shorting of cased crossings, the heat shrinkable end seals shall be removed, the pipe shall be lifted at the edges to remove the shorting. The vent pipes and Ground Pot shall be new, fabricated and welded. Supply and installation of casing end seals, insulators and filler.Dry air shall be flushed to remove all muck, water from the annulus of casing filling. Supply and installation of heat shrinkable end seals. Refer Work Procedure attached in Tender Document.	36	NOS		-
9	Coating repair of Block valves with Petrolatum/wax tape coating system:- The broad scope of work shall include the following : -Cleaning and digging the under ground valve installed in the soil in the ROW/ in concrete chamber - Chipping the concrete chamber at least 3" in depth and at least 2" radially around the pipe. - Repairing concrete chamber at cracks including plastering of the walls / base of the concrete chamber as per direction of OIL / PMC. - Repair / Painting of existing MS Valve Box - Removal of old coating / loose rust from the surface of the valve body using wooden / brass hammers & hand wire brushes. - Recoating the block valves as per procedure . - Installation of pre-packed Zinc anode of net weight 10Kg – 1 no. which will be connected to the pipeline thru TLP type V. - Inspection and testing of the applied coating. Refer detailed scope of work , as indicated in the Tender document.	37	Nos		-

PRICE SCHEDULE					
SPREAD # 4 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH -115 KMS (From Chainage 645.485(U/s RS-11: CHEPANI) TO 905.805 KM(RS-14 KISHANGANJ)					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 06.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
9.1	Fabrication, installation and painting of new MS Valve Box of dimension (1mtr x 0.6 mtr x 1.2 mtr) with 5mm MS plate	6	Nos		
10	Supply and installation of FRP type Test station.Test station enclosure shall be manufactured from UV stabilized, moisture proof fiber reinforced plastic (FRP) of minimum thickness 4 mm with canopy. Test stations enclosure shall have degree of protection IP-65 with hinged lockable shutter.The test station will have bottom plate for access of CP cables inside the FRP enclosure. The FRP enclosure shall have suitable arrangement for mounting on FRP pipe post which shall be encased in concrete at site . The cable entry from the ground into the FRP pipe shall be sealed with silicone compound or visco elastic filler to prevent moisture entry. Also all cables entering the FRP enclosure shall also be sealed with silicone compound or visco elastic filler. and all other materials required for erecting the test lead point over concrete foundation (TLP grouting)with cement concrete mixture 1:2:4 (Cement:Sand: Grit of 20mm nominal size), making cable connection to the pipe with necessary excavation,complete in every respect as per drawing, specifications and instructions of OIL/PMC inclusive of the cost of all labour, materials etc.B47				-
10.1	TLP- Type A Potential Measurement Test station (to be installed every one kilometer) (The scope includes supply and installation of TLP with two cables of 1c x 10 sq mm from pipeline to the test station. The minimum number of terminals on the terminal plate is four (4). Two for connection of cable and two spare.The scope includes the supply of cable and pin brazing on the pipeline)	29	Nos		-
10.2	TLP Type - B Current Measurement Test Station(to be installed at CP stations and every 8 km) (The scope includes supply and installation of Test station with 2 sets of measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation at spacing of 60 meters shall be terminated in the terminal plate.(Each set of measurement cable comprises of 2 cable length from the pipeline). The supply and installation of cable and pin brazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate is six (6). Four for connection of cables and two spare.	10			-
10.3	TLP Type D - Cased Crossing of length ≤ 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above five number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm ² cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is twelve (12). Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	24	Nos		-
10.4	TLP Type D - Cased Crossing of length > 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above ten number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm2 cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is ten (12).Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	24	Nos		-
10.5	TLP Type M- High Tension line Crossings (At all HT line locations ≥ 66 kV) The dimension of the test station shall be designed to accommodate solid state decoupler (not to be supplied by EPC contractor). In this test station two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shall be terminated.Also two grounding cables of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shall be terminated for future connection to solid state decoupler and zinc grounding cell. • Minimum no of Terminals : 12 nos	23	Nos		-
10.6	TLP Type E-Foreign Pipeline Crossing Test Station/Bond Box (At every 5 km for bonding the parallel pipelines and at every pipeline crossing) The scope includes supply and installation of bonding cable of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to each pipeline: parallel or crossing by pin brazing / epoxy encapsulation shall be terminated for bonding with resistors and shunts. Also from each pipeline, one potential measurement cable of 1Cx10mm2 shall be terminated in the test station. The supply and installation of cable and pin brazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate are twelve (12).	20	Nos		-
10.7	TLP Type F - Isolation Flange Joint at Repeater stations (At Isolation Joint location) This scope includes supply and installation of one potential measurement cables of size 1C x 10 mm2 & one 1c x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the each (protected / unprotected side) of the pipeline by pin brazing / epoxy encapsulation shall be terminated. Minimum No of terminals : 12 nos	8	Nos		-
11	Surge divertor , EXFS- 300 mm to be mounted on monolithic isolation joint	8	Nos		-
	TOTAL				-
	GOODS & SERVICE TAX @ 18% ON TOTAL AMOUNT				-
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN FIGURE)				-
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN WORD)				

