OIL INDIA LIMITED

BID DOCUMENT

Tender NO. : CGI 2448P20

Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited

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

OIL INDIA LIMITED (OIL) invites Bids through its E-Procurement portal "https://etender.srm.oilindia.in/irj/portal" for the following services under **Single Stage Two Bid** system.

1.0 IFB No.	**CGI2448P20**
Service Requirement	**Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited**
Cost of Bid Document	**NIL**
Bid Security(EMD)	**For Part A works:** **₹16,19,000.00 (Sixteen Lakh Nineteen Thousand) Only** **For Part B works:** **₹8,45,000.00 (Eight Lakh Forty Five Thousand) Only**
Period of Sale of Bid Document/Issue of User ID & Password	**As per online data**
Bid Closing /Opening Date & Time	**As per online data**

2.0 For participation, the application(s) on applicant's letter pad with a request for USER ID & PASSWORD is to be submitted /sent to reach the **Office of GM-Contracts, Contracts section, Pipeline Head Quarter, Oil India Limited, P.O. Udayan Vihar, Assam-781171** within the period of sale (inclusive both the days i.e. start date & end date) of Bid document.

Alternatively, applicants already having User ID & Password for OIL's E-procurement portal can register against the IFB.

In case the Bidder(s) send their application for Bid Documents in sealed envelopes, the following must be super scribed on the envelope along with the name & registered postal address of the bidder in typed format or in clear legible handwriting:

"Application & Tender Fees, IFB No.: **CGI2448P20**

Description of Services: **Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited**

2.1 Amongst others, the Bidder(s) must also provide the following information in the application for request for Bid documents: (i) Valid e-mail ID (ii) Registered Postal Address with PIN code (iii) Vendor Code with OIL (if available) (iv) Mobile No. /Telephone No/Fax No.

2.2 No physical Bid documents will be provided. USER_ID and initial PASSWORD will be communicated to the bidder through e-mail at the e-mail address provided along with request for bid documents as mentioned in 2.2(i) above and will be allowed to participate in the bidding through OIL's E-Procurement portal.

2.3 a) Bidders without having E-tender Login ID and Password should complete their online registration at least seven (7) days prior to the scheduled bid closing date and time of the tender. For online registration, Bidder may visit the OIL's E-tender site https://etender.srm.oilindia.in/irj/portal

b) Necessary Login ID & Password will be issued by OIL only after submitting the complete online registration by the Bidder. In the event of late registration/incomplete registration by Bidder, OIL INDIA LIMITED shall not be responsible for late allotment of User ID & Password and request for bid closing date extension on that plea shall not be entertained by Company.

c) MSEs Units (manufacturers/Service Providers only and not their dealers/distributors) who are already registered with District Industry Centers or Khadi & Village Industries Commission or Khadi & Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts & Handloom or any other body specified by Ministry of MSME are exempted from payment of Bid Security (EMD) irrespective of monetary limit mentioned in their registration, provided they are registered for the item they intend to quote/participate

d) For availing benefits under Public Procurement Policy (Purchase preference & EMD exemption), the interested MSE Bidders must ensure that they are the manufacturer/ service provider of tendered item(s) and registered with the appropriate authority for the said item(s). Bids without EMD shall be rejected, if the technical offer does not include a valid copy of relevant MSE Certificate issued by appropriate authority specifying the item as per tender. Therefore, it is in the interest of such MSE Vendors to furnish a copy of complete certificate to the concerned tender handling officer of OIL at least seven (7) days prior to the scheduled Bid Closing Date of the tender; seeking clarification/confirmation as to whether their registered item is eligible for EMD exemption or not. Late communication in this regard and request for bid closing date extension on that plea shall not be entertained by Company

3.0 <u>EXEMPTION OF EMD</u>:

i) Small Scale Industries (SSI) registered with NSIC under Single Point Registration Scheme are exempted from payment of EMD for the items they are registered with NSIC. Valid registration certificate with NSIC must be enclosed along with the application for issuing tender documents.

ii) Public Sector Units (PSU) are also exempted from payment of EMD

iii) Firms registered with NSIC, PSU's & Government Departments claiming exemption from payment of EMD should submit their request with all credentials to the tender administrator at least 7

days in advance from the date of closer of sale of bid documents, to get access for participation in the tender.

(iv) Tender documents provided to SSI Units registered with NSIC on free of charge basis shall submit their offer for the service for which they are registered. Their offer for other than the registered service shall not be acceptable. Their offer as service provider also will not be acceptable and shall be rejected straightway.

4.0 The details of IFB can be viewed using "Guest Login" provided in the E-Procurement portal and also in OIL's web site www.oil-india.com. The link to OIL's E-Procurement portal has also been provided through OIL's web site www.oil-india.com

Note: All corrigenda, amendments, time extension, clarifications etc. if any to the above tender will be hosted on OIL's website and in the e-portal https://etenders.srm.oilindia.in/irj/portal only and no separate notification shall be issued in the press. Prospective bidders are requested to regularly visit the website and e-portal to keep themselves updated.

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

OIL INDIA LIMITED invites ON-LINE BIDS from eligible Bidders/Firms for the following mentioned works/services under **SINGLE STAGE TWO BID System** through its e-Procurement site on limited tender basis.

DESCRIPTION OF WORK/ SERVICE:

Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited

IFB NO:	**CGI 2448P20**
Type of IFB:	Single Stage Two Bid System
Location:	**Duliajan to Digboi, Assam**
Contract Period:	For Part A works: **12 months** For Part B works: **08 months** (Periods for Part A and Part B may overlap based on contracts offered by client)
Mobilisation Period:	**15 (Fifteen) days** from the date of issue of LOA.
Pre-Bid meeting	As per online data
Technical Bid Closing/ Opening Date & Time:	As per online data
Price Bid Opening Date & Time:	As per online data
Bid Submission Mode:	Bid should be submitted online in OIL's E-Procurement Portal
Bid Form Submission:	Bid Form Proforma-I to be submitted along with Technical Bid
Bid Opening Place:	Office of the GM-Contracts, Oil India Limited, Guwahati- 781171, Assam
Bid Validity:	**120 days** from Bid opening Date for Part-A works and **10 months** from Bid opening Date for Part-B works
Bid Security Amount:	**For Part A works:** ₹16,19,000.00 (Sixteen Lakh Nineteen Thousand) Only **For Part B works:** ₹8,45,000.00 (Eight Lakh Forty Five Thousand) Only
Amount Of Performance Security:	**10%** of Annualised Contract Value for Part A works and Part B works respectively.

Validity of Performance Security:	**Up to 3 months beyond the defects liability period of 12 months**

a) Bid Security deposited vide Demand Draft/Banker Cheque /Bank Guarantee No._____dated_____ of_____

Original hard copy of (a) (In case of Bidders submitting Bid Security in the form of Bank Draft/Banker cheque/Bank Guarantee) should reach the office of Deputy General Manager(CONTRACTS) on or before 12:45 Hrs (IST) on the bid closing date or it *can be paid through the online payment Gateway against this Tender*, otherwise Bid will be rejected. A scanned copy of Bid security/EMD invoice (In case of Bid security submitted online) should also be uploaded along with the Un-priced Techno-commercial bid documents.

A Bank Guarantee in the prescribed format issued by any of the following Bank is only acceptable:

i) 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 in case of domestic bidder OR

ii) Any foreign Bank which is not a Scheduled Bank in India, provided the Bank Guarantee issued by such Bank is counter-guaranteed by any Branch situated in India of any Scheduled Bank incorporated in India.

Bank Guarantee issued by a scheduled Bank in India at the request of some other Non-Scheduled Bank of India shall not be acceptable.

The bank guarantee issued by the bank must be routed through SFMS platform as per the following details:

a) (i) "MT760/ MT760 COV for issuance of bank guarantee"
(ii) "MT767/ MT767 COV for issuance of bank guarantee"

The above message/ intimation shall be sent through SFMS by the BG issuing bank branch to Axis Bank, Guwahati Branch, IFS Code- UTIB0000140, Branch Address – Axis Bank Ltd, Guwahati Branch, Chibber House, G S Road, Dispur, Assam, PIN- 781005."

b) The vendor shall submit to OIL the copy of SFMS message as sent by the issuing bank branch along with the original bank guarantee

b) Bidders to confirm that in the event of award of Contract, bidder will submit **Performance Security Deposit @ 10% of Annualised Contract Value** and this will not earn any interest.

A Bank Guarantee in the prescribed format issued by any of the following Bank is only acceptable:

i) 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 in case of domestic bidder OR

ii) Any foreign Bank which is not a Scheduled Bank in India, provided the Bank Guarantee issued by such Bank is counter-guaranteed by any Branch situated in India of any Scheduled Bank incorporated in India.

Bank Guarantee issued by a scheduled Bank in India at the request of some other Non-Scheduled Bank of India shall not be acceptable.

The bank guarantee issued by the bank must be routed through SFMS platform as per the following details:

a) (i) "MT760/ MT760 COV for issuance of bank guarantee"
(ii) "MT767/ MT767 COV for issuance of bank guarantee"

The above message/ intimation shall be sent through SFMS by the BG issuing bank branch to Axis Bank, Guwahati Branch, IFS Code- UTIB0000140, Branch Address – Axis Bank Ltd, Guwahati Branch, Chibber House, G S Road, Dispur, Assam, PIN- 781005."

b) The vendor shall submit to OIL the copy of SFMS message as sent by the issuing bank branch along with the original bank guarantee

2.0 (a) SEALED ENVELOPES containing the **Bid Security, Printed catalogue and Literature, if called for in the tender** shall be marked with the above IFB Number and description of work and submitted in the office of:

GM-CONTRACTS
CONTRACTS SECTION, PHQ
OIL INDIA LIMITED
GUWAHATI– 781171, ASSAM.

All bidders (except those exempted) shall deposit the requisite **BID SECURITY in the form of Demand Draft/Banker's Cheque/Bank Guarantee (In case of Bank Guarantee, the same should be valid for minimum 120 days from the date of opening of Technical Bid) from a Nationalised Bank / Scheduled Bank in favour of M/s Oil India Limited and payable at Guwahati** or *it can be paid through the online payment Gateway against this Tender***.** This Bid Security shall be refunded to all unsuccessful bidders, but is liable to be forfeited in full or part, at Company's discretion, as per Clause No. 6(a), 14, 15 & 16 below. **Bids without BID SECURITY in the manner specified above will be summarily rejected.**

3.0 **Bid should be submitted online up to 11:00 AM (IST) (OIL's e-procurement Portal Server Time) on the date as mentioned and will be**

opened on the same day at/after 02:00 PM (IST) at Office of the DGM-Contracts in presence of authorized representative of the bidder.

4.0 All the Bids must be Digitally Signed using "Class 3" digital certificate [Organization] (e-commerce application) only 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. The bid signed using other than "Class 3" digital certificate, will be liable for rejection. Please note Encryption certificate is also required along with Digital Certificate Class III [Organization in order to submit bid in system. Please refer "Guideline to Bidder for participating in OIL"

5.0 The Company reserves the right to reject any or all the tenders or accept any tender without assigning any reason.

6.0 (a) No Bidder can withdraw his bid within the validity or extended validity of the bid. Withdrawal of any bid within validity period will lead to forfeiture of his/her/their BID SECURITY in full and debarred from participation in future tenders, at the sole discretion of the company.

(b) Once a withdrawal letter is received from any bidder, the offer will be treated as withdrawn and no further claim / correspondence will be entertained in this regard.

7.0 Conditional bids are liable to be rejected at the discretion of the Company.

8.0 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 Un-priced bid documents.

8.1 In case of Sole Proprietorship Firm, Copies of Telephone(Landline Bill)/Electricity/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 GST and Central Excise Registration Certificate.

8.2 In case of HUF, Copies of Telephone(Landline Bill)/Electricity/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 GST and Central Excise Registration Certificate.

8.3 In case of Partnership Firm, Copies of Telephone (Landline Bill)/Electricity/ 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 GST Registration Certificate.

8.4 In case of Co-Operative Societies, Copies of Telephone(Landline Bill)/Electricity/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 GST Registration Certificate.

8.5 In case of Societies registered under the Societies Registration Act, Copies of Telephone (Landline Bill)/Electricity/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 of GST Registration Certificate.

8.6 In case of Joint Stock Companies registered under the Indian Companies Act, Copies of Telephone (Landline Bill)/Electricity/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 GST Registration Certificate.

8.7 In case of Trusts registered under the Indian Trust Act, Copies of Telephone (Landline Bill)/Electricity/ 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 GST Registration Certificate.

9.0 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.

10.0 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.

11.0 The contractor will be required to allow OIL officials to inspect the work site and documents in respect of the workers payment.

12.0 **The successful bidder shall furnish a Performance Security Deposit in the form of Demand Draft / Banker's Cheque / Bank Guarantee as specified above before signing the formal contract.** The Performance Security Deposit will be refunded to the Contractor after satisfactory completion of the work, but a part or whole of which shall be used by the Company in realization of liquidated damages or claims, if any or for

adjustment of compensation or loss due to the Company for any reason. This Performance Security Money shall not earn any interest.

13.0 **BACKING OUT BY BIDDER:** In case any bidder withdraws their bid within the bid validity period, Bid Security shall be forfeited and the party will be debarred for a period of 2(two) years from the date of withdrawal of bid.

14.0 **BACKING OUT BY L-1 BIDDER AFTER ISSUE OF LOA:** In case LOA issued is not accepted by the L1 bidder or Performance Security is not submitted as per terms of the Contract within the stipulated time, **Bid Security shall be forfeited and the bidder shall be debarred for 2 (two) years from the date of default.**

15.0 FURNISHING FRAUDULENT INFORMATION/DOCUMENT: Bidder should note that the documents/information submitted by the bidders(s) against the tender are presumed to be genuine, authentic and true copy of the originals. In case at any stage of tendering process or during execution of contract or after expiry of contract, if it is found at any time that, a Bidder / Contractor has / had furnished fraudulent documents / information, the company shall immediately reject the bid of such bidder(s) or cancel /terminate the contract, as the case may be and the Bid Security/Performance Security shall be forfeited. Also the bidder / the party/the contractor shall be debarred for a period of three (03) years from the date of issuance of debarment notice, besides legal action.

16.0 **The tender will be governed by:**

Forwarding Letter.
Instruction to Bidders
BRC-BEC-Bid Rejection Criteria & Bid Evaluation Criteria.
Part -I - General Conditions of Contract. (GCC)
Part - II - Schedule of Work, Unit and Quantity (SOQ)
Part - III - Special Conditions of Contract (SCC)
Part-IV- Payment Terms
Part-V-Schedule of company's Plants, Materials and Equipment
Part-VI- Owner's Drawing and Data
Part-VII- Safety Measures (SM)
Part-VIII- Integrity Pact –Applicable for this IFB
Price Bid Format
Proforma and Annexures

17.0 **The Integrity Pact is applicable against this tender:**

OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide "Part-VIII Integrity Pact" of the tender document. This Integrity Pact Proforma has been duly signed digitally by OIL's competent signatory (Digitally Signed). The proforma has to be returned by the bidder (along with the technical bid) duly signed (digitally) by the same signatory who signed the bid, i.e., who is duly authorized to sign the bid. 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 sign the Bid.

(Note: Following person has been appointed as Independent External Monitor:
A. SHRI RAJIV MATHUR, IPS (Retd.),
(E-Mail ID: rajivmathur23@gmail.com)

B. SHRI JAGMOHAN GARG,
Ex-Vigilance Commissioner, CVC
e-Mail id: jagmohan.garg@gmail.com

C. Shri Rudhra Gangadharan, IAS (Retd.),
Ex-Secretary, Ministry of Agriculture
(E-mail id : rudhra.gangadharan@gmail.com)

18.0 **SPECIAL NOTE:**

GUIDELINES FOR PARTICIPATING IN OIL'S E-PROCUREMENT:
To participate in OIL's E-procurement tender, bidders should have a legally valid digital certificate of Class 3 with Organizations Name 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). Bidders must have a valid User Id to access OIL e-Procurement site. Bidders can click on Guest login button to view the available open tenders in the E-portal. Bidders shall request OIL through E-mail or fax or letter along with the cost of bid documents as indicated in the NIT for issue of the USER ID for accessing and submitting against the E-procurement tender. The User ID shall be issued to the eligible bidders on receipt of the requisite cost of the bid document. In case any bidder is exempted from paying the tender fee, they should request OIL with supporting documents for issue of the User Id on free of charge basis. The detailed guidelines are available in OIL's e-procurement site. For any clarification in this regard, bidders may contact OIL.

Please note that all tender forms (Bid document, Integrity Pact, Proforma, Annexure) and supporting documents are to be submitted through OIL's E-Procurement site only except Original Bid Security and any other document if specified in the IFB which are to be submitted in sealed envelope super scribed with tender no. and due date to: The G.M. (Contracts), Pipeline Head Quarter, Oil India Limited, Guwahati- 781171, ASSAM

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 bidders 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.

Please note Encryption certificate is also required along with Digital Certificate Class III [Organization in order to submit bid in system. Please refer "Guideline to Bidder for participating in OIL"

19.0 The tender is invited under SINGLE STAGE TWO BID SYSTEM. The bidder has to submit the "Un-Priced Techno-Commercial" and "Price-Bid" through electronic form in the OIL's e-Tender portal within the Bid Closing Date and Time stipulated in the e-Tender portal. **The Technical Bid is to be submitted as per Scope of Work &Technical Specifications along with all technical related documents related to the tender are to be uploaded under Technical RFx Tab.** The Price Bid rates shall be quoted as specified in the "PRICE BID FORMAT" and to be attached as attachment under the Notes & attachment tab. **The price quoted in the "PRICE BID FORMAT" will only be considered for evaluation.**

Please note that no price details should be uploaded under Technical RFx. Details of prices as per Price Bid format / Priced bid can be uploaded as Attachment under Notes & Attachment Tab. Offer not complying with above submission procedure will be rejected.

A few screen shots to find out the required IFB is shown below.

Notes and Attachments	➔ Only Price Details Should Be Uploaded
Technical attachments	➔ All technical bid documents except price details

Please do refer "NEW INSTRUCTION TO BIDDER FOR SUBMISSION" for the above two points and also please refer " New Vendor Manual (effective 12.0.2017) " available in the login Page of the OIL's E-tender Portal.

Regarding new bid submission procedure (effective from 12.04.2017 onwards), please refer **new vendor manual** available in OIL's E-tender Site:

Notes :

* The "Techno-Commercial Unpriced Bid" shall contain all techno-commercial details **except the prices**.

** The "Price bid" must contain the price schedule and the bidder's commercial terms and conditions. For uploading Price Bid, first click on Sign Attachment, a browser window will open, select the file from the PC and click on Sign to sign the Sign. On Signing a new file with extension .SIG will be created. Close that window. Next click on Add Atachment, a browser window will open, select the .SIG signed file from the PC and name the file under Description, Assigned to General Data and clock on OK to save the File.

8.0 Bidder is responsible for ensuring the validity of digital signature and its proper usage by their employee.

9.0 The bid including all uploaded documents shall be digitally signed by duly authorized representative of the bidding company.

10.0 OIL reserves the right to increase/decrease the quantum of job at the time of award of contract and it will be obligatory on the part of the successful bidder to accept the same at the offered rates.

11.0 The Company reserves the right to reject any or all the tenders or accept any tender without assigning any reason.

12.0 Offer must conform in all respect to the terms and conditions of the enquiry. Deviations, if any, must be clearly and specifically stated. Conditional bids are liable to be rejected at the discretion of the Company.

Thanking you,

Yours faithfully,
OIL INDIA LIMITED

General Manager (Contracts)
for Executive Director (PLS)

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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.

2.0 **BIDDING DOCUMENTS**

2.1 The services required, bidding procedures and contract terms are prescribed in the Bidding Documents. This Bidding Document includes the following:

a) A forwarding letter highlighting the following points
   (i) Company's IFB No.
   (ii) Bid closing date and time
   (iii) Bid opening date, time and place
   (iv) Bid submission place
   (v) Bid opening place
   (vi) The amount of Bid Security
   (vii) The amount of Performance Guarantee
   (viii) Quantum of liquidated damages for default in timely mobilizations
b) Instructions to Bidders
c) BRC-BEC-Bid Rejection Criteria & Bid Evaluation Criteria
d) General Conditions of Contract (Part-I)
e) Schedule of Work, Unit, Quantities, Rates and Prices (Part- II-SOQ)
f) Special Conditions of Contract (Part-III-SCC)
g) Payment Terms (Part IV)
h) Schedule of company's Plants, Materials and Equipment -(Part-V)
i) Owner's Drawing & Data -(Part-VI)
j) Safety Measures (Part-VII-SM)
k) Integrity Pact- (Part-VIII)
l) Price Bid Format
m) Proforma & Annexure.

2.2 The bidder is expected to examine all instructions, forms, terms and specifications in the Bid document. Failure to furnish all information required in the Bidding Documents or submission of a bid not substantially responsive to the Bidding 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 offers will not be considered and will be rejected straightway.

4.0 **AMENDMENT OF BIDDING 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 Bidding Documents by the issuance of an Addendum.

4.2 The Addendum will be sent in writing through post / courier / Fax/e-mail to all prospective Bidders to whom Company has sent the bid documents and also be uploaded in the OIL's e-portal in the C-folder under the tab "Amendments to Tender Documents". The company may, at its discretion, extend the deadline for bid submission, if the Bidders are expected to require additional time in which to take the Addendum into account in preparation of their bid or for any other reason. Bidders shall also check OIL's E-Tender portal [C-folder under the tab "Amendments to Tender Documents"] for any amendments to the bid documents before submission of their bids.

5.0 **PREPARATION OF BIDS**

5.1 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 English translated version, which shall govern for the purpose of bid interpretation.

5.2 DOCUMENTS COMPRISING THE BID: The complete bid should be submitted on-line in the e-portal.

6.0 **BID FORM:**

The bidder shall complete the Bid Form and the appropriate Price Schedule furnished as attachment in the e-portal.

7.0 **BID PRICE:**

7.1 Prices must be quoted by the bidders, both in words and in figures. In case of any discrepancy between the words and in figures, the prices indicated in words only will be considered.

7.2 Price quoted by the successful bidder must remain firm during its performance of the Contract and will not be subjected to variation on any account.

7.3 Bidder shall be deemed to have satisfied himself before submitting his bid as to the correctness and sufficiency of its bid for the services required and of the rates and prices quoted, which rates and prices shall, except insofar as otherwise provided, cover all its obligations under the contract.

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

These are as per BEC/BRC

9.0 **PERIOD OF VALIDITY OF BIDS:**

9.1 Bids shall remain valid for **120 days** for **Part A** works and **10 months** for **Part-B** works from the date of bid opening.

9.2 In exceptional circumstances, the OIL 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 (or by Fax). 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.

10.0 **FORMAT AND SIGNING OF BID:**

The original and all copies of the bid shall be typed or written in indelible inks and shall be signed (digitally) by the Bidder or a person or persons duly authorized to bind the Bidder to the contract.

11.0 **SUBMISSION OF BIDS.**

11.1 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 [e commerce application (Certificate with personal verification and Organization 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.

The bid including all uploaded documents shall be digitally signed by duly authorized representative of the bidder to bind the Bidder to the contract. The authenticity of above digital signature shall be verified through authorized CA after bid opening and 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.

11.2 Any person signing the Bid or any other document in respect of this Bid 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.

11.3 Timely submission of the bids is the responsibility of the Bidder should be submitted before the bid closing date and time. Company shall not be responsible for any delay.

11.4 E-mail/ Fax/ Telex/Telegraphic/Telephonic offers will not be accepted.

11.5 Bidder shall submit the Bid, duly completed in terms of the Bid Document.

12.0 **DEADLINE FOR SUBMISSION OF BIDS**:

12.1 Bids should be submitted on-line up to 11.00 AM (IST) (Server Time) on the Bid Closing date mentioned in the Forwarding Letter. Bidders will be permitted by System to make any changes in their bid after the bid has been uploaded by the bidder prior to the date and time as mentioned in the bid. But no changes would be allowed by the system once the due date and for submission of bids has been reached and bids are opened.

12.2 No bid can be submitted after the submission date line is reached. The system time displayed on the e-procurement web page shall decide the submission dead line.

12.3 The documents in physical form must be received by Company at the address specified in the "Forwarding Letter" on or before the Bid Closing Date & Time mentioned in the "Forwarding Letter". Timely delivery of the same at the address mentioned in the Forwarding Letter is the responsibility of the Bidders.

13.0 **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. Any Bid received by the Company after the Bid Closing Date & Time stipulated by the Company shall be rejected.

14.0 **MODIFICATION AND WITHDRAWAL OF BIDS:**

14.1 Bidders will be permitted by System to make any changes in their bid after the bid has been uploaded by the bidder prior to the date and time as mentioned in the bid. But no changes would be allowed by the system once the due date and for submission of bids has been reached and bids are opened.

14.2 No bid can be modified / withdrawn subsequent to the deadline for submission of bids.

14.3 No bid may 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.

15.0 **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. However, the bidder whose bid has been received within the bid closing date and time will not be allowed to revise their Bid/prices. Withdrawal of such Bid also will not be permitted by the system.

16.0 **BID OPENING AND EVALUATION:**

16.1 OIL shall open the Bids, in the presence of Bidder's representatives who choose to attend at the date, time and place mentioned in the Covering Letter. However, an authorization letter (as per Proforma-II) 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 date, only Technical RFx will be allowed to open by the system.** Bidders therefore should ensure that techno-Commercial bid is uploaded under the **Technical RFx** Tab Page only ***and no price should be mentioned anywhere under the Technical RFx.***

16.2 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.

16.3 Bid for which an acceptable notice of withdrawal has been received pursuant to clause 14.0 shall not be opened. OIL shall examine bids to determine whether they are complete, whether requisite Bid Securities have been furnished, whether documents have been properly signed and whether the bids are generally in order.

16.4 Bid opening shall be done as detailed in clauses 16.1 and 16.2 above

16.5 OIL shall prepare, for its own records, minutes of bid opening including the information disclosed to those present in accordance with the sub-clause 16.3

16.6 To assist in the examination, evaluation and comparison of bids, 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 at its discretion. The request for clarification and the response shall be in writing and no change in the price or substance of the bid shall be sought, offered or permitted.

16.7 Prior to the detailed evaluation, OIL will determine the substantial responsiveness of each bid to the requirement of the Bidding Documents. For purpose of these paragraphs, a substantially responsive bid is one, which conforms to all the terms and conditions of the Bidding 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 bidding 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. OIL's determination of bid's responsiveness is to be based on the contents of the Bid itself without recourse to extrinsic evidence.

16.8 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.

16.9 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.

17.0 **EVALUATION AND COMPARISON OF BIDS:**

17.1 The OIL will evaluate and compare the bids as per Priced Bid Format of the bidding documents.

17.2 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.

18.0 **CONTACTING THE COMPANY:**

18.1 Except as otherwise provided in Clause 14.0 above, no Bidder shall contact OIL 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 OIL vide sub-clause 16.6.

18.2 An effort by a Bidder to influence OIL in the bid evaluation, bid comparison or Contract award decisions may result in the rejection of their bid.

19.0 **AWARD CRITERIA:**

OIL will award the Contract to the successful Bidder whose bid has been determined as the bidder obtaining highest mark in the evaluation process of both the technical bid (concept design) and commercial bid combined together as explained in succeeding para.

20.0 **OIL' S RIGHT TO ACCEPT OR REJECT ANY BID**:

OIL 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 there by incurring any liability to the affected bidder, or bidders or any obligation to inform the affected bidder of the grounds for OIL's action.

21.0 **NOTIFICATION OF AWARD:**

21.1 Prior to the expiry of the period of bid validity or extended validity, OIL will notify the successful Bidder in writing by registered letter or by cable or telex or fax or e-mail (to be confirmed in writing by registered / couriered letter) that its bid has been accepted.

21.2 The notification of award will constitute the formation of the Contract.

22.0 **SIGNING OF CONTRACT:**

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

22.2 Within 2 (Two) Weeks from the date of issue of Letter of Award (LOA), the successful Bidder shall sign and date the contract and return it to OIL. Till the contract is signed, the LOA issued to the successful bidder shall remain binding amongst the two parties.

22.3 In the event of failure on the part of the successful bidder to sign the contract within the period specified above or any other time period specified by OIL. OIL reserves the right to terminate the LOA issued to the

successful bidder. The party shall also be debarred for a period of 2 (two) years from the date of default.

23.0 **FURNISHING FRAUDULENT INFORMATION/DOCUMENTS:**

If it found that a bidder has furnished fraudulent information/documents, it shall constitute sufficient ground for annulment of the award and the party shall be debarred for a period of 3(three) years from the date of detection of such fraudulent act besides the legal action.

24.0 **BID DOCUMENT:**

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.

25.0 **MOBILIZATION PERIOD**: **15 days** from the date of issue of LOA.

26.0 **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.

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BID REJECTION CRITERIA & BID EVALUATION CRITERIA FOR THE TENDER

1.0 BID EVALUATION CRITERIA (BEC):

The bid shall conform generally to the specifications and terms and conditions given in the Tender Documents. Bids will be rejected in case services offered do not conform to the required parameters stipulated in the technical specifications. Not-withstanding the general conformity of the bid to the stipulated specifications, the following mandatory requirements will have to be particularly met by the Bidders without which the same will be considered as non-responsive and rejected. All the documents related to BEC must be submitted along with the Technical Bid.

1.1 FINANCIAL CRITERIA:

1.1.1 Annual Financial Turnover of the bidder during any of preceding 03 (Three) financial/ accounting years from the original bid closing date should be at least Rs. **6,67,63,335.00.**

1.1.2 Net worth of the bidder must be Positive for the preceding financial/accounting year.
Note: The Net worth to be considered against Clause 1.1.2 above, should be read in conjunction with the definition of Net worth as mentioned in Section 2 (57) of The Companies Act, 2013.

Notes to BEC Clause 1.1 above:

a. For proof of Annual Turnover & Net worth (refer clauses 1.1.1 & 1.1.2 above), any one of the following documents/photocopies must be submitted along with the bid:

(i) Audited Balance Sheet along with Profit & Loss account.

OR

(ii) 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 Annexure-AA.

b. 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 _____ have actually not been audited as on original bid closing date'.

c. 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.

1.2 TECHNICAL CRITERIA:

The Bidder must have experience of at least One SIMILAR WORK of minimum length **18.75 KM** under single Contract in previous 7 (seven) years to be reckoned from the original bid closing date.

OR

The bidder must have experience of at least One SIMILAR work of minimum value of **INR 6,67,63,335.00** under single Contract in previous 7 (seven) years to be reckoned from the original bid closing date.

Notes to BEC Clause 1.2 above:

a. "SIMILAR WORK" mentioned in para 1.2 above means *"Construction of Crude Oil/Petroleum Product/Gas transportation welded pipe lines of minimum 150 NB in Central Govt./State Govt./Public Sector Undertaking/State Govt. Enterprise/any E&P or Midstream or Downstream Oil and Gas Company, conforming to ANSI B31.4/ ANSI B31.8/ OISD 141, as per applicable and relevant codes/ standards."*

b. Documentary evidence in support of experience must be submitted along with the Un-Priced Techno-Commercial Bid. The documentary evidence must be in the form of copies (self-attested/attested) of **Job Completion certificate/Gross Payment Certificate along with contract copy/work order/LOA etc.** as applicable showing gross value of job done/quantum of job done including nature of job done and time period covering as per the NIT. Only Letter of Intent (LOI)/Letter of Award (LOA) or Work Order(s) are not acceptable as evidence.

c. Bidder shall submit a summary of requisite work experience as per the tabular format enclosed as Annexure-BEC/I.

d. Mere award of contract(s) will not be counted towards experience. Successful completion of the awarded contract(s) to the extent of volume & value, as stipulated respectively under Clause Nos. 1.2 will only be treated as acceptable experience.

e. Following work experience will also be taken into consideration:

1. If the prospective bidder has executed contract in which similar work is also a component of the contract.

2. If the prospective bidder is executing similar work which is still running and the contract value/quantity executed prior to original bid closing date is equal to or more than the minimum prescribed value/ quantity in the BEC.

3. In case the start date of the requisite experience is beyond the prescribed 07 (seven) years reckoned from the original bid closing date but completion is within the prescribed 07 (seven) years reckoned from the original bid closing date.

Proof of work experience against Para e**.** above, to satisfy i. similar work, ii. Minimum prescribed Value/Qty., iii. Prescribed period of 07 years, to be submitted as below:

1. In case requisite experience is against OIL's Contract:
   Bidder must submit copy of Completion Certificate, Letter of Award/ Work order.

   OR

   Bidder must submit certified copies of SES for completed work and SES, which clearly shows completed quantity of work for Pipeline Hydro-testing scope. Certified Pipeline Hydro-tested quantity shall be considered for qualification of requisite quantity.

2. In case requisite experience is **NOT** against OIL's Contract:
   Bidder must submit copy of Completion Certificate with value of work completed, quantity of work completed and completion date along with copy of Letter of Award/ Work order.

   OR

   Bidder must submit certified copies of Payment Proof for completed work and Certified Measurement Sheet, Invoice and payment proof, which clearly shows completed quantity of work for Pipeline Hydro-testing scope. Bidder shall submit relevant document from contract for identification of hydro-testing scope in the item. Certified Pipeline Hydro-tested quantity shall be considered for qualification of requisite quantity.

f. SIMILAR work executed by a bidder for its own organization/subsidiary cannot be considered as experience for the purpose of meeting BEC.

g. SIMILAR work executed by a bidder as a Sub-Contract shall not be considered as experience for the purpose of meeting BEC.

h. Bids submitted for part of the work will be rejected. Bid will be rejected if not accompanied with adequate documentary proof in support of Annual turnover, Net worth and Work experience as mentioned in Para 1.1.1, 1.1.2, 1.2.

1.3 A substantially responsive bid is one that meets the terms and conditions of the Tender and/or the acceptance of which bid will not result in indeterminate liability on OIL. Prices shall be opened in respect of only the techno-commercially acceptable bidders whose bids have been found to be substantially responsive.

1.4 Bidders are required to quote for all the items as per Price Bid Format, otherwise the offer of the bidder will be straightway rejected.

1.5 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.

1.6 The quantities shown against each item in the "Price Bid Format" shall be considered for the purpose of Bid Evaluation. It is, however, to be clearly understood that the assumptions made in respect of the quantities for various operations are only for the purpose of evaluation of the bid and the Contractor will be paid on the basis of the actual number of days/parameter, as the case may be.

1.7 The bidders are advised not to offer any discount/rebate separately and to offer their prices in the Price Bid Format after considering discount/rebate, if any.

1.8 Conditional and unsolicited discount will not be considered in evaluation. However, if such bidder happens to be the lowest recommended bidder, unsolicited discount without any condition will be considered for computing the contract price.

1.9 In case of identical overall lowest offered rate by more than 1 (one) bidder, the selection will be made by draw of lot between the parties offering the same overall lowest price.

1.10 Purchase Preference allowed as per Government Guidelines in Vogue and PPP [Public Procurement policy] for Micro and Small Enterprises is not applicable for this tender (being works contract tender).

1.11 Price Bids shall be evaluated on overall lowest cost to OIL (L-1 offer) basis i.e. considering total quoted price for all services including applicable GST (CGST & SGST/UTGST or IGST).

1.12 OIL will prefer to deal with registered bidder under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet.

However, in case any unregistered bidder is submitting their bid, their prices will be loaded with applicable GST while evaluation of bid. Where OIL is entitled for input credit of GST, the same will be considered for evaluation of bid as per evaluation methodology of tender document.

1.13 Price Bid uploaded without giving any of the details of the taxes (Including rates and amounts) will be considered as inclusive of all taxes including GST.

When a bidder mentions taxes as extra without specifying the rates & amount, the offer will be loaded with maximum value towards taxes received against the tender for comparison purposes. If the bidder emerges as lowest bidder after such loading, in the event of order on that bidder, taxes mentioned by OIL on the Purchase Order/Contracts will be binding on the bidder.

1.14 Input Tax Credit on GST (Goods & Service Tax) for this service is NOT available to OIL & the bids will be evaluated based on total price including GST.

1.15 Based on the evaluation of techno-commercially qualified bidders, the job will be awarded to L-1 bidder.

2.0 BID REJECTION CRITERIA (BRC):

2.1 The bids are to be submitted in single stage i.e. Un-priced Techno-Commercial Bid and Price Bid together, under Two Bid system. Only the Price Bid should contain the quoted price.

2.2 The price quoted by the successful bidder must be firm during the performance of the contract and not subject to variation on any account except as mentioned in the bid document. Any bid submitted with adjustable price quotation other than the above will be treated as non-responsive and rejected.

2.3 Bid security shall be furnished as a part of the Techno Commercial Un-priced Bid. The amount of bid security should be as specified in the forwarding letter. Any bid not accompanied by a proper bid security will be rejected.

2.4 Bid Documents/User ID & Password for OIL's E-Tender portal are not transferable.

2.5 Any bid received in the form of Physical document/ Telex/Cable/Fax/E-mail will not be accepted.

2.6 Bids shall be typed or written in indelible ink. The bidder or his authorized representative shall sign the bid digitally, failing which the bid will be rejected.

2.7 Bids shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by bidder, in which case such corrections shall be initiated by the persons(s) signing (digitally) the bid. However, white fluid should not be used for making corrections. Any bid not meeting this requirement shall be rejected.

2.8 Any bid containing false statement will be rejected and action will be taken by Company as per Bid Document.

2.9 Bidders must quote clearly and strictly in accordance with the price schedule outlined in Price Bidding Format attached under "Notes and Attachments" tab in the main bidding engine of OIL's E-Tender portal; otherwise the bid will be rejected. All other techno-commercial documents other than price details to be submitted with Unpriced Techno-Commercial Bid as per tender requirement under "Technical Attachment" Tab Page only.

2.10 Bidder must accept and comply with the following provisions as given in the Tender Document in toto, failing which offer will be rejected:

(i) Firm price
(ii) EMD / Bid Bond
(iii) Period of validity of Bid
(iv) Price Schedule
(v) Performance Bank Guarantee / Security deposit
(vi) Delivery / Completion Schedule
(vii) Scope of work
(viii) Guarantee of material / work
(ix) Liquidated Damages clause
(x) Tax liabilities
(xi) Arbitration / Resolution of Dispute Clause
(xii) Force Majeure
(xiii) Applicable Laws
(xiv) Specifications
(xv) Integrity Pact

2.11 There should not be any indication of price in the Un-priced Techno-Commercial Bid. A bid will be straightway rejected if this is given in the Un-priced Techno-Commercial Bid.

2.12 Bid received with validity of offer less than specified number of days from the date of Bid opening will be rejected.

2.13 The Integrity Pact is applicable against this tender. OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide **"Part-VIII/Integrity Pact"** of the tender document. This Integrity Pact proforma has

been duly signed digitally by OIL's competent signatory. The proforma has to be returned by the bidder (along with the Un-priced Techno-Commercial Bid) duly signed (digitally) by the same signatory who signed the bid, i.e., who is duly authorized to sign the bid. 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 sign the Bid.

3.0 GENERAL:

3.1 In case bidder takes exception to any clause of bidding 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. No deviation will however be accepted in the clauses covered under BRC.

3.2 To ascertain the substantial responsiveness of the bid the Company reserves the right to ask the bidder for clarification in respect of clauses covered under BEC/BRC also and such clarifications fulfilling the BEC/BRC clauses must be received on or before the deadline given by the company, failing which the offer will be will be evaluated based on the submission. However, mere submission of such clarification shall not make the offer responsive, unless company is satisfied with the substantial responsiveness of the offer.

3.3 If any of the clauses in the BRC contradict with other clauses of bidding document elsewhere, the clauses in the BRC shall prevail.

3.4 Bidders should note that the documents/information submitted by the bidder(s) against the tender are presumed to be genuine, authentic and true copy of the originals. However, in case at any stage of tendering process or during execution of the contract or after expiry of contract, if it is detected that bidder has submitted forged or fabricated documents or furnish false information towards fulfilment of any of the tender/contract conditions, Company shall immediately reject the bid of such bidder(s) or cancel/ terminate the contract, as the case may be and forfeit EMD/SD submitted by the bidder. Besides, the bidder shall be dealt as per the Banning Policy (available in OIL's website) of Company.

3.5 Bidder(s) must note that requisite information(s)/financial values etc. as required in the BEC/BRC & Tender are clearly understandable from the supporting documents submitted by the Bidder(s); otherwise Bids shall be rejected.

3.6 OIL will not be responsible for delay, loss or non-receipt of applications for participating in the bid sent by mail and will not entertain any correspondence in this regard.

3.7 The originals of such documents [furnished by bidder(s)] shall have to be produced by bidder(s) to OIL as and when asked for.

ANNEXURE-AA:

CERTIFICATE OF ANNUAL TURNOVER & NETWORTH

(To be issued by practicing Chartered/Cost Accountant Firm
on their Letter Head)

TO WHOM IT MAY CONCERN

This is to certify that the following financial positions extracted from the audited financial statement of M/s_____ (Name of the bidder) for the last three (3) completed accounting years up to_____(as the case may be) are correct.

YEAR	TURNOVER (₹)	NET WORTH (₹)

Place:

Date:

Seal:

Membership Code and Registration No.

Signature

Annexure-BEC/I

OIL TENDER NO.: **CGI2448P20**

Sr.	Item	Details to be provided by Bidder	E-tender uploaded document file name, page no. & line no.
1.	Title of Work		
2.	Client (owner of pipeline)		
3.	Value as per Work Order		
4.	Nature of Petroleum Pipeline (Crude/ Gas/ Product etc.)		
5.	Size and length of Pipeline as per work order (Dia 6 inch & above)		
6.	Diameter and Length of Pipeline work completed (Dia 6 inch & above)		
7.	Diameter and Length of Pipeline hydro-testing completed (Dia 6 inch & above)		
8.	Conforming technical standard as per work order (ANSI B31.4/ 31.8 etc.)		
9.	Value of work completed		
10.	Date of Work Completed		
11.	Documentary proof submitted		

(Sign & Seal of Bidder)

End of BEC-BRC*

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PART-I

GENERAL CONDITIONS OF CONTRACT (GCC)

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

DESCRIPTION OF WORK/SERVICES:-

Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited

GENERAL CONDITIONS OF CONTRACT (GCC)

MEMORANDUMOF 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) The contractor hereby agrees to carry out the work set down in the Schedule of work which forms **Part-II** of this Contract in accordance with the 1968 General Conditions of Contract of Oil India Limited and General Specifications read in conjunction with any drawings and Particular Specifications & instructions which forms **Part-III** of the contract utilizing any materials/services as offered by the Company as per **Part-V** of the contract at Various field installations within the states of Assam, West Bengal & Bihar as per **Part-VI**

   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-III** 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.