PRICE SCHEDULE					
SPREAD # 5 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH -80 KMS (From Chainage 905.805 KM(RS-14 KISHANGANJ) TO 1157.580 (PS-10 BARAUNI PUMP STATION)					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 07.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
1	2	3	4	5	6
	LOCATION OF ROW : BIHAR				
1	COATING OF PIPELINE				
1.1	COATING AND WRAPPING IN DRY AREA/ WET AREA DURING RAINY SEASON	75426	M		-
1.1.1.	3ply/2ply cold applied system at Dry Areas/ Wet Area during Rainy season :- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 m to 2.5 mtr depth (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) . The rates are inclusive of shoring, shuttering, de-watering of surface water and water in pipeline trench & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-
1.2	COATING AND WRAPPING IN SWAMPY AREA	1700	M		-
1.2.1	Visco elastic coating in swampy area:- (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at a depth of 1.5 mtr to 2.5 mtr. (The depth may vary near road/ rail / nala/ cart track crossing or at locations where subsequent filling has taken place) .The rates are inclusive of for shoring, shuttering, de-watering of surface water and water in pipeline trench area & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m. The size of the trench, width and depth will be suitable for ensuring hand application of the visco-elastic inner and outer tape. The visco ealastic tape to be used where surface can not be prepared by Sa 2 1/2 , however surface can be dried. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preparation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL/PMC. (e.1) Applying visco-elastic inner layer with 10mm overlap with hand application followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe.During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-
1.3	COATING AND WRAPPING IN SUBMERGED AREA	2500	M		-
1.3.1	Petrolatum/wax tape coating in submerged area:- In submerged section the trenching shall be done after de watering the ground water using dewatering / sludge pumps and making necessary bund to prevent flow of water. (a) Excavating in all type of soil including hard murrum for exposing existing pipeline in ROW normally buried at 1.5 mtr to 2 mtr Depth (The depth may vary near road/ rail/nala/ cart track crossing or at locations where subsequent filling has taken place) including keeping top layer of soil separately, shoring shuttering etc. The rates are inclusive of shoring, shuttering, de-watering & cutting of cart tracks, Kachha irrigation channel and embankment falling in ROW and making bye pass for the movement of equipments and restoration of the same to its original condition upon the completion of the job. During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring hand application of the petrolatum putty, inner and outer tape. The petrolattum tape shall be used in pipeline trenches where the pipe surface is wet. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Suface preperation of pipe by hand / power wire brushing to St2 / St3.Checking and marking the cleaned steel surface area for surface imperfections/pits/damage. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e)Application of the coating material to be free issued by OIL. (e.1) Apply mastic/putty on the pipe area with hand such as to create a smooth profile to tape wrapping. (e.2) Apply petrolatum tape coating material with 50% ovelapwith hand application on the mastic followed by an outer layer for additional mechanical protection also to be applied with 50% overlap with hand wrapping to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. Top layer of soil kept separately, shall be back filled properly at the top of the trench including formation of the crest to take care of settlement, if any, so as to form the original top layer of the soil. During back filling contractor shall properly provide compaction of the backfilled earth & restore the worksite / to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC.				-