   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.

5. 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) GST Act.

   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 **1 year** 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 1/2% (Half p.c) per week of the contract price of the item(s) delayed in completion and the maximum value of the liquidated damage 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 utilisation of the work then the contractor will be liable to pay liquidated damages by way of penalty at the rate of 1/2% (Half percent) of the total contract cost subject to a maximum of 7.5% of the total contract cost.

OIL's Engineer's certificate 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 GST** is Rs.XXXXXXXXX **(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 Schedule of work part II 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 GST. GST if applicable shall be, to the company's account. However, GST 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.

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 up to 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.

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 entirely 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:

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

Amount of Claims and counter claims (excluding interest)	Period for making and publishing of the award (counted from the date of first meeting of the Arbitrators)
Up to 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.

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 comply with the instructions and guidance which Company may give to the Contractor from time to time.

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 local taxes, levies and duties, sales tax, ~~octroi~~, customs duty, ~~VAT~~ etc. on purchases and sales made by contractor shall be borne by the contractor.***

30.9 **GST:**
Quoted price should be **exclusive** of applicable GST. Please also refer **clause 45** onwards.

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.

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**
GM (Contracts) OIL INDIA LIMITED PO: Udayan Vihar Assam-781171, India E-mail: ellora@oilindia.in	GM (PLP) OIL INDIA LIMITED PO: Udayan Vihar Assam-781171, India

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:**

34.1 Contractor shall not subcontract 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.

36.2 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, 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.

36.7 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 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.

40.6 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 :

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:-

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

iv) 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. **ROYALITY 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.

45.0 GOODS AND SERVICES TAX

45.1 GENERAL REMARKS ON TAXES & DUTIES:

In view of **GST** Implementation from 1st July 2017, all taxes and duties including Excise Duty, CST/VAT, Service tax, Entry Tax and other indirect taxes and duties have been submerged in **GST**. Accordingly reference of Excise Duty, Service Tax, VAT, Sales Tax, Entry Tax or any other form of indirect tax except of **GST** mentioned in the bidding document shall be ignored.

45.2 Bidders are required to submit copy of the GST Registration Certificate while submitting the bids wherever **GST** (CGST & SGST/UTGST or IGST) is applicable.

45.3 "**GST**" shall mean Goods and Services Tax charged on the supply of material(s) and services. The term "**GST**" shall be construed to include the Integrated Goods and Services Tax (hereinafter referred to as "IGST") or

Central Goods and Services Tax (hereinafter referred to as "CGST") or State Goods and Services Tax (hereinafter referred to as "SGST") or Union Territory Goods and Services Tax (hereinafter referred to as "UTGST") depending upon the import / interstate or intrastate supplies, as the case may be. It shall also mean GST compensation Cess, if applicable.

45.4 Quoted price/rate(s) should be inclusive of all taxes and duties, except **GST(i.e. IGST or CGST and SGST/UTGST applicable in case of interstate supply or intra state supply respectively and cess on GST if applicable) on the final service**. However, GST rate (including cess) to be provided in the respective places in the Price Bid. Please note that the responsibility of payment of GST (CGST & SGST or IGST or UTGST) lies with the Supplier of Goods /Services (Service Provider) only. Supplier of Goods / Services (Service Provider) providing taxable service shall issue an Invoice/ Bill, as the case may be as per rules/ regulation of **GST**. Further, returns and details required to be filled under GST laws & rules should be timely filed by Supplier of Goods / Services (Service Provider) with requisite details.

45.4.1 Bidder should also mention the **Harmonised System of Nomenclature** (HSN) and **Service Accounting Codes (SAC)** at the designated place in **SOR.**

45.5 Where the OIL is entitled to avail the input tax credit of GST:

45.5.1 OIL will reimburse the **GST** to the Supplier of Goods / Services (Service Provider) at actuals against submission of Invoices as per format specified in rules/ regulation of GST to enable OIL to claim input tax credit of **GST** paid. In case of any variation in the executed quantities, the amount on which the **GST** is applicable shall be modified in same proportion. Returns and details required to be filled under GST laws & rules should be timely filed by supplier with requisite details.

45.5.2 The input tax credit of **GST** quoted shall be considered for evaluation of bids, as per evaluation criteria of tender document.

45.6 Where the OIL is not entitled to avail/take the full input tax credit of GST:

45.6.1 OIL will reimburse **GST** to the Supplier of Goods / Services (Service Provider) at actuals against submission of Invoices as per format specified in rules/ regulation of **GST** subject to the ceiling amount of **GST** as quoted by the bidder. In case of any variation in the executed quantities (If directed and/or certified by the In-Charge) the ceiling amount on which **GST** is applicable will be modified on pro-rata basis.

45.6.2 The bids will be evaluated based on total price including **GST**.

45.7 Payments to Service Provider for claiming **GST** amount will be made provided the above formalities are fulfilled. Further, OIL may seek copies of challan and certificate from Chartered Accountant for deposit of **GST** collected from OIL.

45.8 Contractor/vendor shall be required to issue tax invoice in accordance with GST Act and/or Rules so that input credit can be availed by OIL. In the event that the contractor / vendor fails to provide the invoice in the form and manner prescribed under the **GST Act read with GST Invoicing Rules** thereunder, OIL shall not be liable to make any payment on account of **GST** against such invoice.

45.9 GST shall be paid against receipt of tax invoice and proof of payment of **GST** to government. In case of non-receipt of tax invoice or non-payment of **GST** by the contractor/vendor, OIL shall withhold the payment of **GST**.

45.10 GST payable under reverse charge mechanism for specified services or goods under GST act or rules, if any, shall not be paid to the contractor/vendor but will be directly deposited to the government by OIL.

45.11 Where OIL has the obligation to discharge **GST** liability under reverse charge mechanism and OIL has paid or is /liable to pay **GST** to the Government on which interest or penalties becomes payable as per GST laws for any reason which is not attributable to OIL or ITC with respect to such payments is not available to OIL for any reason which is not attributable to OIL, then OIL shall be entitled to deduct/ setoff / recover such amounts against any amounts paid or payable by OIL to Contractor / Supplier.

45.12 Notwithstanding anything contained anywhere in the Agreement, in the event that the input tax credit of the **GST** charged by the Contractor / Vendor is denied by the tax authorities to OIL for reasons attributable to Contractor / Vendor, OIL shall be entitled to recover such amount from the Contractor / Vendor by way of adjustment from the next invoice. In addition to the amount of **GST**, OIL shall also be entitled to recover interest at
the rate prescribed under GST Act and penalty, in case any penalty is imposed by the tax authorities on OIL.

45.13 TDS under GST, if applicable, shall be deducted from contractor's/vendor's bill at applicable rate and a certificate as per rules for tax so deducted shall be provided to the contractor/vendor.

45.14 The Contractor will be under obligation for charging correct rate of tax as prescribed under the respective tax laws. Further the Contractor shall avail and pass on benefits of all exemptions/concessions available under tax laws. Any error of interpretation of applicability of taxes/ duties by the contractor shall be to contractor's account.

45.15 It is the responsibility of the bidder to quote the correct GST rate. The classification of goods/services as per GST (Goods & Service Tax) Act should be correctly done by the contractor to ensure that input tax credit on GST (Goods & Service Tax) is not lost to the OIL on account of any error on the part of the contractor.

45.16 In case, the quoted information related to various taxes, duties & levies subsequently proves wrong, incorrect or misleading, OIL will have no liability to reimburse the difference in the duty/ tax, if the finally assessed amount is on the higher side and OIL will have to right to recover the difference and in case the rate of duty/ taxes finally assessed is on the lower side.

45.17 Notwithstanding anything mentioned elsewhere in the Bidding Document the aggregate liability of OIL towards Payment of GST shall be limited to the volume of GST declared by the bidder in its bid & nothing shall be payable extra except for the statutory variation in GST.

45.18 Further, it is the responsibility of the bidders to make all possible efforts to make their accounting / IT system GST compliant in order to ensure availability of Input Tax Credit (ITC) to Oil India Ltd

45.19 GST liability, if any on account of supply of free samples against any tender shall be to bidder's account.

45.20 In case of statutory variation in **GST,** other than due to change in turnover, payable on the contract value during contract period, the Supplier of Goods / Services (Service Provider) shall submit a copy of the 'Government Notification' to substantiate the rate as applicable on the Bid due date and on the date of revision.

Beyond the contract period, in case OIL is not entitled for input tax credit of **GST**, then any increase in the rate of **GST** beyond the contractual delivery period shall be to Service provider's account whereas any decrease in the rate **GST** shall be passed on to the OIL.

Beyond the contract period, in case OIL is entitled for input tax credit of **GST**, then statutory variation in applicable **GST** on supply and on incidental services, shall be to OIL's account.

Claim for payment of **GST**/ Statutory variation, should be raised within two [02] months from the date of issue of 'Government Notification' for payment of differential (in %) **GST**, otherwise claim in respect of above shall not be entertained for payment of arrears. **The base date for the purpose of applying statutory variation shall be the Bid Opening Date.**

45.21 The contractor will be liable to ensure to have registered with the respective tax authorities, wherever applicable and to submit self-attested copy of such registration certificate(s) and the Contractor will be responsible for procurement of material in its own registration (GSTIN) and also to issue its own Road Permit/ E-way Bill, if applicable etc.

45.22 In case the bidder is covered under Composition Scheme under GST laws, then bidder should quote the price inclusive of the GST (CGST & SGST/UTGST or IGST). Further, such bidder should mention "Cover under composition system" in column for GST (CGST & SGST/UTGST or IGST) of price schedule.

45.23 OIL will prefer to deal with registered supplier of goods/ services under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet. However, in case any unregistered bidder is submitting their bid, their prices will be loaded with applicable GST while evaluation of bid. Where OIL is entitled for input credit of GST, the same will be considered for evaluation of bid as per evaluation methodology of tender document.

45.24 Procurement of Specific Goods: Earlier, there is no tax incidence in case of import of specified goods (i.e. the goods covered under List-34 of Customs Notification no. 12/2012-Cus dated. 17.03.2012 as amended). Customs duty is not payable as per the policy. However, under GST regime, IGST Plus GST compensation cess (if applicable) would be leyiable on such imports. Bidders should quote GST as inclusive considering IGST component for the imported Materials portion while quoting their prices on destination basis. However, GST rate to be specified in the price bid format.

45.25 Documentation requirement for GST

The vendor will be under the obligation for invoicing correct tax rate of tax/duties as prescribed under the GST law to OIL, and pass on the benefits, if any, after availing input tax credit.

Any invoice issued shall contain the following particulars:

a) Name, address and GSTIN of the supplier;

b) Serial number of the invoice;

c) Date of issue;

d) Name, address and GSTIN or UIN, if registered of the recipient;

e) Name and address of the recipient and the address of the delivery, along with the State and its code,

f) HSN code of goods or Accounting Code of services[SAC];

g) Description of goods or services;

h) Quantity in case of goods and unit or Unique Quantity Code thereof;

i) Total value of supply of goods or services or both;

j) Taxable value of supply of goods or services or both taking into discount or abatement if any;

k) Rate of tax (IGST,CGST, SGST/ UTGST, cess);

l) Amount of tax charged in respect of taxable goods or services (IGST,CGST, SGST/UTGST, cess);

m) Place of supply along with the name of State, in case of supply in the course of interstate trade or commerce;

n) Address of the delivery where the same is different from the place of supply and

o) Signature or digital signature of the supplier or his authorised representative.

GST invoice shall be prepared in triplicate, in case of supply of goods, in the following manner:

a) The original copy being marked as ORIGINAL FOR RECIPIENT;

b) The duplicate copy being marked as DUPLICATE FOR TRANSPORTER and

c) The triplicate copy being marked as TRIPLICATE FOR SUPPLIER.

In case of any advance given against any supplies contract, the supplier of the goods shall issue Receipt Voucher containing the details of details of advance taken along with particulars as mentioned in clause no. (a), (b), (c), (d), (g), (k), (l), (m) & (o) above.

45.26 Anti-profiteering clause

As per Clause 171 of GST Act it is mandatory to pass on the benefit due to reduction in rate of tax or from input tax credit to the consumer by way of commensurate reduction in prices. The Supplier of Goods / Services may note the above and quote their prices accordingly.

45.26.1 In case the GST rating of vendor on the GST portal / Govt. official website is negative / black listed, then the bids may be rejected by OIL. Further, in case rating of bidder is negative / black listed after award of work for supply of goods / services, then OIL shall not be obligated or liable to pay or reimburse GST to such vendor and shall also be entitled to deduct / recover such GST along with all penalties / interest, if any, incurred by OIL.

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 Partner/Legal Attorney

_____

(Full Name of Signatory)

_____

(Seal of Contractor's Firm)

And in presence of

_____

(Signature of (Witness)

_____

Date: _____

(Full name of Signatory)

Address:

_____

_____

SIGNED & DELIVERED FOR & ON BEHALF OF OIL INDIA LIMITED

_____

(Signature of Acceptor)

Date: _____

Designation: _____

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PART II - SOQ
PROFORMA-A

OIL INDIA LIMITED
(A Govt. of India Enterprise)

Description of Service: **Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited**

TENDER NO. CGI 2448P20

Scope of work is primarily divided into Part A and Part B.

Part A consists of approximately 24 KM (approx.) of Pipeline laying and associated works from Pump Station 1 at Duliajan (PLKM 0) to Kathalguri Forest Gate (approx. PLKM 17.567) and from St. Paul Church, Balijan (Approx. PLKM 30.857) to Digboi Refinery Terminal (Approx. PLKM 37.392). OIL shall award the contract for this part (A) initially to the successful bidder.

Part B (OPTIONAL) consists of approximately 13.5 KM (approx.) of Pipeline laying and associated works along Forest Portion of Pipeline Corridor from Kathalguri Forest Gate (approx. PLKM 17.567) to St. Paul Church, Balijan (Approx. PLKM 30.857). OIL may award contract for this part (B), at a later time, within bid validity period for Part B.

Bidder shall quote a single consolidated percentage increase/ decrease on total value in terms of percentage up to 2 decimal places. The same percentage shall be applicable uniformly to all the items of the Schedule of Rates. Upper limit of percentage quoted shall be (+)10.00% and Lower limit of percentage quoted shall be (-)10.00%.

SCHEDULE OF QUANTITIES (SOQ), SERVICE/WORK AND RATES

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
PART A: PIPELINE LAYING AND ASSOCIATED WORKS IN NON-FOREST AREA						-	-
10	**Part A: Pipeline laying (Non-Forest)** Pipeline laying (Non-Forest Terrain): (For details - Special Terms & Conditions shall be referred) Transportation of line pipe and other free issue materials from Client's store/ yard and returning back surplus materials to designated store/ yard; Clearing & grading of RoW; Cross trenching for locating existing pipes, cables etc.; Bell hole excavation; Swabbing & Cleaning, Handling, Hauling and Stringing	24000	M	₹ 1,790.00	₹ 4,29,60,000.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
	of pipe; Repair of Pipe Bevel End; Fabrication of Cold bends for all required angles; Welder Qualification Test; Girth Welding of pipe joint; Welding of Tie-in joint; Radiographic Inspection of weld joints; Supply of Heat Shrinkable Sleeves; Installation of Heat Shrinkable Sleeves; Repair of defects in 3LPE Type of Coating; Dewatering using pumps, as required for all kinds of terrain and weather; Mechanized/ Manual Excavation for Trenching in normal soil as well as hard soil, roads etc. as per site requirement; Lowering of Pipes; Holiday Inspection Services; Providing Sand padding as required; Backfilling the trench; Arrangement of Water for Hydro-testing; Air Cleaning and Gauging of Pipeline; Hydro-testing & pigging of Pipeline; Supply and Installation of Pipeline Warning Signs as per approved design; Supply and Installation of Kilometre Post as per approved design; Site Cleaning; Slope Stabilization; All restoration jobs except Bituminous road re-carpeting, road Paver Block re-installation works, major civil restoration works; Documentation works - As built CAD drawing, Pipe book, test reports, final alignment sheet generation etc.						
20	**Part A: OFC Duct & Cable Laying along PL** OFC Duct laying along the pipeline, Cable blowing, Supply & Installation of RCC Chamber & Route marker post, Warning tape installation, Splicing etc. including supply of all materials and consumables except FIM, complete in all respects as per detailed scope of works in Special Terms & Conditions (SCC). Free Issue Materials (FIM): OFC Duct, Cable, Jointing Closures, Electronic Markers, Warning Tape	24000	M	₹ 251.00	₹ 60,24,000.00		
30	**Part A: OFC Duct & Cable Crossing (HDD)** OFC Duct and cable laying across road crossings using HDD Method including supply of all materials and consumables except FIM, complete in all respects as per detailed scope of works in Special Terms & Conditions (SCC). Free Issue Materials (FIM): OFC Duct, Cable, Jointing Closures, Electronic Markers, Warning Tape	180	M	₹ 500.00	₹ 90,000.00		
40	**Part A: OFC Laying & Termination (Station)** OFC Duct cable laying inside station area, cable blowing, all station	200	M	₹ 360.00	₹ 72,000.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
	terminations, panel erection works, testing and commissioning including supply of all materials and consumables except FIM, complete in all respects as per detailed scope of works in Special Terms & Conditions (SCC). Free Issue Materials (FIM): OFC Duct, Cable, Jointing Closures, Electronic Markers, Warning Tape						
50	**Part A: PL Cased Crossing 300 mm dia** Supply and Installation of 300 mm NB, 8.0 mm Wall Thickness (minimum), MS casing pipe by manual Boring or any other suitable means for Road wherever required in all types of soils and terrain; supply and installation of all other materials viz. casing insulators, casing end seals, materials for casing vents and drains; installation of 200mm NB carrier pipe; transportation of all supplied materials; supply of all labour, equipment, consumables etc.; backfilling and restoration etc. for complete installation of the item as per drawings, specifications, instructions of COMPANY's representative/s in Charge and other provisions, complete in all respects as per detailed scope of works in Special Terms & Conditions (SCC). Casing Pipe Material: API 5L Grade B/ IS 3589/ IS 4270/ IS 3601, FE 410 Grade, Seamless/ ERW/ LSAW.	180	M	₹ 18,777.00	₹ 33,79,860.00		
60	**Part A: OFC Cased Crossing 100 mm dia** Supply and Installation of 100 mm NB, 5.0 mm Wall Thickness (minimum), MS casing pipe by manual Boring or any other suitable means for Road wherever required in all types of soils and terrain; supply and installation of all other materials viz. casing end seals, materials for casing vents and drains; installation OFC Duct; transportation of all supplied materials; supply of all labour, equipment, consumables etc.; backfilling and restoration etc. for complete installation of the item as per drawings, specifications, instructions of COMPANY's representative/s in Charge and other provisions, complete in all respects as per detailed scope of works in Special Terms & Conditions (SCC). Casing Pipe Material: API 5L Grade B/ IS 1239/ IS 4270/ IS 3601, FE 410 Grade, Seamless/ ERW/ LSAW.	180	M	₹ 6,171.00	₹ 11,10,780.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
70	**Part A: Open Cut Cased Crossing of Roads** Supply and Installation of 300 mm NB, 8.0 mm Wall Thickness (minimum), MS casing pipe by Open Cut Road Crossing required in all types of soils and terrain; supply and installation of all other materials viz. casing insulators, casing end seals, materials for casing vents and drains; installation of 200mm NB carrier pipe; transportation of all supplied materials; supply of all labour, equipment, consumables etc.; backfilling and restoration etc. for complete installation of the item as per drawings, specifications, instructions of COMPANY's representative/s in Charge and other provisions, complete in all respects as per detailed scope of works in Special Terms & Conditions (SCC). Casing Pipe Material: API 5L Grade B/ IS 3589/ IS 4270/ IS 3601, FE 410 Grade, Seamless/ ERW/ LSAW.	120	M	₹ 12,798.00	₹ 15,35,760.00		
80	**Part A: Continuous Concrete Coating work** Concrete coating of Pipes at specified locations and lengths, as per standard procedure, including supply of all materials, consumable, complete in all respects as per detailed scope of works and procedure in Special Terms & Conditions (SCC).	2000	M	₹ 2,178.00	₹ 43,56,000.00		
90	**Part A: Installation of Block Valve, Box** Transportation of valve from Company's store, Erection of Valves at site, Making foundation and valve box as per drawing (including supply of all materials & consumables), application of coating materials (petrolatum tape or equivalent) complete in all respects as per detailed scope of works in Special Terms & Conditions (SCC).	4	NO	₹ 44,828.00	₹ 1,79,312.00		
100	**Part A: Supply of LR (6D) Hot Bends** Manufacturing and Supply of Coated Long Radius (LR) Factory made Hot Induction Bends (6D) of all required angles in accordance with required quantity evaluated using physical measurement of pipe alignment, including delivery at site, complete in all respects as per detailed scope of works, standard and procedures in Special Terms & Conditions (SCC). Pipe Material: As detailed in Technical Specification for LR bend.	116	NO	₹ 74,340.00	₹ 86,23,440.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
110	**Part A: Supply of Insulating Joints (IJ)** Manufacturing and Supply of Pipeline Insulating Joints, including delivery at site, complete in all respects as per detailed Technical Specifications in Special Terms & Conditions (SCC).	2	NO	₹ 89,607.00	₹ 1,79,214.00		
120	**Part A: Supply of Patrolatum Coat Paste** Supply of Paste for Petrolatum Tape Coating for coating of block valves, including delivery at site, complete in all respects as per detailed Technical Specifications in Special Terms & Conditions (SCC). Unit in Carton. 1 Carton = 10 kg	2	Carton	₹ 6,900.00	₹ 13,800.00		
130	**Part A: Supply of Patrolatum Coat Mastic** Supply of Profiling Mastic for Petrolatum Tape Coating for coating of block valves, including delivery at site, complete in all respects as per detailed Technical Specifications in Special Terms & Conditions (SCC). Unit in Carton. 1 Carton = 18 kg.	4	Carton	₹ 13,900.00	₹ 55,600.00		
140	**Part A: Supply of Patrolatum Coat Inner** Supply of Petrolatum Tape Coating Material for coating of block valves, including delivery at site, complete in all respects as per detailed Technical Specifications in Special Terms & Conditions (SCC). Unit in Carton. 1 Carton = 100 mm x 180 m roll length	2	Carton	₹ 18,000.00	₹ 36,000.00		
150	**Part A: Supply of Patrolatum Coat Outer** Supply of Petrolatum Tape Coating Material (Outer Wrap) for coating of block valves, including delivery at site, complete in all respects as per detailed Technical Specifications in Special Terms & Conditions (SCC). Unit in Carton. 1 Carton = 100 mm x 396 m roll length	2	Carton	₹ 20,000.00	₹ 40,000.00		
160	**Part A: Pipeline Geometry Survey (EGP)** Pipeline Geometry Pigging including providing of all resources at site, carrying out required preparatory pig runs, running of magnetic cleaning pig, data analysis, documentation etc., complete in all respects as per detailed technical specifications, standard, procedure & scope of works in Special Terms & Conditions (SCC).	37500	M	₹ 70.00	₹ 26,25,000.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
	The EGP shall be capable of recording the entire length of the pipe segment in one single run. The measurement shall cover the entire 360 Degree of Internal Pipe Circumference using properly oriented and sufficient nos. of sensors. The tool shall be capable of identify and locate Individual Girth Weld, Dent/ ovality/ buckles/ ripples/ change of thickness etc., Valves, Tap-offs. EGP shall have valid calibration and copy of calibration shall be submitted to client. Bidders are free to avail back-up services from any reputed pigging company for above specialized services. All risks and costs of pig getting stuck shall be with the contractor and all costs of retrieving such pig shall be borne by the contractor.						
170	**Part A: Supply & Installation of Boundary Pillar** Manufacturing, Supply and Installation of Right-of-Way Concrete boundary pillar (as per drawing/ specified size) at specified locations in the pipeline route, complete in all respects as per detailed technical specifications, standard, procedure & scope of works in Special Terms & Conditions (SCC). SUPPLY OF ALL MATERIALS IN CONTRACTOR'S SCOPE.	500	NO	₹ 888.68	₹ 4,44,340.00		
180	**Part A: Supply & Installation TCP in Totality** Design, Engineering, Manufacturing, Supply of Materials, Installation, Testing, Commissioning, Monitoring, Documentation etc. for Pipeline Temporary Cathodic Protection system for the complete pipeline from Duliajan to Digboi, complete in all respects as per detailed technical specifications, standard, procedure & scope of works in Special Terms & Conditions (SCC). SUPPLY OF ALL MATERIALS IN CONTRACTOR'S SCOPE. For part work, payment will be on pro-rata basis on kilometer of work done.	1	LSM	₹ 16,87,000.00	₹ 16,87,000.00		
190	**Part A: Crude Oil Evacuation from Old PL** Evacuation of Crude Oil from existing Pipeline by way of pumping water/ equivalent non-hazardous media using suitable pumps and pigs for isolation and tracking of media. Arrangement of all machineries, equipment, temporary piping, temporary launcher and receiver, water for pumping,	1	LSM	₹ 5,80,890.00	₹ 5,80,890.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
	water disposal arrangement, materials and consumables etc. are in contractor's scope. SUPPLY OF ALL MATERIALS IN CONTRACTOR'S SCOPE.						
200	**Part A: Pipeline Golden Joint/ Hook-up** Hooking up of the new pipeline with the existing charged pipeline with all necessary safety precaution as per specification. Hook up -joints will be allowed only after approval of Company's Engineer. Necessary planning and coordination shall be carried out with OIL officials. The job shall be carried out non-stop until the job is completed. All resources, materials and site arrangements required for the hook-up jobs will be in contractor's scope. Technical standards of welding, coating etc. shall be as per procedures adopted for pipe laying and API 1104 for welding. SUPPLY OF ALL MATERIALS IN CONTRACTOR'S SCOPE.	6	Job	₹ 32,658.00	₹ 1,95,948.00		
210	**Part A: Civil - Demolish Cement Concrete** Demolishing cement concrete manually / by mechanical means including disposal of material.	100	M3	₹ 717.00	₹ 71,700.00		
220	**Part A: Civil - Demolishing Brick Work** Demolishing brick work manually / by mechanical means including stacking of serviceable material and disposal of unserviceable material.	100	M3	₹ 605.00	₹ 60,500.00		
230	**Part A: Civil - Earth Work in Excavation** Earth work in excavation of foundation of structures including proping, shoring etc. as per drawing and technical specification.	100	M3	₹ 211.00	₹ 21,100.00		
240	**Part A: Civil - Cement Concreting Works** Laying in position cement concrete of specified grade 1:2:4 (1 cement 2 sand 4 stone aggregates) excluding the cost of centring and shuttering -	50	M3	₹ 6,582.00	₹ 3,29,100.00		
250	**Part A: Civil - Shuttering Works** Providing fitting ,fixing ,Centring and shuttering including strutting, propping etc.	100	M2	₹ 327.00	₹ 32,700.00		
260	**Part A: Civil - RCC Works** Providing laying Reinforced cement concrete work of grade 1:1.5:3 (1 cement : 1.5 coarse sand: 3 graded stone aggregate 20 mm nominal size in columns beam etc. as specified)	100	M3	₹ 6,806.00	₹ 6,80,600.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
270	**Part A: Civil - Reinforcement, RCC Works** Providing reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete.	2000	KG	₹ 75.00	₹ 1,50,000.00		
280	**Part A: Civil - Brick Masonry Works** Providing laying Brick masonry work with common burnt clay F.P.S. (non-modular) bricks of class designation 7.5 in foundation and plinth in 1 Cement mortar 1:4 (1 cement : 4 coarse sand)	10	M3	₹ 7,153.00	₹ 71,530.00		
290	**Part A: Civil - Cement Plastering Works** Providing and laying 12mm thick cement plaster of mix:1:4 (1 cement : 4 fine sand)	10	M2	₹ 165.00	₹ 1,650.00		
300	**Part A: Felling of Trees (30-60 cm)** Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. Size: Beyond 30 cm girth upto and including 60 cm girth.	20	EACH	₹ 381.00	₹ 7,620.00		
310	**Part A: Felling of Trees (60-120 cm)** Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. Size: Beyond 60 cm girth up to and including 120 cm girth.	20	EACH	₹ 1,695.00	₹ 33,900.00		
320	**Part A: Felling of Trees (120-240 cm)** Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. Size: Beyond 120 cm girth up to and including 240 cm girth.	5	EACH	₹ 7,860.00	₹ 39,300.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
330	**Part A: Paver Block Road Restoration** Providing and laying of inter locking concrete block pavement (ICBP) with cement concrete paver block (Coloured) of thickness 80mm and 28 days compressive strength not less than 30N/m over a layer of bedding sand of compacted thickness 30mm ,laid either in stretches/running/herringbone pattern of bond as directed by the engineer and in proper level and grade and compacted with appropriate equipment such as plate vibrator along with spreading thin layer of joint filling sand to fill up the gaps between blocks including construction of edge restraint wherever required complete as per drawings and technical specification.	180	M2	₹ 998.00	₹ 1,79,640.00		
340	**Part A: Bituminous Road Restoration** (i) Scarifying existing bituminous surface to a depth of 50 mm by Mechanical means (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead up to 1000 metres.) (ii) Applying tack coat with bitumen emulsion (iii) Providing and laying semi- dense Bituminous concrete using crushed stone aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site by tippers, laying with paver finisher equipped with electronic sensor to the required grade, level and alignment and rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction and density as per specification, complete and as per directions of Engineer-in-Charge (25 mm compacted thickness with bitumen of grade VG-30 @ 5% (percentage by weight of total mix) and lime filler @ 2% (percentage by weight of Aggregate) (iv) Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A seal coats.(Road roller provided by Contractor). Free Issue Material: Bitumin	120	M2	₹ 227.00	₹ 27,240.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
350	**Part A: Civil - Earth Work filling** EARTHWORK IN FILLING by excavating the earth from BORROW AREAS arranged by CONTRACTOR for all leads, transporting the earth from borrow area including cleaning & stripping the earth at borrow areas, breaking clods, loading, unloading and laying at all depths and heights in layers of thickness not exceeding 15 cms., watering, rolling and ramming by manual methods/mechanical compactors to achieve 90% of the maximum laboratory dry density, dressing, trimming, levelling the top surface etc. in foundations, plinths, trenches etc. all complete.	100	M3	₹ 564.00	₹ 56,400.00		
360	**Part A: Structural Work of all kinds** Supplying, transporting, storing, fabricating & erecting in position and testing/ examining bolted and/ or welded STRUCTURAL STEEL WORKS of Grade E250BR / E250B0 (confirming to per IS:2062) at all locations and levels UPTO & INCLUSIVE OF 20 m ABOVE HPP/ FGL, including all built-up sections/ compound sections made out of rolled sections and/or plates/ bent plates in all types of structural frameworks, floor beams, stairs, or any other structural items or accessories to support equipment, piping etc., cutting to required size, straightening/ bending if required, edge preparation, cleaning, preheating, bolting/ welding of joints, (including sealing the joints of box sections with continuous welding and plugging any open ends & holes of box sections), finishing edges by grinding, fixing in line and level with temporary staging & bracing and removal of the same after erection, grouting with Ordinary Grout or premix free flow Non-shrink Grout as specified, including preparation and submission of detailed fabrication drawings, preparing the surface for painting (SSPC-SP-10) and applying pre-erection/ shop primer (1 coat of F-9 @ 65-75 micron DFT) as per Job Specification, enamel painting of structures, wherever applicable, after fabrication etc., complete in all respects as per detailed technical specifications, standard, procedure & scope of works in Special Terms & Conditions (SCC). SUPPLY OF ALL MATERIALS IN CONTRACTOR'S SCOPE.	15	MT	₹ 92,718.00	₹ 13,90,770.00		

SL. NO.	DESCRIPTION OF WORK	Quantity (A)	Unit	OIL'S RATE PER UNIT (B)	OIL'S TOTAL AMOUNT C=(AXB)	SERVICE ACCOUNTING CODE (SAC)	SPECIFY % OF GST ON (C)
PART B: PIPELINE LAYING AND ASSOCIATED WORKS WITHIN FOREST AREA							
370	**Part B: Pipeline laying (Forest Area)** Pipeline laying (Forest Terrain): (For details - Special Terms & Conditions shall be referred) Transportation of line pipe and other free issue materials from Client's store/ yard and returning back surplus materials to designated store/ yard; Clearing & grading of RoW; Cross trenching for locating existing pipes, cables etc.; Bell hole excavation; Swabbing & Cleaning, Handling, Hauling and Stringing of pipe; Repair of Pipe Bevel End; Fabrication of Cold bends for all required angles; Welder Qualification Test; Girth Welding of pipe joint; Welding of Tie-in joint; Radiographic Inspection of weld joints; Supply of Heat Shrinkable Sleeves; Installation of Heat Shrinkable Sleeves; Repair of defects in 3LPE Type of Coating; Dewatering using pumps, as required for all kinds of terrain and weather; Mechanized/ Manual Excavation for Trenching in normal soil as well as hard soil, roads etc. as per site requirement; Lowering of Pipes; Holiday Inspection Services; Providing Sand padding as required; Backfilling the trench; Arrangement of Water for Hydro-testing; Air Cleaning and Gauging of Pipeline; Hydro-testing & pigging of Pipeline; Supply and Installation of Pipeline Warning Signs as per approved design; Supply and Installation of Kilometre Post as per approved design; Site Cleaning; Slope Stabilization; All restoration jobs except Bituminous road re-carpeting, road Paver Block re-installation works, major civil restoration works; Documentation works - As built CAD drawing, Pipe book, test reports, final alignment sheet generation etc.	13500	M	₹ 2,327.00	₹ 3,14,14,500.00		
380	**Part B: OFC Duct & Cable Laying (Forest)** OFC Duct laying along the pipeline, Cable blowing, Supply & Installation of RCC Chamber & Route marker post, Warning tape installation, Splicing etc. including supply of all materials and consumables except FIM, complete in all respects as per detailed scope of works in Special Terms & Conditions (SCC). Free Issue Materials (FIM): OFC Duct, Cable, Jointing Closures, Electronic Markers, Warning Tape	13500	M	₹ 326.00	₹ 44,01,000.00		

Total amount without GST Part A = ₹ 7,73,42,694.00	
Total amount without GST Part B = ₹ 3,58,15,500.00	
Total amount without GST (Part A + Part B) = ₹ 11,31,58,194.00	
Bidder's to quote single consolidated percentage increase/ decrease on total amount of ₹ 11,31,58,194.00 **The same percentage shall be applicable uniformly to all the items of the Schedule of Rates.** **Upper limit of percentage quoted shall be (+)10.00% and Lower limit of percentage quoted shall be (-)10.00%.**	**Quoted Percentage of the Bidder in Words & Figure (up to 2 decimal places) =**

Special Notes:

1. The price/rate(s) quoted by the Bidders will be inclusive of all taxes except ***GST*** *(i.e. IGST or CGST and SGST/UTGST as applicable in case of interstate supply or intra state supply respectively and Cess on GST, if applicable) on the final services. However, GST rate (including cess) to be provided in the respective places in the Price Bid.*

2. OIL will prefer to deal with registered bidder under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet. However, in case any unregistered bidder is submitting their bid, their prices will be loaded with applicable GST while evaluation of bid. Where OIL is entitled for input credit of GST, the same will be considered for evaluation of bid as per evaluation methodology of tender document."

3.. Price Bid uploaded without giving any of the details of the taxes (Including rates and amounts) will be considered as inclusive of all taxes including GST.

When a bidder mentions taxes as extra without specifying the rates & amount, the offer will be loaded with maximum value towards taxes received against the tender for comparison purposes. If the bidder emerges as lowest bidder after such loading, in the event of order on that bidder, taxes mentioned by OIL on the Purchase Order/ Contracts will be binding on the bidder."

*5. Refer GST Clauses****(Clause no. 31 of GCC).***

6. Bidders are required to quote for all the items as per Price Bid Format; otherwise the offer of the bidder will be straightway rejected.

7. Bidders are also requested to refer the Taxes and Duties clause during GST regime attached vide ***Annexure-I*** *(refer bid document) for compliance*

8. Amount of GST shall not be included by the Contractor in their quoted price. OIL will reimburse the GST to the CONTRACTOR against submission of invoices issued in accordance with GST Rules,

9. Bidder shall furnish this Form duly filled in all respects along with his price part. However, Bidder is required to furnish this ***Form indicating only the Rate of Duty/ Tax (%)*** *as per Column (d) along with his un-priced part.*

10. The rate of GST indicated in this format shall be considered for statutory variation as per the provisions of bidding document.

11. ***GST quoted above shall be considered for evaluation as per provisions of Bidding Document****.*

12. Contractor shall indicate total GST amount payable under the contract in this format. However, if Services, to be provided by the Contractor, falls under the category defined under reverse charge rule of GST then the liability of deposition of GST to the tax authority by the Contractor, and by the Owner shall be dealt in accordance with Notifications issued on reverse charge rule of GST by Government of India from time to time.

13. Bidders are requested to quote for all the items mentioned above. Bids will be evaluated considering the entire requirement as above. The Rates/amounts should be quoted by the Bidders inclusive of all applicable taxes and duties, however, GST payable to be shown separately.

14. Price Bid should be signed and sealed by the Authorised signatory of the Firm.

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Annexure –A

TAXES AND DUTIES CLAUSE - FOR VENDOR/SUPPLIER/CONTRACTOR
(For Supplies/ Services during GST Regime i.e., New Tender)

INDIRECT TAXES/ GST

1. *For the purposes of levy and imposition of GST, the expressions shall have the following meanings:*

   (a) GST - means any tax imposed on the supply of goods and/or services under GST Law.
   (b) Cess – means any applicable cess, existing or future on the supply of Goods and Services as per Goods and Services Tax (Compensation to States) Act, 2017.
   (c) GST Law - means IGST Act 2017, CGST Act 2017, UTGST Act, 2017 and SGST Act, 2017and all related ancillary Rules and Notifications issued in this regard from time to time.

2. ***The rates quoted by the bidders shall be inclusive of all taxes, duties and levies.*** *However, bidders are required to provide separately the rate and amount of all types of taxes, duties and levies. In case, the quoted information related to various taxes, duties & levies subsequently proves wrong, incorrect or misleading, OIL will have no liability to reimburse the difference in the duty/ tax, if the finally assessed amount is on the higher side and OIL will have to right to recover the difference in case the rate of duty/ taxes finally assessed is on the lower side. Further, for the purpose of this contract, it is agreed between the parties that if Goods and Services Tax introduced during the tenure of this contract/agreement then the bidders have to clearly show the amount of GST separately in the Tax Invoices. Further, it is the responsibility of the bidders to make all possible efforts to make their accounting / IT system GST compliant in order to ensure availability of Input Tax Credit (ITC) to Oil India Ltd.*

3. *Offers without giving any of the details of the taxes (Including rates and amounts) as specified above will be considered as inclusive of all taxes including GST. When a bidder mentions taxes as extra without specifying the rates &amount, the offer will be loaded with maximum value towards taxes received against the tender for comparison purposes. If the bidder emerges as lowest bidder after such loading, in the event of order on that bidder, taxes mentioned by OIL on the Purchase Order/ Contracts will be binding on the bidder.*

4. *Bidders are required to pass on the benefit arising out of introduction of GST, including seamless flow of Input Tax Credit, reduction in Tax Rate on inputs as well as final goods by way of reduction of price as contemplated in the provision relating to Anti-Profiteering Measure vide Section 171 of the CGST Act, 2017. Accordingly, for supplies made under GST, the bidders should confirm that benefit of lower costs has been passed on to OIL by way of lower prices/taxes and also provide details of the same as applicable. OIL reserves the right to examine such details about costs of inputs/input services of the bidders to ensure that the intended benefits of GST have been passed on to OIL.*
5. *Oil India Ltd. shall declare the value of free issue of materials and services, if any, involved in the execution of the contract. The Contractor should consider the same while working out the*

6. *GST liability, if any. Further in cases where GST is leviable on any facilities provided by OIL and used by bidders and the consideration for which is recovered by OIL in the form of reduction in the invoice raised by bidders then OIL will raise GST invoices on such transactions and the same will be reimbursed by bidders.*

7. ***When Input tax credit is available for Set Off as per the end use certification given by User Department at the time of raising Purchase Requisition (P.R.)***
   Evaluation of L-1 prices shall be done based on Quoted price after deduction of Input Tax Credit (ITC) of GST, if available to OIL.OIL shall evaluate the offers on the basis of the quoted rates only and any claim subsequently by the bidders for additional payment/liability shall not be admitted and has to be borne by the bidders

   When Input tax credit is NOT available for Set Off
   Evaluation of L-1 prices shall be done based on Quoted price only.OIL shall evaluate the offers on the basis of the quoted rates only and any claim subsequently by the bidders for additional payment/liability shall not be admitted and has to be borne by the bidders

8. *In a situation where Purchase Orders (POs)/ Contracts have been placed prior to GST Regime and supplies are effected during GST Regime, it is made clear that any statutory variation (increase/decrease) due to introduction of GST, as the case may be, but within the contractual delivery/completion period will be to the account of OIL subject to documentary evidence. However, any increase in statutory levy after the expiry of the scheduled date of delivery shall be to the supplier's account.*

9. *Bidders agree to do all things not limited to providing GST compliant Tax Invoices or other documentation as per GST law relating to the supply of goods and/or services covered in the instant contract like raising of and /or acceptance or rejection of credit notes / debit notes as the case may be, payment of taxes, timely filing of valid statutory Returns for the tax period on the Goods and Service Tax Network (GSTN), submission of general information as and when called for by OIL in the customized format shared by OIL in order to enable OIL to update its database etc. that may be necessary to match the invoices on GSTN common portal and enable OIL to claim input tax credit in relation to any GST payable under this Contract or in respect of any supply under this Contract.*

10. *In case Input Tax Credit of GST is denied or demand is recovered from OIL by the Central / State Authorities on account of any non-compliance by bidders, including non-payment of GST charged and recovered, the Vendor/Supplier/Contractor shall indemnify OIL in respect of all claims of tax, penalty and/or interest, loss, damages, costs, expenses and liability that may arise due to such non-compliance. OIL, at its discretion, may also withhold/recover such disputed amount from the pending payments of the bidders.*

10. *GST liability, if any on account of supply of free samples against any tender shall be to bidder's account.*

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PART-III

Special Conditions of Contract (SCC)

Work Description: Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited

Table of Content

1. INTRODUCTION

1.1. Oil India Limited (OIL) OIL is a premier Indian National Oil Company engaged in the business of exploration, development and production of crude oil and natural gas, transportation of crude oil and production of LPG.