PRICE SCHEDULE					
SPREAD # 5 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH -80 KMS (From Chainage 905.805 KM(RS-14 KISHANGANJ) TO 1157.580 (PS-10 BARAUNI PUMP STATION)					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 07.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
2	Cutting / excavation of roads, in locations where the trench is cut across roads including shoring, shuttering and providing temporary bridges / suitable bypass of adequate strength & proper construction to allow the passage of normal traffic with minimum of inconvenience and interruptions. The contractor should make good and restore such roads etc. to its original condition without any extra cost. a) During excavation all necessary precautions are to be taken by providing sand bag/earth support to ensure maximum unsupported length of less than 10 m.The size of the trench width and depth will be suitable for ensuring free movement of the OIL/PMC supplied hand wrapping machine for coating application. (b) Removing old coat & wrap with scrappers using wooden/ brass hammers etc. Safe disposal of the old coal tar coating as directions of Owner/PMC. (c) Surface preparation of pipe by copper slag abrasive blasting to achieve Sa21/2 finish with anchor pattern 50 to 100 microns.Checking and marking the blasted steel surface area for surface imperfections/pits/damages and recording the length of the pipe from girthweld to girthweld. (d) Measuring the wall thickness of the pipe using ultrasonic meter at 3,6,9 and 12' o clock position every ten meter and at locations where pitting is observed. (e) Application of the coating material to be free issued by OIL. (e.1) Applying liquid adhesive primer at the blasted surface with hand brush. (e.2) Applying 3ply tape inner layer with 50% overlap with the help of hand operated machine followed by an 2ply tape outer layer for additional mechanical protection also to be applied with 50% overlap with the help of hand operated machine to the satisfaction of OIL/PMC. (f) Inspection and testing of the coating - thickness testing, 100% holiday detection, peel test. The frequency of the testing shall be as per approved QAP. (g) Backfilling of the trench gradually with available soft selected earth all around the pipe in full trench width up to 12" below the pipe to 12" above the pipe. During back filling contractor shall properly provide compaction of the backfilled earth & restore the road to original conditions. (h) Restoration of the ROW to its original condition including restoration of field boundaries/ fencing/ field demarcation post / drains / channels / roads / irrigation pipes of the farmers / ROW boundary pillars / TLPs / KM posts / warning sign boards / markers/ Turning point markers etc. to the satisfaction of OIL /PMC. Types of Road crossing shall be as below:-				-
2.1	Asphalted Road	174	M		-
2.2	Concrete Road	180	M		-
2.3	Gravel Road	20	M		-
3	Extra excavation for depth beyond 2.5 mtr and upto 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring, shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 2 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 2 mtr depth (from top of pipe to surface level) of pipe.	1577.44	CUM		-
4	Extra excavation for depth beyond 3.5 mtr depth in canal beds and other specific locations: Excavation in all types of ordinary and hard soils including hard murrum including de-watering the excavated pits necessary shoring,shuttering including backfilling, stacking selected excavated material for back filling and/ or disposing outside the premises of OIL, if the depth of the pipe (from top of pipe) is more than 3 mtr depth from average land surface level. Payment shall be made for quantity in cum to be calculated beyond 3 mtr depth (from top of pipe to surface level) of pipe. Average depth considered up to 6 mtr.	788.72	CUM		-
5	Pumping out of water from ponds/depressions /trench s using deWatering pumps of capacity greater than 50 m3/hr and/or installation of wellpoint systm of capacity greater than 100 m3/hr only after getting approval of OIL/PMC. (The item will be operated in case of dewatering of excessive water as per approval from OIL/PMC)				-
5.1	Deployment of dewatering pump of capacity greater than 50 m3/hr	1500	Hour		-
5.2	Deployment of well point system of capacity greater than 100 m3/hr	1500	Hour		-
6	SAND PADDING (IN HARD ROCKY AREAS) Supplying, providing and filling fine sand in trenches in stretches other than normal soil and hard rock / boulder around mainline pipe for providing a minimum padding thickness of 150 mm on top as well as at bottom of the mainline pipe.Item to be operated under specific instructions from Engineer-in-Charge.	1000	mtr		-
7	Fabrication, fitment, and welding for full encirclement sleeves from OIL supplied 16"/14"/12"/10" dia pipes over pitted sections of the exposed pipeline including testing / inspection (DP test), supply of all equipment, consumables, labour etc. required to complete the work in all respects as per the specifications and directions of theOIL/PMC. Pipes will be supplied by OILfrom OIL's nearest Store Yards and shall be transported to site at the Contractor's risk & cost for sleeving of 16"/14"/12"/10" dia line.	30	M		-
8	Repair of cased crossings: Excavation of cased crosings at either ends to check shorting of cased crossings, if required. In case of shorting of cased crossings, the heat shrinkable end seals shall be removed, the pipe shall be lifted at the edges to remove the shorting. The vent pipes and Ground Pot shall be new, fabricated and welded. Supply and installation of casing end seals, insulators and filler.Dry air shall be flushed to remove all muck, water from the annulus of casing filling. Supply and installation of heat shrinkable end seals. Refer Work Procedure attached in Tender Document.	12	NOS		-
9	Supply and installation of casing filler material for the annulus space between the casing pipe(16 inch) and the carrier pipe(14 inch) as per NACE0200-2014 for a casing length of 150 meter in two to three Crossings. The length may increase or decrease as per site requirement and actual length shall be considered for final measurement/Payment.	150	mtr		-
10	Supply of Monolithic Isolation joints for the 14 inch pipeline , as per specification of isolation joints	8	NOS		-
11	Supply of 14 Inch 90 ⁰ LR bends , bend radius- 6D , wall thickness- XX mm, tangent length- 500 mm	8	NOS		-
12	Supply of 14 inch 45 ⁰ LR bends , bend radius- 6D , wall thickness- XX mm, tangent length- 500 mm	8	NOS		-
13	Stopple plugging application for fitment of pipeline section with MIJ at repeater stations by hiring specialised agency as mentioned in the tender.	8	Locs		-
14	Design including preparation of pipe section replacement drawing , fabrication and installation including 100% radiography of pipe section comprising of 90 ⁰ /45 ⁰ LR bends and OIL free issued straight pipe fitted with MIJ. The scope would also include taking delivery of free issue pipe from OIL's store, cold cutting of existing pipe spool piece, hook up, alignment and welding and safe disposal of the crude.The hook up /installation activity to be completed within 48 hours at both up stream & downstream of the repeater station.	8	Locs		-

PRICE SCHEDULE					
SPREAD # 5 DULIAJAN BARAUNI PIPELINE DIA : 14" PIPE LENGTH -80 KMS (From Chainage 905.805 KM(RS-14 KISHANGANJ) TO 1157.580 (PS-10 BARAUNI PUMP STATION))					
Bidder Name					
Owner: OIL INDIA LTD					
Tender No. : CGI5616P18 dated 07.09.2017					
Currency: INR					
SL. NO.	DESCRIPTION	QUANTITY	UNITS	UNIT RATE INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT	TOTAL AMOUNT INCLUSIVE OF ALL TAXES , DUTIES, LEVIES,FREIGHT, INSURANCE INCLUDING TRANSIT INSURANCE OF FREE ISSUE MATERIALS EXCLUDING GST AS DEFINED IN BID DOCUMENT
15	Coating repair of Block valves with Petrolatum/wax tape coating system:- The broad scope of work shall include the following : -Cleaning and digging the under ground valve installed in the soil in the ROW/ in concrete chamber - Chipping the concrete chamber at least 3" in depth and at least 2" radially around the pipe. - Repairing concrete chamber at cracks including plastering of the walls / base of the concrete chamber as per direction of OIL / PMC. - Repair / Painting of existing MS Valve Box - Removal of old coating / loose rust from the surface of the valve body using wooden / brass hammers & hand wire brushes. - Recoating the block valves as per procedure . - Installation of pre-packed Zinc anode of net weight 10Kg – 1 no. which will be connected to the pipeline thru TLP type V. - Inspection and testing of the applied coating. Refer detailed scope of work , as indicated in the Tender document.	17	Nos		-
	Fabrication, installation and painting of new MS Valve Box of dimension (1mtr x 0.6 mtr x 1.2 mtr) with 5mm MS plate	6	Nos		
16	Supply and installation of FRP type Test station.Test station enclosure shall be manufactured from UV stabilized, moisture proof fiber reinforced plastic (FRP) of minimum thickness 4 mm with canopy. Test stations enclosure shall have degree of protection IP-65 with hinged lockable shutter.The test station will have bottom plate for access of CP cables inside the FRP enclosure. The FRP enclosure shall have suitable arrangement for mounting on FRP pipe post which shall be encased in concrete at site . The cable entry from the ground into the FRP pipe shall be sealed with silicone compound or visco elastic filler to prevent moisture entry. Also all cables entering the FRP enclosure shall also be sealed with silicone compound or visco elastic filler. and all other materials required for erecting the test lead point over concrete foundation (TLP grouting)with cement concrete mixture 1:2:4 (Cement:Sand: Grit of 20mm nominalsize), making cable connection to the pipe with necessary excavation,complete in every respect as per drawing, specifications and instructions of OIL/PMC inclusive of the cost of all labour, materials etc.				-
16.1	TLP- Type A Potential Measurement Test station (to be installed every one kilometer) (The scope includes supply and installation of TLP with two cables of 1c x 10 sq mm from pipeline to the test station. The minimum number of terminals on the terminal plate is four (4). Two for connection of cable and two spare.The scope includes the supply of cable and pin brazing on the pipeline)	37			-
16.2	TLP Type - B Current Measurement Test Station(to be installed at CP stations and every 8 km) (The scope includes supply and intallation of Test station with 2 sets of measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation at spacing of 60 meters shall be terminated in the terminal plate.(Each set of measurement cable comprises of 2 cable length from the pipeline). The supply and installation of cable and pin brazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate is six (6). Four for connection of cables and two spare.	10			-
16.3	TLP Type D - Cased Crossing of length ≤ 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above five number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm ² cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is twelve (12). Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	6			-
16.4	TLP Type D - Cased Crossing of length > 10 mtr The scope includes supply and Installation of two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the carrier and casing pipe respectively by pin brazing / epoxy encapsulation shall be terminated in the terminal plate.In addition to the above ten number of magnesium anodes to be connected to the casing pipe for protection. The supply and installation of Magnesium anodes- 20 kg with 1c x 10 mm2 cable is also included in the scope of the contractor.The minimum number of terminals on the terminal plate is ten (12).Each terminal for terminating the magnesium anode cable shall be fitted with shunt for current measurement and toggle switch.	7			-
16.5	TLP Type M- High Tension line Crossings (At all HT line locations ≥ 66 kV) The dimension of the test station shall be designed to accommodate solid state decoupler (not to be supplied by EPC contractor). In this test station two potential measurement cables of size 1C x 10 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shall be terminated.Also two grounding cables of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the pipeline by pin brazing / epoxy encapsulation shall be terminated for future connection to solid state decoupler and zinc grounding cell. • Minimum no of Terminals : 12 nos	10			-
16.6	TLP Type E-Foreign Pipeline Crossing Test Station/Bond Box (At every 5 km for bonding the parallel pipelines and at every pipeline crossing) The scope includes supply and installation of bonding cable of size 1C x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to each pipeline: parallel or crossing by pin brazing / epoxy encapsulation shall be terminated for bonding with resistors and shunts. Also from each pipeline, one potential measurement cable of 1Cx10mm2 shall be terminated in the test station. The supply and installation of cable and pin brazing shall be included in the scope of contractor.The minimum number of terminals on the terminal plate are twelve (12).	20			-
16.7	TLP Type F - Isolation Flange Joint at Repeater stations (At Isolation Joint location) This scope includes supply and installation of one potential measurement cables of size 1C x 10 mm2 & one 1c x 25 mm2 copper cored, XLPE insulated / PVC (FRLS) sheathed connected to the each (protected / unprotected side) of the pipeline by pin brazing / epoxy encapsulation shall be terminated. Minimum No of terminals : 12 nos	6	Nos		-
17	Surge divertor , XFS- 300 mm to be mounted on monolithic isolation joint	6	Nos		-
	TOTAL				-
	GOODS & SERVICE TAX @ 18% ON TOTAL AMOUNT				-
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN FIGURE)				-
	TOTAL AMOUNT INCLUSIVE OF GST @ 18% (IN WORD)				