1.2. OIL operates 200 NB (8 Inch diameter), 35 Km long Crude Oil spur line from Pump Station - 1, Duliajan to Digboi Refinery with one intermediate pigging station and a receipt terminal at Digboi Refinery since 1962. This pipeline is routed through a pipeline corridor along with other oil & gas flow lines, mostly along Digboi – Duliajan road on OIL's RoW/ RoU. Now, the company intends to replace this pipeline with new one, complying to required statutory norms.

1.3. It is now intended to hire services for Pipeline Laying and associated services for above job.

1.4. This document covers scope of work, technical specification and other technical and commercial conditions for above jobs.

2. SCOPE OF WORK IN BRIEF

The scope of work for intended services are summarized below. Details of scope and technical specification are available in Schedule of Rates (SoR) and Specific Work Specifications/ Terms of Reference (ToR).

Scope of work is primarily divided into **Part A** and **Part B**.

Part A consists of approximately 24 KM (approx.) of Pipeline laying and associated works from Pump Station 1 at Duliajan (PLKM 0) to Kathalguri Forest Gate (approx. PLKM 17.567) and from St. Paul Church, Balijan (Approx. PLKM 30.857) to Digboi Refinery Terminal (Approx. PLKM 37.392).

Part B (OPTIONAL) consists of approximately 13.5 KM (approx.) of Pipeline laying and associated works along Forest Portion of Pipeline Corridor from Kathalguri Forest Gate (approx. PLKM 17.567) to St. Paul Church, Balijan (Approx. PLKM 30.857).

NOTE:

Award of Contract/ Execution (in the award of contract) of Part B work (approx. 13.5 km) in the Forest area is subject to Government Clearance and Safety considerations. OIL reserves the sole right to decide on the Award of Contract/ Execution (in the award of contract) of aforesaid stretch. No compensation whatsoever will be admissible to the Contractor in the event of cancellation of Part-B work (approx. 13.5 KM) from the Scope of Work. OIL reserves the right to jointly carry out the pipe laying works for the stretch in Part-B with other Oil & Gas Operators or through their contractors in view of safety related and other matters. Bidder must specifically agree to this condition.

Broadly, scope of work against the contract involves:

- Verification of pipeline route and survey, as required, based on Alignment Sheets provided by client
- Clearing of Pipeline Corridor including removal of structures, felling of trees etc., as required
- Pipeline laying, testing, commissioning and documentation job complete in all respect. 3 LPE coated Line Pipes (200 NB, 7.1 mm thick, API 5LX 46) will be free issue material.
- OFC Duct laying in the same pipeline trench and OFC cable blowing complete in all respect including termination at stations. OFC Duct, Cable, Coupler, Electronic Marker etc. will be free issue material.
- Road/ Railway/ Water body Crossing of OFC duct using HDD method.
- Road/ Railway Cased Crossing of Line Pipe by boring including supply of casing pipes and other associated materials and consumables.
- Concrete coating of Line Pipes for selected portion including supply of materials and consumables
- Installation of Pipeline Block Valves at various locations including supply and construction of Valve Boxes as per approved drawing. Through Conduit API 6D Gate Valves will be free issue material.
- Coating of the Pipeline Block Valves with Petrolatum Tape coating including supply of required materials and consumable.
- Supply of Factory made coated LR (6D) Bend of various angles as per alignment sheet or survey data. Scope includes providing all materials as per specification, Third Party Inspection and documentation.
- Supply of Insulating Joints and surge diverter as per specification including Third Part Inspection.
- Pipeline geometry survey using EGP complete in all respect.

- Supply and installation of Pipeline Right-of-Way Boundary Pillar.
- Supply, installation, testing and commissioning of Temporary Cathodic Protection system for the Pipeline as per specification and approved design complete in all respect
- Crude Oil Evacuation from the old pipeline as per approved procedure complete in all respect.
- Pipeline Hook-up jobs at various locations of the pipeline
- Various Structural Works of Pipe Supports, Trestle making/ strengthening etc. including supply of materials
- Various restoration works

Bidder shall visit the sites before submitting bid to get familiarized with the site conditions, extent and nature of work etc. No claim shall be entertained from the contractor after award of works due to any variance or deficit in the details/ documents/ drawings etc. enclosed with the bid documents.

3. PIPELINE CONSTRUCTION STRATEGY

Crude Pipeline under this contract shall be constructed complying to the requirements of OISD-141 standard, ASME B 31.4, PNGRB Regulations etc. Safety practices as per Statutory rules and regulations, OISD - GDN – 192 and Client's requirements shall be strictly followed.

As the pipeline laying job for the entire length is anticipated to be completed in one dry season, contractor shall mobilize resources for following parallel works:

- **For Part A:** Work in THREE SPREADS simultaneously, each of approximately 8 km length, based on front availability
- **For Part B:** Work in TWO SPREADS simultaneously, each of approximately 7 km length, if this part is offered for execution by client.
- Parallel activities for cased boring of road and railway crossings
- Procurement of various supply items
- Parallel activities for Temporary Cathodic Protection site works during laying of pipeline and OFC

As the new pipeline is to be constructed in the existing pipeline corridor for most of the route, contractor shall engage suitable and sufficient resources to locate existing pipelines, cables etc. All safety procedures for working in such environment shall be formulated and strictly followed.

Necessary safety procedures for working inside Forest area shall be formulated and strictly followed.

Necessary safety procedures complying to the requirements for respective authorities for working inside petroleum installations at Duliajan, Kathalguri installation and Digboi refinery shall be formulated and strictly followed.

4. PROJECT PLANNING, SCHEDULING AND MONITORING

The contractor shall submit schedules & plans, target and milestones for various activities covering entire scope of work, within 15 days of receipt of LOA for approval by OIL. The contractor shall execute the activities as per approved schedule.

The work execution progress shall be updated regularly against approved plan & schedule. Site Level Weekly Project Review Meeting and Management Level Monthly Progress Review Meeting will be held and contractor's authorized representative will mandatorily participate in these meetings.

Hindrances faced during contract execution shall be recorded in **Hindrance Register format**, to be provided by OIL.

5. SITE ORGANIZATION AND COMMUCATION

The Contractor shall nominate designated individual as Resident Construction Manager (RCM), Planning and Co-ordination (P&C) personnel and Safety In-charge with necessary Power of Attorney and authority.

Communication and reporting channel between Client, Client's Representative and Contractor shall be finalized during kick-off meeting for the contract.

6. QUALITY CONTROL AND QUALITY ASSURANCE

Contractor shall engage quality manpower, machinery and materials to achieve quality standards stipulated by relevant Job Specifications, Standards and Codes without any adverse effect on work progress as per approved plan.

Contractor shall prepare and submit work procedures for various activities, as necessitated/ instructed by Client or its Representative, complying to relevant technical standards and industry best practices. Such approved procedures shall be used for the contract.

It is the responsibility of the contractor to make necessary Measuring Tools and Instruments available at site, as necessitated for measuring quality. All measuring tools and instruments shall have valid calibration certificates.

7. SAFETY MANAGEMENT

Contractor shall establish their Safety Management Plan for the contract, which shall essentially include list of hazardous activities, daily tool box meeting at site, monthly safety review meeting, Mandatory use of PPE, Safety Training, First Aid Boxes, List of First Aid Trained personnel, emergency preparedness for accidents etc.

Records of meetings and statutory registers shall be kept updated and open for inspection by OIL/ its Representative or External Inspection Agency.

Industry's best practices for Pipeline Construction shall be properly practiced during field jobs.

8. DEFECT LIABILITY PERIOD

8.1. The Defect Liability Period shall be a period of **12 (Twelve) months from completion date** as per 'Completion Certificate'.

8.2. The Contractor warrants that during the duration of the Defect Liability Period, the Works shall be free of all Defects.

8.3. If, during the Defect Liability Period, any Defects are discovered in the Works or any part thereof; or the Works or any part thereof fails to meet the Guaranteed Performance Levels, OWNER/CONSULTANT will notify the Contractor of such Defects or failure. Upon receipt of such notice, the Contractor shall promptly repair or replace such Work (including any necessary uncovering, covering and recovering) in accordance with the Contract, Good Industry Practices and Applicable Laws. Upon completion of any repair or replacement work, the Contractor shall, at its own expense, and with OWNER/CONSULTANT's coordination and Approval, perform such tests as

necessary to demonstrate that pursuant to cure of Defects under this Clause, the Works meet the Guaranteed Performance Levels.

8.4. If the Contractor fails to rectify any Defects in the Work during the Defect Liability Period, OWNER/CONSULTANT (at its sole discretion) may:

(a) Carry out the work itself or by others, in a reasonable manner at the risk and Cost of the Contractor; In addition to the costs, OWNER/CONSULTANT shall be entitled to claim 15% (fifteen percent) of such costs towards the genuine pre-estimated damages suffered by OWNER/CONSULTANT; or

(b) If the Defect or damage is such that OWNER/CONSULTANT has been deprived of substantially the whole of the benefit of the Works or part of the Works, terminate the Contract in respect of such parts of the Works as cannot be put to the intended use. Without prejudice to any other rights, under the Contract or otherwise, OWNER/CONSULTANT shall then be entitled to recover all sums paid for such parts of the Works together with the cost of dismantling the same, clearing the Site and returning Goods and Materials to the Contractor and the provisions of relevant clause of GCC shall not apply.

8.5. If the Defect or damage is such that it cannot be remedied expeditiously on the Site and if OWNER/CONSULTANT gives consent, the Contractor may, remove from the Site for the purpose of repair any part of the Works, which is defective or damaged. The consent may require the Contractor to increase the amount of Contract Performance Bank Guarantee by the full replacement cost of items which are to be replaced or to provide other appropriate security acceptable to OWNER/CONSULTANT.

8.6. If the repair or remedy of any Defect or damage is such that it may affect the performance of the Works, OWNER/CONSULTANT may, within 30 (thirty) Working Days after such repair or remedy, require that certain tests be repeated as may be necessary to demonstrate compliance with the Guaranteed Performance Levels.

8.7. If any part of the Works has been replaced, renewed or repaired during the Defect Liability Period, the Defect Liability Period in respect of such replaced, renewed or repaired part shall be for a further period of 12 (twelve) months from the date on which such replacement, renewal or repair has been completed to the satisfaction of the Engineer-in-Charge and so on. Such further extended period(s) shall be called “Extended Defect Liability Period”. However, in any case, cumulative extensions in defect liability period shall not exceed 2 (two) years from completion.

9. DELIVERABLES/ REPORTS

Following periodical reports shall be submitted by the contractor:

(i) Daily site work progress report
(ii) Fortnightly Site Resource Availability Report
(iii) Fortnightly report of status of material procurement
(iv) Monthly Progress Report
(v) Monthly Material Reconciliation report
(vi) Pipe Book
(vii) All inspection and test reports in original and 2 copies
(viii) As-Built Drawings and Pipeline Alignment Sheets

10. PERMITS & CERTIFICATES

The Contractor shall procure, at his expense, all necessary permits, certificates and licences required by virtue of all applicable laws, regulations, ordinances and other rules in effect at the place where any of the works is to be performed, and Contractor further agrees to hold Client harmless from liability or penalty which might be imposed by reason of any asserted or established violation of such laws, regulations, ordinances or other rules.

11. LABOUR LICENSE

Contractor shall obtain and manage Labour License as per statutory requirement for the entire period of contract and maintain all necessary facilities, documents, registers, returns etc. as per statutory requirement. All costs related to above requirements shall be in contractor's account.

Any penalty imposed to OIL by statutory authority due to contractor's negligence shall be deducted from contractor.

12. SITE FACILITIES FOR WORKMEN

Following facilities are to be ensured at all work places where workmen are deployed/engaged by Contractor:

i) Arrangement of first aid
ii) Arrangement for clean drinking water
iii) Toilets
iv) A crèche where 10 or more women workmen are having children below the age of 6 years.

Any other facility mandated by Statutory Rules & Regulations are to be provided by contractor. Cost involvement for such facilities shall be in Contractor's scope.

13. MATERIAL TO BE SUPPLIED BY COMPANY

i) Full quantity of line pipe required for pipeline laying
ii) Pipeline block valves
iii) OFC Duct, OFC Cable, Coupler and Electronic Markers
iv) Bitumen for Bituminous road restoration

14. CONDITIONS FOR COMPANY SUPPLIED MATERIALS

i. All free issue materials shall be issued to contractor against submission of **Indemnity Bond** (as per OIL's Format, ANNEXURE-K of tender) for 150% landed value of free issue materials.

ii. The contractor shall be responsible for taking over the materials at Owner's store and subsequent handling, hauling, loading, transportation to the actual work site(s)/ fabrication yard(s) and unloading, storage & safe keeping of the materials. Contractor shall arrange all equipment/cranes etc. for loading of these materials on their truck/trailers for transportation.

iii. The Contractor shall inspect all Company supplied free issue materials at the time of taking over from the Company and defects noticed, if any, shall be brought to the notice of Company/Company representative and jointly recorded. Once the material has been taken over by the Contractor, all the responsibility for safe keeping of the materials shall rest with the Contractor. Company shall not be liable for any claims or complaints whatsoever in respect of quantity, quality and condition of said materials once the contractor has taken delivery thereof.

iv. Every month the Contractor shall submit to the Company an account for the material issued to the Contractor in the pro forma prescribed by Engineer-in-Charge.

v. On completion of the works Contractor shall submit a 'Material Appropriation Statement' for all the materials supplied by the company as free issue materials.

vi. All unused material shall be the property of the Company and shall be returned by Contractor to Company at Company's designated storage points including transportation of the same from Contractor's stock yard (s)/ worksite(s)/ workshop(s) to the Company's designated storage point(s). Contractor shall be responsible for the proper measurements of the unused materials to be returned to the Company.

15. MATERIALS TO BE SUPPLIED BY CONTRACTOR

The procurement and supply, in sequence and at appropriate time and place, including inspection and expediting, of all materials and consumables and any additional materials required for completion of the WORK as defined in this Bid document except Company free issue material, shall be entirely the Contractor's responsibility and the item rates quoted for the execution of the WORK shall be inclusive of supply of all these materials as described in SOR items. All materials supplied by the Contractor shall be strictly in accordance with the requirements of relevant Company material specifications. All equipment, materials, components etc. shall be new and specifically purchased for this job.

Materials shall be duly inspected by approved Third party inspection agency(s) like Lloyds, Bureau Veritas, DNV etc./ OIL, as per approved QAP, if specified in SOR item.

15.1. LIST OF APPROVED BRANDS/ MANUFACTURER

1.	Heat Shrinkable Sleeve	M/s Tyco Adhesives, M/s Raychem, M/s Canusa, M/s Seal for Life
2.	Casing end seals	M/s Tyco Adhesives, M/s Raychem, M/s Canusa, M/s Seal for Life
3.	Casing Insulators	M/s Tyco Adhesives, M/s Raychem, M/s Canusa, M/s Seal for Life, M/s Pipeline Seal and Insulator INC, M/s V K Vikram India Pvt Ltd.
4.	Insulation Joint (IJ)	M/s V K Vikram India Pvt Ltd.
5.	Petrolatum coating materials	M/s Denso
6.	TCP Anodes	Sargam Metals, Chennai / Scientific Metals and Fabricators , Chennai/ Shakti enterprise, Ahmedabad
7	TCP Cables	Icon cables/Suyog cables/ Netco cables/KEI

For any other Manufacturer qualification, prior approval must be taken from the Client by submitting application along with all necessary qualification documents.

Material Test Certificates along with relevant quality conformance documents must be provided for above supplies.

16. TOPOGRAPHIC SURVEY DATA

Company has got the detailed pipeline route survey carried out for the entire pipeline route. Relevant survey drawings and reports are enclosed in the bid document. Wherein bidder's opinion the survey and investigation data is not found to be sufficient in detail, it shall be the responsibility of the bidder to collect/arrange and provide such additional topographic surveys. Bidder shall also perform during execution of work, any additional topographic surveys and geotechnical investigations that may be required for local detours or at crossings or at any other location during execution of the project without any extra cost to the Company. Bidder shall be deemed to have considered all such eventualities while formulating its bid.

17. RIGHT-OF-WAY (ROW)/ RIGHT-OF-USE (ROU)

17.1. In general, the proposed pipelines will be laid along with the RoW/ RoU owned by the Client. The Client does not warranty that the RoW/ RoU shall be suitable at all locations for use and/ or movement of mechanical and other equipment of the Contractor. The Contractor shall at its own initiative and cost make suitable arrangement to perform the work in any particular circumstances as may be encountered.

17.2. RIGHT OF INGRESS AND EGRESS

The right of ingress and egress to the right-of-way furnished by the Client shall be limited to points where such right-of-way intersects public roads. Arrangements for other access if necessary shall be made by THE CONTRACTOR at its expense.

18. THIRD PARTY INSPECTION AGENCY FOR SITE WORKS AND THEIR SCOPE OF WORK

The Contractor shall arrange suitable, proven, resourceful and experienced Inspection Agency at his cost that shall have to be approved by the company before starting of respective activity. Past experience of the party is to be submitted to the Company for approval prior to engagement of such party.

Scope of works of the Agency may be as follows:

i) Witness and approve Welding Procedure and Welders Qualification test as per relevant code and issue certificates of acceptability.

ii) Carry out radiography of weld joints as per relevant code / standards and issue certificates of acceptability.

The Third Party Inspection Agency must have qualified radiographer having valid certificate along with Radiographic Camera and Radio isotopes approved by statutory agencies. Documentary evidence in support of the same is to be furnished to the Client.

19. SAFETY OF EXISTING PIPELINES AND CABLES

The Contractor shall ensure the safety of the pipelines and cables already laid on the Right of Way and at no instance; the existing lines shall be disturbed, stressed or damaged in any way during the construction activities. In the event of any damage, the Contractor shall repair the line forthwith at its own expense and pay any consequential damages arising there from.

20. PROTECTION OF PROPERTY AND EXISTING FACILITIES

20.1. The Contractor shall perform each work in such a manner as will prevent damage to the Company's property and conform to and be consistent with, operational practices of hydrocarbon industries. Any permanent damage / loss to the Company's pipeline, assets and plants due to actions undertaken by the Contractor in order to provide the services envisaged under this Contract shall have to be remedied by the Contractor, entirely at their own cost. This cost shall include and not be limited to actual replacement of such damaged pipeline, assets or plants, or payment of actual replacement cost in relation thereto as may be incurred by the Company.

20.2. The Contractor shall take sufficient care in moving his plants, equipment and materials from one place to another so that they do not cause any damage to any person or to the property of Company or any third party including overhead and underground cables and in the event of any damage resulting to the property of Company or of a third party during the movement of the aforesaid plant, equipment or materials the cost of such damages including eventual loss of production, operation or services in any plant or establishment as estimated by Company or ascertained or demanded by the third party shall be borne by the Contractor.

21. PERFORMANCE OF WORK

The Contractor shall submit daily reports to EIC (Engineer in Charge) detailing progress of different activities as per the scope of the work. The Company, at its option may change the periodicity of such reports. In addition, they shall submit the complete job report (with all pertinent details to serve permanent record) within 15 (Fifteen) days from the date of completion of each individual job.

The manner and the speed of execution are to be conducted in a manner to the satisfaction of the Company's representative. Should the rate of progress of the operations or any part of them is at any time too slow in the opinion of the Company's representative, (to ensure completion of the operations within schedule) the Company's representative may so notify the Contractor in writing. The Contractor shall reply to the written notice giving details of the measures, which he proposes to take to expedite the activities. If no satisfactory reply to the Company's notice is received in seven days, the Company shall be free to take necessary actions as deem to be fit.

22. MEASUREMENTS OF WORKS

22.1. The quantities detailed any in this contract represent only the estimated quantities of works and they are not to be taken as the exact quantity of the works to be executed by the Contractor in fulfilment of his obligations under this contract. The quantities of works to be considered for purpose of payment shall be those actually executed either in accordance with detailed drawings or with the written instruction of the Client's Representative.

22.2. In respect of completed works accepted by the Client's Representative either in part or in full at his discretion, the Client's Representative shall in consultation with the Contractor call upon the Contractor by a notice, written or verbal to be present at work site on specific date and at specific hour for the purpose of making measurements and recording the same. The Contractor or its authorized representative shall be present at the site and shall furnish to the Client's Representative all particulars required for a proper measurement. Should the Contractor not attend or neglect or omit to send such authorized representative, then the measurement made

by the Client's Representative or approved by him will be the conclusive measurement of the works and the Contractor shall accept such measurement.

22.3. All measurements shall be duly recorded by the Client's Representative in the Client's Measurement Book and the Contractor shall agree to such measurement by signing the same. Measurement so recorded shall be treated as legally binding on both parties.

22.4. The Client's Representative shall be free to reject for purpose of measurement any materials / equipment supplied by the Contractor at sites if such materials are not up to the required specifications.

22.5. Notwithstanding the fact that certain works and materials have been already measured and recorded by the Client's Representative; the Contractor shall remain fully responsible for all such works and materials till the final expiry of the defect liability period.

23. COMPLETION CERTIFICATE

As soon as the works have been completed and the Contractor fulfils his obligation envisaged under the contract, he shall be eligible to apply for 'Completion Certificate'. The Client shall issue to the Contractor the completion certificate after verifying the works have been completed in accordance with the Contract Document. The issue of Completion Certificate shall not operate as an admission that the works have been accepted in every respect. The warranty period / defect liability period one year shall commence from date of completion as mentioned in the 'Completion Certificate'.

24. ACCEPTANCE OF WORKS

Upon expiry of the period of Defect Liability and subject to the Client being satisfied that Contractor's obligation have been duly maintained by Contractor during such period and that Contractor has in all respect duly made up any subsidence and performed all his obligations under this contract, the Client shall issue certificate (herein after referred to as 'Acceptance Certificate') to that effect and Contractor shall not be considered to have fulfilled the whole of his obligations until 'Acceptance Certificate' has been issue by the Client. The Performance Bank Guarantee for Defect liability shall be discharged by the Client upon issuance of such Acceptance Certificate as per the stipulated time frame in the Contract.

25. INVOICING PROCEDURE AND PAYMENT TERMS

Contractor shall raise running bills as per certified measurement sheet in GST Invoice format for the completed work as per the payment terms.

Following documents are to be mandatorily submitted along with every invoice:

1) Statutory compliance sheet duly certified by OIL/ Construction Management agency
2) Letter of undertaking (for Royalty and minimum wages) duly signed by Authorized signatory of Contractor.
3) Copy of Labour License.
4) Workmen Compensation policy & all risk policy
5) Employee PF & ESI statements
6) Copy of Insurance

Payment terms shall be as per Part IV of the tender document.

26. JOB SPECIFICATION: PIPELINE LAYING JOB

26.1. Scope of Work

Transportation of line pipe and other free issue materials from Client's store/ yard and returning back surplus materials to designated store/ yard; Clearing & grading of RoW; Cross trenching for locating existing pipes, cables etc.; Bell hole excavation; Swabbing & Cleaning, Handling, Hauling and Stringing of pipe; Repair of Pipe Bevel End; Fabrication of Cold bends for all required angles; Welder Qualification Test; Girth Welding of pipe joint; Welding of Tie-in joint; Radiographic Inspection of weld joints; Supply of Heat Shrinkable Sleeves; Installation of Heat Shrinkable Sleeves; Repair of defects in 3LPE Type of Coating; Dewatering using pumps, as required for all kinds of terrain and weather; Mechanized/ Manual Excavation for Trenching in normal soil as well as hard soil, roads etc. as per site requirement; Lowering of Pipes; Holiday Inspection Services; Providing Sand padding as required; Backfilling the trench; Arrangement of Water for Hydro-testing; Air Cleaning and Gauging of Pipeline; Hydro-testing & pigging of Pipeline; Supply and Installation of Pipeline Warning Signs as per approved design; Supply and Installation of Kilometre Post as per approved design; Site Cleaning; Slope Stabilization; All restoration jobs except Bituminous road re-carpeting, road Paver Block re-installation works, major civil restoration works; Documentation works - As built CAD drawing, Pipe book, test reports, final alignment sheet generation etc.

26.2. GENERAL NOTE

All resources except free issue materials are in Contractor’s scope.

Work procedures shall be as per Cross-country Pipeline Construction practices conforming to OISD-141 standard, ASME B 31.4, PNGRB Regulations etc. Safety practices as per Statutory rules and regulations, OISD - GDN – 192 and Client’s requirements shall be strictly followed.

Specific Work procedures as necessitated by Client shall be prepared by the Contractor and get Client’s Approval.

26.3. PIPE JOINT WELDING AND REPAIR

Welding shall be done in accordance with the API standard for field welding of pipelines, API standard 1104 (latest edition) and/ or Approved Welding Procedure Specification (WPS). The Contractor shall employ reputed third party inspection agency approved by the Client for qualification of welding procedure / welders and radiography of weld joints.

QUALIFICATION OF WELDERS: The Contractor shall test and grade the welders in accordance with relevant clause of API 1104 using an approved welding procedure. The welders engaged by the Contractor shall satisfactorily qualify the welding test before being allowed to weld on the pipe line. The Contractor shall issue identity cards to all the welders who have passed the test and approved by the Company. Client will supply pipe for the purpose of making test pieces. Contractor shall arrange at no cost to the Client the welders time, welding equipment, welding rods, other consumables as well as the Third Party Inspection agency for the purpose of conducting the test.

WELDING ELECTRODES: The electrodes shall be of suitable gauge and of following specifications:

Stringer or Root bead	E 6010 conforming to AWS A 5.1
Hot Pass	E 7010 conforming to AWS A 5.5

Filler Passes	E 7010 conforming to AWS A 5.5

26.4. TESTING OF WELDS IN THE LINE

Inspection of all welds shall be carried out as per the latest editions of API 1104. All finished welds shall be visually inspected for parallel and axial alignment of the work, shrinkage, cracks, under-cuts, dimensions of the weld, surface porosity and other defects. Under-cutting adjacent to the completed weld shall not exceed the limits specified in the applicable standard / code.

100% Radiographic examination of weld joints shall be carried out by the Third Party Inspection agency engaged by the Contractor. Client may engage its Representative to inspect radiography results and reports of such inspection shall be final and binding to the Contractor. Repairs and replacement, if any, shall be at the Contractor's expense. Radiography reports issued by the Third Party Inspection Agency along with the radiography films shall be submitted to OIL for retention.

26.5. PIPE BENDING (COLD FIELD BEND)

Factory made long radius Bends of higher degrees will be provided as separate supply item. However, the Contractor, in general, shall provide for marginal changes of vertical and horizontal alignment by making Cold Field Bends of appropriate degrees by the use of a Bending Machine, approved by THE Company, in such a manner as to preserve the cross sectional shape of the pipe. The Bending Machine shall be capable of making bends without wrinkles, buckles and stretching and pipe diameter shall not be reduced at any point by more than 1.5% of the nominal diameter and completed bends shall pass the sizing pig. The longitudinal weld in a bend section shall be near the neutral axis of the pipe. No welded joint shall be included in a bend. The ends of each bend length shall be straight and not involved any way in the bending and the length of the straight section shall permit easy jointing. Over bends shall be made in such a manner that the centre of the bend clears the high points of the trench bottom. Sag bends shall fit the bottom of the trench and side bends shall conform and leave clearance to the outside wall of the trench. Any bend rejected by the Company's representative/s shall be removed from the line at the Contractor's expense and pipe thus removed will be charged to the Contractor as damaged materials.

The radius of cold bends shall not be less than 30 times the pipe specified diameter.

26.6. HEAT SHRINKABLE WRAPAROUND SLEEVE FOR FIELD JOINT COATING

Heat shrinkable wraparound sleeve shall consist of radiation cross-linked thermally stabilised, ultraviolet resistant semi-rigid polyolefin backing with a uniform thickness of high shear strength thermoplastic/copolymer hot melt adhesive. The joint coating system may consist of a solvent free epoxy primer applied to the pipe surface prior to sleeve application. The backing shall be coated with thermochrome paint which will change colour when the desired heat during shrinking is attained.

The wraparound sleeve shall be supplied in pre-cut sizes to suit the diameter and the requirements of overlap.

26.7. HOLIDAY TESTING

Before lowering in, a complete check by a full circle Holiday Detector for Pipe Coating and for Field Joint coating shall be carried out and all damages repaired at Contractor's cost. All points on the pipeline where the coating has been in contact with either the skid or with the lifting equipment during laying,

shall be carefully inspected for damages, denting or other defects and shall be completely repaired. If, after checking, it becomes necessary to place the pipeline again on supports at the bottom of the trench, these must be padded in such a way as to prevent damage to the coating, thus avoiding necessity of further repairs when the pipe is finally raised and laid. Before the last operation, a check must be made of the coating at points of contact with the supports.

26.8. PIPELINE LAYING ON OVERGROUND SECTIONS

Following works shall be completed before proceeding with the assembly and laying of over ground pipelines –

- Construction of Pipe Support Structures
- Paint and/ or coating of the Pipe Work

The erection of the supports shall be carried out taking care of alignment sheets. In the case of metal work supports, pre-fabrication and/or assembly shall take into account the maximum allowed free span and the supports shall not interfere with pipeline welds.

An insulation sheet shall be installed to isolate the pipe from the support. The Sheet shall be hard polythene/ neoprene/ Teflon pad of at least 5mm thickness. It shall extend at least to 10 mm outside the saddles or clamps. Supply of above pad shall be in Contractor's scope.

26.9. AIR CLEANING, GAUGING AND HYDRO-TESTING

All welding jobs on pipes including those for TCP shall be completed before hydro-testing of pipeline sections.

As pipe is welded into sections and prior to hydro-testing, the contractor shall arrange to Air clean the pipe segment and propel an approved pig with Aluminium gauging plate of correct diameter (95% of the I.D. of the heavy wall pipe used in the section) by compressed air through each section to clear out all dirt and debris and to verify the fact that there are no obstructions for free passage of scraper subsequently. The Contractor shall check for wear after running each section of the line and shall replace the plate whenever necessary. Gauge plates with reports shall be submitted to the Client.

Hydro-testing of the Pipeline shall be carried out at 1.25 times the pipeline design pressure for a minimum hold period of 24 hours. The Contractor shall prepare Hydro-testing Procedure complying with requirements of ANSI B 31.4 std., API RP 1110 and OISD 141 Std. and shall submit to the Client well in advance for approval. Approved hydro-testing procedure shall be followed for testing.

The maximum hydro-test pressure at any location in the pipeline during testing shall not exceed the pressure required to produce hoop stress equal to 95% of SMYS of pipe material based on the minimum wall thickness in the test section.

Subsequent to separate hydro-testing of the pipeline and associated facilities, tie-in/ hook up shall be carried out by the contractor. Pipes/ prefabricated assembly used for such tie-in shall be pre-tested to a test pressure specified for the pipeline. All materials required for the fabrication of the test headers shall be provided by the contractor at no extra cost to Company. After successful hydrostatic testing, the Contractor shall de-water the pipeline as per directions of Engineer-in-charge.

Disposal of water (hydro-testing) shall be done by Contractor after seeking necessary permission from concerned authority/ land, so that no liability on this account comes to company.

After hydro-testing, the line shall be drained and subsequently the pipelines shall be filled with Nitrogen. The maximum positive pressure shall be maintained at 2.0 bar (g) in the pipeline during preservation (for a period up to 12 months, if required). Necessary arrangements like valves, fittings, manpower etc. shall be kept for maintenance of pressure in the pipeline during idle time preservation.

26.10. AS BUILT DRAWINGS

The contractor shall process As-built drawing from the start of construction in the CAD format. Required measurements for As-built drawing shall be executed by the Contractor through experienced and qualified surveyors. GPS co-ordinates shall be collected and mapped for all required locations. The Surveyor shall take care of all measurements such as but not limited to:

- Horizontal location of pipeline with regard to deviation and permanent grid pillars
- Vertical level with regard to MSL of pipeline and grade
- Location and type of bends, fittings etc. and point of intersection
- Pipe wall thickness, coating thickness, materials
- Location and details of valves, flow tee, insulating joints, fencing etc.
- Location and details of road, railway, water crossings
- Location and details of crossing pipes, vents
- Location and details of over ground pipe laying
- Location and type of markers
- Location and details of Pig trap locations along with signaller positions
- Location of RoU/ RoW and pipeline with respect to RoU/RoW
- Type of soil/ rock/ padding
- Type of road pavement
- Details of bank protection, number of insulators, seals etc.

The contractor shall submit 3 copies of signed and approved As-built drawing and soft copies of drawing files in CD-ROM in pdf as well as CAD formats.

26.11. PIPE BOOK

The contractor shall prepare and submit signed and approved Pipe Book as follows:

Every page of the Pipe and Welding Book shall mention –

- Data relevant to the project and section thereof
- Sequential number
- Length brought forward (for pipes and other materials)
- Length to bring forward (for pipes and other materials)
- Alignment Sheet number and at least the GPS location thereon of two welds on every page of the pipe book

Further following shall be specified:

- Diameter of the pipeline
- Length of each pipe
- Wall thickness

- Coating thickness
- Pipe number
- Heat number
- Cut and re-numbered pipe ends
- Coating number
- Date of Stringing
- Date of Welding
- Weld number
- Type of welding, electrode and diameter of electrode etc.
- Equipment used for radiography
- Date of field joint coating
- Date of lowering
- Date of OFC laying
- Date of backfilling
- Date of hydro-test
- Date of Temporary cathodic protection (TCP) work
- Date of marker installation
- Limits of water crossings
- Date of block valve installation

27. SCOPE OF WORK FOR TCP SYSTEM

- Scope of TCP Work shall cover entire 37.5 KM length (approx.) from Duliajan to Digboi.
- Pipeline laying contractor shall engage competent CP vendors to carry out the Temporary Cathodic Protection (TCP) Works. No PCP work has been envisaged in this scope.
- Relevant Technical Specification, enclosed elsewhere in this bid document shall be referred.
- Contractor shall carry out the TCP commissioning to monitor the PSP levels of the pipeline.
- The contractor shall carry out the design, engineering, procurement, supply, installation, testing, commissioning and survey of TCP system for pipeline.
- Contractor shall be responsible for the following:
    - Corrosion survey, design, detail engineering, supply, installation, testing and commissioning of the TCP system using galvanic anodes to protect the pipelines against corrosion for minimum one year.
    - Works related to TCP such as connection of cable to pipeline, installation of sacrificial anode, laying of polarization coupons, reference cells etc. and laying of HDPE sheets (between pipeline being installed in this contract and other foreign pipelines at the crossing locations for providing electrical isolation for minimizing the pick-up and discharge of the CP system current between the pipelines) shall be completed before backfilling the trench.
    - Supply of the materials/ equipment whatever is required to achieve desired protection level and carry out the work as per requirement of the relevant national/ international codes and standards and requirement of approved design shall be in Contractor's scope.
    - The pipeline material required for fabrication of polarization coupons shall be arranged by the contractor.

- All civil works associated with the complete Cathodic Protection system are included in the scope of Contractor. The shall include providing cable trenches and foundations for all equipment, all test stations etc.
- CP contractor shall submit the TCP design document immediately after award of contract and shift the required material as per reviewed/ approved design document as per project schedule.
- Within 60 days of lowering of each continuous segment of pipe, it should be protected at minimum (-)850 mV potential level by Mg anode as a part of TCP. Where soil resistivity is 150 ohm-m or more, achievement of (-)850 mV potential level shall not be mandatory.
- Installation of independent sacrificial type CP system considering suitable number of Magnesium anode (20 kg net each) at all cased crossings.
- Providing Test Stations along the pipeline route as per specifications.
- Suitable cable connections and test stations for future installation of CTSU, Polarization cell be provided. The locations for such stations shall be decided during detail engineering.
- Maintaining and safe keeping of test stations and monthly monitoring of the TCP system including monitoring of AC and DC voltages till commissioning of Permanent Cathodic Protection (PCP) system or 12 months (design life), whichever is less.

- Provisions for direct/ resistance bonding between the pipelines in the common RoU, where applicable, shall be provided in the test stations along the pipeline route at an average interval of 1 km and at additional locations wherever required for interface mitigation.
- The work shall be performed in conformity with the scope and specifications for CP system mentioned in the tender document. In case of any conflict, the following shall be priority:
  a) Scope of Work
  b) Design Basis
  c) Data Sheets
  d) Job Specification/ Codes/ Standards
- Protection Current Densities for TCP of pipeline shall be considered as follows:

Minimum Protection Current Density	
Temporary CP (μ A/m^2)	Permanent CP for 30 years design life (μ A/m^2)
60	250

The above current density values for temporary CP system are applicable for CP system design life up to One year.

- After completion of work, Contractor shall prepare commissioning report as well as hard copy and soft copy of as built drawings and documents for TCP.

28. SCOPE OF STRUCTURAL WORK

Scope of Structural Work shall include

i) Preparation of fabrication drawings as per site requirement during execution of work & marking them up with the field changes

ii) Supply of Mild Steel Structural material of any size conforming to relevant BIS standard at site/ works (including transportation)

iii) Fabrication of structural members including cost of labour, tools & tackles, consumable, utilities etc.

iv) Erection/ Installation of structural items.

v) Preparation of as built drawings as per instruction of Engineer-In-Charge.

29. ANNEXURES – TECHNICAL SPECIFICATIONS/ WORK PROCEDURES & PROFORMA

Following Technical Specifications/ Work Procedures and Proforma are enclosed as Annexures:

29.1. SPECIFICATION FOR CASING INSULATORS AND END SEALS

29.2. SPECIFICATION FOR FIELD JOINT COATING OF ONSHORE PIPELINES

29.3. TECHNICAL SPECIFICATION: LONG RADIUS BEND

29.4. TECHNICAL SPECIFICATION: INSULATING JOINTS

29.5. DATA SHEET FOR INSULATING JOINTS

29.6. TECHNICAL SPECIFICATION: CONCRETE WEIGHT COATING

29.7. TECHNICAL SPECIFICATION: TEMPORARY CATHODIC PROTECTION SYSTEM

29.8. SPECIFICATION OF OPTICAL FIBER CABLE & HDPE DUCT LAYING AND ASSOCIATED WORKS

SPECIFICATION FOR CASING INSULATORS AND END SEALS

PART A: CASING INSULATORS

1. SCOPE

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

2. FUNCTION

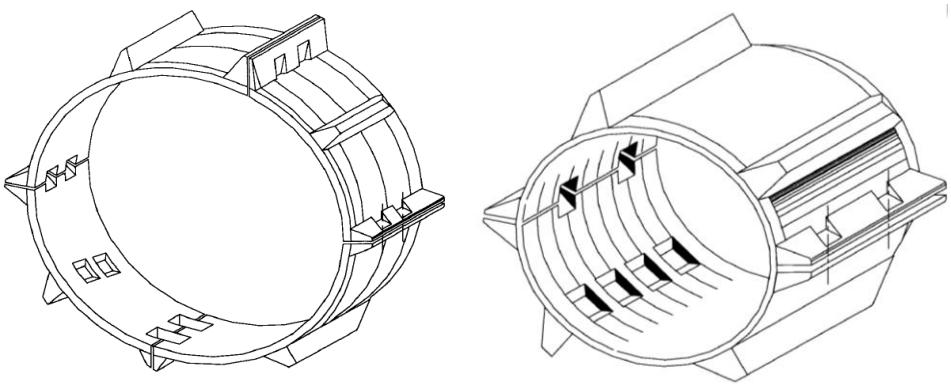
Pipeline insulators shall be used to support the carrier pipe inside the casing pipe and electrically isolate the carrier pipe from the casing pipe at the cased crossings.

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.

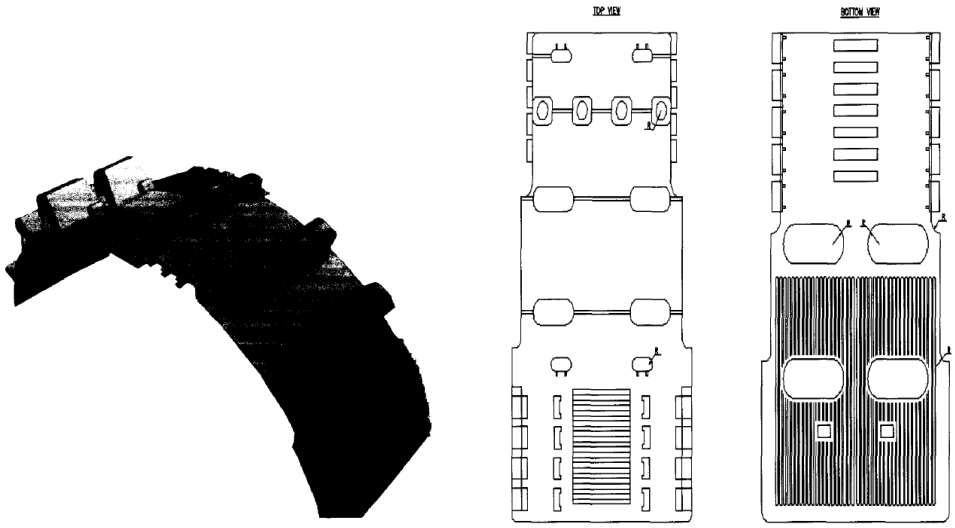
3. DESIGN

The arrangement of insulator shall be generally in accordance with Figure below. It shall be made in segments duly held together with cadmium/ XYLAN plated bolts and nuts, to be supplied with casing insulators. The number of segments shall be two for pipe diameters upto 12" (generally). For larger diameters, the number of segments may be more than two, but their number shall be kept minimum.



As an alternate design, as shown in the following figure, the casing insulator element shall be a flexible section containing a toothed male butt strap at one end and an appropriately toothed female slot on the other end. The same shall be wrapped over the outer surface of the carrier pipe and locked positively. The insulator rings should be fastened onto the carrier pipe with the appropriate tool to be provided by the casing insulator manufacturer. No metallic parts or attachments should be considered in the casing insulator element assembly. The design of casing insulator should allow for onsite adjustments for any variances within the allowable O.D. range of

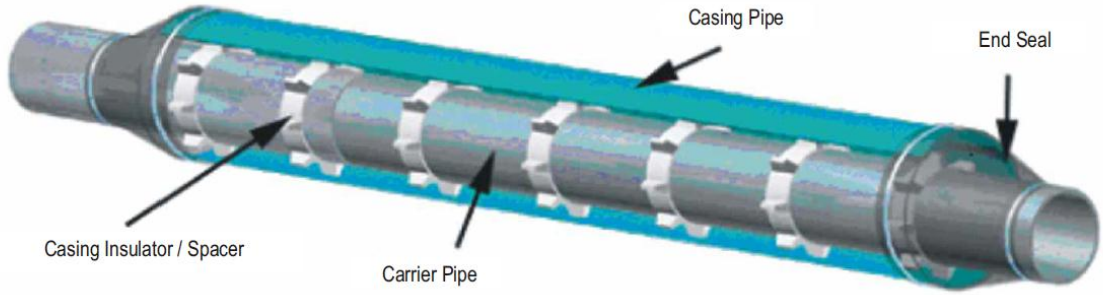
the pipeline and should grip the pipe firmly without any chances of horizontal movement or breakage of the insulator rings during installation.

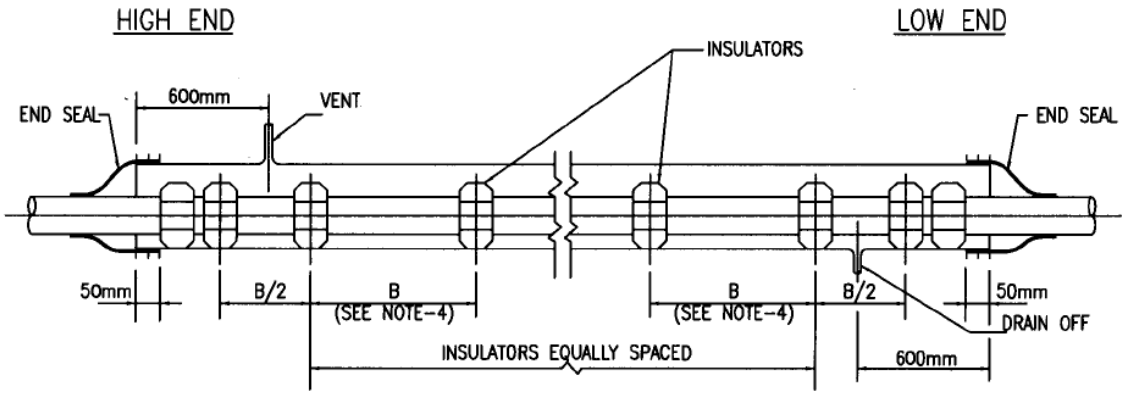


The skid height shall be such that it is slightly less than the value obtained by formula:

(Casing internal dia – carrier outer dia)/ 2

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





Notes:

1. The Casing Pipe shall be designed in accordance with API RP 1102 (Latest Edition)
2. At both ends of Casing Pipe a souble set of Insulators shall be installed

3. The Maximum Spacing of the Insulators shall be as per Manufactureres Recommendations but in no case more tha 2000 mm.
4. Electrical Insulation between the casing and carrier pipe shall be checked with a suitable Megger.

4. 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
Compressive 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

5. 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.

PART B: CASING END-SEALS

1. 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.

2. 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.

3. 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 COMPANY on casing end seals design/drawings.

4. MATERIAL

The casing end-scale shall be made of head 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, disbonding, organic and bio-deterioration. Manufacturer shall confirm compatibility of end seals with carrier pipe coating.

Casing end seals shall meet following minimum property requirements:

Property	Minimum Value	Test Method
a) Backing (Sleeve and closure patch)		
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 23°C - 250 psi (2 inch/min)	ASTM D-1002
c) System (as applied)		
Peel strength (To casing and carrier pipe and closure patch)	5 pli (10 inch/min.)	ASTM D-1000

5. 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.

PART C: SUPPLEMENTARY REQUIREMENTS

1.0 The Manufacturer shall replace, at no extra cost, any material not conforming to the material and performance requirements of this specification.

2.0 Manufacturer shall submit detailed specification of the materials used in the assemblies, along with instructions for handling, use and installation of the material for COMPANY approval prior to procurement.

3.0 Manufacturer shall submit all the documents, test reports, records and other information in six copies to the COMPANY for record after approval as per clause 2.0 above.

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SPECIFICATION FOR FIELD JOINT COATING OF ONSHORE PIPELINES

6. SCOPE

This specification covers the minimum requirements of materials, equipment and installation of field joint anti-corrosion coating of buried onshore pipelines factory coated with either three layer polyethylene or fusion bonded epoxy coating, by heat shrink wraparound sleeves or by cold applied tapes conforming to DIN EN 12068 –"Cathodic Protection – External Organic Coatings for the Corrosion Protection of Buried or Immersed Steel Pipelines used in Conjunction with Cathodic Protection – Tapes and Shrinkable Materials" and the requirements of this specification. Unless modified/ replaced by this specification, all requirements of DIN EN 12068 shall remain fully applicable and complied with.

This specification shall be read in conjunction with the conditions of all specifications and documents included in the Contract between COMPANY and CONTRACTOR. Unless specified otherwise, all section of this specification shall apply to all specifications referred in this specification.

7. REFERENCE DOCUMENTS

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

a. ASTM D-149: Standard Test Methods of Dielectric Breakdown voltage and Dielectric Strength of solid electrical insulating materials at commercial frequencies.
b. ASTM D-257: Standard Test Methods for D-C Resistance or conductance of insulating materials.
c. ASTM D-570: Standard Method of Test for Water Absorption of Plastics
d. ISO 8502-3: Preparation of Steel Substrates before Application of Paints and Related Products – Part-3 –Assessment of Dust on Steel Surfaces Prepared for Painting (Pressure Sensitive Tape Method).
e. ISO:8503-1: Part-1: Specification and definitions for ISO surface profile comparator for the assessment of abrasive blast cleaned surfaces.
f. ISO:8503-4: Part-4: Methods for calibration of ISO surface profile comparator and for the determination of surface profile – Stylus instrument procedure.
g. SIS-055900: Pictorial surface Preparation Standard for Painting Steel Surfaces.
h. SSPC-SP 1: Steel Structure Painting Council.

In case of conflict between the requirements of this specification and that of above referred documents, the requirements of this specification shall govern.

The Contractor shall be familiar with the requirements of these documents and shall make them readily available at the site to all personnel concerned with carrying out the works specified in this specification.

8. MATERIALS AND EQUIPMENT

a. Field Joint Corrosion Coating Material

Field joint anti-corrosion coating material shall be heat shrinkable wraparound sleeve suitable for a maximum operating temperature of (+) 60°C (T max) and shall conform to designation EN 12068 – C HT 60 UV. In addition, the field joint anti-corrosion coating shall comply the requirements specified in para 3.2 of this specification.

Heat Shrinkable Wraparound Sleeve

Heat shrinkable wraparound sleeve shall consist of radiation cross-linked thermally stabilised, ultraviolet resistant semi-rigid polyolefin backing with a uniform thickness of high shear strength thermoplastic/copolymer hot melt adhesive. The joint coating system may consist of a solvent free epoxy primer applied to the pipe surface prior to sleeve application. The backing shall be coated with thermochrome paint which will change colour when the desired heat during shrinking is attained. The wraparound sleeve shall be supplied in pre-cut sizes to suit the diameter and the requirements of overlap.

The total thickness of heat shrinkable wraparound sleeve in the as applied condition shall preferably be equal to line pipe coating thickness, but shall not be less than 2.0 mm (average).

b. Functional Requirements of Field Joint Coating

i. Properties of the PE backing shall be as follows:

Sl.	Property	Unit	Requirement	Test Method
A	Tensile Strength at @+25°C	N/mm^2	≥12	DIN EN 12068
B	Ultimate Elongation @+ 25°C	%	≥250	DIN EN 12068
C	Dielectric withstand with 1000 Volts/sec	kv	≥30	ASTM D 149
D	Water absorption @+ 25°C for 24 hours	%	≤0.05	ASTM D 570
e	Volume Resistivity @+25°C	Ohm-cm	$\geq 10^{15}$	ASTM D 257

ii. Functional Properties of Joint Coating System (As applied):

As applied field joint coating system shall comply the requirements of DIN EN 12068. Table 1 and 2 corresponding to designation DIN EN 12068 – C HT 60 UV, except as modified below:

a) Cathodic Disbondment Resistance at T_{max} i.e. 60°Cshall be 20mm when tested as per Annexure K of DIN EN 12068. Test shall be carried out at (+) 60°C.

b) Peel Strength shall be as follows :

Peel Strength		Unit	Requirement for Mech Resistance Class C (Minimum)	Test Method as per DIN EN 12068
Inner to Inner + Outer to Inner	@23°C	N/mm	1.5	Annexure-B
	@T_{max}	N/mm	0.3	
Outer to Outer	@23°C	N/mm	1.5	Annexure-B
	@T_{max}	N/mm	0.3	
To Pipe Surface	@23°C	N/mm	3.5	Annexure-C
	@T_{max}	N/mm	0.3	
To Factory Coating	@23°C	N/mm	3.5	Annexure-C
	@T_{max}	N/mm	0.3	

c. The materials shall not be older than their period of validity at the time of application by CONTRACTOR. Deteriorated/ decomposed material shall be disposed of and replaced by CONTRACTOR at his own expense.
CONTRACTOR shall ensure that the coating materials supplied by him are properly packed and clearly marked with the following:
   - Manufacturer's name
   - Material qualification
   - Batch number
   - Date of manufacturing and date of expiry.

d. CONTRACTOR shall ensure that the manufacturer has carried out all quality control tests on each batch and manufacturer shall provide test certificates to certify that the supplied materials meet the manufacturer's specifications as indicated in the purchase order and/ or as approved by COMPANY. Certificates and data sheets certifying the qualities of the coating materials shall be submitted by CONTRACTOR to COMPANY prior to application. COMPANY reserves the right to have the materials tested by an independent laboratory.

e. Materials shall be stored in sheltered storage in the manufacturer's original packing and away from direct sunlight and in accordance with manufacturer's instructions.

f. CONTRACTOR shall provide and maintain mobile facilities which contains all necessary equipment and its spares for cleaning, coating repairs, inspection and tests.

g. CONTRACTOR shall furnish sufficient number of the following equipment and the required spares as a minimum for inspection and test purpose for each crew.
   a) Fully automatic full circle adjustable holiday detector with a visible and audible signal system for inspection of coatings.
   b) Thickness gauge for measuring thickness.
   c) Contact type temperature recording thermometer.
   d) Roughness profile measuring (Stylus) instrument.

9. APPLICATION PROCEDURE

a. General

i. The application procedure shall be in accordance with manufacturer's instruction and the minimum requirements specified below whichever are most stringent and shall be demonstrated to and approved by the company.

ii. Operators for coating application shall be given necessary instructions and training before start of work, by the CONTRACTOR. To verify and qualify the application procedures, all coating applied during the qualification test, shall be removed for destructive testing as detailed subsequently in this specification. Contractor shall only utilize those operators who have been approved/ prequalified by the field joint coating manufacturer.

iii. Oil, grease, salt shall be removed from steel surface by wiping with rags soaked with suitable solvents such as naphtha or benzene. Kerosene shall not be used for this purpose. Solvent cleaning procedure according to SSPC-SP 1 shall be followed.

iv. Each field joint shall be blast cleaned using a closed cycle blasting unit or an open expendable blasting equipment. With the first equipment type, steel or chilled shot and iron grit shall be used and Garnet material with the second one. During blast cleaning the pipe surface temperature shall be simultaneously more than 5° and more than 3°C above ambient Dew Point, while the ambient Relative Humidity shall not be greater than 85%. Prior to surface cleaning the surface shall be completely dry. The surface shall be cleaned to a grade Sa 2½ in accordance with Swedish Standard SIS-055900 with a roughness profile of 50-70 microns. Surface roughness profile shall be measured using an approved profile comparator in

accordance with ISO 8503-1 and shall be calibrated prior to the start of the work in accordance with ISO:8503-3 or ISO:8503-4. The blast cleanliness shall be checked on every joint and the roughness profile shall be checked 1 every 10 joints.

Dust girt or foreign matter shall be removed from the cleaned surface by an industrial vacuum cleaner. The dust contamination allowed shall be of a rating max 2 as per ISO:8502-3. The frequency of checking for dust contamination shall be 1 every 10 joints.

Blast cleaned field joint shall be coated within 2-4 hours according to the conditions below :

- Relative Humidity (RH) > 80% - 2 Hours
- Relative Humidity (RH) > 70-80% - 3 Hours
- Relative Humidity (RH) > 80% - 4 Hours

Pipes delayed beyond this point or pipes showing any visible rust stain shall be blast cleaned again.

Alternatively, based on site conditions and upon approval by Client's Engineer-In-Charge, surface preparation may be done using power brushes.

v. The field joint surface shall be inspected immediately after blast cleaning and any feature of the steel surface such as weld spatter, scabs, laminations or other imperfections considered injurious to the coating integrity made visible during blast cleaning shall be reported to the Company Representative and on permission from Company Representative, such defects shall be removed by filing or grinding. Pipes affected in this manner shall be then re-blast cleaned if the defective area is larger than 50 mm in diameter.

vi. The ends of existing pipe protective coating shall be inspected and chamfered. Unbounded portions of the coating shall be removed and then suitably trimmed. Portions where parent coating is removed shall be thoroughly cleaned as specified. The adjacent chamfered areas of the line pipe coating shall be cleaned and abraded, to expose a clean uniform fresh surface of uncontaminated factory applied coating.

vii. All steel joint surfaces shall be thoroughly examined before the application of the coating in order to ensure the surfaces are free of oil, grease, rust, mud, earth or any other foreign matter. All these substances shall be removed before coating, to the procedures herein described.

viii. Protection coating shall be applied on the joints immediately after the completion of cleaning operation.

b. Application of Heat Shrink Wraparound / Sleeves

In addition to the general requirements stated above, following shall be taken into account –

i. The wrap around sleeve shall be of a size such that a minimum overlap of 50mm before applying is ensured (after shrinking) on both sides of the yard applied corrosion coating of pipes.

In the cases where carrier pipe is installed by direct boring/ jacking, the overlap on the mill coating for the leading edges of the joints shall be minimum 200mm. When this extra overlap is achieved by providing an additional patch of heat shrink tape/ wraparound, it shall be applied in such a manner that the square edge of the patch on the joint coating is in the direction opposite to the direction of boring/ jacking.

ii. Before centering the wraparound sleeve, the bare steel surface shall be preheated with torch moved back and forth over the surface or by induction heating. The minimum preheat temperature shall be as recommended by manufacturer and shall be checked by means of contact type temperature recording thermometer. Temperature indicating crayons shall not be used Pre-heat temperature shall be checked on every joint. Care shall be taken to ensure that the entire circumference of the pipe is heated evenly. Temperature measuring

instruments shall be calibrated immediately before the start of the works and thereafter at intervals recommended by the manufacturer of the instrument.

iii. Upon pre-heating the pipe surface shall be applied with two pack epoxy primer of wet film thickness 100 microns or as per manufacturer's recommendation whichever is higher, to cover the exposed bare metal of the welded field joint and 10mm min. onto the adjacent pipe coating if recommended by the manufacturer. The wet film thickness of the primer shall be checked or every joint with a wet film thickness gauge prior to installation of sleeve. Thickness gauge shall be calibrated once per shift.

iv. Immediately after application of epoxy primer, the wraparound sleeve shall be entirely wrapped around the pipe within the stipulated time recommended by the manufacturer. Sleeve shall be positioned such that the closure patch is located to one side of the pipe in 10 or 2 O'clock position, with the edge of the undergoing layer facing upward and an overlap of min. 50mm. Gently heat by appropriate torch the backing and the adhesive of the closure and press it firmly into place.

v. A heat shrinking procedure shall be applied to shrink the sleeve in such a manner to start shrinkage of the sleeve beginning from the center of the sleeve and heat circumferentially around the pipe. Continue heating from the center towards one end of the sleeve until recovery is completed. In a similar manner, heat and shrink the remaining side. Shrinking has been completed when the adhesive begins to ooze at the sleeve edges all around the circumference.

The complete shrinking of the entire sleeve shall be obtained without undue heating of existing pipe coating and providing due bonding between pipe, sleeve and pipe coating. The installed sleeve shall not be disturbed until the adhesive has solidified.

10. INSPECTION & TESTING

a. Visual Inspection

Visual inspection of the as applied coating shall be carried out on every joint, for the following:

- Mastic extrusion on either ends of the sleeve shall be examined.
- There shall be no sign of punctures or pinholes or bend failure. The external appearance of the sleeve shall be smooth, free of dimples, air entrapment or void formation. All sleeves shall be tested for the presence of voids by knocking on the sleeves. A hollow sound compared to the remainder of the sleeve may indicate the presence of voids under the sleeve. Such sleeve shall be tested for adhesion at the discretion of the Company Representative.
- Weld bead profile shall be visible through the sleeve.
- Visual indicator provided on the backing and the closure patch showing desired heat is achieved.

b. Holiday Inspection

The holiday detector used shall be checked and calibrated daily with an accurate DC voltmeter. The detector electrode shall be in direct contact with the surface of coating to be inspected.

The entire surface of the joint section shall be inspected by means of a full circle holiday detector approved by COMPANY set to a DC voltage applicable as per the requirements of factory applied mainline coating specification of Company. Inspection of the sleeves shall be conducted only after the joint has cooled below 50°C. The holiday detector used shall be checked and calibrated daily with an accurate DC voltmeter. The detector electrode shall be in direct contact with the surface of coating to be inspected.

No field joint shall be covered or lowered in the trench until it has been approved by the COMPANY.

c. As-applied Coating Thickness

Coating thickness shall be checked by non-destructed methods for each field joint. Average thickness of the as-applied coating on pipe body shall be established based on measurement at min. eight locations i.e. four measurements on either sides of the girth weld at 3, 6, 9, & 12 O'clock positions. To establish the minimum thickness on the girth weld, four measurements shall be taken on apex on the weld at 3, 6, 9 & 12 O'clock positions. All such measurements shall Company Representative reserves the right to ask for additional measurement at any location on the field joint coating, whenever doubt arises.be recorded.

d. Peel Strength Testing

i. One out of every 50 joint coatings or one joint coating out of every day's production whichever is stringent shall be tested to establish the peel strength on steel and factory applied coating. Contractor shall carry out such testing in the presence of Company Representative.

ii. From each test sleeve selected as above, one or more strips of size 25mm x 200mm shall be cut perpendicular to the pipe axis and slowly peeled off.
The required peel strength shall meet the requirements of this specification as applicable for (+) 23°C or (+) 60°C whichever is feasible. This test shall be conducted between wrapping & metal and mill coating & between layers at overlap with joint coating (wherever applicable). After removal of strip, the bulk of adhesive shall remain adhered to the pipe showing no bare metal, otherwise, test shall be considered failed. The adhesive layer that remains on the pipe surface shall generally be free of voids resulting from air or gas inclusion. In case the peel strength test at a different temperature than that specified in warranted due to the ambient site conditions, then the peel strength shall comply the recommendation of the manufacturer. Manufacturer shall be asked to furnish peel strength values corresponding to various expected temperatures, prior to start of the works.

iii. If the sleeve does not meet the requirements of clause 5.4.2 the adjacent two sleeves shall also be tested. If the adjacent two sleeves are acceptable the test rate shall be increased to one sleeve every twenty-five until Company's Representative is satisfied. The test rate can then be reduced as per clause 5.4.1. If either or both of the adjacent two sleeves do not meet the requirements of clause 5.4.2, the field joint shall be stopped.

iv. Company Representative reserve the right of 100% removal of sleeves if he is not convinced that the requirements of clause 5.4.2 are achieved.

11. REPAIRS

a. If a field joint is detected to be unacceptable after testing as per section 5.0 of this specification the Contractor shall, at his own cost:
   - Determine the cause of the faulty results of the field coating.
   - Mobilise the expert of manufacturer, if required.
   - Test to be complete satisfaction of the COMPANY, already completed field coatings.
   - Stop field coating until remedial measures are taken against the causes of such faults, to the entire satisfaction of the Company.

b. CONTRACTOR shall replace all joint found or expected to be unacceptable as per section 5.0 of this specification.

c. CONTRACTOR shall, at his own cost repair all areas where the coating has been removed for testing by COMPANY.
d. After the coating work on welded joints, fittings and repairs to the coating have been completed the coating as a whole shall be tested with a spark-tester before lowering or jacking the pipeline.
e. COMPANY shall be entitled to check the coating on buried pipelines or parts of pipelines with equipment such as the "Pearson Meter" and the resistance meter. If the Coating defects are established, the Contractor shall be responsible for excavations at such points repair the coating, spark testing and back filling the excavations without extra charge.

12. DOCUMENTATION

a. Prior to procurement of coating materials, Contractor shall furnish the following information for qualification of the manufacturer and material:
    i. Complete information as per clause 3.2 and DIN EN 12068 along with descriptive technical catalogues.
    ii. Test certificates and results of previously conducted tests, for all properties listed in clause 3.2 of this specification.
    iii. Reference list of previous supplies, in last 5 years, of the similar material indicating the project details such as diameter, quantity, operating temperature, year of supply, project name, contact person and feedback on performance.

    Once the Company's approval has been given, any change in material or Manufacturer shall be notified to Company, whose approval in writing of all changes shall be obtained before the materials are manufactured.
b. Prior to shipment of materials from the Manufacturer's works. Contractor shall furnish the following documents:
    i. Test certificates/ results as per Manufacturer's Quality Control Procedure for each batch of materials.
    ii. Specific application instructions with pictorial illustrations.
    iii. Specific storage and handling instructions.
c. All documents shall be in English language only.

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ANNEXURE – Part-III (SCC)/ Spec. no.: DDPL/SP-03

TECHNICAL SPECIFICATION : LONG RADIUS BEND

13. 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.

14. REFERENCE DOCUMENTS

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

i. ASME B 31.4: Pipeline Transportation Systems for Liquids
j. ASME B 16.25: Butt welding Ends
k. API 5L: Specification for Line Pipe
l. ASTM A 370: Standard Test Methods and Definitions for Mechanical Testing of Steel Products
m. MSS-SP-75: Specification for High Test Wrought Welding Fittings
n. ISO – 15590-1: Petroleum and natural gas industries – Induction bends, fittings and flanges for pipeline transportation systems – (Part 1 –Induction Bends).
o. ASME B16.49: Factory-made Wrought Steel, Butt welding Induction Bends for Transportation and Distribution Systems.
p. Specification of Line pipes for LR Bend: HFW/ LSAW/ SEAMLESS Conforming to API 5L X 46 PSL2, Diameter 8 Inch, Thickness 7.1 mm (with 20% positive and zero negative tolerance), Bare (uncloated) pipe

In case of conflict between the requirements of this specification and that of above referred documents, the requirements of this specification shall govern.

The Contractor shall be familiar with the requirements of these documents and shall make them readily available at the site to all personnel concerned with carrying out the works specified in this specification.

15. MATERIALS AND EQUIPMENT

a. Bends shall be fabricated from steel line pipe. The type of pipe to be used out of HFW/ 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.
b. Pipes used for bend fabrication shall be tested for chemical and mechanical properties in addition to review of test certificate of line pipes.
c. The line pipes for fabrication of bends shall be procured by contractor.
d. 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.

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

16. MANUFACTURE

a. 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.

b. 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.

c. Hot Induction bends to be manufactured as per latest edition of standard ISO 15590-1 / ASME B16.49.

d. 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.

e. 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.

f. 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.

g. Unless otherwise specified differently in the PO, the bevels at the ends shall be as per the relevant pipe specification.

h. Bends shall not have any circumferential joint.

i. No repair by welding is allowed on any part of the bends.

j. 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.

k. 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.

I. 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.

i. Following tolerances shall be applicable for bend angle and bend radius:
Bend Angle: ± 0.5 0 from the specified angle
Bend Radius: ± 1 % of bending nominal radius (radius as indicated in Clause 4.1 above).

ii. 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:

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

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

iii. 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.

iv. Off-Plane

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. The measurement shall be in accordance with MSS-SP-75.

17. BEND MANUFACTURING PROCEDURE QUALIFICATION

a. 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 Third Party Inspector (TPI)/ company representative. All costs related to TPI Inspections are in the scope of supplier/ manufacturer.

b. 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 900.

c. Inspection and Testing of Bends

i. 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.

ii. 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 follows:

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 requalify 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.

18. COATING OF LR BENDS

Factory made LR Bend shall be coated with Heat Shrinkable Sleeves or equivalent coating materials, if specified.

Coating Material, Surface preparation, application procedure, testing etc. shall be according to Specification for Field Joint Coating included elsewhere in this document.

19. INSPECTION & TESTS

a. Quality Assurance Plan (QAP)

Supplier shall submit QAP prepared by manufacturer and reviewed by Third Party Inspection (TPI) complying to Technical Specification mentioned above and various Technical Standard referred in this document. Client or its representative shall approve the QAP.

Sample QAP may be provided by Client for reference.

b. Third Party Inspection (TPI)

Supplier shall arrange for Third Party Inspection (TPI) at various stages of manufacturing as per approved QAP, at no extra cost to client. Approved Third Party Inspection (TPI) Agency are Lloyds/ BVQI/RITES/ IRS/ DNV/ Tuboscope Vetco.

c. 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:

a) 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.
b) Visual inspection
c) Dimensional and tolerances check as per MSS-SP-75 and requirements of Section 4.0 of this specification.
d) Check heat treatment, if carried out, as required and maintain its records.
e) Temperature against time recorder charts for each induction heating.
f) 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.

d. Owner reserves the right to perform stage wise inspection and witness tests on all bends as indicated in Clause 5.3 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.

20. TEST CERTIFICATES

The supplier shall submit the following certificates:

a) 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.
b) Certificates of non-destructive test/ examination carried out on bends.
c) Records of heat treatment, if carried out for bends.
d) Certified reports of dimensional tolerance of bends.
e) Certificates of all other tests as required in this specification and as per approved QAP.

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

21. MARKING, PACKING AND SHIPMENT

a. All bends shall be marked as per MSS-SP-75.
b. All loose and foreign material like rust, grease, etc. shall be removed from inside and outside of the bends.
c. 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.
d. 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.
e. 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)

22. DOCUMENTATION

Documentation to be submitted by Supplier to Company is summarized below. 3 sets of hard copy documents (One in original) for LR bends.

a. All documents shall be in English language.
b. At the time of approval of manufacturer (if applicable), bidder shall submit the following documents:
    a. Reference list of previous supplies of bends of similar specifications.
    b. Brief description of manufacturing including heat treatment and quality control facilities of the Manufacturer's Works.
c. Within three weeks of placement of order, the manufacturer/ supplier 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 relevant clause of this specification, Supplier/ 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/ TPI.

Once the approval has been given by Company/ TPI any change in material and method of manufacture and quality control shall be notified to company/ TPI whose approval in writing of all such changes shall be obtained before the bends are manufactured.

d. Prior to shipment, the Supplier/ Manufacturer shall submit test certificates.

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TECHNICAL SPECIFICATION: INSULATING JOINTS

23. SCOPE

This specification covers the minimum requirements for design, manufacture, testing and supply of carbon steel insulating joints to be installed in onshore pipeline systems handling non-sour hydrocarbons in liquid or gaseous phase.

24. REFERENCE DOCUMENTS

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

q. ASME B 31.4: Pipeline Transportation Systems for Liquids
r. ASME B 31.8: Gas Transmission & Distribution Piping Systems.
s. ASME B 16.5: Steel Pipe Flanges and Flanged Fittings.
t. ASME B 16.25: Butt welding Ends
u. API 5L: Specification for Line Pipe
v. ASTM A 370: Standard Test Methods and Definitions for Mechanical Testing of Steel Products
w. ASME Section VIII: Boiler and Pressure Vessel Code - Rules for Construction of Pressure Vessels
x. ASME Section IX: Boiler and Pressure Vessel Code - Welding and Brazing Qualification
y. API 1104: Specification for Welding Pipeline and Related Facilities
z. MSS-SP-53: Quality Standard for Steel Castings and Forgings for Valves, Flanges and Fittings and Other Piping Components - Magnetic Particle Examination Method
aa. MSS-SP-75: Specification for High Test Wrought Welding Fittings
bb. NACE SP 0286: Standard Recommended Practice - Electrical Isolation of Cathodically Protected Pipelines
cc. SSPC-VIS-I - Steel Structures Painting Council-Visual Standard

In case of conflict between the requirements of this specification and that of above referred documents, the requirements of this specification shall govern.

The Contractor shall be familiar with the requirements of these documents and shall make them readily available at the site to all personnel concerned with carrying out the works specified in this specification.

25. MATERIALS AND EQUIPMENT

a. Material for the pressure containing parts of the insulating joints shall be as indicated in the Insulating Joint Data Sheets. Other parts shall be as per the Manufacturer's standard (suitable for the service conditions indicated in the Insulating Joint Data Sheets), which shall be subject to approval by Company. In addition, the material shall also meet the requirements specified hereinafter.

   All process-wetted parts, metallic and non-metallic shall be suitable for the commissioning fluids and service specified by the Company. Manufacturer shall confirm that all wetted parts are suitable for treated water/seawater environment, which may be used during field testing.

b. Carbon steel used in the manufacture of insulating joints shall be fully killed.

c. Insulating Joints which are subject to field welding by Company, shall have carbon equivalent (CE) not exceeding 0.45 based on check analysis for each heat of steel used, as calculated by the following formula:

$$CE = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

d. For insulating joints specified to be used for Gas service or LPG service, Charpy V-notch test shall be conducted on each heat of steel used in the manufacture of all pressure containing parts including pipe pups & retainer rings of Insulating Joints. The test procedure shall conform to ASTM A370. Unless specified otherwise, the Charpy V-notch test shall be conducted at 0° C. The average absorbed energy value of three full sized specimens shall be 27 J. The minimum impact energy value of any one specimen of the three specimens analysed as above, shall not be less than 22 J. Results of Charpy test shall be recorded.

When Low Temperature Carbon Steel (LTCS) materials are specified in Data Sheet or offered by Manufacturer, the Charpy V-notch test requirements of applicable material standard shall be complied with.

e. For insulating joints specified to be used for Gas service or LPG service, Hardness test shall be carried out as per ASTM A 370 for each heat of steel used in the manufacture of all pressure containing parts. A full thickness cross section shall be taken for this purpose and the maximum hardness of base metal, weld metal and HAZ of all the pressure containing parts shall not exceed 248 HV_{10}. Hardness shall be recorded.

f. Insulation material shall be minimum 20 mm thick and Insulating Joint shall comply with Section 6, NACE SP 0286.

26. DESIGN AND FABRICATION

a. Mechanical

i. Insulating joints shall be of integral type fabricated by welding and with pups on either side as shown in Fig. 4.1 & Fig. 4.2. Bolted and threaded joints are not permitted. Insulating Joints of design, not having closing welds, are not acceptable.

ii. Insulating joints shall be designed using the design principles of ASME Section VIII Div. 1. The design shall be checked for the following two cases:
Case I: Design pressure (as per Data Sheet) and Axial Force (F).
The Axial force shall be calculated as under:
F = 0.1 x S x A
Where,
S = SMYS of connected pipe (refer Data Sheet)
A = Metal cross-sectional area of connected pipe
The allowable stress in this case shall be less than or equal to 0.5 x SMYS of insulating joint material.
Case II: Hydrostatic Test Pressure
The allowable stress in this case shall be less than or equal to 90% of SMYS of insulating joint material.
All design parameters shall be as per Insulating Joint Data Sheet. Detailed design calculations shall be submitted for Company approval.

iii. A corrosion allowance as indicated in the Insulating Joint Data Sheet shall be considered in design.

iv. Insulating joints shall not restrict the pipeline bore and shall allow free passage of scraper and instrumented pigs.

v. Insulating joint shall be designed to withstand a sustained internal vacuum of at least one (1) milli-bar.

vi. The joint between pipe pup pieces and main forging shall be full penetration butt weld type. Weld design shall be such as resulting in a weld joint factor of 1.0.

vii. Butt weld ends shall have ends prepared as per ASME B 16.25. However, end preparation for butt welding ends having unequal thickness with respect to connecting pipe, shall be as per ASME B.31.4/B 31.8 as applicable.

viii. Insulating joints shall be suitable for aboveground or underground installation as specified in the Insulating Joint Data Sheet.

ix. The reinforcement of inside weld seam, in case of pups fabricated from LSAW pipes, shall be removed for a distance of at least 50 mm from each end.

x. All welds shall be made by welders and welding procedures qualified in accordance with the provisions of ASME Section IX. The procedure qualification shall include impact test and hardness test and shall meet the requirements of Para 3.4 and 3.5 respectively of this specification.

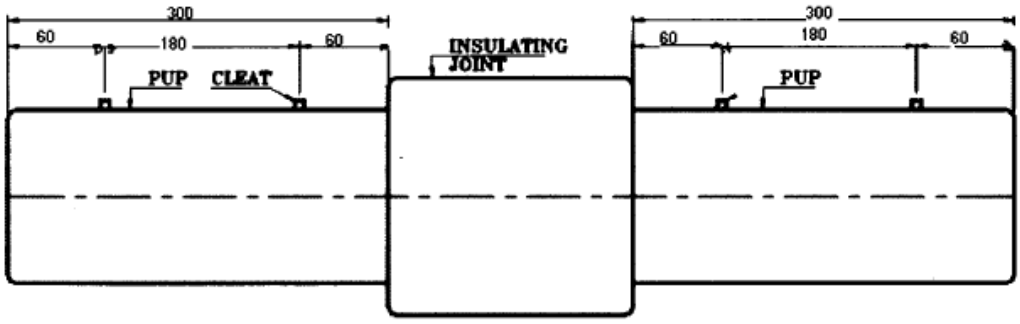
xi. Repair welding on parent metal is not allowed. Repair of welds shall be carried out only after specific approval by Company's Inspector for each repair. The repair welding shall be carried out by welders and welding procedures duly qualified as per ASME Section IX and records for each repair shall be maintained. Repair welding procedure qualification shall also include impact test and hardness test when required as per Clause 3.4 and 3.5 of this specification and shall meet the requirements as specified therein. Radiography shall be performed after the weld repair.

xii. The tolerance on internal diameter and out of roundness at the ends for Insulating joints shall be as per applicable connected pipe specification as indicated in the Data Sheet.

b. Electrical

i. The average dielectric strength of the insulating joint shall be minimum 15 KV.

ii. Two cleats as shown in Figure, shall be provided on the pups on either side of the insulating joint for connecting 10 mm^2 and 50 mm^2 cables for measurement/shorting purposes. Cleats shall be attached to the insulating joint by welding.



(For sizes up to 8" NB)

c. Insulating Material

i. The electric resistance does not decrease with time.

ii. The insulating material shall not deform.

iii. The insulating material shall be resistance to chemical attack by transferred fluid under design temperature and pressure.

iv. The transferred fluid does not penetrate into the structure of the insulating material under design conditions of pressure and temperature.

27. INSPECTION & TESTS

a. Quality Assurance Plan (QAP)

Supplier shall submit QAP prepared by manufacturer and reviewed by Third Party Inspection (TPI) complying to Technical Specification mentioned above and various Technical Standard referred in this document. Client or its representative shall approve the QAP.

b. Third Party Inspection (TPI)

Supplier shall arrange for Third Party Inspection (TPI) at various stages of manufacturing as per approved QAP, at no extra cost to client. Approved Third Party Inspection (TPI) Agency are Lloyds/ BVQI/RITES/ IRS/ DNV/ Tuboscope Vetco.

c. The manufacture shall perform all inspection and tests as per the requirements of this specification and the relevant codes, prior to shipment at his Works. Such inspection and tests shall be as a minimum, but not limited to the following:

i. All Insulating joints shall be visually inspected. The internal and external surfaces shall be free from any strikes, gouges and other detrimental defects. The surfaces shall be thoroughly cleaned and free from dirt, rust and scales.

ii. Dimensional checks shall be carried out as per the Company approved drawings.

iii. Chemical composition and mechanical properties including hardness shall be checked as per relevant material standards and this specification, for each heat of steel used.

iv. Non-destructive inspection of insulating joints shall be carried out as given below:

a) All butt welds and repair welds of pressure containing parts shall be examined 100% by radiography. Acceptance limits shall be as per API 1104.

b) Welds, which in Company's opinion cannot be inspected by radiographic methods, shall be checked by ultrasonic or magnetic particle methods. Acceptance criteria shall be as per ASME Section VIII Appendix U and Appendix VI respectively.

c) All forgings shall be wet magnetic particle inspected on 100% of forged surfaces. Method and acceptance shall comply with MSS-SP-53.

d) All finished weld ends shall be 100% ultrasonically tested for lamination type defects for a distance of 50 mm from the ends. Any lamination larger than 6.35 mm shall not be acceptable.

e) All fillet welds of thickness <6 mm shall be examined 100% by magnetic particle inspection and ≥ 6mm shall be examined 100% by UT. Acceptance criteria for MPI and UT shall be as per ASME Sec VIII Appendix VI and Appendix U respectively.

v. Insulating joints shall be hydrostatically tested to a pressure as indicated in the Insulating Joint Data Sheet. The test duration shall be 15 minutes.

vi. After hydrostatic test, insulating joints shall be tested with air at 5 kg/cm^2 for 10 minutes. The tightness shall be checked by immersion or with a frothing agent. No leakage will be accepted.

vii. Dielectric Test

a) Insulation resistance of each insulating joint shall be at least 25 Mega Ohms, when checked with 500-1000 V DC.

b) In addition, prior to and after hydrotesting, each insulating joint shall be tested for dielectric integrity at 5000 V AC, 50 Hz for one minute and the leakage current before and after the hydrostatic test shall be equal. Testing time, voltage and leakage shall be recorded and certified.

No repair shall be permitted to the insulating joints failed in the above mentioned tests.

d. Company reserves the right to perform stage wise inspection and witness tests as indicated in clause 5.3 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 by the Company's Inspector. Inspection and tests performed/witnessed by the Company's Inspector shall in no way relieve the Manufacturer's obligation to perform the required inspection and tests.

28. TEST CERTIFICATES

The supplier shall submit the following certificates:

f) Test certificates relevant to the chemical analysis and mechanical properties of the materials used for construction of insulating joint as per this specification and relevant standards.
g) Certificates of non-destructive test/ examination carried out.
h) Test certificates for hydrostatic and air tests.
i) Test certificate for electrical tests.
j) Certificates of all other tests as required in this specification and as per approved QAP.

The Certificate shall be valid only when approved and signed by Third Party Inspector. Only those bends which have been certified by Third Party Inspector shall be dispatched from Manufacturer’s works.

29. MARKING, PACKING AND SHIPMENT

a. After all inspection and tests required have been carried out, Insulating joint surface shall be thoroughly cleaned, freed from rust and grease and applied with sufficient coats of corrosion resistant paint as per manufacturer's standard suitable for normal corrosive environment unless otherwise specified in the data sheets. Surface preparation shall be carried out by shot blasting to SP-10 in accordance with "Steel Structures Painting Council - Visual Standard SSPC-VIS-I". External surfaces of buried insulating joints shall be painted as per manufacturer's standard or as specified in data sheet. Manufacturer shall indicate the type of corrosion resistant paint used, in the drawings submitted for approval.

b. Insulating joints shall be marked with indelible paint with the following data:
   i. Manufacturer's name
   ii. Suitable for _____ inch Nominal diameter pipeline
   iii. End thickness in mm
   iv. Material
   v. Design Pressure / Hydrostatic Test Pressure
   vi. ANSI Class Rating
   vii. Tag No.
   viii. Year of Manufacture

c. Insulating joints shall be suitably protected to avoid any damage during transit. Metallic or high-impact plastic bevel protectors shall be provided for weld ends.
d. Only those insulating joints, which have been inspected and certified by TPI/ Company's Inspector, shall be shipped.
e. Package shall be marked legibly with suitable marking ink to indicate the following:
   f) Order Number
   g) Package Number
   h) Manufacturer's Name

30. DOCUMENTATION

Documentation to be submitted by Supplier to Company is summarized below. 3 sets of hard copy documents (One in original) shall be submitted.

a. All documents shall be in English language.
b. After the placement of order, the Supplier/ Manufacturer shall submit the following documents for Company's information & review/ approval.
   c. General Arrangement drawing with overall dimensions and cross sectional drawings
   d. QAP
c. Prior to shipment, the Supplier/ Manufacturer shall submit test certificates.

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DATA SHEET FOR INSULATING JOINTS

DESIGN DATA FOR INSULATING JOINT		
Service	Crude Oil	
Size (OD), mm (inch)/ Rating	219.1 (8.625")/ 600#	
Design Pressure	84 kg/cm^2 g	
Design Factor	0.4	
Design Temperature (°C)	- (29) to 65.0	
Corrosion Allowance (mm)	1.5	
Hydrostatic Test Pressure	117.6 kg/cm^2 g for 15 min.	
Air Leak Test	5 kg/cm^2 for 10 min.	
Design Code (Pipeline / Insulating Joint)	ASME B31.4 / ASME SEC. VIII DIV. I	
End Connection	Butt Weld Ends	
Installation	Above Ground	
Hardness Test	Required As Per Specification	
INSULATING JOINT MATERIAL (EQUIVALENT OR SUPERIOR)		
Part	**Material of Construction**	
Body	ASTM A 350 LF2 Cl. 1	
Pups	ASTM A 333 Gr. 6	
Insulation	As per Manufacturer's standard	
CONNECTING PIPE SPECIFICATION		
Outside Diameter, OD mm (inch)	**Wall Thickness, (mm)/ Schedule**	**Material**
219.1 (8.625)	7.1	API 5L GR. X-46, PSL-2

Note:

1. Manufacturer shall ensure that the wall thickness (W.T.) of all parts of insulating joint shall be adequate to sustain design pressure and selected W.T. shall be suitable for welding with W.T. of connected pipeline.
2. Insulating material shall be min. 20 mm thick and shall comply with section 5, NACE RP 0286 and meets requirement of clause 4.3 of Relevant Technical Specification in this bid.
3. Butt welding end of Isolating Joints shall be bevelled as per ASME B 31.4.
4. All other tests shall be as per Relevant Technical Specification in the bid.
5. Insulating Joint shall be designed to withstand a sustained internal vacuum during drying operation of pipeline system.

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ANNEXURE – Part-III (SCC)/ Spec. no.: DDPL/SP-05

TECHNICAL SPECIFICATION: CONCRETE WEIGHT COATING

31. SCOPE

This specification covers requirements for the materials, workmanship, quality assurance and handling for anti-buoyancy measures covering the external concrete weight coating of pipelines and concrete saddle weight installation.

32. REFERENCE DOCUMENTS

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

dd. IS:8112: Indian Standard Specification for high strength Ordinary Portland Cement.

ee. IS:383: Indian Standard Specification for Coarse and Fine Aggregates from Natural Sources for Concrete.

ff. IS:2386 (Parts-I: Indian Standard Methods of Test for to VIII) Aggregates for Concrete.

gg. IS: 12330: Indian standard specification for sulphate resisting portland cement.

hh. IS:456: Indian standard code of practice for plain and reinforced concrete.

ii. IS:3370: Indian standard Code of practice for concrete structures for storage of liquids.

jj. IS:1566: Indian standard for Hard-drawn steel wire fabric for concrete reinforcement.

kk. IS:432 (Part II): Indian Standard for Mild steel and medium tensile steel bars and hard drawn steel wire for concrete Reinforcement.