PART – V
INTEGRITY PACT

	INTEGRITY PACT	P.010416 R11050 002

INTEGRITY PACT

Between

Oil India Limited (OIL) hereinafter referred to as "The Principal"

And

(Name of the bidder).....hereinafter referred to as "The Bidder/Contractor"

Preamble :

The Principal intends to award, under laid down organizational procedures, contract/s for Tender No. **CGI5616P18**. The Principal values full compliance with all relevant laws and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder/s and Contractor/s.

In order to achieve these goals, the Principal cooperates with the renowned international Non-Governmental Organisation "Transparency International"(TI). Following TI's national and international experience, the Principal will appoint an external independent Monitor who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 - Commitments of the Principal

- (1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-
 1. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for him/herself or third person, any material or immaterial benefit which he/she is not legally entitled to.
 2. The Principal will, during the tender process treat all Bidders with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidders the same information and will not provide to any Bidder confidential/additional information through which the Bidder could obtain an advantage in relation to the tender process or the contract execution.
 3. The Principal will exclude from the process all known prejudiced persons.
- (2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the relevant Anti-Corruption Laws of India, or if there be a Page 2 of 6 substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

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Section 2 - Commitments of the Bidder/Contractor

- (1) The Bidder/Contractor commits itself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
 1. The Bidder/Contractor will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or immaterial benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
 2. The Bidder/Contractor will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, Subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.
 3. The Bidder/Contractor will not commit any offence under the relevant Anticorruption Laws of India; further the Bidder/Contractor will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 4. The Bidder/Contractor will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- (2) The Bidder/Contractor will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 - Disqualification from tender process and exclusion from future Contracts

If the Bidder, before contract award has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or credibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

1. If the Bidder/Contractor has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is entitled also to exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressions within the company hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.
2. The Bidder accepts and undertakes to respect and uphold the Principal's Absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.
3. If the Bidder/Contractor can prove that he has restored/recouped the Damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely.
4. A transgression is considered to have occurred if in light of available evidence no reasonable doubt is possible.

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Section 4 - Compensation for Damages

1. If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from the Bidder liquidated damages equivalent to 3 % of the value of the offer or the amount equivalent to Earnest Money Deposit/Bid Security, whichever is higher.
2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.
3. The bidder agrees and undertakes to pay the said amounts without protest or demur subject only to condition that if the Bidder/Contractor can prove and establish that the exclusion of the Bidder from the tender process or the termination of the contract after the contract award has caused no damage or less damage than the amount or the liquidated damages, the Bidder/ Contractor shall compensate the Principal only to the extent of the damage in the amount proved.

Section 5 - Previous transgression

1. The Bidder declares that no previous transgression occurred in the last 3 years with any other Company in any country conforming to the TI approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
2. If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders/Contractor/Subcontractors

1. The Bidder/Contractor undertakes to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
2. The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Subcontractors.
3. The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 - Criminal charges against violating Bidders/Contractors/ Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor, which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 - External Independent Monitor/Monitors (three in number depending on the size of the contract) (to be decided by the Chairperson of the Principal)

1. The Principal appoints competent and credible external independent Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
2. The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Chairperson of the Board of the Principal.
3. The Contractor accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is

	INTEGRITY PACT	P.010416 R11050 002

applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder/Contractor/Subcontractor with confidentiality.

4. The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or heal the violation, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
6. The Monitor will submit a written report to the Chairperson of the Board of the Principal within 8 to 10 weeks from the date of reference or intimation to him by the 'Principal' and, should the occasion arise, submit proposals for correcting problematic situations.
7. If the Monitor has reported to the Chairperson of the Board a substantiated suspicion of an offence under relevant Anti-Corruption Laws of India, and the Chairperson has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
8. The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made/ lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by Chairperson of the Principal.

Section 10 - Other provisions

1. This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. New Delhi.
2. Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
3. If the Contractor is a partnership or a consortium, this agreement must be, signed by all partners or consortium members.
4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

M. B. Singha
Dy. Manager Materials (PL)

For the Principal

For the Bidder/Contractor

Place: Guwahati

Witness 1 :

Date: 27.05.2016

Witness 2 :

PART – VI
PROFORMA AND ANNEXURES

OIL INDIA LTD

PROFORMA & ANNEXURES

PART VI

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PROFORMA - I

BID FORM

To
THE CM (CONTRACTS)
OIL INDIA LIMITED
(A Govt. of India Enterprise) P.O.
GUWAHATI-781171
DIST. KAMRUP(M)
ASSAM

Subject : IFB No. CGI5616P18 for 'Coating Refurbishment Work for OIL Pipeline in the States of Assam, West Bengal and Bihar, India'.