In case of conflict between the requirements of this specification and that of above referred documents, the requirements of this specification shall govern.

The Contractor shall be familiar with the requirements of these documents and shall make them readily available at the site to all personnel concerned with carrying out the works specified in this specification.

33. MATERIALS AND EQUIPMENT

The CONTRACTOR shall supply all the materials necessary for the performance of the work.

Materials for concrete coating shall comply with following requirements. All materials supplied by the CONTRACTOR which in the opinion of COMPANY, do not comply with the appropriate specifications shall be rejected and immediately removed from site by CONTRACTOR at his expense.

a. Cement

Portland cement (conforming to IS:269), or High Strength Ordinary Portland Cement (conforming to IS:8112) shall be used. Cement which has hardened or partially set or has become lumpy shall not be used. Test certificates from the cement Manufacturer shall be supplied to the COMPANY for all cement delivered to site.

b. Aggregates

i. Aggregate shall comply with the requirements of IS:383 and shall be tested in accordance with IS:2386.

ii. Fine Aggregates

`Fine Aggregates' shall mean any of the following, as defined in IS:383:

i) Natural sand;

ii) Crushed stone sand;

iii) Crushed gravel sand.

Sand shall be well-graded from fine to coarse in accordance with Table-4 of IS:383.

iii. Coarse Aggregates

Use of coarse aggregates shall be subject to COMPANY approval.

iv. Aggregates shall be clean and free from injurious amount of salt, alkali, harmful substances or organic impurities.

c. Water

The water shall preferably be clean, fresh and shall be free from non-permissible amounts of oils, acids, salts, sugar, organic materials or other substances that may be deleterious to concrete or steel. It shall not contain chlorides, sulphates, and magnesium salts. Water from doubtful sources shall be tested by the CONTRACTOR at his expense and approved by COMPANY before use.

d. Reinforcement

Concrete coating shall be reinforced by a layer or layers of steel reinforcement according to the provisions described here.

i. Reinforcement shall consist of welded steel wire fabric manufactured in flat sheets or in rolls (ribbon mesh) and shall conform to IS:1566-1995. Wires shall conform to IS:432, Part-II.

ii. Steel wires shall be galvanized at finished size. The diameter of the wire and spacing of wires (mesh dimensions) shall be selected according to the following criteria.

1. Wire fabric manufactured in flat sheets shall be 50 x 100 mm max. steel wire mesh, 13 gauge 2.5mm thickness.

2. Wire fabric manufactured in rolls (ribbon mesh) shall be 25 x 50 mm of 14 gauge (2mm thickness). The above dimensions will be applied unless otherwise specified by designs. As a rule, wire fabric (sheets) shall be used when concrete coating is applied by casting method, while ribbon mesh (rolls) shall be used when concrete coating is applied by impingement method.

34. COATING REQUIREMENTS

Pipes shall be concrete coated to a thickness as specified in the drawings and documents supplied/ approved by the COMPANY. The concrete unit weight shall be minimum 2245 kg/m^3 and the compressive strength shall not be less than 350 kg/cm^2 in 28 days and 235 kg/cm^2 in 7 days.
CONTRACTOR shall be permitted to select any proportioning of materials to achieve the specified requirements of concrete density and weight by doing mix design and trial tests.

35. APPLICATION METHOD

Concrete coating shall be applied either using casting or impingement method. Any alteration or modifications to the methods described in this specification shall be submitted to the COMPANY for approval. The application method shall however ensure the basic characteristics of concrete coating in compliance with the minimum requirements of this specification.

CONTRACTOR shall submit to the COMPANY, prior to commencement of work, the procedure/ method of application for approval.

Wherever practical, the total thickness of coating shall be applied in a single pass.

36. EQUIPMENT

The equipment used for the concrete coating shall be capable of giving a reasonable degree of uniformity with respect to thickness, density and strength. The proportioning equipment and procedure shall be of the type to assure consistently proportioned materials by weight. Concrete shall be mixed in a mechanical mixer, which shall ensure thorough mixing of all materials. Any equipment that tends to separate the in gradients shall not be used.

37. MEASUREMENTS & RECORDS

a. All measurements as mentioned below shall be taken during the work stages and clearly recorded in a proper log-book. A special log-book shall be used for recording tests and trial results. A log-book shall refer to pipe lengths having the same nominal diameter, and steel wall thickness.

b. The following shall be subject to measurement and recording for each pipe length.

a) Line Pipe
   1) Field identification number
   2) Mill serial number
   3) Length
   4) Weight
   5) Average outside diameter

b) Concrete Coating
   6) Batch identification number
   7) Date of placing of concrete coating
   8) Average concrete coating thickness
   9) "Dry weight" of concrete coated pipe
   10) "Unit dry weight" of concrete coated pipe
   11) "Negative buoyancy" (unit) of concrete coated pipe

c. No concrete placing shall be allowed before items 1 through 5 listed at clause 7.2, have been recorded and approved by COMPANY.

38. PROCEDURE QUALIFICATION

Before commencement of the work, CONTRACTOR shall perform all tests, either in laboratory or in field and trials necessary to properly select type of mix which meets the requirements of section 4.0 of this specification.

a. The type of mix, i.e. the correct combination of the cement, aggregates and water which results in the desired properties of concrete shall be at first determined. For each mix the following shall be accurately checked and recorded:
   - proportions and weights of the respective materials used
   - the water/ cement ratio;
   - the grading of the aggregates.

b. Samples shall be prepared and tested in accordance with IS:456 to determine the dry specific gravity of the concrete.
   Test for concrete specific gravity at intermediate time (7 days after coating) shall be performed.

c. When the results of the above tests do not meet the requirements, the mix shall be modified and concrete samples tested until a proper mix has been determined.

d. The mix so determined, shall then be used for sampling of concrete to be submitted to compressive strength tests as per IS:456.

e. Frequency of sampling for tests for density and compressive strength of concrete shall be as follows:

`Quantity' of Concrete in the Work(m3)	Number of Samples
Up to 25	3
26 to 50	4
51 and above	4 plus one additional sample for each additional $50m^3$ or part thereof.

`Quantity' means the volume of concrete to be used.

39. APPLICATIONS OF REINFORCEMENT AND CONCRETE COATING

a. Two test cubes each per day shall be obtained from batches and tested at the end of 7 days after coating, for compressive strength and specific gravity.

b. The moisture content of the aggregates used shall be such as to maintain a satisfactory control on the water/ cement ratio of the concrete mix.
To maintain the water/ cement ratio constant at its correct, value, determination of moisture contents in both fine and coarse (if used) aggregates shall be made as frequently as possible.

c. Pipe Length Preparation
Prior to placing of reinforcement, the protective coating of each pipe length shall be carefully inspected visually and by holiday detectors and, if damages are found, they shall be repaired before start of the work. Foreign materials, if any, shall be removed from the surface of the protective coating.

d. Reinforcement Application

i. Reinforcement shall be placed around the pipe in such a way as to cover the whole pipe length or sections to be concrete coated. The reinforcement shall protrude a minimum 5 cm from the finished concrete coating.

ii. Reinforcement shall rest on PVC spacers forming a "Crown" whose number shall be such as to avoid any contact with the pipe's protective coating. Spacing between the two consecutive "crown" centres shall be 500 C/C and a minimum of 4 Nos. shall be provided at each `Crown' centre.

iii. Splices and attachments shall be done by binding with steel wire having 1.5 mm diameter. Circular and longitudinal joints of wire fabric in sheets shall be lapped at least for one mesh. When wire fabric in rolls (ribbon mesh) is used, the spiral lap shall be one mesh while the spliced lap shall be three meshes.

iv. One layer of reinforcement steel shall be provided for concrete thickness less than 50mm and the same shall be embedded approximately midway in the concrete coating thickness. For concrete thickness 50mm and above two layers of reinforcing steel shall be provided. If application method requires more than one pass concrete, one reinforcement layer for each pass is to be applied independently from concrete coating thickness.

e. Concrete Placing

i. Concrete shall be placed within a maximum of 30 minutes from the time of mixing (adding water to mix) and shall be handled in such a way so as to prevent aggregate segregation and excessive moisture loss. Concrete containers shall continuously be kept clean and free from hardened or partially hardened concrete.

ii. If casting method is used, once reinforcement and mould have been applied around the pipe, concrete mixture shall be poured through an opening on the upper section of the same

mould. Concrete shall not be deposited from a height greater than 1 metre. During pouring of concrete, vibrator sets applied inside of pipe or outside the mould shall vibrate the mix so as to obtain the best possible compactness.

iii. If impingement method is used, placement of concrete shall be up to the specified thickness in one continuous course, with allowance for splices of reinforcement and providing reinforcement in the right location.

iv. No casting shall be interrupted or passes shall be stopped for more than 30 minutes. Before placing fresh concrete against the joint, the contact surfaces shall be carefully cleaned and wetted to obtain a good bond between the fresh material and the previously placed material.

v. Suitable means shall be provided to ensure that the temperature of the concrete, when placed, does not exceed 32°C.

vi. All pipes shall be kept clean and free from cement concrete and grout either inside or outside of the uncoated sections.

vii. Bevel protectors shall be kept in place throughout the coating application and after.

viii. The coating at each end of the pipe shall be bevelled to a slope of approximately two-to-one (2:1). It shall terminate about 50mm short of the end of the corrosion coating applied on the pipe surface.

f. Curing

i. Immediately after concreting, the exposed surfaces of the concrete shall be protected during `setting' from the effects of sunshine, drying winds, rain, etc. and then after the initial set has taken place, the concrete coating shall be properly cured. The coated pipe sections shall be handled gently by suitable means to prevent undue distortion.

ii. Curing shall be done by sprinkling water at regular intervals on gunny cloth wound around the concrete coated pipes.

Alternatively, curing may be done by application of an approved curing membrane using sealing compounds and shall meet the basic requirements of IS:456 and shall generally be of very high quality of manufacture and approved make. The material shall be stored, prepared and applied in strict conformity with the instructions of the manufacturer. The ingredients of any such compound shall be non-toxic and non-inflammable and shall not react with any ingredient of the concrete, the reinforcement, the protective coating or pipe. The application of the curing compound shall take place immediately after the coating is completed and preferably before the pipe is removed from the concrete coating apparatus. The surface of the concrete shall be lightly sprayed with water before applying the curing compound. The membrane curing period shall not be less than 4 days, during which period the freshly coated pipes shall not be disturbed. The pipe surface shall be kept wet during daylight hours for seven days after application of the concrete coating. The concrete coating shall not be allowed to dehydrate.

iii. Before handling and hauling the concrete coated pipes, a check shall be made to make sure that the concrete coating is properly cured. Stacking and shipment of the coated pipes shall be initiated only after seven days provided that the concrete coating suffers no damage.

40. TOLERANCES

a. CONTRACTOR shall maintain a surface tolerance of 8mm maximum for the radial distance between high and low areas of the surfaces. The diameter of each coated pipe shall be obtained at three (3) or more points, spaced at equal intervals between the end points.

b. The acceptance weight tolerance for any single pipe shall be limited to plus five (5) or minus two (2) percent of the calculated theoretical weight. The theoretical weight shall be calculated using total weight of the pipe with concrete and corrosion coating.

41. WEIGHING

a. The test specimen shall be selected at equal intervals during the course of production.
b. CONTRACTOR shall weigh each pipe when dry prior to shipment and 28 days after placing of concrete and mark the weight with paint on the inside of the pipe. The weight mark shall be followed with letters "DW" meaning Dry Weight.

42. INSPECTION AND TESTS

a. After curing, every length of concrete coated pipe shall be non-destructively tested by means such as "ringing" to determine if any suspected defects are present. In case this indicates faulty coating, cores shall be removed from coating and inspected. When defective coating appears from cores, the concrete coating shall be removed from the pipe lengths.
b. Every length of concrete coated pipe shall be checked to verify insulation between steel reinforcement and pipe by means of a megger or equivalent device. To this purpose provisions should be made during placing of concrete such as to leave at-least a point of exposed steel reinforcement whenever the latter shall terminate inside of concrete coating.
c. During the tests as per clause 12.2 above, and before transporting of concrete coated pipes, every pipe length shall be visually inspected to detect whether any damages and/ or defects are present. Possible damages and/ or defects with their allowable limits are described at following clause 13.0. Repairable concrete coatings shall be clearly marked while the non-repairable ones shall be removed from the pipe lengths.

43. THE COATING OF FIELD WELDS

a. The CONTRACTOR shall coat the uncoated pipe surface at field welds in accordance with methods approved by COMPANY. CONTRACTOR shall submit a detailed procedure for joint coating for COMPANY's approval.
b. The reinforcement for the field welds shall be same as that for line pipe coating with the same number of layers and the same space between layers as for the existing coating. The edges of this meeting must be carefully secured with galvanized wire to the reinforcement extending from the existing coating.
   The reinforcement shall not make direct or electrical contact with the pipe.
   Synthetic resin spacer blocks may be used to keep the reinforcement free from the pipe coating as mentioned in cl. 9.4.2. The moulds used for applying the concrete coating shall be supplied by the CONTRACTOR.
c. The composition of the concrete shall be the same as that of the concrete coating of the pipe.
   When using moulds, the CONTRACTOR shall prevent air being trapped by applying mechanical vibrators or by striking the outside of the moulds with sticks.
d. If the moulds remains around the pipe, e.g. in the case of submerged pipes floated into position, the CONTRACTOR shall take appropriate measures to prevent too much water entering the mould. This can be achieved by clamping strips of burlap between the ends of the mould and the existing concrete coating. After the mould has been filled with concrete the filling opening must also be closed off by clamping a strip on burlap under the sealing cover.

44. REPAIRS

The following are repairs that will be permitted to coating due to unavoidable damage in handling and in storage (This applies only to concrete that has set).

a. Spalling due to compression or shearing caused by impact against other objects. Spalling is defined as damage which causes a loss in concrete of more than 25 percent of the total thickness of the coating at the point of damage.

b. Damage due to spalling of a local area shall be repaired by removing loose concrete and exposing the reinforcing steel throughout the damaged area. Edges of the spalled area shall be undercut so as to provide a key lock for the repair material. A stiff mixture of cement, water and aggregate shall be trowelled into and through the reinforcement and built up until the surface is level with the coating around the repair. The pipe shall then be carefully laid with the repaired area at the top and shall be moist cured for a minimum of thirty-six (36) hours before further handling.

c. Should the damaged area be more than $0.3m^2$, coating shall be removed around the entire damaged area. A repair shall be made by satisfactorily restoring the reinforcement, forming the area with a metal form and pouring a complete replacement of materials similar to that from which the coating was made. The mixture shall be one (1) part of cement to three (3) parts of aggregate and the necessary water to produce a slump not to exceed 100mm. The resulting coating shall be equal in weight, density, uniformity, thickness, strength and characteristics to the originally applied coating. The pipe shall then be carefully laid in a position where it shall be moist cured for a minimum of 36 hours before further handling.

45. MARKING

a. Every concrete coated pipe length shall be clearly marked by a suitable type of paint (i.e. red and/ or white lead paint). Markings out of concrete coating shall be made inside of pipe close to bevel end, in such a way that the area involved by welding operations is not affected by paint.

b. For each concrete coated pipe length, at one of the two ends, the field identification number and the date of concrete placing shall be marked, while the dry as well as the net weight along with number of days after coating shall be marked at the other end.

46. UNLOADING, TRANSPORT, STORING AND HAULING

a. Once the pipe sections have been taken on charge, the CONTRACTOR, complying with provisions of the CONTRACT, shall execute their transport together with other material, either supplied by him or by the COMPANY, from the site of receipt to the coating yard and after concrete coating completion and acceptance, to delivery point at laying field or storage areas as previously established providing each time the necessary storage.

b. Materials other than pipes and which are susceptible of deteriorating or suffering from damages especially due to humidity or other adverse weather conditions, shall be suitably stored and protected.

c. During loading, transport, unloading and hauling of inert aggregates, any contact and mixing with mud, earth, grease and any other foreign material shall be carefully avoided. Precautions shall be taken to prevent contamination, to maintain the cleanliness and against effects of hot or cold weather.

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ANNEXURE – Part-III (SCC)/ Spec. no.: DDPL/SP-06

TECHNICAL SPECIFICATION: TEMPORARY CATHODIC PROTECTION SYSTEM

1. SCOPE

1.1 This specification defines the requirements of design, engineering supply of materials, installation, testing and commissioning of temporary cathodic protection system of external surface of cross country underground pipeline/structure including supplementing of corrosion survey, investigation for interference/ interaction problems and mitigation of the same. Unless otherwise specified, monitoring of the temporary Cathodic protection system for 12 months (design life) or till the commissioning of permanent C.P. System, whichever is less, shall be carried out by Contractor.

This specification defines the basic guidelines to develop a suitable temporary cathodic protection system for the structure required to be protected. All data required in this regard shall be taken into consideration to develop an acceptable design and for proper engineering of the system.

1.2 Compliance with these specifications and/ or approval of any of the contractor's documents shall in no case relieve the contractual obligations.

1.3 In case where temporary and permanent cathodic protection works are being executed by the same agency, activities of permanent CP system which are common to temporary CP system shall be completed as part of temporary CP system. In cases where temporary and permanent cathodic protection works are being executed by different agencies, the contractual scope of work shall be referred for further details.

1.4 All work to be performed and supplies to be effected as a part of contract shall require specific approval of owner or his authorized representative. Major activities requiring approval shall include but not be limited to the following:

- Corrosion survey data interpretation report and design basis for CP system.
- CP system design package
- Purchase requisitions for major equipment and vendor approval
- Detailed engineering package
- Field testing and commissioning procedure
- Procedures for interference testing and mitigation
- Continuous Pipeline potential (CPL survey) and system monitoring procedures

2. CODES AND STANDARDS

The system design, performance and materials to be supplied shall unless otherwise specified, conform to the requirements of latest relevant applicable standards of:-

- BIS specifications
- BS specifications and codes of practice
- ANSI specifications

- NFPA publications
- NACE publications
- IEC publications
- DNV publications
- IEEE publications
- DIN publications
- ASTM publications

In case of conflicting requirements amongst any of the above standards the publication having most stringent requirement shall be governing.

3. CORROSION DATA

3.1. The corrosion survey including soil resistivity data along ROW, Pipeline Alignment sheets etc. will be provided by the client. However, verification of its veracity and adequacy shall be the entire responsibility of the contractor. In addition, contractor shall have to generate/ collect additional data as required for completeness of the job. Contractor shall also carry out soil resistivity survey at sacrificial anode ground bed locations for proper design of ground beds. Wenner's 4-pin method or approved equal shall be used for such measurements. Survey instruments shall have maximum AC and DC ground current rejection feature.

Care shall be taken to ensure that the resistivity observations are not influenced by the presence of foreign pipelines/ structures, and earth currents in the vicinity of EHV/ HV lines and installations using earth return in their power system etc.

3.2. ADDITIONAL DATA TO BE COLLECTED

The following data shall be collected to generate design data for evaluation of interaction/ interference possibilities due to presence of other services in ROW/ in vicinity.

i. Route and types of foreign service/pipeline in and around or crossing the right of way (including those existing and those which are likely to come up during contract execution or any abandoned pipelines).

ii. Diameter, wall thickness, pressure, pipeline coating against corrosion, soil cover used in case of pipelines).

Detail of the existing cathodic protection system protecting the services i.e. location, rating, type of protection, anode beds, test station locations and their connection schemes.

iii. Graphical representation of existing structure/ pipe-to soil potential records. T/R unit current/ voltage readings.

iv. Remedial measures existing on foreign pipeline/services to prevent interaction.

v. Possibility of integration/isolation of CP system, which may involve negotiations with owners of other services.

vi. Crossing and parallel running of electrified and non-electrified traction (along with information regarding operating voltage, type AC/DC etc.) as well as abandoned tracks near ROW having electrical continuity with the tracks in use.

vii. Crossing and parallel running of any HT/AC/DC overhead line (existing/proposed) along with details of voltage, type AC/DC etc.

viii. Voltage rating, number of cores and sheathing details of underground power cables, along ROW or in its vicinity.

ix. Information on existing and proposed DC/AC power sources and system having earth as return path, in the vicinity of the entire pipeline, route such as HV/DC sub stations, fabrication yards with electric welding etc.

x. Any other relevant information that may be needed in designing and implementing proper protection scheme for the proposed pipeline.

Unless otherwise mentioned, Contractor shall conduct necessary potential gradient survey for any existing anode ground bed that may interfere with the CP system of the pipeline covered under this project.

xi. Any masonry work for other concrete or non-conductive constructions in the ROW which may block the CP current or cause interference to the pipeline.

xii. Any underground cable running in parallel or crossing the ROW.

3.3. REPORT

On completion of all field work a report incorporating all the results generated from surveys and details of additional data collected shall be furnished. The report shall also contain detailed interpretation of survey results and resistivity data enclosed, probable interference prone areas etc. to form design basis for the scheme of cathodic protection. This report shall be plotted on semi-log graph sheets.

4. CATHODIC PROTECTION DESIGN PARAMETERS

Unless otherwise specified in the project specifications, following parameters shall be used for design of temporary cathodic protection system.
Those parts of sacrificial anode cathodic protection system which will be integrated with permanent CP system shall be designed based on permanent CP parameters.

4.1. Protection current density

(I) Pipe lines having polyethylene coatings

Pipeline surrounding	Protection current density*	
	Temporary CP ($\mu A/m^2$)	Permanent CP (MA/m^2)
Normal soil	100	0.200
Marshy area	150	0.300
High resistivity area (more than 100Ω m)	100	0.150

(ii) Pipe lines having FBE Coatings

Pipeline surrounding	Protection current density*	
	Temporary CP ($\mu A/m^2$)	Permanent CP (MA/m^2)
Normal soil	200	0.300
Marshy area	300	0.500

High resistivity area (more than 100Ω m)	150	0.250

Pipe to soil "ON" potential shall not be more negative than (-) 1.5V.
* Actual current density to be adopted shall be decided based upon soil and other environmental conditions, proximity of foreign pipelines and structures affecting interference. Where considered necessary for satisfactory protection of pipeline the current density shall be suitably increased by contractor.

4.2. Safety factor for current density: 1.3

4.3. Anode utilization factor: 0.65 for Mg. Anode
0.80 for Zn Anode

4.4. Pipeline natural potential: (-) 0.45 V

4.5. Unless otherwise specified in project specification the design life of temporary CP shall be one year and that of permanent CP shall be 30 years.

5. CATHODIC PROTECTION DESIGN CRITERIA

5.1. Cathodic protection system shall be designed to meet the following criteria:

a) The pipe for electrolyte potential measurement shall be 950mV or more negative as measured between the pipe surface and a saturated Cu-$CuSO_4$, reference electrode containing the electrolyte when cathodic protection is applied.

b) The pipeline shall be considered protected when a minimum of (-) 300 millivolt potential shift has been achieved from the initial native potential to the CP `ON' potential.

c) In rare circumstances a minimum polarization shift of (-) 100 millivolts shall indicate adequate levels of cathodic protection for the pipeline. The formation of decay of this polarization shall be used in the criteria. Discretion to use any of the criteria listed above shall solely rest with the Owner/ Owner's representative.

d) The pipe to electrolyte `ON' potential measurement shall not go more negative than (-) 1500 millivolts. 5.2 A positive potential swing of 50-100 mV shall be considered the criteria for presence of an interaction situation requiring investigation and incorporation of mitigation measures by the CONTRACTOR.

6. SYSTEM DETAILS

The system shall include the following major equipment/sub-systems unless otherwise specified:

- Sacrificial anodes and anode ground beds
- Test stations
- Surge diverter/grounding cell
- Polarization cells
- Interconnecting cables
- Cable to pipe connections
- Spark Gap Arrester

All equipment shall be new and supplied by approved reputed manufacturers. Equipment offered shall be field proven. Equipment requiring specialized maintenance or operation shall be avoided as far as possible and prototype equipment shall not be accepted.

The detailed specification of each system and equipment shall be furnished by the contractor. However, certain minimum requirements for the major equipment are highlighted in this document. As far as possible equipment including test stations, anode lead junction boxes, etc., shall be located in safe area. All equipment located in hazardous areas shall be of flame proof type as per IS: 2148 for gas groups IIA & IIB and temperature class T3.

6.1. Anode Ground Beds

6.1.1. The pipeline shall be protected by prepacked zinc/ magnesium anodes.

6.1.2. Anodes shall be installed along the pipeline at suitable intervals as per pipeline protection voltage attenuation calculations and ground bed resistance/ current output of anode installations. Minimum one anode installation shall be provided for every one km. of the pipeline. In congested area, minimum one anode installation shall be provided for every 250 meter of pipeline length.

6.1.3. Each electrically continuous section of pipeline shall preferably be protected totally by one type (material) of anodes to avoid inter-anode circulation currents.

6.1.4. The anodes shall be installed at sufficient depth to reach moist soil and shall be separated from the pipe line by at least 5m and 2m for magnesium and zinc anodes respectively. The anode connections to pipeline shall be routed through test stations.

6.1.5. At the temporary cathodic protection anode ground bed, the leads of all the anodes shall be joined together in a junction box filled with epoxy and buried. A single cable shall be routed from the junction box to the test station. At permanent CP anode ground bed (i.e. at cased crossing), the leads of all the anodes shall be brought up to the test station and shall be terminated individually.

6.1.6. For sacrificial anode ground bed which shall be integrated with permanent CP System the leads of all the anodes shall be brought up to the test station and shall be terminated individually.

6.1.7. The number of anodes at each ground bed shall be sufficient for providing the specified pipe protection current density taking into consideration the ground bed resistance, pipe coating resistance, cable resistance, etc. Contractor shall prepare a table for number of anodes required at different soil resistivity to produce the specified protection current.

6.1.8. **Magnesium anode**

The anode shall be of high manganese, magnesium alloy packed with special back fill. The metallurgical composition, potential and consumption rate of anode shall be as below:

(i) Composition:

Element	Weight
Manganese	0.5 – 1.3%
Copper	0.02% max.
Silicon	0.05% max.
Zinc	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%
Magnesium	Balance

(ii) Anode closed circuit potential 1.5 volts
(iii) Anode consumption rate 7.9 kg/(A yr)

6.1.9. **Zinc Anode**

The anode shall confirm to the requirements of ASTM – 418 standard. The anode (other than ribbon anode) shall be packaged with special back fill. The metallurgical composition of anode, potential and consumption rate shall be as below:

(I) Composition:

Element	Weight
Aluminum	0.3 – 0.5%
Cadmium	0.075 – 0.1%
Copper	0.005% max.
Iron	0.002% max.
Silicon	0.005% max.
Lead	0.005% max.
Zinc	Remainder

(ii) Anode closed circuit potential 1.1 volts
(iii) Anode consumption rate 11.24 kg/(A yr)

6.1.10. Contractor shall furnish spectrographic analysis from each heat both for zinc and magnesium anodes along with electrochemical test results.

6.1.11. Special Backfill

The composition of special back fill for anodes shall be as below:

Gypsum	75%
Bentonite	20%
Sodium Sulphate	5%

6.1.12. The anodes shall be provided with cable tail of sufficient length to reach junction box test station as applicable without tension.

6.1.13. Tolerance in fabrication of anodes

The anode surface shall be free from cracks which may reduce the performance of the anode.
Any cracks which follow the longitudinal direction of elongated anodes shall not be acceptable.
Small cracks in the transverse direction of elongated anodes and in anodes of other shapes may be accepted provided the cracks would not cause any mechanical failure during service of the anode considering that the combination of cracks and lack of bond to the anode core is detrimental.
For transverse cracks the acceptable limits shall be furnished by the bidders along with the offer.
The anode shall be free from excessive shrinkages. The following limits shall be used:
- Maximum 10% of the depth of anode or 50% of the depth of the anode core whichever is less. The depression may be measured from the edged of one side.

The surface of the anodes shall be free from coatings and slag/dross inclusions etc.
The maximum deviation from straightness shall not exceed 2%.
The weight tolerance on individual anodes may be taken as ± 5%. The total weight of the anodes shall not have negative tolerance.

Recommended dimensional tolerance shall be as follows:

Length	± 2.5%
Width/thickness	± 5%

6.1.14. As saline soil, Ag/ AgCl reference electrode shall be used and not Zinc Electrode

6.2. Test Stations

6.2.1. OIL/PMC intends to install vandal proof reinforced concrete encased MS test station along the ROW to prevent damage by any third party. Reference drawing is enclosed at the end of the document. Detailed drawing shall be provided after placement of work order.

6.2.2. Test stations shall be provided along the pipeline ROW for monitoring the performance of the Cathodic Protection system at intervals not exceeding 1000 meters in uncongested & 250 meters in congested area unless otherwise specified. In addition to above, test stations shall also be provided at the following locations:

a. At both sides of major road crossings
b. At all insulating joints
c. At vulnerable locations with drastic changes in soil resistivity
d. At connections of surge diverters, grounding cells and polarization cells
e. At HT AC/DC overhead line crossings and selected locations where HT overhead line is in the vicinity of the pipeline.
f. At railway line crossings and running parallel to the pipeline.
g. At both sides of major river crossings.
h. At high voltage cable crossings or along routes where HV cables are running in parallel.
i. In the vicinity of DC networks or grounding system where interference problems are suspected.
j. At crossings/parallel running of other pipeline structures
k. At both sides of cased crossings
l. At any other locations considered vulnerable locations where interference is expected
m. At any other locations considered necessary by owner/owner's representative

6.2.3. Test stations shall be designed suitably as per requirement, e.g Type A, Type B, Type D, Type F. Type M, and Type E (Bond box)

6.2.4. Test stations for bonding shall be provided with shunt and resistor as a means to monitor and control current.

6.2.5. Test stations used for sacrificial anodes shall have shunt for measurement of anode current, and provision for resistance insertion to limit the anode current output.

6.2.6. Test station with current measuring facility shall be provided at each intermediate CP station drainage point (to measure pipeline from drainage point), at interference prone areas, on both sides of major river crossings and at least at two additional locations along the pipeline ROW between two CP stations.

6.2.7. All test stations shall have weather proof enclosure, having degree of protection IP 55 with hinged lockable shutter. Enclosure shall be made of sheet steel of at least 3 mm thickness and shall be suitable for M.S. post mounting. The test stations shall be designed with terminals required for both temporary and permanent CP system and shall be suitable for total life of permanent CP system.

6.2.8. The test stations shall be installed with the front of the test station facing the pipeline. The name plate of test stations shall in minimum carry following information:

- Test station number
- Chainage in km
- Test station connection scheme type

- Distance from pipeline in meters
- Direction of product flow

Painting, letter writing etc. shall be in the scope of contractor.

The complete test station shall be painted with Signal Red Enamel Paint. All labour, materials and consumable shall be in Contractor's scope.

6.2.9. Terminal blocks and different scheme of wiring as required shall be provided in the test station as per the test station connection scheme sketch.

6.2.10. The location of all the test stations shall be marked with their connection schemes and other relevant information's on alignment sheets. A detailed test station schedule shall be prepared.

6.3. Surge diverter, grounding cell and polarization cell

6.3.1. Where high voltage (66 KV and above) transmission line runs in parallel or crosses the pipeline, the pipeline shall be grounded through polarization cells & zinc anodes of minimum 20 kg net each.

Alternatively, grounding could be done directly with zinc galvanic anodes of minimum 20 kg net each at the discretion of owner. Grounding shall be done at regular intervals where transmission lines run parallel within 25 meter of the pipeline to ground any surges on the pipeline that would appear in case of transmission line faults.

6.3.2. In case of continuous induction of voltage on the pipeline beyond safe limits is expected or observed during commissioning due to HV Line etc., the pipeline shall be grounded to the earth system of nearest HV transmission tower of the transmission line causing the voltage induction through polarization cell or the pipeline shall be grounded to a separate earthing system of zinc galvanic anodes through polarization cell. Alternatively, the pipeline shall be directly grounded with zinc galvanic anodes of minimum 20 kg net each at the discretion of the owner. The polarization cell shall be installed in test station.

6.3.3. Spark gap arrestor shall be connected across each insulating joint to protect in from high voltage surges.

6.3.4. Alternatively, zinc grounding cell may be provided across insulating joints along ROW where the pipeline on both the sides of the insulating joint are cathodically protected and difference of protection voltage is not more than 0.4 volts.

Alternatively, owner on its own discretion may permit use of Magnesium / Zinc galvanic anodes for protection of insulating joints. Choice between Magnesium or zinc anodes shall depend upon the potential valves on either side of the insulating joint. These anodes shall be sized for the specified design life of permanent Cathodic protection system.

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

6.3.6. Unless otherwise specified on data sheet, the minimum rating of grounding cells, polarization cells and surge diverters shall be as below:

(i) Grounding Cell

- Type : Zinc, 2 or 4 plate type
- Current rating : Suitable to pass more than 10kA surge

(ii) Polarization cell

- Type : Solid state type
- Rating

Description	Rating
- 50H2 steady state current (RMS symmetrical) :	35A min. at 65°C & min. 2V
- AC Voltage under :	Less than 10V peak to

maximum rated AC peak
fault current
- AC fault current : 6 kA min. for 1 cycle,
(RMS symmetrical) 3.5 kA min. for 30 cycle.

(iii) Spark Gap Arrester
- Type : Spark gap
- Current, 8/20 wave : 100 kA
- Spark over AC voltage :
- 50 Hz : 1 kV
- Impulse (1.2/50) : 2.2 kV
micro sec)

(iv) Surge diverter

- Max. allowable voltage	AC	:	230 V
	DC	:	350 V
- Turn on voltage (DC)		:	430 ± 10%V
- Protective leve at 200 amps (8/20 micro second)		:	800 V (Max.)
- Energy (Single Short) 2 micro sec.		:	400 J
- Single Short, Surge withstand capacity (8/20 micro second)		:	20 kA

6.3.7. The grounding cell, spark gap arresters, surge diverter and polarization cell system shall be sized for the design life of permanent CP system. The zinc or magnesium anodes meant for pipeline grounding shall also be sized for the life of the permanent CP system taking into account the current discharge from the anodes. The grounding system shall have minimum resistance to earth to restrict the pipeline voltage as per NACE criteria.

6.3.8. In case of HT transmission overhead lines of voltage below 66KV also requisite mitigation measures should be provided to take care of continuous induction of voltage interface due to presence of transmission line in close proximity.

6.4. CP at Cased Crossing

At cased crossings where casing is coated, the casing shall be protected by sacrificial anode installations. The sacrificial anode installations shall be provided at both ends of casing. The anode installation shall be sized based on permanent C.P. design parameters specified for the main pipeline.

The carrier inside coated casing shall be protected by zinc ribbon anodes well connected to the outer surface of bottom of carrier pipe extending up to hour hand positions of 4 and 8 o'clock. The anodes shall be placed at close intervals as per design parameters calculations and sized based on the permanent CP design parameters.

6.5. Painting

The sheet steel used for fabrication shall be thoroughly cleaned and degreased to remove mill scale, rust, grease and dirt. Fabricated structures shall be pickled and then rinsed to remove any trace of acid. The under surfaces shall be prepared by applying a coat of phosphate paint and a coat of yellow zinc chromate primer. The under surfaces shall be free from all imperfections before undertaking the finished coat. After preparation of the under surface, spray painting with two coats of final paint shall be done. The finished panel shall be dried in oven in dust free atmosphere. Panel finish shall be free from imperfections like pin holes, orange peels, run off paint, etc.

All unpainted steel parts shall be cadmium plated to prevent rust information.

6.6. Cables

Cables shall be annealed high conductivity, tinned, stranded copper conductor, XLPE insulated 650/1100 V grade, armoured, PVC sheathed. The size of the copper conductor shall be 6 sq mm for anode cable from anode to buried junction box, 10 sq mm from junction box to test station, 10mm² from test station to pipeline. The size of the conductor shall be 6 sq mm for potential measurement, 10 sq.mm for current measurement and 25mm² for bonding, polarization cell/grounding cell and surge diverter connection purpose. The anode cable from anode to junction box (buried) shall be unarmoured. The length of anode tail cable shall be sufficient enough to reach junction box (buried) in case of temporary CP anodes and up to test station In case of permanent CP sacrificial anodes. PE Sleeves shall be provided for unarmoured cables.

Identification of different cables:

Alphabetic and numeric PVC ferrules and following colour cable sleeve need to be considered at termination for identification of different cables terminated inside Test Station, AJB, CJB, TR/ CPPSM unit:

SL.NO.	DESCRIPTION	COLOUR
1.	Anode tail and anode cable (Positive header cable)	Red
2.	Cathode cable, Drainage cable & Negative header cable	Blue
3.	PSP measurement cable from pipe	Green
4.	Reference cell cable	Yellow
5.	All cable from foreign pipeline (Bonding or PSP Measurement cable)	Pink
6.	Grounding cell cable	Brown
7.	Balance all cable	Black

7. QUALITY ASSURANCE PLAN

7.1. MAGNESIUM ANODES

Sl. No.	Activity Description	Characteristics	Quantum of check	Reference Document	Format of record	Agency	
						A	B
1	Visual & Dimensional	a. Surface Finish b. Dimension	10%	Approved Datasheet	Manufacturer TC	P	W/ R
2	Electrochemical Test	a. Open circuit potential b. Consumption rate	One sample			P	R
3	Review of MTC	Routine test certificate	-			P	R

Legends:

A: Manufacturer/Contractor; B: TPIA/OIL; P: Perform; W: Witness; R: Review

7.2. CABLES

Sl. No.	Activity Description	Characteristics	Quantum of check	Reference Document	Format of record	Agency	
						A	B
1	Physical	Check for physical damage or any other visual defects	-	Approved Datasheet	Manufacturer TC	P	W/R
2	Electrical	Continuity Test	100%			P	W/R
3	Review of TC	Routine test certificate	-			P	R

8. INSTALLATION

8.1. Cable Laying

8.1.1. Cables shall be laid in accordance with approved layout drawings to be prepared by the contractor. No straight through joint shall be permitted in a single run of cable. Cable route shall be carefully measured and cables cut to required length.

8.1.2. All cables inside station/plant area shall be laid at a depth of 0.75 M. Cables outside station/plant area shall be laid at a depth of 1.5m. Cables shall be laid in sand under brick cover back filled with normal soil. Outside the station/plant area the routes shall be marked with Polyethylene cable warning mats placed at a depth of 0.9m from the finished grade.

8.1.3. All underground unarmoured cables forming part of permanent CP system shall run through PE sleeves. Cables along the pipeline shall be carried along the top of the pipe by securely strapping it with adhesive tape or equivalent as required.

8.1.4. RCC or GI pipes of proper size shall be provided for all underground cables for road crossings.

8.1.5. Cables shall be neatly arranged in trenches in such a manner that crisscrossing is avoided and final take off to equipment is facilitated.

8.2. Cable to Pipe Connections

All the cable connections to the pipeline including charged foreign pipeline shall be made using an approved exothermic process or pin brazing. A suitable water proof sealing system of the cable connections shall be made which will be compatible with parent coating system of the pipeline after exothermic process.

For charged pipeline pin-brazing shall be used. Eutectic solder shall not be acceptable for charged or non-charged pipeline.

8.3. Permanent Reference Cells

The permanent reference cells shall be installed with special backfill material and as per the recommendations of the cell manufacturer. Installations in highly acidic/ alkaline soil and soil contaminated by hydrocarbons shall be avoided.

9. CIVIL WORKS

All civil works associated with the complete cathodic protection work shall be included in the scope of contractor. This shall include providing cable trenches, foundation for equipment and all test stations, etc.

10. TESTING AND INSPECTION AT WORKS

10.1. OWNER/OWNER's representative shall visit the works during manufacture of various equipment to assess the progress of work as well as to ascertain that only quality raw material is used for the same. All necessary assistance during such inspections shall be provided.

10.2. The minimum testing, inspection requirements for all components/ equipment shall confirm to the requirements as defined in the relevant codes and standards. Detailed inspection and testing procedures along with the acceptance criteria shall be prepared by CONTRACTOR for OWNER's approval.

10.3. Test certificates including test records, performance curves etc., shall be furnished. All test certificates shall be endorsed with sufficient information to identify equipment to which the certificate refers to and must carry project title, owner's name and purchase order details etc.

10.4. Owner reserves the right to ask for inspection of all or any item under the contract and witness all tests and carry out inspection or authorize his representative to witness test and carry out inspection. CONTRACTOR shall notify the OWNER or OWNER's representative at least 20 days in advance giving exact details of tests, dates and addresses of locations where the tests would be carried out.

11. PACKING AND TRANSPORT

All equipment/material shall be protected for inland/marine transport, carriage at site and outdoor storage during transit and at site. All packages shall be clearly, legibly and durably marked with uniform block letters giving the relevant equipment/material details. Each package shall contain a packing list in a water proof envelope. Copies of the packing list in triplicate, shall be forwarded to owner prior to dispatch. All items of material shall be clearly marked for easy identification against the packing list.

12. SYSTEM TESTING, COMMISSIONING AND INTERFERENCE MITIGATION

12.1. SYSTEM TESTING AT SITE

12.1.1. Contractor shall furnish the detailed field testing and commissioning procedure for approval. Field tests as per the approved procedures shall be carried out on the equipment/systems before being put into service. The acceptance of the complete installation shall be contingent upon inspection and field test results.

12.1.2. Before the CP facilities are placed in operation all necessary tests shall be carried out to establish that all equipment, devices, wiring and connection, etc., have been correctly installed, connected and are in good working condition as required for intended operation.

12.1.3. Owner/owner's representative may witness all the tests. At least one week's notice shall be given before commencing the tests.

12.1.4. All tools, equipment and instruments required for testing shall be provided by CONTRACTOR.

12.1.5. Generally following tests shall be carried out and recorded in proforma given in subsequent clauses:

Checking : Visual inspection, comparison with drawings and specifications.
Inspection : Detailed physical inspection
Testing : Simulation tests of equipment to determine its operational fitness.

(i) Cables
- Cable no.
- Voltage grade

- Conductor cross-section
- Continuity check
- Voltage test
- Insulation resistance values between core and earth
- All cables shall be tested by 500 V megger

(ii) Insulating joint

Checking of insulating joint for leakage, before and after energization of C.P. by means of insulating joint tester. Structure to electrolyte potential of both protected and non-protected sides of insulating joint shall be checked before and after energization of CP system.

(iii) Polarization cell
- Location/identification number
- Rating
- Check for electrolyte
- Check for wiring
- Check for standby current drain with CP

(iv) Grounding cell
- Location
- Type (no. of anodes)
- Ratings

(v) Surge diverter
- Location/identification no.
- Ratings
- Check for healthiness

(vi) Anode ground beds
- Location/test station number
- Current output of the ground bed

(vii) Spark Gap Arrester
- Location/ identification No
- Ratings
- Check for healthiness

12.2. COMMISSIONING

12.2.1. Natural pipe to soil potential shall be measured at each test station location prior to connecting anodes to pipeline. The pipe to soil potential observation shall be repeated after connecting the anodes and allowing sufficient time for polarization. The current output of the anode installation shall also be measured to ensure that it does not exceed the output current capacity of the anodes. In case the anode output current exceeds the rated capacity it shall be controlled by insertion of resistance element in the anode circuit inside test station and the pipe to soil potential shall be rechecked for adequacy of protection. Additional anodes shall be provided where required to achieve desired level of protection. Each anode installation shall become individually operational as above.

12.2.2. After connecting all the anode ground beds to pipeline, measurement of pipe to soil potentials shall be taken at each test station to ensure conformity to protection criteria.

12.2.3. In case of insufficient protection as per the CP design criteria on any portion of the pipeline, CONTRACTOR shall carry out necessary additions modification to the provided protection in consultation with the ENGINEER.

12.3. INTERFERENCE MITIGATION

Investigation shall be made for stray current electrolysis of the pipeline, AC induction on pipeline due to overhead high voltage line, interference due to high voltage DC lines, electric traction, etc.

Measurements including pipe to soil potential and pipeline current etc., on the pipeline/structure being CP protected shall be made to investigate the current discharge and collection locations.

In case of fluctuating stray currents investigation shall be made continuously over a period of time and if required simultaneously at different locations to find out the stray current source. For long time measurements, recorders shall preferably be used.

Where foreign pipeline (unprotected or protected by independent CP system) runs in parallel to the pipeline in same trench or very near to the pipeline, and is not bonded to the pipeline then investigation shall be made for current discharge points on both the pipelines.

Mitigation measured shall be provided depending on type of interference. These shall include installation of bond with variable resistor and diodes, installation of galvanic anodes for auxiliary drainage of current, adjustment/relocation (if possible) of offending interference source, provision of electric shield etc., depending on the type of interference.

Bonding with foreign pipeline/structure as a mitigation measure shall be provided where the owner of the pipeline/structure has no objection, otherwise, alternative mitigation measure shall be provided. Where bonding is provided for mitigation the bonding resistor shall be adjusted for optimum value for minimum/no interference. Galvanic anodes installed as a mitigation measure shall be sized for the life specified for permanent CP.

13. SYSTEM MONITORING

The temporary CP system provided shall be monitored at all the test stations once in a month for healthiness/adequacy of protection for 6 months or till the commissioning of permanent C.P. System, whichever is earlier, till commissioning of permanent CP or for 12 months (design life) of temporary CP specified, whichever is less. During this period if any deficiency/interference in protection system is noticed the same shall be rectified/augmented by additional anodes as required. The monitoring report shall be submitted regularly to owner for his review/information.

14. DRAWINGS AND DOCUMENTS

14.1.1. three weeks from the date of issue of LOA, CONTRACTOR shall submit four copies of the list of all drawings/ data/ manuals/ procedures for approval, identifying each by a number and descriptive title and giving the schedule date. This list shall be revised and extended, as necessary, during the progress of work.

14.1.2. All drawings and documents shall be in English and shall follow metric system. Number of copies of each submission shall be as follows unless otherwise specified.

Submission	**No. of Copies**
a. For review/approval	6
b. Drawings issued for execution construction	6
c. Final / As built drawings	

execution/construction 6

d. Operation/Maintenance manual, vendor data 6

14.2. Contract drawings and documents

14.2.1. As a part of the contract, drawings and documents shall be furnished which shall include but not be limited to the following:

a. Report on corrosion survey

b. Basis of system design calculations, equipment selection criteria and sizing calculations.

c. Bill of material, material requisitions, purchase requisitions

13.2.2 Detailed construction drawings (including as built drawings)

a. Sacrificial anode fabrication drawings

b. Typical layout drawing for anode ground bed installation and connection

c. Equipment layout, cable layout and schedules

d. Fabrication, installation and connection scheme drawing for different types of test stations.

e. Fabrication and installation details of surge diverter, grounding cell and polarization cell with its enclosure and housing

f. Cable-to-pipe joint details for charged and non-charged pipelines.

g. Incorporation of anode beds, polarization cell, surge diverters, test stations, etc., and other relevant features of CP system design in Pipeline alignment sheet and other related drawings

h. Identification of section of pipeline affected by interference, source of interference and details of interference mitigation arrangements provided. Various measurement data at all relevant test stations with and without mitigation measures provided.

i. Detailed commissioning report including various measurement data at all test stations, etc.

j. Vendor drawings and catalogues, test certificates

k. Operation and maintenance manual

l. Miscellaneous

- Equipment inspection and testing procedure
- Construction, installation procedures
- Field testing and commissioning procedures
- Procedure for monitoring of cathodic protection after commissioning
- Quality control procedures

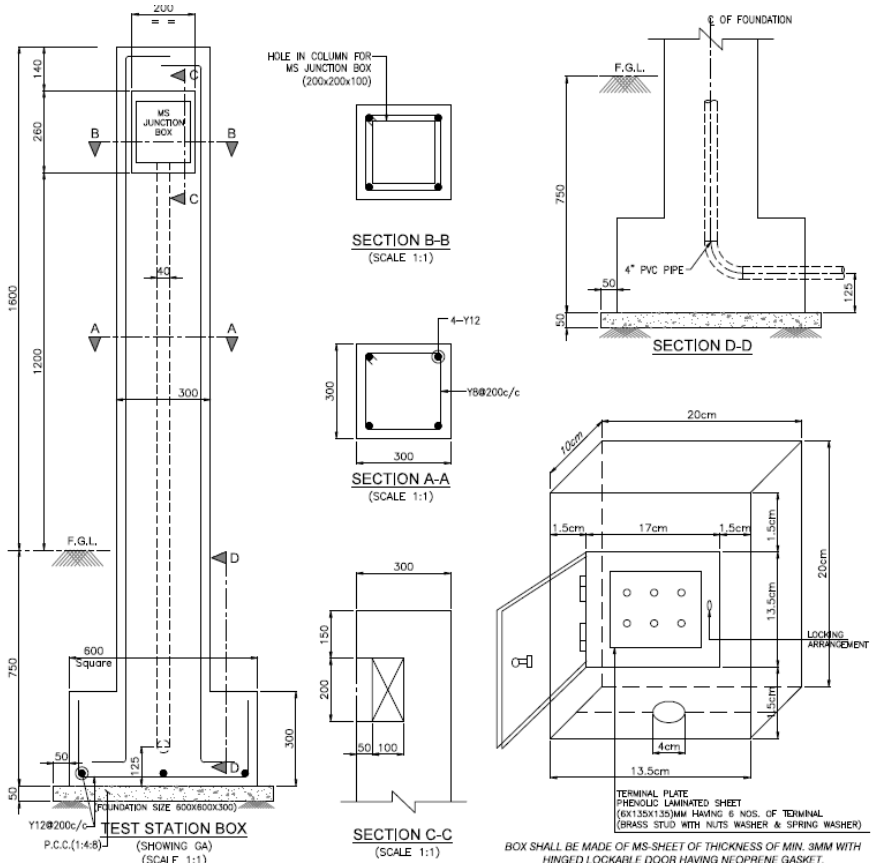
15. INSTRUMENT, TOOLS AND SPARES

15.1. CONTRACTOR shall supply all instruments, tools and tackles necessary for proper operation and maintenance of complete cathodic protection system and associated equipment.

15.2. CONTRACTOR shall provide a list of spares and consumables required for proper operation and maintenance of part of cathodic protection system to be integrated with permanent CP system

designed on the basis of permanent CP design parameters and associated equipment, for two years' operation of the system.

16. DRAWING



Reference Drawing for Test Station (Type A,B,D,E & F) (d*imensions are in mm*)

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TABLE OF CONTENTS:

SECTION 1

1.1 INTRODUCTION

An Optical Fiber (OFC) system for the Telecommunication requirements has been most suitable for any hydrocarbon transporting pipeline project. Laying of OFC along with pipeline are present trend to economize the project cost.

This specification covers the minimum requirement and guidelines for various activities to be carried out by the contractor. As part of project, this Document / specification provides guideline to be followed for Laying of HDPE duct, Blowing / Laying of Optical fiber cable through duct along the pipeline route. It also covers guidelines for Jointing and testing of the cable, HDPE conduit and associated work.

1.1.1 OFC to be laid by blowing technique in permanently lubricated HDPE (PLE HDPE) telecom duct (Conduit) to meet the present telecommunication requirements. The HDPE duct and OFC shall be laid in the same trench as that of the pipeline.

1.1.2 The Optical Fibre Cable supplied by Client will be of 2 Km single length without any joint. Contractor has to arrange proper machine and tool to blow the Optical Fibre Cable supplied by Client. In no case Contractor shall cut the cable without the prior approval of Client.

1.2 SPECIAL INSTRUCTIONS TO BIDDER

1.2.1 Vendor / Contractor (main pipeline laying job) shall make the bid in its name and takes the total responsibility for the OFC job irrespective of support from any other sub-agency.

1.2.2 Sub-vendor identified by the bidder (if any) at the bid stage for execution of a predefined part of the work shall be maintained in the bid with details.

1.2.3 The Scope of supply, works and technical requirements is expediently stated in the Bid document. Bidder is required to study these requirements in detail and make the offer complete in all respects leaving no scope for ambiguity.

1.3 SCOPE OF WORK:

The scope of work under the contract will be all that is necessary to lay One (01) number of permanently lubricated HDPE duct along with the newly laying Duliajan-Digboi Pipeline of OIL, blowing of OFC in the duct, splicing of OFC and all related works as under, which will be executed by the Contractor at his own cost:

1.3.1 Establishment of site office at convenient location from where all field related works will be controlled.

1.3.2 Verify the proposed fibre optic cable route along Main Pipeline Laying route and verify the land data and geographical locations of river, canal, road and railway crossings.

1.3.3 Obtain necessary permissions from concerned authorities for various crossings.

1.3.4 Collection of OFC drums, Fibre jointing boxes/termination boxes, HDPE ducts and accessories from designated stores of CLIENT and transportation to work sites.

1.3.5 Levelling and cleaning of cable surface route, clearing and its marking.

1.3.6 Clearing of trench bottom created for Main pipeline laying work and laying of HDPE duct each of 500 m single coil length in the trench, side by side.

1.3.7 Jointing of HDPE ducts with plastic duct couplers as per requirement.

1.3.8 Crossing of HDPE ducts through road, canal, nullah and railway tracks by boring/ moling/ hammering/ Horizontal Deviation Drilling and trenchless technology along with the main Pipeline laying work, as per SOR.

1.3.9 End sealing of HDPE ducts and duct integrity testing.

1.3.10 Backfilling of trench, compacting and restoration of surface to original status along with the main Pipeline laying work.

1.3.11 Installation of warning tap 250mm above the OFC during back filling of the trench throughout the laying length.

1.3.12 Blowing of OFC through the duct and testing of OFC parameters.

1.3.13 Jointing, splicing and fixing of cables in jointing boxes/ termination boxes and testing.

1.3.14 End to end testing of optical fibre cable between two successive stations.

1.3.15 Providing protection to surplus OFC loops.

1.3.16 Installation of Electronic markers for OF cable route and OF cable joint chamber.

1.3.17 Return of surplus unutilized material to designated stores of CLIENT with records.

1.3.18 Supply and installation of pre-cast concrete chambers, DWC/RCC pipe, GI pipes, duct binding straps, consumables and other materials as needed.

1.3.19 Use of splicing machines, OTDRs, power meter, optical power source, HDD equipment, excavators, pumps, JCBs, blowing equipment etc., arranged by the Contractor for execution works.

1.3.20 Provision of Labour and transport as required.

1.3.21 Safety and security arrangement.

1.3.22 Supply of 2 sets of As-Built Documents and drawings with original transparencies.

1.3.23 Supply of softcopy in CD for all documents and drawings.

SECTION 2 DATA TO BE FURNISHED BY THE BIDDER

Bidder shall furnish this information at the time of their offer and it will be part of contract for successful bidder.

Bidder shall provide below details of specific experience of the agency responsible for HDPE conduit laying, Blowing of Optical Fibre Cable through HDPE conduit, jointing of HDPE conduit, jointing of Optical Fibre cable & testing of HDPE and Optical Fibre cable. Only those parties shall be accepted for the works, which have proven experience as asked below.

The Bidder shall be entirely and exclusively responsible for all works under this bid document. Bidder to fill blank spaces marked (b) of this form:

Sl. No	Description	Performed by (Provide name)	Place of execution of the activity
1.1	Single source responsibility with Performance guarantee for successful completion of scope of work for this project.	Bidder	NA
1.2	HDPE conduit laying, sealing and testing	(b)	Site
1.3	Optical fiber cable Laying	(b)	Site
1.4	Optical fiber cable jointing & testing	(b)	Site
1.5	Documentation	Bidder	NA

(Legend: NA – Not applicable)

Bidder shall specifically indicate the deviation related to technical work if any and give proper justification with documentary evidence for specific deviation.

The following information necessarily to be submitted by the bidder during the Bid submission, otherwise their offer may be rejected/ disqualified for OFC work

Sl. No.	Description	Specification	Column to be filled by bidder
1	Name & address of the agency responsible for Laying, jointing and testing of HDPE conduit in this project.		(b)
1.1	Whether the party has done similar works of laying of HDPE conduit	$\geq$ 12 km in one stretch	Yes / No
1.2	Project name, description, client name, telephone & email/fax no. of contact person for works done in Sl. No. 1.1 above.		(b)
1.3	Date of completion of work in Sl. No. 1.1 above		(b)
1.4	Length of works in Sl. No. 1.1 above	In km	(b)
1.5	Supporting documents for works in Sl. No. 1.1 above (a) work order (b) completion certificate	Enclosed	Yes / No
2	Name & address of the party responsible for Laying of optical fibre by Blowing application in this project.		(b)
2.1	Whether the party has done similar works	$\geq$ 12 km cable in one stretch	Yes / No
2.2	Project names, description, client name, and telephone & email/fax no. of contact person for works done in Sl. No. 2 above		(b)
2.3	Date of completion of work in Sl. No. 2.1 above		(b)
2.4	Length of works in Sl. No. 2.1 above	In km	(b)
2.5	Supporting documents for works in Sl. No. 2.1 above (a) work order (b) completion certificate	Enclosed	Yes / No
3	Name & Address of the party responsible for jointing and testing of Optical fibre cable in this project		(b)
3.1	Whether the party has done similar works of jointing and testing of Optical fibre cable.	$\geq$ 12 km cable	Yes / No
3.2	Project name, description, client name, telephone & email/fax no. of contact person for works done in Sl. No. 3.1 above.		(b)
3.3	Date of completion of work in Sl No. 3.1 above		(b)

3.4	Length of works in Sl. No. 3.1 above.	In km	(b)
3.5	Supporting documents for works in Sl. No. 2.1 above (a) work order (b) completion certificate	Enclosed	Yes / No

SECTION 3 GENERAL GUIDELINES FOR BIDDER

3.1 The vendor shall be completely responsible for the successful completion of the job. However, to ensure a good quality of workmanship, and the offered system, vendor shall prepare and submit the documents for approval by the Owner / Consultant.

3.2 Vendor shall be totally responsible for the completion of project. In the event any modifications in the specification (as included in the Bid document), he shall clearly spell out all such required changes and a deviation list for review and approval of owner at the time of submission of his offer.

Vendor may improve upon specification, in such case vendor shall list out all proposed improvements in Deviation list form along-with his offer for review and approval of owner.

3.3 If during the course of execution of the work, any discrepancy or inconsistency, error or omission in any or the provisions of the contact is discovered, the same shall be referred to the Owner for final decision & instruction. He will direct the manner in which the work is to be carried out. The decision of the Owner shall be final and conclusive and the vendor shall carry out the work in accordance therewith.

3.4 The data provided in the bid document shall be used for reference purposes for the Bidder. It shall be the bidder's responsibility to verify the data & satisfy him in regard to accuracy & utility of their data.

3.5 Splicing and jointing requirements in addition to above, arising out of any negligence on behalf of the vendor shall be the responsibility of the vendor. In such case, the vendor shall take necessary rectification action at his own cost including necessary materials.

SECTION 4 SUB-SYSTEM SPECIFICATIONS

The intent of the following specifications is to inform the successful bidder the quality of the free issue items. Before taking over the possession of the items, he may verify the specification of supplied materials from Owner and can be collected after the award of the contract.

4.1 OPTICAL FIBER CABLE (for information only)

The selected vendor, before execution of the job may collect the final Optical Fibre cable's specification which is a free issue item for the project.

4.1.1 Technical specifications of fibres (for information only)

4.1.1.1 It is a Multi Grade, Non-Metallic, Single Mode, Composite Optical Fibre cable with 24 Fibre counts, out of this 6 fibre counts are Non-Zero Dispersion Shifted (NZ-DSF) type as per ITU-G.655 and 18 fibre counts are Non Dispersion Shifted Fibre (NDSF) as per ITU-G.652D specifications. The fibre shall fulfil latest ITU-T Recommendation G-652 & G-655 for single mode optical fibres.

4.1.1.2 The inner strength member shall be Fibre Reinforced Plastic (FRP) rod, non-metallic member with minimum diameter of 2mm.The strength member shall provide strength and adequate flexibility of

the cable and shall have anti buckling property. This shall also keep the fibre strain within the permissible value.

4.1.1.3 Around the strength member, 4 Nos of loose tubes made of Polyamide/PBTP or other thermoplastic material are to be symmetrically placed using helical or reverse lay technique with 6 nos. of primary coated fibres in each tube. Two polyethylene dummy fillers tubes are to be added so that the cable gets packed into near round configuration. The tubes are to be filled up moisture resistant thixotropic jelly, which should be compatible with the coated fibres in the tube. The colour of the loose tubes containing fibres shall be of 4 different distinct colours. The 6 fibre counts of G. 655 type shall be housed in a single tube, rest of 18 fibres to be distributed equally in remaining 3(three) tubes. The loose tube containing G.655 type fibre shall be Red Colour and other three tubes containing G.652 type fibres shall be Yellow, Green and Brown Colour. The tube assembly and the core shall be flooded with the moisture resistant jelly.

4.1.1.4 Aramid yarn strength members distributed equally over the periphery of loose tube should be provided along with the solid FRP strength member for peripheral strength.

4.1.1.5 The main cable core containing fibres shall be wrapped with a water blocking polyester of foil / tape of minimum 0.15 thickness. The nylon/polyester binder thread shall be used to hold the tape. The cable shall be rolled in wooden drums with rugged construction to withstand multiple transhipment and handling as well as storage in open area under adverse weather conditions. The drum (confirming to GR No. G/CBD-01/02 Nov. 94 and subsequent amendments) should be marked to identify the direction of rotation of the drum. Both ends of the cable should be kept inside the drums.

4.1.1.6 Cable marking: "OIL INDIA LIMITED" shall be marked on the cable sheath in black colour in addition to other details like meter markings and as mentioned above.

4.1.1.7 Packaging of cable shall be done in a manner in such a way that it will allow 2-meter length of cable at each end to be pulled out for performing various tests. The end shall be protected by heat shrinkable sleeves.

4.1.1.8 The cable drum shall be marked with an arrow to indicate the coiling sense.

4.1.2 Geometrical, optical & physical characteristics of optical fibres

4.1.2.1 Cladding Diameter: 125 µm $\pm$ 2%

4.1.2.2 Mode field concentricity error: Less than 1 µm

4.1.2.3 Cladding non-circularity: Less than 1 µm

4.1.3 Mechanical & Environmental Characteristics: As per relevant TEC Specs

4.1.4 Geometrical Characteristic of Optical Fibre: As per relevant TEC Specs

4.1.5 Mechanical Characteristics of OFC: As per relevant TEC Specs

4.1.6 Transmission Characteristic of Fibre: As per relevant TEC Specs

4.2 JOINTING CLOSURES (for information only)

4.2.1 Jointing closure shall be suitable for armoured and unarmoured optical fibre cables of all construction designs (slotted core, stranded tube, central tube).

4.2.2 Jointing closures shall have 4 entry ports to allow entry/exit of four optical fibre cables. The same shall have provision of blocking/sealing of the ports, if not in use.

4.2.3 The fibres and their storage shall be managed with proper bend radius controls and protection. The fibre organizer trays shall have provision of maximum 6 fibres per tray. The trays should be hinged in such a manner that if moved about the hinge, the fibres are not strained, kinked or stressed. Also, it should be possible to work on the fibres on one tray without disturbing the fibres of the other trays.

4.2.4 The sealing of the entry ports, shall provide adequate sealing and shall be capable of withstanding an axial pull applied using 50 kg freely suspended weight of the cable, without using any additional clamps, etc.

4.2.5 Jointing closures should be Dust tight (No dust ingress) and protected against immersion in water (suitable for continuous immersion in saline water under 4-meter water-head). It should be complete with all accessories including splice cassettes splice protection and all other accessories including accessories for electrical continuity of metallic layer of optical fibre cable etc. along with instruction sheets.

4.3 JOINTING CHAMBER (for information only):

4.3.1 The Jointing pit should be of minimum 150 cm diameter & depth 205 cm.

4.3.2 At the bottom of the pit a PCC slab of minimum 140 cm diameter and 10 cm thick shall be laid.

4.3.3 Over this slab a pre-cast RCC (1:2:4) concrete ring of 120 cm diameter with 10 cm thickness and 80 cm height with four suitable entry holes for duct pipes should be installed in the jointing pit in such a way that entry holes of HDPE duct should be 30 cm from the below. This pre-cast concrete ring serves as jointing chamber.

4.3.4 Rubber Seal/ Special Seal should be fitted at the entry holes of HDPE duct to prevent water leakage inside the jointing chamber.

4.4 PERMANTELY LUBRICATED HDPE CONDUIT (for information only):

4.4.1 The HDPE conduit shall be permanently lubricated with an inner layer of solid permanent lubricant by co-extrusion method to minimize the internal coefficient of friction.

4.4.2 The co-extruded inner layer of above lubricant shall be continuous throughout the length of the HDPE conduit.

4.4.3 The HDPE conduits shall also be free of blisters. Shrink hooks, break and other defects. The internal and external pipe surfaces shall be smooth. Pipes shall not display any stress edged grooves or sink marks.

4.4.4 The colour of the pipes shall be yellow/Green and be uniform throughout.

4.4.5 The HDPE conduit shall unroll off the drums without snaking or waving having zero coil set.

4.4.6 Following are the mechanical and dimensional specifications of HDPE conduit:

Pressure Rating: Min. 6 Kg/Cm^2

Outer diameter: 4 0 mm.

Wall thickness: 4.0 +/- 0.3 mm

Tensile strength: 20 N/mm^2 or better

Density: 940.0 – 950.0 kg/cum at 27° C

Melt Flow index: 0.4 to 0.95 gm/10 minutes at 90°C under 5 Kg load

Intrinsic coefficient of friction: 0.06 (max) when tested with respect to Nylon

Impact strength: As per IS: 12235 (part 9), 1986

The pipes should confirm to IS specifications IS-7328/IS-9938/IS2530/IS4984/ASTMD-1693

4.4.7 HDPE conduit identification:

The outer surface of the HDPE conduit shall be permanently & legibly marked with colour in contrast to the outer sheath at regular intervals not exceeding one meter with name of client, name of manufacturer and part number. All the markings over HDPE conduit shall be such that it should not be erased during field use.

SECTION 5 INSTALLATION OF PERMANENTLY LUBRICATED HDPE DUCT:

5.1 LAYING OF DUCT:

5.1.1 Permanently lubricated HDPE ducts/conduits shall be laid for installation of Optical Fibre Cable.

5.1.2 The conduits shall be continuous in length of 500 m.

5.1.3 The HDPE laying will follow lowering of pipeline.

5.1.4 HDPE conduit should be laid in the pipeline trench bed along with OFC as per Drawing/Sketch enclosed.

5.1.5 The duct shall be placed over 50 mm soft padding of sand or soft soil (riddled earth obtained by passing through a sieve having meshes not exceeding $15mm^2$, or of a natural soft ground no requiring riddling) as shown in the drawing.

5.1.6 Contractor has to ensure the laying of HDPE conduit without any snaking or waving and the HDPE conduit should rest on the trench bed i.e. the pipe should not hang in the trench bed.

5.1.7 The trench will be back filled after ensuring the correct positioning of HDPE conduit as mentioned above. While back filling, the contractor has to ensure that the HDPE conduit is not hanging in the trench bed.

5.1.8 Following procedure should be followed for laying HDPE conduits:

5.1.8.1 Moving Trailer Method: This method should be used when the path of duct does not contain any road/railway bores or utility crossings. Following steps should be followed:

(a) Fix the Jack Stand on the trailer properly.

(b) Mount the duct coil reel/duct drum on the Jack stand.

(c) Bring the trailer at the start point from where the duct is to be laid.

(d) Move the trailer slowly along the trench route and uncoil the duct from the bottom of the reel/drum and place into the trench. Avoid any over spinning of the duct while uncoiling it from the drum.

5.1.8.2 Manual Laying: This method is used when there is an obstruction along the route. Following steps should be followed:

(a) Place the Jack stand along the side of the trench. Place the drum on the jack with correct positioning of the drum i.e. the duct reel should uncoil from the bottom of the drum. Duct reel should not uncoil form the top of the drum.

(b) Rotate the drum slowly so that the duct comes off the drum slowly.

(c) Unroll the duct to the required length spacing the workers after every 15 to 20 metres.

(d) If any obstruction like utility crossings or road/railway crossings comes in, then ensure the HDPE conduit is drawn under the obstruction or through the crossing without requiring joint in between.

(e) The contractor can lay the duct into the trench either directly form the drum or temporally lay the duct along the trench and then place it later in the trench.

5.1.9 Tensioning of the HDPE duct after laying:

5.1.9.1 Determine the direction of installation and set the reel. Duct should be unrolled from the bottom of the coil.

5.1.9.2 Place the duct inside the trench.

5.1.9.3 Let two workers stand on the duct at start point and two other worker stretches the duct, thereby giving tension, up to of 30-40 meters.

5.1.9.4 After covering the 30-40 meter backfill the trench at that point to hold the duct in position and to avoid loss of tension.

5.1.9.5 Repeat the above procedure till the entire duct length of 500 M laid with proper tensioning.

5.1.9.6 Backfill the entire trench.

5.1.9.7 To lay the next HDPE duct drum length, couple the laid HDPE ducts to the new drum to be laid with the help of a coupler with same procedure explained above.

5.2 JOINTING OF HDPE DUCTS:

5.2.1 The jointing of two ends of HDPE conduit should strictly be done with the help of Coupler, which will be made of similar material.

5.2.2 Installation of HDPE coupler to join laid HDPE conduits should strictly be done with the help of C-spanners for proper tightening of Coupler.

5.2.3 Joints may also likely to come up due to road/ river/ nallah/ railways crossing.

5.2.4 All efforts shall be made to minimize joints.

5.2.5 The coupling should be water and airtight and should be able to withstand minimum pressure of 10 bar.

5.2.6 Following procedure should be followed for jointing HDPE conduits:

5.2.6.1 Cut the two ducts that are to be joined at the same place where they overlap. Cutting should be done in such a way that the duct ends match with the coupler perfectly because is very important that coupling joints be airtight. Proper pipe shears or cutter must be used for smooth cutting Hacksaw should not be used to cut the duct.

5.2.6.2 Debar both the inside and the outside edges of the duct with a debarring tool.

5.2.6.3 Apply a small amount of proper lubricant for better installation of plastic coupler.

5.2.6.4 Tighten the plastic coupler with C-Spanner.

5.3 SEALING OF HDPE DUCTS:

5.3.1 The Contractor shall put end plugs to seal the end of HDPE ducts after laying of same to prevent ingress of sit, dust etc. prior to back filling.

5.3.2 The end plug should be made of similar material as that of HDPE conduit.

5.4 TESTING OF DUCT AFTER LAYING:

HDPE conduits will be tested for proper laying, crush deformity and pressure testing. The Contractor shall be fully responsible for any obstruction and deformity in the laid HDPE conduit and shall have to remove the obstruction/ deformity of any kind before blowing Optical Fibre Cable into the duct. Following tests are to be carried out on the laid HDPE:

5.4.1 **Duct Cleaning:** Following steps are to be followed for cleaning the laid HDPE conduit:

5.4.1.1 Compressed air should be blown through the duct in order to remove any dirt and water that has accumulated inside the duct with the help of air compressor. A short blast of air of about 1 bar shall be blown through the duct for about 1 minute.

5.4.1.2 Duct sponges will be blown through the duct to further remove any dirt and water from the duct segment. Sponges should be blown into the duct clean and a dry sponge comes out of the duct.

5.4.2 **Duct Calibration and integrity Test:**

5.4.2.1 This test is to be done to check the roundness and the integrity of the duct. During installation or backfill process there is possibility of flattening, twisting or kinking of the duct. This testing process shall be conducted by blowing a plug or probe through the duct segment with compressed air.

5.4.2.2 Calibration shall be done by a simple sender like small probe, which shall be blown through the duct by compressed air. This probe shall be detectable using a HF Detector.

5.4.2.3. The calibration process shall be considered completed once the probe exits the duct at the other end after an uninterrupted pass.

5.4.2.4 When obstruction in the duct are found, these obstructions have to be removed by removing the damaged or deformed portion of the duct and placing a new section of duct.

5.4.3 **Air Pressure Test:**

5.4.3.1 A static pressure test is to be carried out in order to verify air tightness for the purpose of cable blowing as well as to prevent ingress of water or dirt during the lifetime of the duct.

5.4.3.2 To verify the air tightness, pressure inside the duct should be brought up to 10 bar for two minutes. A pressure drop of 0 to 0.5 bar per minute of the test is acceptable. If a higher-pressure drop is detected, no further test should be conducted until the leak has been located and repaired.

5.4.3.3 After pressure teasing duct ends should be sealed with the help of duct plugs to prevent entering of any dirt and water inside it.

5.4.3.4 After testing the duct any obstruction both the ends of HDPE conduit shall be plugged again using end plugs.

5.5 BACK-FILLING:

The back filling shall be done in the following stages:

5.5.1 Filling the trench after inspection with 65 cm earth to hold the duct in position in the trench.

5.5.2 Lay the warning grid tape. (Owner shall supply the warning tape as per the owner's Specification to be placed before back filling).

5.5.3 Backfilling the remaining depth.

5.5.4 The duct integrity test will be conducted after first stage of filling.

5.5.5 The filling earth should not contain any sharp item, metal pieces, plastics or glass pieces or any other debris.

5.5.6 The back filling operation shall be performed in such a manner so as to provide firm support under and above the pipe and to avoid bend or deformation of the pipe, when the pipe gets loaded with the back filled earth.

5.6 JOINT LOCATION/ROUTE MARKERS

The Bidder shall make a 300 mm diameter metal/ concrete plate on the pipeline markers itself (at approx. every kilometre and at crossings). The Bidder shall suitably paint on these metal plates the following:

1. Optical fibre cable
2. Cable progressive distance from the station in the direction as specified by CLIENT.
3. Optical fibre cable length
4. Fibre Length.

A typical diagram of a joint marker is shown at Annexure, drawing. Cable markers shall be similar to the diagram except the description of joint number.

SECTION 6 OPTICAL FIBER CABLE LAYING:

The cables shall be tested by the bidder in the cable drums at the designated stores at site, before installation. The test results shall be pasted on each drum and report shall be submitted to CLIENT.

The vendor shall carry out all works concerning the cable laying. The cable shall be laid always on the same side of the pipeline and any crossing of the pipeline shall be avoided. Vendor shall plan

the cable-laying schedule such that the complete drum-length of cable can be laid without cutting in-between. The vendor shall prepare the cable drum schedule for this purpose.

6.1 BLOWING OF OPTICAL FIBER CABLE

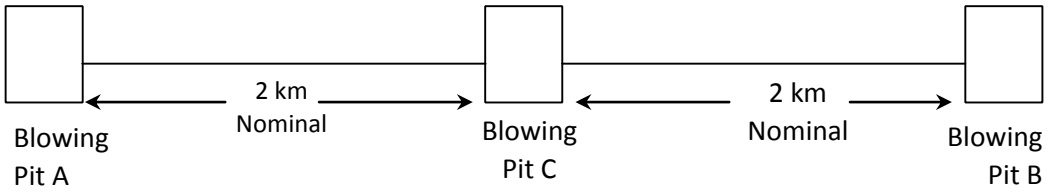
6.1.1 Optical Fibre Cable will be blown into the laid HDPE conduit with the help of a compressor (Blowing Machine) with minimum pressure of 8 bar and maximum pressure of 12 bar, with flow rate of minimum $10m^3$/minute.

6.1.2 The blowing method involves feeding of Optical Fibre Cable into the duct with the help of consistent high-pressure airflow, equally distributed along the entire cable throughout the duct.

6.1.3 The Contractor has to ensure the safe blowing of OFC into the duct without any damage to the cable internally or externally. If at any stage of the project, any damage to the cable due to blowing process is identified, then the Contractor will be fully responsible for that and has to ensure the rectification of the damage without any cost implications to CLIENT.

6.1.4 Optical Fibre Cable drum are available in the drum of 2 or 4 km nominal. The contractor shall follow the steps detailed below for blowing of OFC. There is possibility that the Contractor may not be able to blow this length continuously. In this case the Contractor should follow steps for safe blowing of OFC as the case may be.

1. Position the compressor and blowing machine at blowing pit C of 2 Km stretch between pits A & B as shown below:



(Location of compressor & Blowing machine)

2. Uncoil 1 Km of cable in a figure of eight configurations and blow towards blowing pit A and Coil 20 m of OFC in the blowing pit A. Now seal the duct end at location A with the help of cable sealing plug.

3. Coil 20 m of OFC in the blowing pit at location C and seal the duct end with the help of duct sealing compound.

4. Now uncoil the remaining Optical Fibre Cable from the drum in form of Figure of 8 to have an access to the other end of the cable.

5. Now blow this end of the cable towards the blowing pit B and coil 20 m of OFC in the blowing pit B. Now seal the duct end at location B with the help of cable sealing plug.

NOTE: Since the cable will be available in length of 2/4 KM +/- 5%, the cable length will accordingly vary. So, the Contractor has to plan the location of blowing pits before laying of HDPE conduit. The Contractor has to ensure that excess OFC is not coiled in the blowing pit and also Optical Fibre cable does not fall short of the location of blowing pit. The Contractor has to ensure the safe blowing of OFC for the complete stretch as shown in above figure. The contractor has to do the preliminary survey for proper location of the blowing equipment so that the blowing lengths are not reduced.

6.2 CABLE BLOWING PIT /CABLE PULLING PIT

6.2.1 The cable-blowing pit shall enclose HDPE section ends from both sides at every 2-km nominal distance or as per direction of Engineer-in-charge.

6.2.1 The cable-blowing pit shall be circular (Internal diameter 1200 mm) and made of reinforced concrete with lifting lungs cast into the lids during construction itself.

6.2.3 The pit shall be provided with suitable arrangement for the entry of HDPE pipes (40/33 mm outer diameter) from both side so that HDPE pipe should enter the pit at a height of 300 mm above the bottom level of the pit and to prevent entry of mud, insects etc.

6.3 CABLE JOINTING PIT

6.3.1 The cable blowing pit as described above will be used as Optical fibre Cable jointing pit every 2 km nominal distance because the OFC drum length is of 2 KM.

6.3.2 So at every 2 KM nominal distance, this pit will be used to keep the OFC jointing enclosure.

6.3.3 Contractor has to leave 20 m coil of Optical Fibre Cable from both sides in the jointing pit i.e. total 40 m of OFC will be coiled in jointing pit.

6.3.4 Similarly, the Contractor has to leave total 20 m of OFC in the blowing pit.

6.4 SEALING OF HDPE CONDUIT AFTER BLOWING OF OFC

6.4.1 HDPE conduit will be sealed with the help of cable sealing plugs after blowing of Optical Fibre into the duct at jointing pit locations.

6.4.2 HDPE conduits will be sealed with the help of Cable Duct Sealing Compound after blowing of Optical Fibre cable into the duct at blowing pit locations.

6.4.3 Cable duct Sealing Compound should be non-toxic, vapour free and should not crack and fail due to vibrations in the duct to temperature changes. No other sealing material is to be used by the Contractor to seal the ends of HDPE conduit with blown Optical Fibre cable at blowing pit location.

6.4.4 The blowing/ jointing pit will be completely filled with sand up to 30 cm from bottom level after blowing and jointing of OFC covering joint enclosure and HDPE conduits completely.

6.5 CROSSING

6.5.1 **Cased Crossing**

For pipeline crossing executed through using pipes or by boring/ jacking/HDD/Thrust Boring methods, as mentioned in the SOR:

In case of crossing to be done with boring/ jacking/ HDD/ Thrust Boring, the OFC along with the HDPE conduit shall be Sub-ducted in a MS conduit. Easy-to-install cable sealing plug shall be used to seal the ends of the conduit to prevent the ingress of water, dirt and rodents, which may damage the OFC. The two ends of each conduit shall be sealed immediately after installation of Sub-ducts. The Sub-ducting of HDPE conduits through MS pipe shall be extended for minimum 3 meters on either side of the road.

At bends and leading-in-points, a bending radius of minimum 20-time outer diameter of the cable have to be maintained.

6.5.2 **Uncased Crossings:**

For pipeline crossing executed for minor road crossing:

For these crossing bidder shall lay the cable through the HDPE conduit. Length of HDPE pipe shall be estimated with the help of survey documents & alignment sheets. For water crossings, HDPE conduit shall be used till 5m of the normal underground trench depth on either side. The bank protection measure being provided for line pipe shall also be extended to take care of Optical Fibre Cable. If casing is provided in open cut crossings, then the OFC laying methodology shall be similar to as explained above.

6.6 LAYING INSIDE OIL's STATIONS

Inside the boundary walls of the stations, the Optical Fibre Cable (s) from each direction shall come to a common point & then shall be laid through HDPE conduit preferably along the wall of the station up to and inside the telecom room.

The HDPE pipe used for the leading-in of the Optical Fibre Cable into the telecom room shall be below the ground level without getting exposed outside (which shall be properly sealed after cable installation to avoid entry if rodents, insects, etc.). A 15 m length of Optical Fibre Cable shall be kept in the telecom room to facilities termination.

6.7 FIBRE TERMINATION

6.7.1 **TERMINATION**

After entering the telecom room, the cable shall be secured on `Steel Mesh' or `Wire Mesh' by the help ties. This mesh shall have suitable chemical coating/ painted to prevent corrosion. In case of painting, the colour shall match the wall colour. Further, the cable shall be terminated in Fibre Termination Closure (FTC).

6.7.2 **FIBER TERMINATION CLOSURE (FTC)**

6.7.2.1 The FTC shall be wall-mounted type suitable for the Optical Fibre Cable used for this project (24 Fibres).
6.7.2.2 The FTC shall give grounding arrangement for all the metallic layers of the cable.
6.7.2.3 The cable shall be spliced to pigtails on trays provided in the FTC.
6.7.2.4 The connector side for the pigtails shall be secured with suitable coupler/ through adapter provided as integral part of the FTC itself.
6.7.2.5 The FTC shall have trays suitable for splicing maximum of 6 Fibres per tray.
6.7.2.6 The arrangement inside the FTC should be simple and in straight line.
6.7.2.7 FTC should have entry points for a minimum of 2 No. of Optical Cable (armoured/ non-armoured) of diameter up to 20 mm with cable clamps to avoid entry of rodents/ dust in general.
6.7.2.8 FTC should have a minimum of 2 Nos. of outlets for taking out 24 Nos. Pigtail. The outlets should have cable clamps.
6.7.3 SINGLE MODE OPTICAL FIBER PIGTAIL & CONNECTORS TO BE USED IN THE FTC
6.7.3.1 The single mode fibre pigtails and connectors should meet the TU-T Recommendations G-652 & G-655 as required.
6.7.3.2 Both connectors and cable should be robust and should withstand wear and tear due to frequent use, Connection and disconnection.
6.7.3.3 Normal expected life should be 15 year or more.
6.7.3.4 Optical Fibre Cable, connections & pigtails shall be fully compatible and matching to each other.

6.7.4 JOINTING

6.7.4.1 Each splice loss shall be ≤ 0.1 dB at 1310 nm.
6.7.4.2 In all the jointing locations (normal joints at the end of each drum as well as other joints) at least 20m of cable from each end of the cable shall be left surplus in a coiled.
6.7.4.3 During jointing, electrical continuity of each of the metallic layer in the optical fibre cable shall be maintained.
6.7.4.4 After completion of each joint at site, it shall be tested for water proof-ness by immersing it is water along-with OFC for 5 minutes.
6.7.4.5 Jointing closures shall be issued to the vendor as a free issue material for all planner joints as per the approved cable alignment sheets. Cable alignment sheets are to be submitted immediately after award of work for approval of owner/consultant.
6.7.4.6 Jointing closures, jointing pits and all accessories (along–with jointing, installation of joints, jointing pits etc. all complete) for unplanned joints shall be provided by the vender at their own cost.
6.7.4.7 The OFC coil shall rest on the floor of the pit after turns being secured with cable ties.
6.7.4.8 The lid of the jointing pit should be 1000mm below the ground level after installation.
6.7.4.9 The HDPE conduit shall enter the pit at the bottom level of the pit. Proper arrangement should be done for protection of the cable at the entry points (Sealing of the HDPE conduit entry points at the jointing / blowing pits e.g. sealing of the cable entry points after cable installation).

6.8 JOINT MARKERS

6.8.1 All jointing locations shall be marked with proper identification markers.
6.8.2 The Bidder shall supply fabricate and install the joint location markers.
6.8.3 The markers shall show the progressive joint No. and distance of the Joint as directed by CLIENT.
6.8.4 These markers shall be installed approximately 1mtr away from the jointing pit in the direction as per the instruction of CLIENT.

6.9 ELECTRONIC MARKERS

6.9.1 Additionally, CLIENT shall provide electronic locating system suitable for field use to locate underground-buried Optical fibre cable joints.
6.9.2 The system shall consist of:

a) Electronic marker (to be buried underground along-with Optical fibre cable joints).

b) Marker locator (including probe & locator electronics).

c) The electronic markers shall be placed at all joint locations (planned and unplanned).

6.9.3 The electronic markers shall be lightweight and shall have a passive tuned resonant circuit, enclosed and sealed within a casing.
6.9.4 The marker locator shall be able to locate the electronic markers from a distance of 2.2m minimum with the help of audio and visual signals.
6.9.5 The markers shall be suitable for Oil & Gas application.
6.9.6 The marker locator and the probe shall be of lightweight and portable enough to be carried (in suitable carrying case, to be provided) on shoulder.
6.9.7 The locator shall be able to work on batteries (dry alkaline) for continuously 8 hours.
6.9.8 The electronic locating system shall be shall be protected against corrosion.
6.9.9 The electronic locating system shall not be affected by any metal, alternating current, etc. The casing of the electronic marker shall be resistant to chemicals, minerals, water ingress and temperature variation normally encountered in underground environments. The material used for

the manufacture of electronic markers shall be protected against any damage due to rodents or any other insects in the underground environment.