Dear Sir,

Having examined the General and Special Conditions of Contract and the Scope of Work & Technical Specification including all attachments thereto, the receipt of which is hereby duly acknowledged, we the undersigned offer to perform the services in conformity with the said conditions of Contract and Scope of Work & Technical Specification for the sum of

____(Price not to be indicated)____ stated below or such other sums as may be ascertained in accordance with the Price Bid Form attached herewith and made part of this Bid:

We undertake, if our Bid is accepted, to commence the work within (____) days calculated from the date of issue of Company's LOA.

We agree to abide by this Bid for a period of **120 days** from the date fixed for Bid opening and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof in your notification of award shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Bid you may receive.

Dated this _____ day of _____ 2017.

Signature and seal of the Bidder: _____

(In the capacity of) : _____

Name of Bidder : _____

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PROFORMA – II

LETTER OF AUTHORITY

To
THE CM (CONTRACTS)
OIL INDIA LIMITED
(A Govt. of India Enterprise) P.O.
GUWAHATI-781171 DIST.
KAMRUP(M)
ASSAM

Sir,

Subject : IFB No. CGI5616P18 for ‘Coating Refurbishment Work for OIL Pipeline in the States of Assam, West Bengal and Bihar, India’.

We _____ confirm that Mr. _____
(Name and address) as authorized to represent us to Bid, negotiate and conclude
the agreement on our behalf with you against Invitation
No.: _____ for
‘Coating Refurbishment Work for Oil Pipeline in the State of Assam, West Bengal and Bihar’.

We confirm that we shall be bound by all and whatsoever our said representative shall commit.

Yours Faithfully,

Signature: _____
Name : _____
Designation: _____
For & on behalf of: _____

Note: This letter of authority shall be printed on letter head of the Bidder and shall be signed by a competent person to bind the Bidder.

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PROFORMA - III

STATEMENT OF NON-COMPLIANCE

(Only exceptions/deviations to be rendered)

Subject : IFB No. CGI5616P18 for ‘Coating Refurbishment Work for OIL Pipeline in the States of Assam, West Bengal and Bihar, India’.

- 1.0 The Bidder shall furnish detailed statement of **exceptions/deviations**, if any, to the tender stipulations, terms and conditions in respect of each PART of Bid Document in the following format:

PART No.	Clause No. (Page No.)	Non-Compliance	Remarks

Authorized Person’s Signature: _____

Name: _____

Designation: _____

Seal of the Bidder:

NOTE: OIL INDIA LIMITED expects the bidders to fully accept the terms and conditions of the bid document. However, should the bidders still envisage some exceptions/deviations to the terms and conditions of the bid document, the same should be indicated as per above format and submit along with their bids.

If the “**Statement of Compliance**” in the above Proforma is left blank (or not submitted along with the technical bid), then it would be construed that the bidder has not taken any exception/deviation to the tender requirements.

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PROFORMA- IV
(To be submitted on bidder's letter head)

**[TO BE FILLED-UP / SUBMITTED BY THE BIDDER ON ITS LETTER HEAD
FOR E-REMITTANCE]**

Name:

FULL Address:

Phone Number :

Mobile Number :

E-mail address :

FAX Number :

Bank Account Number:
(in which the Bidder wants remittance against invoices)

Bank Name :

Branch :

Address of the Bank:

Bank Code :

IFSC/RTGS Code of the Bank:

NEFT Code of the Bank :

PAN Number :

Goods & Service Tax (GST) Number:

Signature of Vendor with Official Seal

Note: This declaration shall be printed on letter head of the Bidder and shall be signed by a competent person.

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PROFORMA-V
FORM OF BID SECURITY (BANK GUARANTEE FORMAT)

To:
M/s. OIL INDIA LIMITED,
CONTRACTS SECTION, PHQ
GUWAHATI,
ASSAM, INDIA, PIN -781171.

WHEREAS, (Name of Bidder) _____ (hereinafter called "the Bidder") has submitted their offer Dated _____ for the provision of certain services (hereinafter called "the Bid") against OIL INDIA LIMITED, GUWAHATI, Assam, India hereinafter called the Company)'s Tender No. _____ KNOW ALL MEN BY these presents that we (Name of Bank) _____ of (Name of Country) _____ having our registered office at _____ (hereinafter called "Bank") are bound unto the Company in the sum of (* _____) for which payment well and truly to be made to Company, the Bank binds itself, its successors and assignees by these presents.

SEALED with the
said Bank this ____ day of _____ 2017.

THE CONDITIONS of these obligations are:

1. If the Bidder withdraws their Bid within its original/extended validity; or
2. The Bidder modifies/revises their bid suomoto; or
3. The Bidder does not accept the contract; or
4. The Bidder does not furnish Performance Security Deposit within the stipulated time as per tender/contract; or
5. If it is established that the Bidder has submitted fraudulent documents or has indulged into corrupt and fraudulent practice.

We undertake to pay to Company up to the above amount upon receipt of its first written demand (by way of letter/fax/cable), without Company having to substantiate its demand provided that in its demand Company will note that the amount claimed by it is due to it owing to the occurrence of any of the conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including the date (**--/--/--) and any demand in respect thereof should reach the Bank not later than the above date.

The details of the Issuing Bank and Controlling Bank are as under:

A. Issuing Bank:

BANK FAX NO:
BANK EMAIL ID:
BANK TELEPHONE NO.:
IFSC CODE OF THE BANK:

B. Controlling Office:

Address of the Controlling Office of the BG issuing Bank:
Name of the Contact Person at the Controlling Office with Mobile No. and e-mail address:

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SIGNATURE AND SEAL OF THE GUARANTORS _____

Name of Bank & Address _____

Witness _____

Address _____

(Signature, Name and Address) Date:

Place: _____

* The Bidder should insert the amount of the guarantee in words and figures.

** Date of expiry of Bank Guarantee should be minimum 30 days after the end of the validity period of the Bid /as specified in the Tender.

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PROFORMA-VI

FORM OF PERFORMANCE BANK GUARANTEE

(To be submitted by the successful bidder in case of award of contract)

To:
M/s. OIL INDIA LIMITED,
CONTRACTS SECTION
PIPELINE DEPARTMENT, GUWAHATI
ASSAM, INDIA, PIN –781 171.

WHEREAS _____ (Name and address of Contractor) (hereinafter called "Contractor") had undertaken, in pursuance of Contract No. _____ to execute (Name of Contract and Brief Description of the Work) _____ (hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee as security for compliance with Contractor's obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;
NOW THEREFORE we hereby affirm that we are Guarantors on behalf of the Contractor, up to a total of (Amount of Guarantee in figures) _____ (in words _____), such amount being payable in the types and proportions of currencies in which the Contract price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of guarantee sum as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein. We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or the work to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way cease us from any liability under this guarantee, and we hereby waive notice of such change, addition or modification.

This guarantee is valid until the -----day of -----

The details of the Issuing Bank and Controlling Bank are as under:

A. Issuing Bank:

BANK FAX NO:

BANK EMAIL ID:

BANK TELEPHONE NO.:

IFSC CODE OF THE BANK:

B. Controlling Office:

Address of the Controlling Office of the BG issuing Bank:

Name of the Contact Person at the Controlling Office with Mobile No. and e-mail address:

SIGNATURE AND SEAL OF THE GUARANTORS _____

Designation _____

Name of Bank _____

Address _____

Witness _____

Address _____

Date _____

Place _____

Note: Bank details of Oil India Limited may be required by Bank for issuance of Bank Guarantee (BG):

BANK DETAILS OF BENEFICIARY		
a	Bank Name	AXIS BANK
b	Branch Name	GUWAHATI
c	Branch Address	CHIMBER HOUSE, G.S.ROAD, DISPUR ASSAM
d	Banker Account No.	140010200027654
e	Type of Account	CURRENT ACCOUNT
f	IFSC Code	UTIB0000140
g	MICR Code	781211002
h	SWIFT Code	Axisinbb140
i	Contact No.	8876501401
j	Contact Person Name	Mr. Dibakar Ghaosh
k	Fax No.	Not available
l	Email Id	Guwahati.branchhead@axisbank.com

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PROFORMA-VII

**FORMAT FOR UNDERTAKING
(IN TERMS OF TENDER NO. CGI20XXPXX)
(On Non-Judicial Stamp Paper of Rs. 100/-)
TO BE NOTORISED**

To
CM-CONTRACTS
OIL INDIA LIMITED
GUWAHATI

Dear Sirs,

UNDERTAKING/DECLARATION BY THE BIDDER IN RESPECT OF TENDER NO. **CGI5616P18**.

This is in connection with the Bid submitted by me/us, ... (Name of Bidder), against Tender No. CGI20XXPXX for **“Coating Refurbishment Work for Oil Pipeline in the State of Assam, West Bengal and Bihar.”**

I/We, the afore mentioned Bidder against the subject tender, hereby declare that my/our quoted rates include the following -

- (a) Labour wages as per Minimum Wages Act and notifications issued by the Central Govt. from time to time, including P.F, insurance and Bonus.
- (b) Material and Equipment (if any) cost.
- (c) PPE cost.
- (d) IME (Initial Medical Examination) cost (Not Applicable).
- (e) Other charges / cost including overheads, profit, insurance and handling charge..

I/We, the afore mentioned Bidder against the subject tender take note that minimum wages may increase from time to time as notified by statutory authority and Central Govt. and undertake that I/We shall not make Company (i.e. OIL) liable to reimburse me/us for such statutory increase in wage rates of the labours/workers engaged by me/us during the entire period of the contract, including extension if any. Currently, such increase in the wage rates is twice in a year. I/We have bid after considering this increase in wage rates for the entire period of Contract including extension provision.