6.9.10 Each marker locator provided shall be complete with its set of accessories (i.e. necessary interfaces, connecting cables, software, etc.)

6.9.11 The electronic markers shall be buried underground 30 mm above the lid of the jointing pits and shall not be in direct contract with any metallic body.

6.10 RECONCILIATION

6.10.1 For accounting of optical fibre cable, all cut pieces measuring in length of 100 meter and above when returned to Owner's storage points, shall be treated as serviceable materials.

6.10.2 All cut pieces of cables measuring less than 50 meter will be treated as scarp.

6.10.3 For accounting of optical fibre cable following allowances shall be permitted:

a) The basic length of optical fibre cable will be the length of pipeline as per pipeline Chainage and not cable length.

b) To take care of the terrain undulations and optical fibre cable slackness in trench and any unaccountable wastage including scrap etc., an allowance of 2% of pipeline length will be considered.

c) At each planned jointing location, 40m of additional optical fibre cable length shall be considered. The same will not be considered for unplanned joints arising out of vendor negligence (not owner's requirement).

d) At blowing pits (other than planned joint location) 20m of additional Optical Fibre Cable shall be considered.

e) At OIL stations the following will be considered:

i From pipeline limit up to telecom building entry point in separate trench Actual length.

ii Telecom building entry point into the telecom room - Actual length.

f) For unaccounted optical fibre cable not returned to owner after reconciliation, deductions of 1.25 times the landed cost of optical fibre cable will be made.

SECTION 7

7.1 **VENDOR DATA REQUIREMENT AND DOCUMENTATION**
(Exclusively for OFC Telecom work)

7.1.1 Two sets of Documentation shall be supplied with each submission.

7.1.1.1 All documents shall be in English language only.

7.1.1.2 During engineering stage, owner/consultant shall review/approve drawings/documents to be mutually agreed with the vendor.

7.1.2 After the award of work, the Bidder for review and approval from Owner/Consultant shall supply the following documents in order to start cable laying at site:

7.1.2.1 Supply of cable alignment sheet: Cable alignment shall comprise the following as a minimum:

i) Detailed measurement of length of optical fibre cable route along-with details of road, nullah, river crossings, high Tension lines etc.

ii) Stations and planned joints.

7.1.2.2 Procedure for laying Optical Fibre cable through Permanently Lubricated HDPE conduit across any river / bridge.

7.1.2.3 Procedure for laying Optical Fibre cable through Permanently Lubricated HDPE conduit across Minor River, nullah and road crossing.

7.1.2.4 Optical fibre cable jointing procedure.

7.1.2.5 Quality Assurance program as requested and the following:

a) Daily optical fibre laying/ jointing/ testing report formats.

b) Approved documents for all the material to be used during optical fibre laying i.e. HDPE, warning tape etc.

7.1.2.6 Any other data, document not specifically mentioned, but required for the satisfactory completion, operation and maintenance of the system shall be provided.

7.1.3 Documents to be supplied before 'Final acceptance certificate' issued by Owner:

7.1.3.1 As built cable route sheets shall comprise the following as a minimum:

i) Location of joints, crossings.

ii) At each joint location:

a. Progressive optical fibre cable length, including the additional length at each joint location.

b. Fibre length, fibre length between joints, as measured by OTDR.

c. Progressive pipeline Chainage.

d. Distance of joint from nearest pipeline markers & crossings, etc.

7.1.3.2 Final cable test reports (individual cable drums, hop to hop between repeaters, section and end to end).

7.1.3.3 All final documents for this project in electronic form.

7.2 VENDOR'S SITE OFFICE

Vendor's site office shall be capable of performing the following function:

7.2.1 Receipt of cable drums / equipment/goods at site, checking them for correctness and completeness, storage, transportation of good, etc.

7.2.2 Installation of the optical fibre cable in best engineering practice and workmanship.

7.2.3 Check out on proper installation.

7.2.4 Liaison with Vendor's head office.

7.2.5 Jointing, Testing and commissioning activities.

7.2.6 Conducting site acceptance testing to the satisfaction of owner.

7.3 **QUALITY ASSURANCE PROGRAM:**

7.3.1 Bidder shall submit the details of Quality Assurance Program followed by him. Bidder shall obtain and forward the Quality Assurance Program for material supplied by the Sub-Vender.

7.3.2 The Owner reserves the right to inspect and test each material / equipment at all stages of production and commissioning of the system. The inspection and the testing shall include but not limited to raw materials, components, sub- assemblies, prototypes, final product etc.

7.3.3 It shall be explicitly understood that under no circumstances shall any approval of the Owner relieve the Bidder of his responsibility for material, design, quality assurance and the guaranteed performance of the system and its constituents.

7.3.4 Bidder shall invite the Owner, at least 15 days in advance, of the date at which system shall be ready for Inspection and testing. All relevant documents and manuals, approved engineering drawing etc. shall be available with Owner / consultant well in advance of the start of inspection and testing.

7.3.5 Owner or his representative shall after completion of inspection and testing to their satisfactions, issue factory acceptance certificate to release the equipment for shipment. No equipment shall be shipped under any circumstances unless a factory acceptance certificates has been issued for it, unless agreed otherwise by the owner.

7.4 TESTING & FINAL DOCUMENTATION

7.4.1 The following tests (in the same sequence) shall be conducted for final acceptance of material / laid cable.

a) Factory acceptance testing (if applicable)
b) Regular Testing
c) Site Acceptance Testing (SAT)

7.4.1.1 These tests shall be carried out on all material Equipment supplied by bidder including those supplied by sub vendors, if any

7.4.1.2 Bidder shall arrange all necessary test instruments, manpower, testing gear, accessories etc.

7.4.1.3 All technical personal assigned by bidder shall be fully conversant with the system specification and requirements. They shall have the specific capability to make the system operative quickly and efficiently and shall not interfere or be interfered by other concurrent testing, construction and commissioning activities in progress. They shall also have the capability to incorporate any minor modification / suggestion put forward by owner / consultant.

7.4.1.4 Power supply and any temporary commissioning facility including communication system required for installation / testing / commissioning of the material / cable laying etc. shall be arranged by the bidder.

7.4.2 TEST PLAN

7.4.2.1 Bidder shall submit to owner and consultant 'Test Plans well in advance of commencement of actual testing in each of the above mentioned test categories (refer clause 7.4.1 above)

7.4.2.2 The plans shall include:

i) Test to be conducted and purpose of test.
ii) Test procedure (including time schedule for the tests) and identification of test inputs details and desired test results.

7.4.3 TEST REPORT

7.4.3.1 The observation and test results obtained during various tests conducted shall be compiled and documented to produce test reports by bidder.

7.4.3.2 The test reports shall be given for each hop of the concerned section. The report shall contain the following information to a minimum:

a) Test Results
b) Comparison of test results with anticipated (as per specifications) test results as given in test plans and reason for deviation if any.
c) The data furnished shall prove convincingly that the system meets the guaranteed performance objectives and mechanical and electrical limits were not exceeded.

74.4 REGULAR TESTING:

After laying and jointing of cables and back – filling of the trench, the cable shall be tested for attenuation over the laid cable and log off the same in Daily optical fibber cable laying, jointing, testing format shall be maintained.

7.4.5 SITE ACCEPTANCE TESTING (SAT) & FINAL ACCEPTANCE.

7.4.5.1 Site acceptance testing for handing over of laid cable and HDPE duct shall be done in the presence of owner's representative in the format provided by CLIENT.

7.4.5.2 Upon successful completion of the 'Site Acceptance Testing' any shortfalls when compared to the contract shall be made good by the vender.

7.4.5.3 The Bidder shall then provide as built documents as specified. After this, Owner shall notify the vendor in writing his final acceptance of the laid cable/Duct and the cable /Duct shall be considered 'commissioned'. Bidder shall hand over to all free issued items after reconciliation to Owners store.

7.4.5.4 Nothing herein above provided, inclusive of the 'Final Acceptance Certificate' shall absolve vender of his full liabilities under the contract inclusion of and relative to the system performance and material Guarantee/warranty.

Annexure-I

Optical Fibre Power Meter Loss Test Results

Date: _____ Tested by: _____
Cable Location:_____ Cable Length (OTDR): _____
(Physical): _____ Factor: _____
Location A: _____ Fiber Type: _____
Location B: _____ Cable Manufacturer: _____

Sl. No.	Fibre Colour	Test Wavelength _____ nm				Test Wavelength _____ nm			
		OTDR Measurements			Power Meter Loss (dB)	OTDR Measurements			Power Meter Loss (dB)
		Loss at Location-A (dB)	Loss at Location- B (dB)	Average Loss (dB) (A+B)/2		Loss at Location- A (dB)	Loss at Location- B (dB)	Average Loss (dB) (A+B)/2	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

Measurement Taken By:

Contractor's Representative
Signature :_____
Name :_____
Designation:_____
Date :_____

CLIENT'S Representative
Signature : _____
Name : _____
Designation: _____
Date : _____

Measurement Certificate By:

EIC'S Signature :_____
Name : _____
Designation : _____
Date : _____

Telecom In-charges:_____
Name :_____
Designation :_____
Date :_____

Annexure-II

Optical Fibre Power Meter Loss Test Results

Date: _____ Tested by: _____
Cable Location: _____ Cable Length (OTDR): _____
(Physical): _____ Factor_____
Location A: _____ Fiber Type: _____
Location B:_____ Cable Manufacturer: _____

Sl. No.	Fibre Colour	Test Wavelength _____ nm				Test Wavelength _____ nm			
		OTDR Measurements			Power Meter Loss (dB)	OTDR Measurements			Power Meter Loss (dB)
		Loss at Location-A (dB)	Loss at Location- B (dB)	Average Loss (dB) (A+B)/2		Loss at Location- A (dB)	Loss at Location- B (dB)	Average Loss (dB) (A+B)/2	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
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15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

Measurement Taken By:

Contractor's Representative
Signature :_____
Name :_____
Designation:_____
Date :_____

CLIENT'S Representative
Signature : _____
Name : _____
Designation: _____
Date : _____

Measurement Certificate By:

EIC'S Signature :_____
Name : _____
Designation : _____
Date : _____

Telecom In-charges:_____
Name :_____
Designation :_____
Date :_____

Annexure-III

Optical Fibre Power Meter Loss Test Results

Date : _____ Tested by: _____
Cable Location: _____ Cable Length (OTDR) : _____
(Physical): _____ Factor_____
Location A: _____ Fiber Type: _____
Location B:_____ Cable Manufacturer : _____

Sl. No.	Fibre Colour	Test Wavelength _____ nm				Test Wavelength _____ nm			
		OTDR Measurements			Power Meter Loss (dB)	OTDR Measurements			Power Meter Loss (dB)
		Loss at Location-A (dB)	Loss at Location- B (dB)	Average Loss (dB) (A+B)/2		Loss at Location-A (dB)	Loss at Location- B (dB)	Average Loss (dB) (A+B)/2	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
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18									
19									
20									
21									
22									
23									
24									

Measurement Taken By:

Contractor's Representative
Signature :_____
Name :_____
Designation:_____
Date :_____

CLIENT'S Representative
Signature : _____
Name : _____
Designation: _____
Date : _____

Measurement Certificate By:

EIC'S Signature :_____
Name : _____
Designation : _____
Date : _____

Telecom In-charges:_____
Name :_____
Designation :_____
Date :_____

SECTION 8 SCHEDULE OF RATES *(SAMPLE ONLY)*

8.1 SCHEDULE OF RATES ***– NOT TO BE QUOTED HERE***

Sl No.	Brief Description of Works Conforming to Technical Specification in the Tender Document	Unit	Unit Price (Rs.)	Qty	Total Price (Rs.)	Total Price Rupees in word
1	Laying of one No. HDPE duct in the open trench along with newly laid pipeline	Metre				
2	Laying of one No HDPE duct for Last mile connectivity at Stations from Pipeline open trench to Communication Room by Open cut method	Metre				
3	Laying of 1 No. HDPE duct for road crossing where duct will pass through MS pipe	Metre				
4	Fabrication, Supply & Installation of Concrete Chamber	Number				
5	Fabrication, Supply & Installation of Joint Location/Route Marker	Number				
6	Blowing of OFC Cable in 1 (One) HDPE duct	Metre				
7	Fusion Splicing of 24 count Fibre in Fibre Jointing box	Number				
8	Fusion Splicing of 24 count Fibre in Fibre Termination Box	Number				
9	Installation of Warning tape in HDPE duct trench	Metre				
10	Installation of Electronic Marker in HDPE duct trench	Number				
11	Installation, Testing & Commissioning	LSM				
12	Documentation	LSM				
13	Any other item					

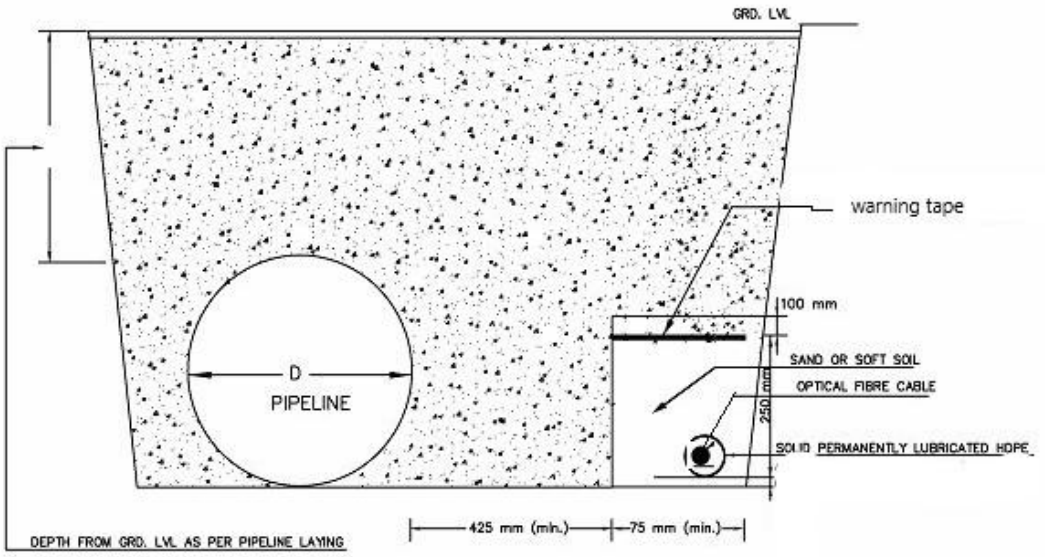
*LSM: Lump Sum

Signature & Seal of Bidder

Bidder's Name:

SECTION 9 ANNEXURES AND DRAWINGS:

FIGURE -1: ARRANGEMENT OF OFC/DUCT WITH RESPECT TO PIPELINE



OPTICAL FIBRE PLACEMENT INSIDE THE TRENCH (TYPICAL)

FIGURE-2: OFC INSTALLATION CASED CROSSINGS

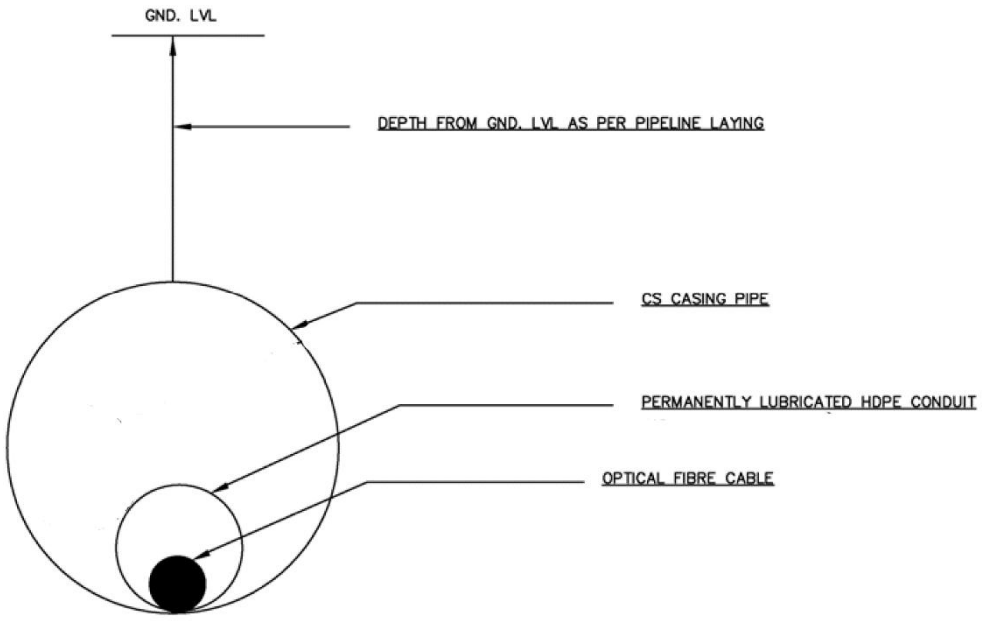
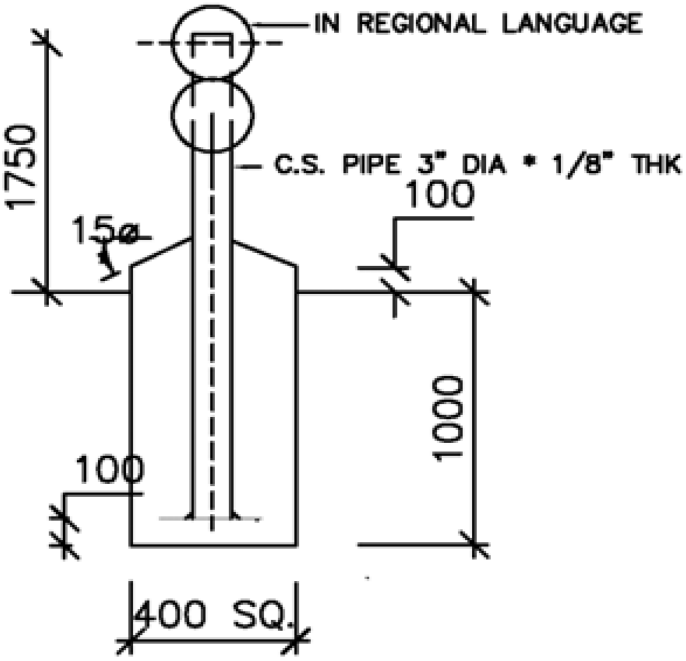
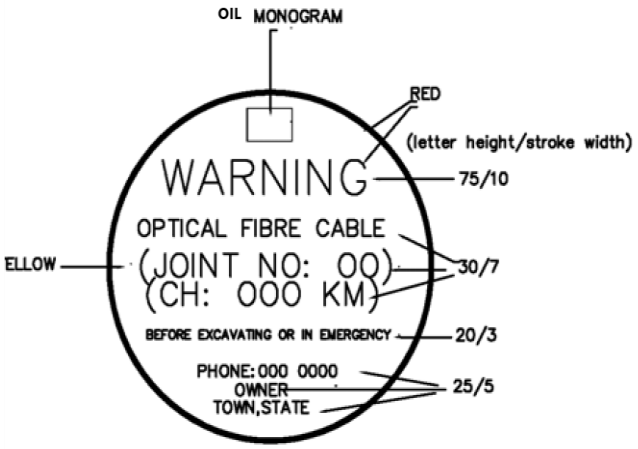


Figure 3: CONCREATE MARKER POST AND SIGN BOARD



FOR NORMAL SOIL

Concreate Marker post



DETAIL X

NOTES

1. SCHEME FOR PAINTING AND COLOURING

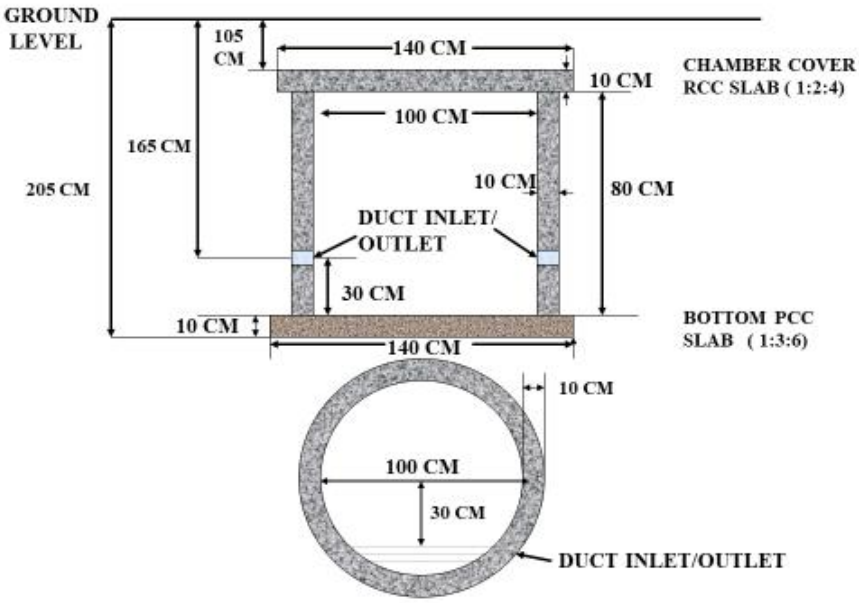
   A) UNDERGROUND STEEL : COAL TAR EPOXY (MIN 300 MICR(THK), (EXCEPT THAT EMBEDDED IN CONCRETE)
   B) OVER GROUND STEEL : ONE COAT OF PRIMER AND TWO COATS OF SPECIFIED COLOUR PAINT.
   C) ALL LETTERS EXCEPT 'WARNING' TO BE PAINTED BLACK.
   D) POST SHALL BE PAINTED WITH 250 WIDE ALTERNATE BAN OF BLACK AND WHITE PAINT.
   E) ALL OTHER ABOVE-GROUND STEEL SHALL BE PAINTED YE

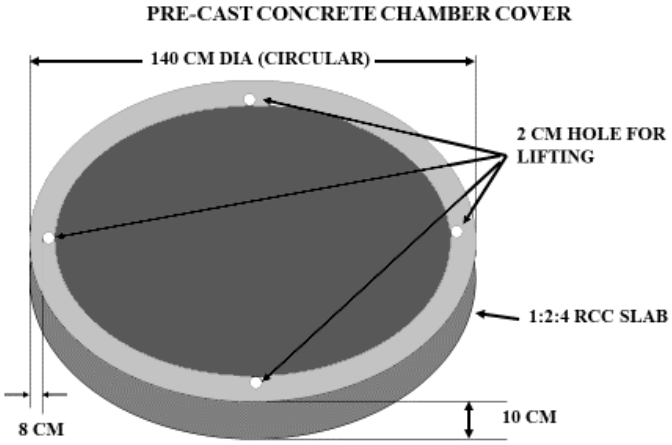
2. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.

3. FOUNDATION SHALL BE MADE OF CONCRETE.

4. SIGN PLATE IN REGIONAL LANGUAGE SHALL BE PREPARED THE CONTRACTOR IN SIMILAR LINES.

Figure 4: RCC concreate chamber design





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PART-IV

PAYMENT TERMS

Sr.	Nature of Work	Payment Terms
1.0	Pipeline laying work	- 5% on completion of site development, clearing and grading of RoW etc. - 5% on completion of transportation up to RoW and Stringing - 15% on completion of Fabrication, Alignment, Field Welding 5% on completion of NDT, Radiography 5% on completion of Joint Coating 20% on completion of trenching, lowering and back-filling 10% on completion of tie-ins 20% on completion of cleaning, gauging and hydro-testing 10% on completion of Hook ups, Kilometer Posts, Warning sign, restoration work etc. (including work under SOR items for restoration of Bituminous Road, Paver Block road, Major civil works) 5% on completion of Pipe Book, Test Reports, As-Built Drawings and other documentation works. Above payments hall be made subject to following: a) For discontinuity on account of crossings specified in the SOR (being paid separately as SOR item), crossing length shall not be taken into account for payment processes. b) All crossings, which are not separately listed in SOR items, shall be paid on the basis of linear pipeline length paid.
2.0	OFC laying work	50% on completion of Duct and Warning Tape laying 20% on completion of Cable Blowing 25% on completion of completion of work in all respect including testing 5% on completion of documentation Above payments hall be made subject to following: c) For discontinuity on account of crossings specified in the SOR (being paid separately as SOR item), crossing length shall not be taken into account for

Sr.	Nature of Work	Payment Terms
		payment processes. d) All crossings, which are not separately listed in SOR items, shall be paid on the basis of linear pipeline length paid.
3.0	Cased crossing by Boring	- 70% on completion of Installation of casing pipe by boring - 30% on completion of remaining work in all respects
4.0	Supply of LR Bends	- 60% on completion of Inspection Release Note of Bends - 40% on receipt and acceptance of materials at site
5.0	Temporary cathodic protection	- 40% on approval of design documents and receipt and acceptance of materials at site - 30% on installation of system progressively - 20% on testing and commissioning of CP system - 10% on completion all works including documentation NOTE: Unit of TCP work in the bid/ contract is considered on Lumpsum basis for entire pipeline from Duliajan to Digboi (37.5 km). However, if TCP work is done for part of the total length, payment will be done for the part job only, calculated on pro-rata basis.
6.0	Others	On completion of respective jobs.

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PART-V

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

SCHEDULE OF COMPANY'S PLANTS, MATERIALS & EQUIPMENT

i) Line Pipe for Pipe Laying Job

ii) Block Valves

iii) OFC Duct, cable, jointing closures, Electronic markers, Warning tape

(iv) Bitumin for road restoration, as required

****

PART-VI

TECHNICAL DRAWINGS

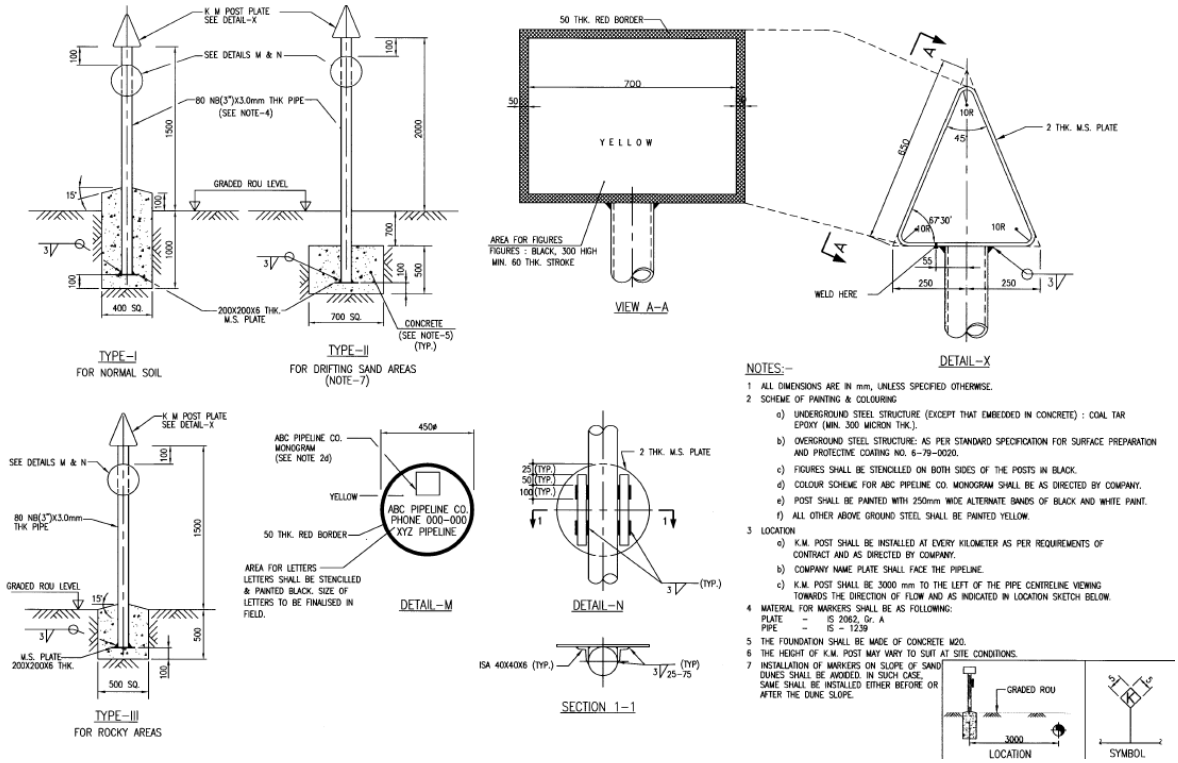


Fig.: Typical Kilometre Post *(dimensions in mm)*

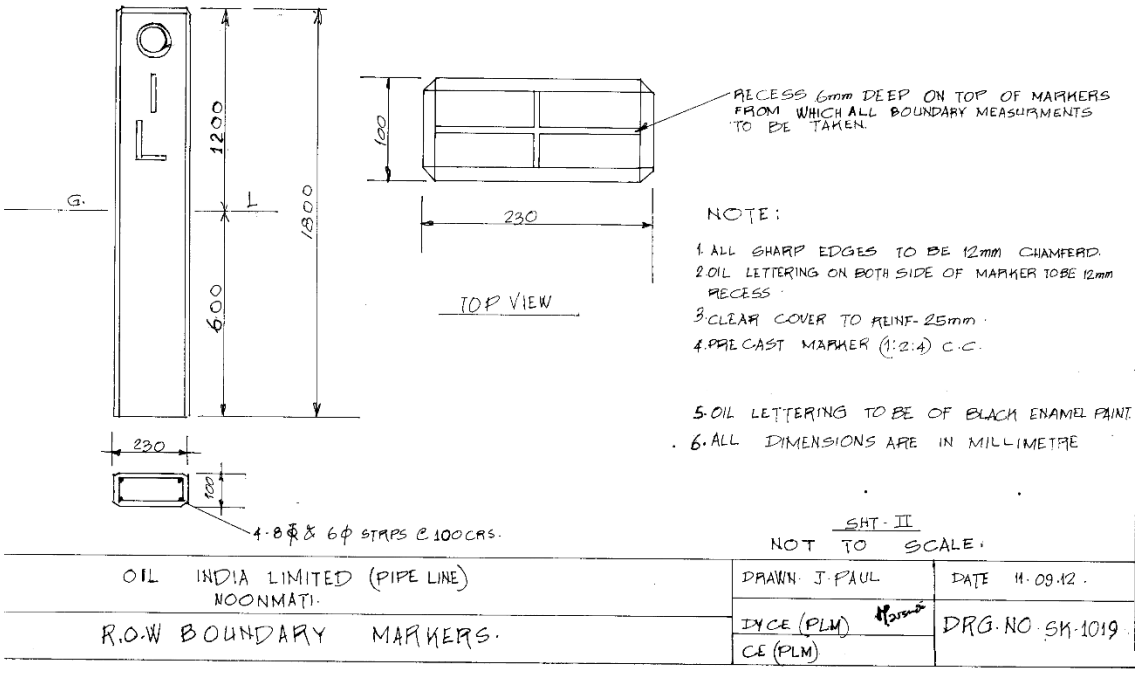


Fig.: Typical Boundary Marker *(dimensions in mm)*

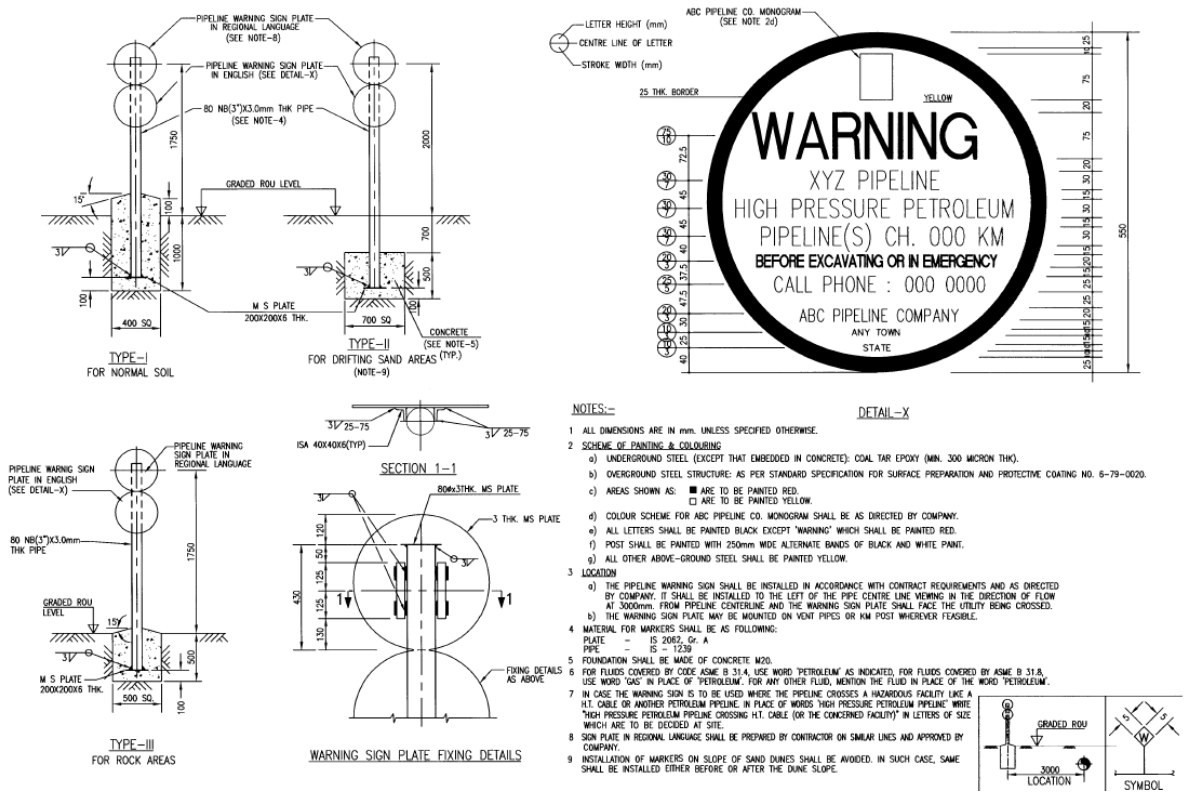


Fig.: Typical Pipeline Warning Sign *(dimensions in mm)*

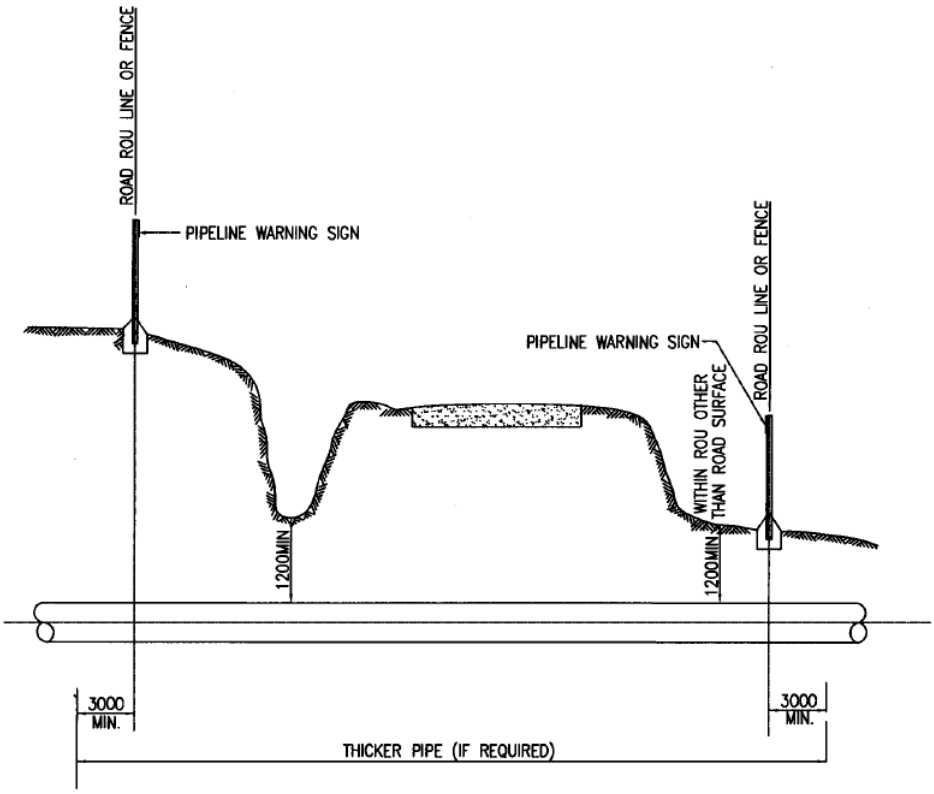


Fig.: Typical Pipeline Road Crossing (Uncased) *(dimensions in mm)*

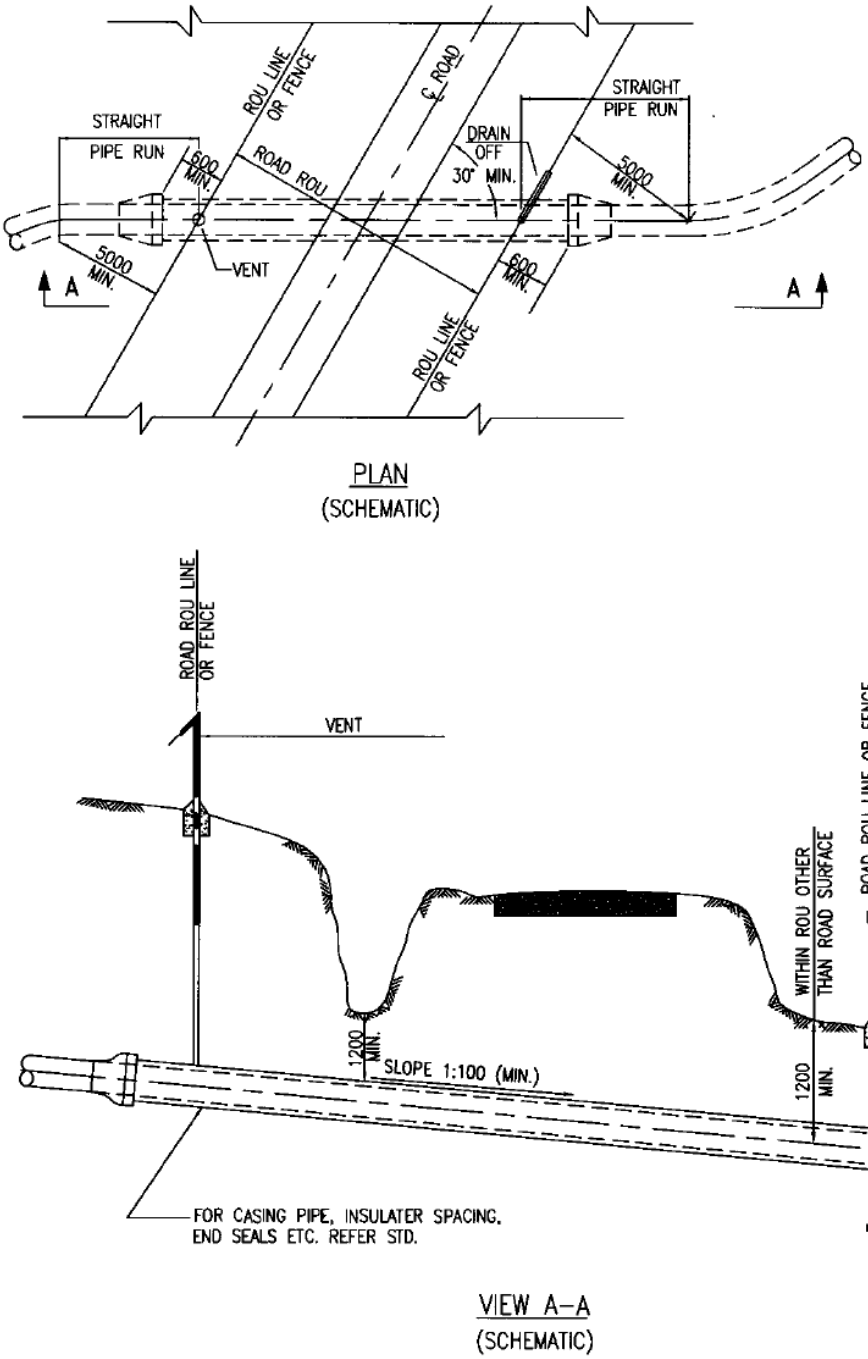


Fig.: Typical Pipeline Road Crossing (Cased) ***(dimensions in mm)***

Notes:

1. Refer API RP 1102 (Latest Edition) for other design and installation requirements
2. At each crossing, pipeline crossing warning sign will be installed on either side of the crossing
3. CP Lead Terminal Box shall be provided at both ends of crossings as per std./ specification
4. All pipeline joints shall be radiographed
5. Electrical insulation between casing and carrier pipes must be checked with suitable megger
6. Pipeline section shall be pretested hydrostatically, separately from the mainline, as instructed by Company
7. Jacking/ Bore Through Technique shall be used for the crossing unless specified otherwise.