I/We, the afore mentioned Bidder against the subject tender, further undertake that I/We will pay my/our workers the existing Daily wages as notified under the. Minimum Wages Act from time to time by the Central Govt. and such statutory or any other increase in the wages rates including consequent increase in statutory.

contributions like provident fund etc. of contract labours engaged by me/us shall be borne solely by me/us during the entire period of the contract, including extension if any, without any cost implication whatsoever upon the Company.

I/We further agree and undertake that in case of any violation of the above undertaking, Oil India Limited (OIL) shall be at liberty to take appropriate action against me/us in terms of the Tender/Contract including but not limited to termination of contract and debarment from future business with OIL. I shall duly comply with all the statutory obligations, more particularly under applicable labour laws. I further agree and undertake that in case of any dispute or claims arise out of my non-compliance of statutory obligations under the Contract, by the Labourers engaged by me or by any statutory authorities, I shall only be responsible for the same and hold the Company harmless against such dispute or claims. I further authorize the Company, in the event of my default or non-compliance of any statutory obligations, to

	PROFORMA & ANNEXURES	P.010416 R11050 002

deduct/recover and adjust such amount or claim against my Bills due under the Contract or against any other existing or future Contracts with the Company including performance security.

I/We declare that the information given above is true and any misstatement, misrepresentation, or suppression of facts in connection with the above undertaking may entail rejection of the bid and cancellation of contract, if awarded.

Yours faithfully,

1. Authorized Signatory with Seal

(Bidder)

Place:-

Date:-

	PROFORMA & ANNEXURES	P.010416 R11050 002

Form – 1
Details of Work Done
(For satisfying the Bid Evaluation
Criteria)

Sl. No	Description of Work	Location of Work	Client Address and contact details including email	Value of Contract	Schedule Completion Date	Date of Actual Completion	Reasons for Delay, if any

Note:

1. Copies of Completion Certificates along with Work Orders/Contract Documents of the Works as per Bid Evaluation Criteria are to be enclosed.
2. Work completed earlier than the period indicated in Bid Evaluation Criteria need not be indicated here.
3. List of work, not as per qualifying criteria indicated in Bid Evaluation Criteria need not be indicated here.

**SEAL AND SIGNATURE OF THE
BIDDER**

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Form – 2
Present Commitments of the Bidder
(In case of Consortium each member to fill this form)

Sl. No	Description of Work	Client & Address	Value of Contract	Contract Period	Date of Commencement of Work	% of Completion as on date	Expected Date of Completion	Remarks

Note:

1. This list must be a full list of all type of works in hand.

SEAL AND SIGNATURE OF THE BIDDER

**Form – 3 (Not Applicable)
Format for Bio Data of Key Personnel**

Paste Photograph
Here

1.	Name						
2.	DOB						
3.	Place of Birth						
4.	Nationality						
5.	Contact Details, Phone No., Email						
6.	Languages Known (Read, Write Speak)						
7.	Educational Qualifications.						
8.	Professional Qualifications.						
9.	Affiliations to Professional Bodies						
10.	Professional Experience						
11.	Organization	From	To	Years	Position	Responsibilities	
	Computer & Software's Proficiency						
12.	Any Other information						

**SEAL AND SIGNATURE OF THE
BIDDER**

**Form – 4
CHECK LIST**

Bidders are requested to duly fill in the checklist. This checklist gives only certain important items to facilitate the bidder to make sure that the necessary data/information as called for in the bid document has been submitted by them along with their offer. This, however, does not relieve the bidder of his responsibilities to make sure that his offer is otherwise complete in all respects.

Please ensure compliance and fill in relevant information against following points:

Sl. No	Description	Document Name	Pg. No of Document	Complied Yes/No
1	Bid document complete in all respects with pages in sequential order			
2	Confirm that the price bid has been duly filled in for each item and complete in all respects			
3	Confirm that annual financial reports for last three financial years submitted with Technical Bid.			
4	Confirm that the certificate (as per Annexure AA) issued on letter head of the Chartered accountant firm is enclosed with Technical Bid.			
5	Confirm that the copies of Service Tax registration, PAN, PF, ESI, Certificate of incorporation from registrar of companies are submitted with the offer. Registrar of companies are submitted with the			
6	Confirm that copies of documents establishing the bidder's experience & eligibility are enclosed with Technical Bid.			
7	Confirm that the duly filled in Form 1 & 2 are enclosed with technical bid.			
8	Confirm that the notarized Bio-Data/CV of the Key personnel viz: Project Manager, Design Manager, Resident Construction Manager, Planning Manager, Contracts Manager, Finance Manager are enclosed with Technical Bid	Not Applicable		
9	Confirm that the duly filled in Form 3 is enclosed with technical bid.	Not Applicable		

**SEAL AND SIGNATURE OF THE
BIDDER**

At the helm of the Energy Transition, Tractebel provides a full range of engineering and consulting services throughout the life cycle of its clients' projects, including design and project management. As one of the world's largest engineering consultancy companies and with more than 150 years of experience, it's our mission to actively shape the world of tomorrow. With about 4,400 experts and offices in 33 countries, we are able to offer our customers multidisciplinary solutions in energy, water and infrastructure.

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