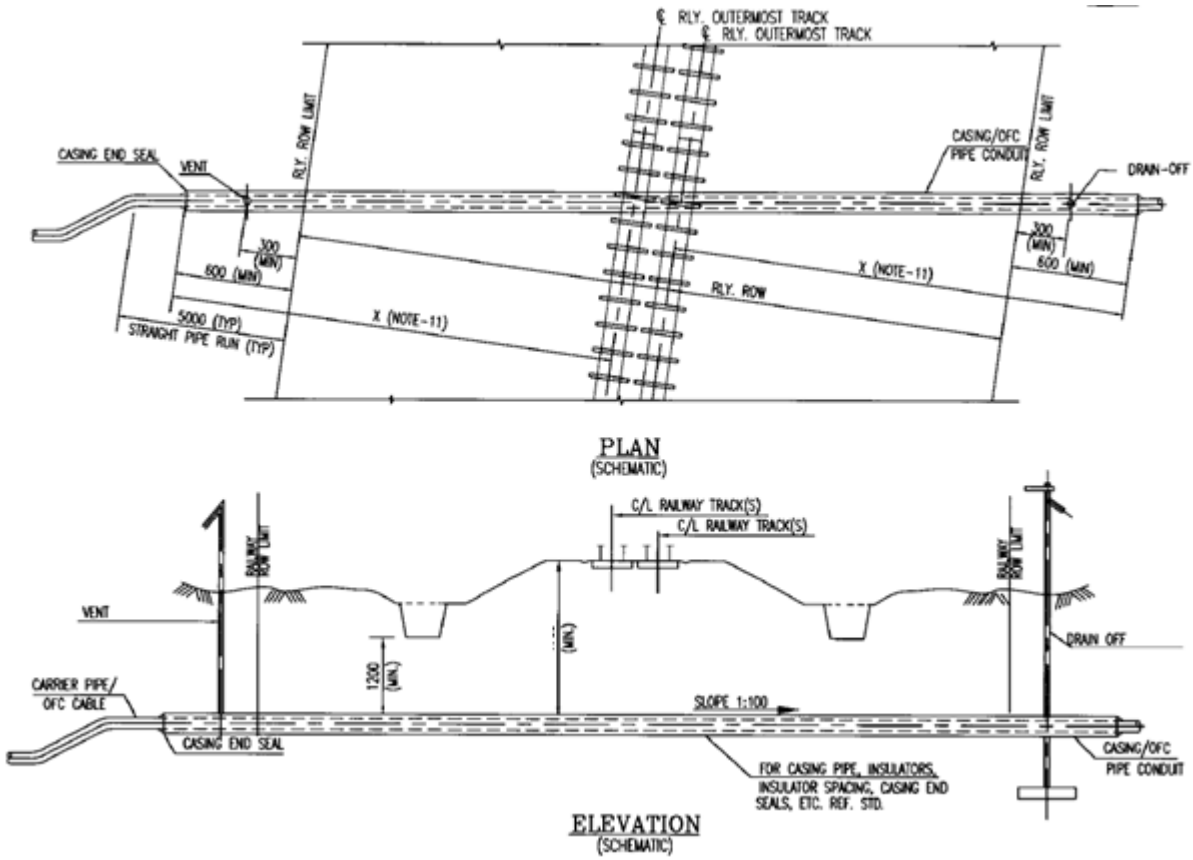


Fig.: **Typical details of Railway Crossing**

Notes:

8. Refer API RP 1102 (Latest Edition) for other design and installation requirements
9. At each crossing, pipeline crossing warning sign will be installed on either side of the crossing
10. CP Lead Terminal Box shall be provided at both ends of crossings as per std./ specification
11. All pipeline joints shall be radiographed
12. Electrical insulation between casing and carrier pipes must be checked with suitable megger
13. Pipeline section shall be pretested hydrostatically, separately from the mainline, as instructed by Company
14. Jacking/ Bore Through Technique shall be used for the crossing unless specified otherwise.

(dimensions in mm)

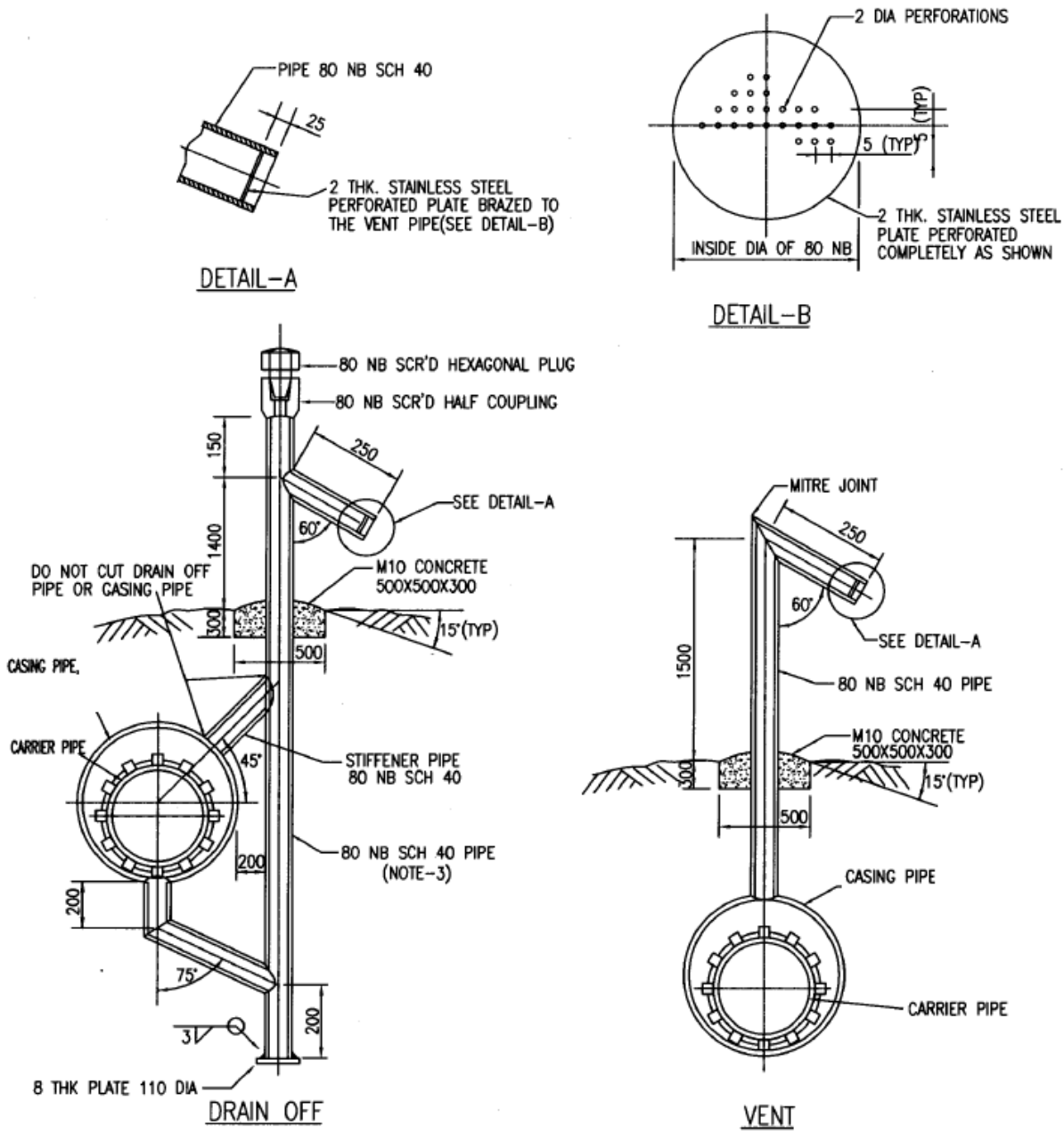
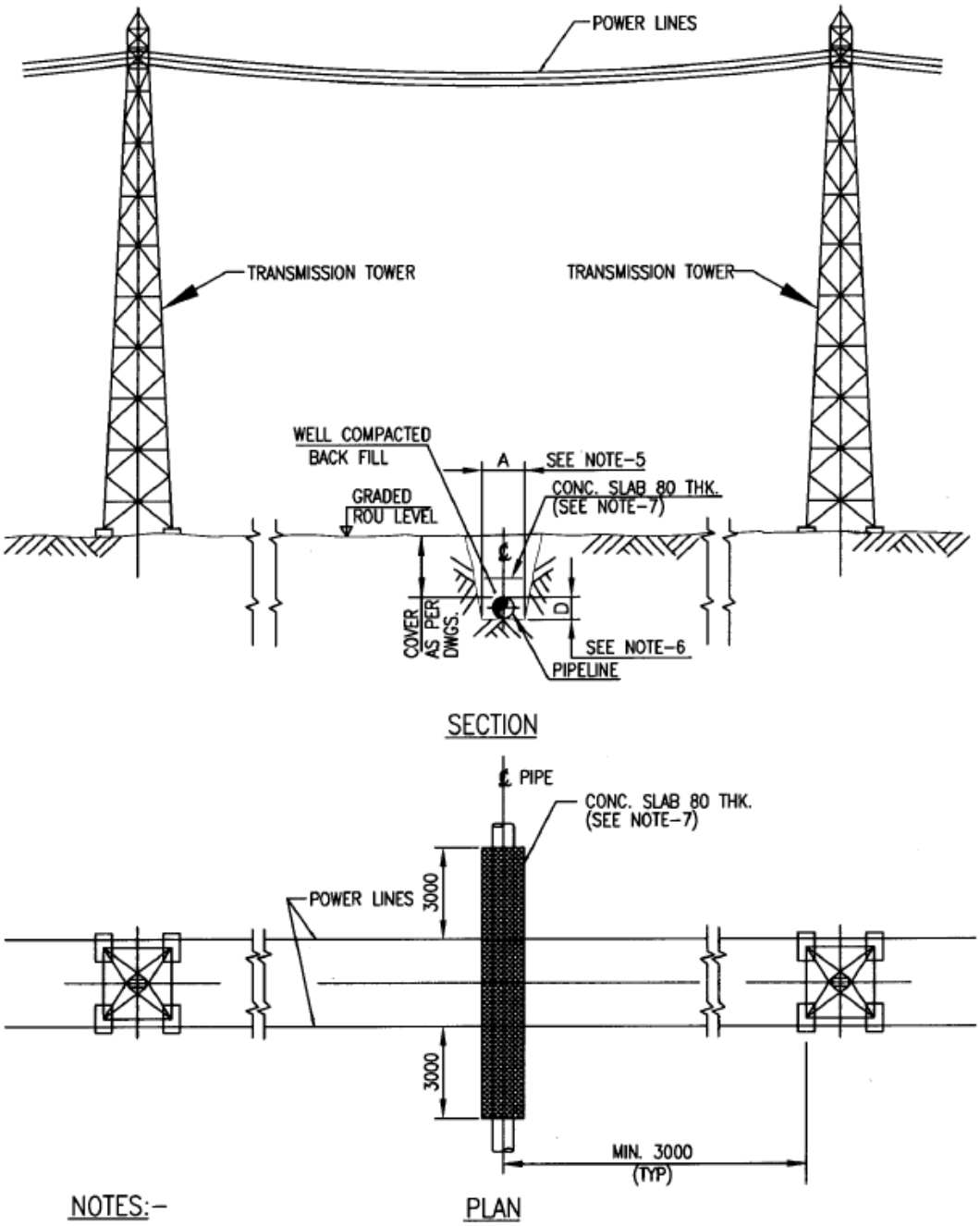


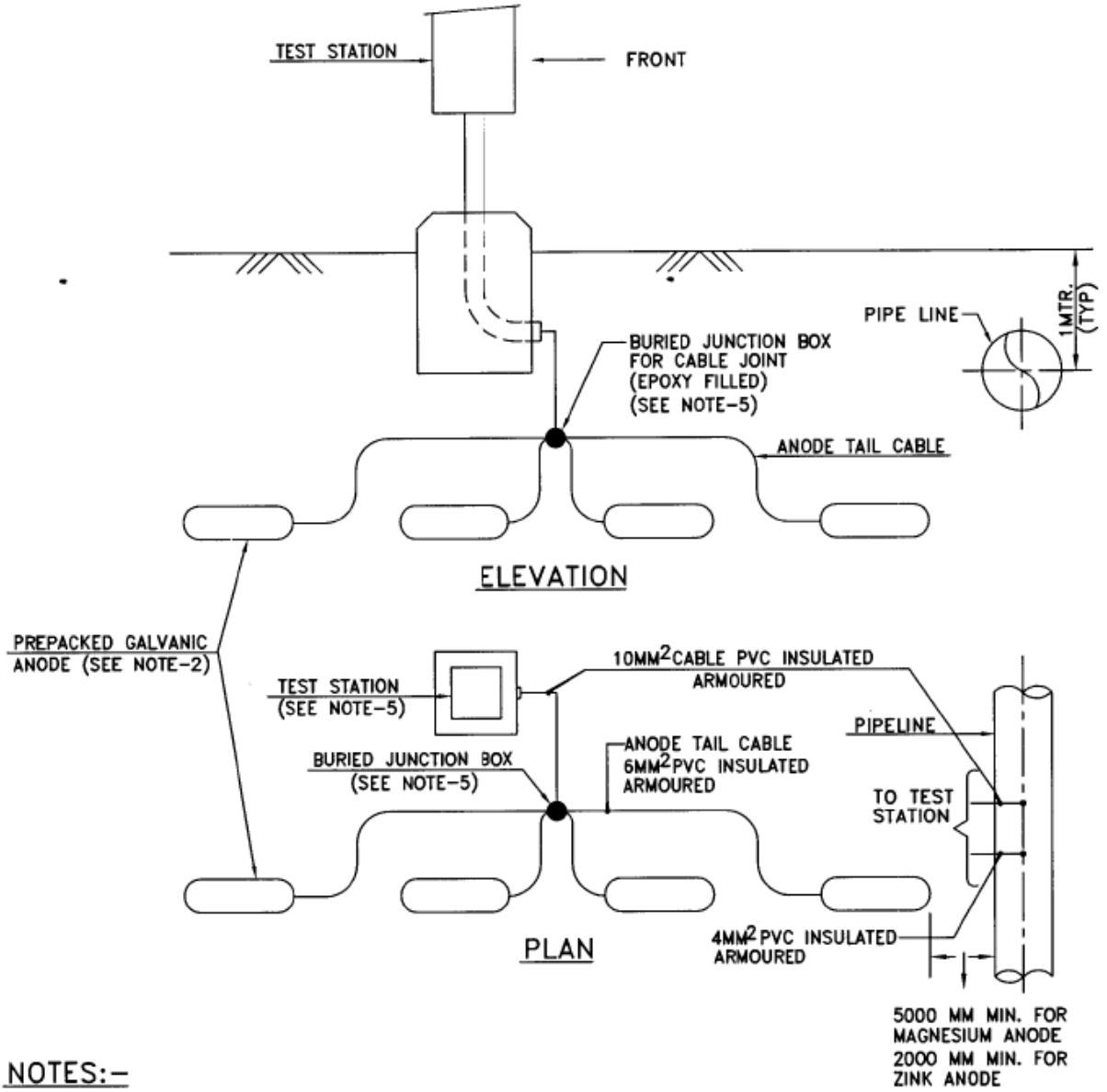
Fig.: Typical details of Casing Vent and Drain-off *(dimensions in mm)*



NOTES:–

1 ALL DIMENSIONS ARE IN mm, UNLESS SPECIFIED OTHERWISE.
2 THIS STANDARD IS APPLICABLE FOR 11 kV AND ABOVE POWER LINES ONLY.
3 SUITABLE MEASURES SHALL BE TAKEN FOR THE PROTECTION OF THE LINE AND SECURITY OF PERSONNEL WHEREVER FOUND NECESSARY.
4 APPROVAL OF THE CROSSING MAY HAVE TO BE OBTAINED FROM CONCERNED AUTHORITIES.
5 DIMENSION 'A' SHALL BE CALCULATED USING FORMULA A=(D1+D2+....Dn)+(n–1) X 500, WHERE D1,D2....Dn IS THE DIAMETER OF PIPES LAID IN SAME TRENCH AND 'n' IS NUMBER OF PIPES IN SAME TRENCH.
6 DIMENSION 'D' SHALL BE THE LARGEST DIAMETER OF THE PIPELINES LAID IN SAME TRENCH.
7 CONCRETE SLAB SHALL BE PCC M15 AS PER IS456.

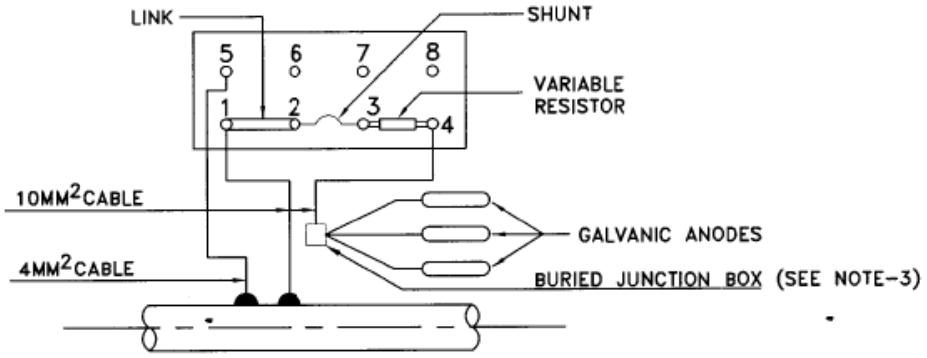
Fig.: Typical Overhead Power Line Crossing *(dimensions in mm)*



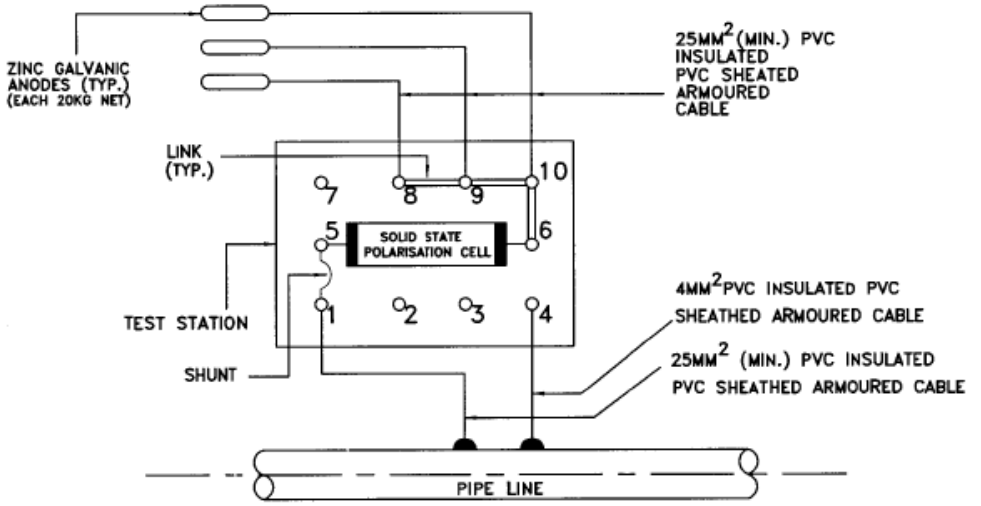
NOTES:-

1. THE PREPACKED GALVANIC ANODE SHALL BE INSTALLED AT A MINIMUM DEPTH, EQUAL TO BOTTOM LEVEL OF THE PIPELINE.
2. THE ANODES ARE SHOWN HORIZONTALLY LAID. ALTERNATIVELY THE ANODES MAY BE VERTICALLY INSTALLED WITH TOP OF THE ANODE AT A MINIMUM DEPTH EQUAL TO BOTTOM LEVEL OF THE PIPE LINE.
3. ALL NATIVE BACKFILL SOIL SHALL BE FREE OF ROCKS, GARBAGE, PAPERS, PLASTICS ETC.
4. CABLE SHALL BE LAID WITH ENOUGH SLACKNESS TO AVOID DAMAGE TO CABLES DURING BACK FILLING ETC.
5. THIS DRAWING SHOWS TYPICAL ANODE INSTALLATION ARRANGEMENT FOR TEMPORARY CATHODIC PROTECTION SYSTEM. ANODES FOR PERMANENT CATHODIC PROTECTION SYSTEM SHALL BE INSTALLED IN A SIMILAR MANNER, BUT ANODE TAIL CABLES OF EACH ANODE SHALL BE BROUGHT INDIVIDUALLY UPTO TEST STATION & TERMINATED. NO BURIED JUNCTION BOX SHALL BE USED FOR PERMANENT CP SYSTEM.
6. ANODE TAIL CABLE SHALL NOT BE USED FOR LIFTING THE ANODE. ROPE SLINGS SHALL BE USED FOR LIFTING THE ANODE DURING INSTALLATION INTO GROUND BED.

Fig.: Typical Galvanic Anode Installation *(dimensions in mm)*



TCP GALVANIC ANODE INSTALLATION
(CONNECTION SCHEME-L)



PIPELINE GROUNDING THROUGH POLARISATION CELL AND GALVANIC ANODE
CONNECTION SCHEME-M

NOTES:-

1. NUMBER OF TERMINALS FOR TEST STATION OF DIFFERENT CONNECTION SCHEME SHALL BE AS SHOWN ON THE RESPECTIVE SCHEME DRAWING. TEST STATION FOR ANY OTHER SCHEME SHALL PREFERABLY BE SIMILAR TO ANY OF THE ABOVE TYPES.
2. ELECTRICAL CONNECTIONS SHALL BE CLEANED TO BRIGHT SURFACE & TIGHTENED WITH NON-OXIDE GREASE APPLIED ON MECHANICALLY MATED SURFACE.
3. FOR SECRIFICIAL ANODE GROUND BED WHICH IS INTENDED FOR PERMANENT CP SYSTEM AND/OR TO BE INTEGRATED WITH PERMANENT CP SYSTEM, THE LEADS OF ALL ANODES SHALL BE BROUGHT UP TO THE TEST STATION AND SHALL BE TERMINATED INDIVIDUALLY. ACCORDINGLY, THE NUMBER OF TERMINALS FOR TEST STATION SHALL BE DECIDED BASED ON NUMBER OF ANODES.
4. WHERE INSULATING JOINT (IJ) ON THE PIPELINE IS BURIED, THE SURGE DIVERTER MOUNTED ACROSS THE IJ SHALL BE HOUSED SUITABLY SO THAT OPERATION OF THE SAME IS NOT AFFECTED.
5. THE DISTANCE BETWEEN TWO SUCCESSIVE PIN BRAZING POINTS SHALL BE MIN. 300MM.

Fig.: Typical Test Station Connection Schemes *(dimensions in mm)*

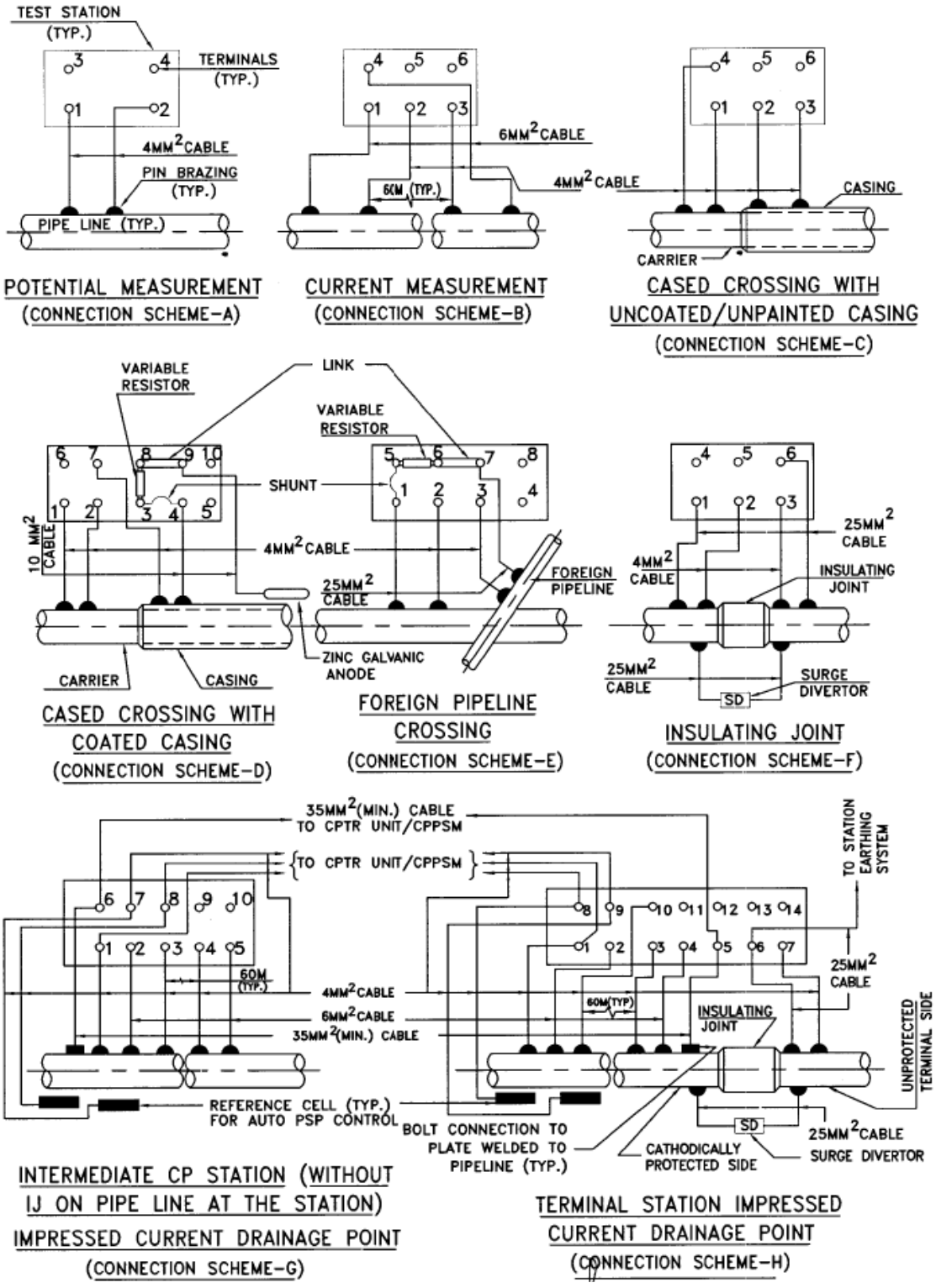


Fig.: Typical Test Station Connection Schemes *(dimensions in mm)*

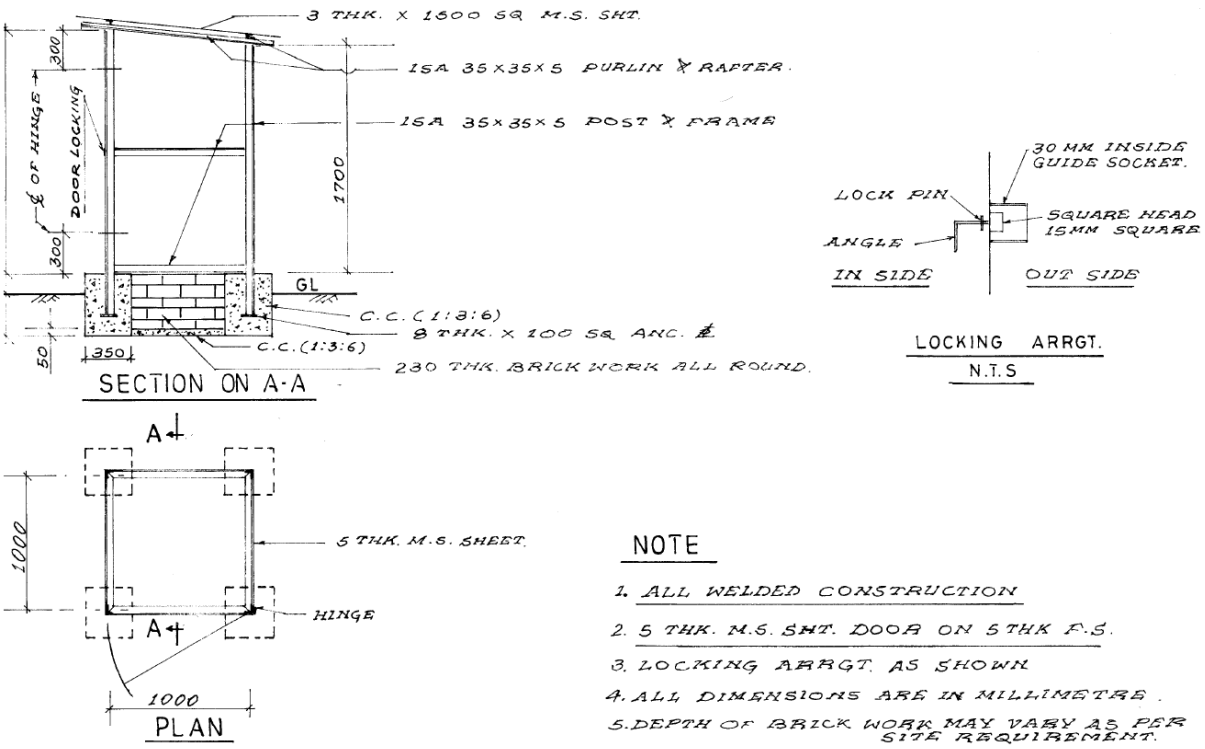


Fig.: Typical Valve Box *(dimensions in mm)*

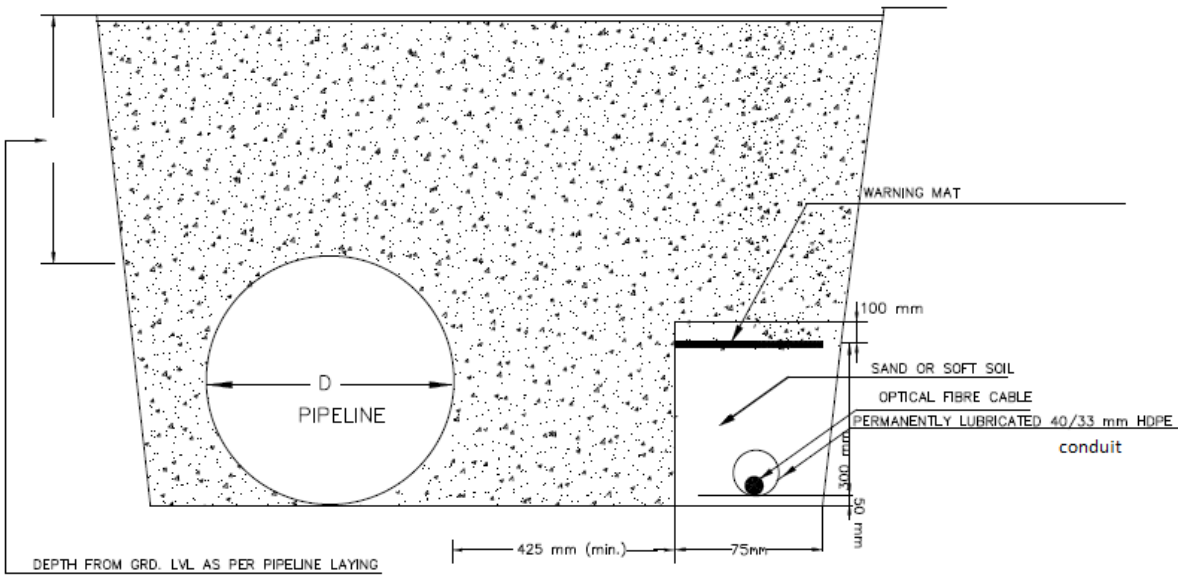


Fig.: Typical Arrangement of OFC w.r.t. Pipeline *(dimensions in mm)*

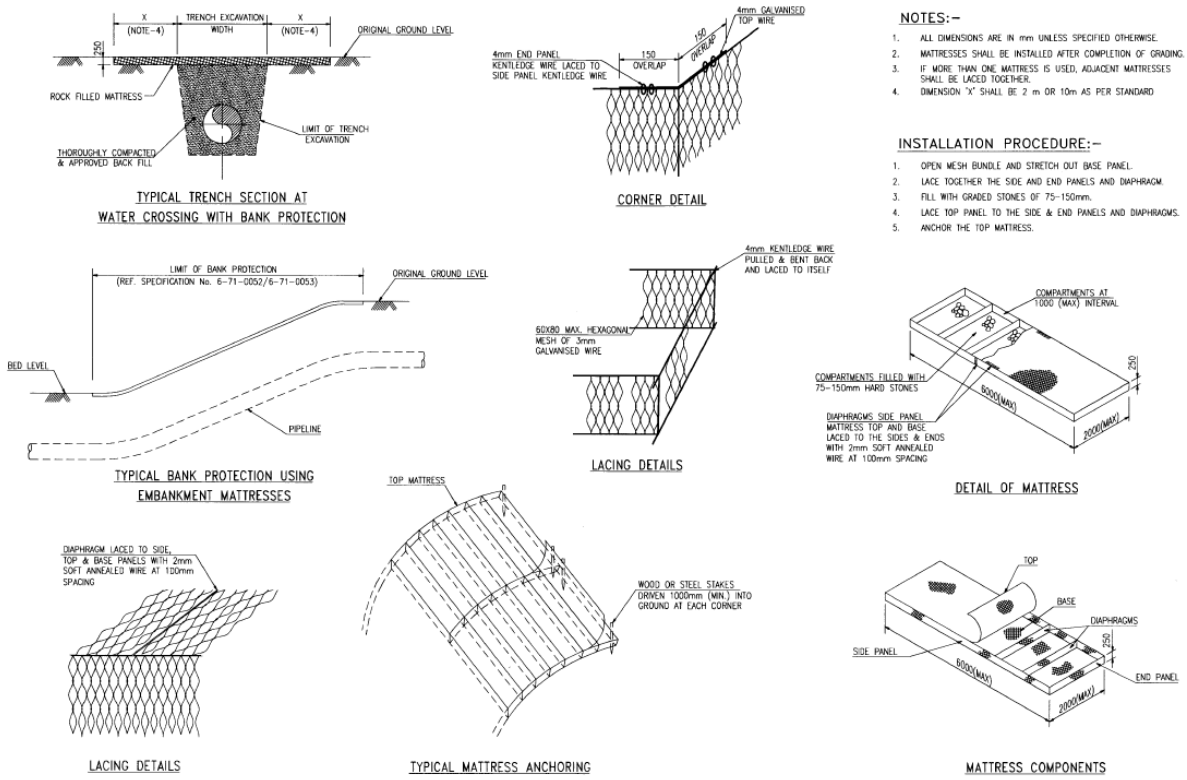


Fig.: Typical Valve Box *(dimensions in mm)*

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PART-VII - SAFETY MEASURES

To,
GM-CONTRACT
OIL INDIA LIMITED
Guwahati-781171

SUB: SAFETY MEASURES

Description of work/service: Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited

Sir,

We hereby confirm that we have fully understood the safety measures to be adopted during execution of the above contract and that the same have been explained to us by the concerned authorities. We also give the following assurances.

a) Only experienced and competent persons shall be engaged by us for carrying out work under the said contract.
b) The names of the authorized persons who would be supervising the jobs on day to day basis from our end are the following:

i) _____

ii) _____

iii) _____

The above personnel are fully familiar with the nature of jobs assigned and safety precautions required.

c) Due notice would be given for any change of personnel under item(b) above.

d) We hereby accept the responsibility for the safety of all the personnel engaged by us and for the safety of the Company's personnel and property involved during the course of our working under this contract. Any violation pointed out by the Company's engineers would be rectified forthwith or the work suspended till such time the rectification is completed by us and all expenditure towards this would be on our account.

e) All losses caused due to inadequate safety measures or lack of supervision on our part would be fully compensated by us and the Company will not be responsible for any lapses on our part in this regard.
(Seal)

Yours Faithfully

Date_____

M/s_____

FOR & ON BEHALF OF BIDDER

PART-VIII- INTEGRITY PACT

INTEGRITY PACT (applicable)

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 **……** 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 Organization "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.

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 h e/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 cartelization 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.

(3) The Bidder/Contractor signing Integrity Pact shall not approach the Courts while representing the matters to IEMs and he/she will await their decision in the matter.

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 risibility 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.

5. Integrity Pact, in respect of a particular contract, shall be operative from the date Integrity Pact is signed by both the parties till the final completion of the contract **or as mentioned in Section 9- Pact Duration whichever is later**. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings

Section 4 -Compensation for Damages

1. If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from the Bidder liquidated damages equivalent to Earnest Money Deposit / Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to Security Deposit / Performance Bank Guarantee.

3. The bidder agrees and undertakes to pay the said amounts without protest or demur subject only to condition that if the Bidder/Contractor 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 Principal will enter into Pacts on identical terms with all bidders and contractors.

2. The Bidder / Contractor undertake(s) to procure from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the provisions laid down in this agreement/Pact by any of its sub-contractors/sub-vendors.

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

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 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. However, the Independent External Monitor shall give an opportunity to the bidder / contractor to present its case before making its recommendations to the Principal.

6. The Monitor will submit a written report to the Chairperson of the Board of the Principal within 8 to 10 weeks from the date of reference or intimation to him by the 'Principal' and, should the occasion arise, submit proposals for correcting problematic situations.

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. The Arbitration clause provided in the main tender document / contract shall not be applicable for any issue / dispute arising under Integrity Pact.

2. Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

3. If the 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 intensions.

……..	**……...**
For the Principal	**For the Bidder/Contractor**
	Witness 1: .....
	Witness 2: .....

Place.
Date .

PROFORMA - B

BID FORM

To
THE GM (CONTRACTS)
OIL INDIA LIMITED
(A Govt. of India Enterprise)
P.O. GUWAHATI-781171
DIST. KAMRUP(M)
ASSAM

Sub: IFB No. : **CGI 2448P20**

Dear Sir,

Having examined the General and Special Conditions of Contract and the Terms of Reference 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 Terms of Reference 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 _____ 2019.

Signature and seal of the Bidder: _____

(In the capacity of) : _____

Name of Bidder : _____

****

PROFORMA – C

LETTER OF AUTHORITY

To
THE GM (CONTRACTS)
OIL INDIA LIMITED
(A Govt. of India Enterprise)
P.O. GUWAHATI-781171
DIST. KAMRUP(M)
ASSAM

Sir,

Sub: IFB No. **CGI2448P20**

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 the service contract as described below:

"Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited

.

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.

****

PROFORMA - D

STATEMENT OF NON-COMPLIANCE

(Only exceptions/deviations to be rendered)

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

Authorised Person's Signature: _____

Name: _____

Designation:_____

Seal of the Bidder:

NOTE: OIL INDIA LIMITED expects the bidders to fully accept the terms andconditions 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.

****

PROFORMA- E

[TO BE FILLED-UP / SUBMITTED BY THE VENDOR 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 :

GST Registration 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.

****

PROFORMA-F
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 _____ 2019.

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:

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.

****

PROFORMA-G

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

****

PROFORMA-H

FORMAT FOR UNDERTAKING
(IN TERMS OF **TENDER NO. CGI2448P20**)
(On Non-Judicial Stamp Paper of Rs. 100/-)
TO BE NOTORISED

To
GM-CONTRACTS
OIL INDIA LIMITED
GUWAHATI

Dear Sirs,

UNDERTAKING/DECLARATION BY THE BIDDER IN RESPECT OF TENDER NO **CGI2448P20**

This is in connection with the Bid submitted by me/us, ... (Name of Bidder), against Tender No. **CGI2448P20** for **"Hiring of Services for Pipeline Laying and associated services for Replacement of 8" Spur line from PS1, Duliajan to Digboi Refinery under Pipeline Dept., Oil India Limited"**

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.
(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 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-I

To,
Deputy General Manager (F&A)-PL
Oil India Limited
Pipeline HQ, Narangi , Guwahati ,Assam-781171

Dear Sir,

Sub: E–Payments vide RTGS/NEFT

I/We request and hereby authorise you to execute E-Payment vide RTGS/NEFT modes to My /Our Bank account as per the details given below:

(A) BANK DETAILS
1. Bank A/c No. (Must Enclose Cancelled Cheque)
2. Account Type Saving Bank/ Curent Account
3. Bank Branch
4. Bank Address
5. IFSC Code
6. MICR No.

(B) VENDOR DETAILS :
1. Vendor Code (See the vendor code given in the PO/Contract)
2. Name
3. PAN No. (Must enclosed self-attested photo copy of PAN Card)
4. Address with Mobile/Telephone No.
5. ~~VAT TIN No.~~
6. ~~CST Regn. No.~~
7. GST N. No.
8. ~~Central Excise Regn.No.~~
9. Email ID

I/We hereby declare that the particulars given above are correct and complete. I/We confirm that I/we shall bear the charges, if any levied by my/our bank for the credit in our above account through NEFT. If the transaction is delayed or lost because of incomplete or incorrect information, we would not hold the company responsible.
Thanking you,

_____

Date: Authorised Signatory & Stamp

……
……..

Bank Certificate
We confirm that the details given above are correct as per our records.

Date: _____
Place: Signature, Code & Stamp of Authorised Bank Official

PROFORMA-J

Format of Undertaking by Bidders towards submission of authentic information/documents

(To be typed on the letter head of the bidder)

To,
General Manager (Contracts)-PL
Oil India Limited
Pipeline HQ, Narangi , Guwahati ,Assam-781171

Subject: Undertaking of Authenticity of Information/documents submitted

Refer : Tender No……Dated…….

Sir/Madam

With reference to our quotation against your above-referred tender, we hereby undertake that no fraudulent information/documents have been submitted by us.

We take full responsibility for the submission of authentic information/documents against the above cited bid.

We also agree that, during any stage of the tender/contract agreement, in case any of the information/documents submitted by us are found to be false/forged/fraudulent , OIL has right to reject our bid at any stage including forfeiture of our EMD and/or PBG and/or cancel the award of contract and/or carry out other penal action on us, as deemed fit.

Yours faithfully,

For (type name of the firm here)

Signature of Authorised Signatory

Name:

Designation:

Phone No:

Place:

Date:

(Affix seal of the Organization here, if applicable)

****

PROFORMA-K

PROFORMA OF INDEMNITY BOND FOR SUPPLY OF MATERIALS BY PURCHASER/ OWNER

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

WHEREAS OIL INDIA Ltd. (hereinafter referred to as "OIL") which expression shall unless repugnant to the context includes their legal representatives, successors and assigns having their Pipeline Headquarters at PO Udayan Vihar, Guwahati-781171, Assam has entered into an Contract with _____(hereinafter referred to as the CONTRACTOR which expression shall unless repugnant to the context include their legal representatives, successors and assigns) for _____on the terms and conditions as set out, inter-alia, in the Contract No..... Dated..... and various documents forming part thereof hereinafter collectively referred to as the "CONTRACT" which expression shall include all amendments, modifications and/or variations thereto.

AND WHEREAS

i) OIL has agreed to supply to the CONTRACTOR, equipment, plants and materials (finished, semi-finished and raw) for the purpose of EXECUTION of the said CONTRACT by the CONTRACTOR (the equipment, plants and materials to be supplied by OIL to the CONTRACTOR, hereinafter for the sake of brevity referred to as the "said materials") and pending execution by the CONTRACTOR of the CONTRACT incorporating the said materials, the said materials shall be under the custody and charge of the CONTRACTOR and shall be kept, stored, altered, worked upon and/or fabricated at the sole risk and expense of the CONTRACTOR.

ii) As a pre-condition to the supply of the said materials by OIL to the CONTRACTOR, OIL has required the CONTRACTOR to furnish to OIL an Indemnity Bond in the manner and upon terms and conditions hereinafter indicated.

NOW, THEREFORE, in consideration of the premises aforesaid the CONTRACTOR hereby irrevocably and unconditionally undertakes to indemnify and keep indemnified OIL from and against all loss, damage and destruction (inclusive but not limited to any or all loss or damage or destruction to or of the said materials or any item or part thereof by theft, pilferage, fire, flood, storm, tempest, lightning, explosion, storage, chemic al or physical action or reaction, binding, warping, exposure, rusting, faulty workmanship, faulty fabrication, or faulty method or technique of fabrication, strike, riot, civil commotion, or other act or omission or commission whatsoever within or beyond the control of the CONTRACTOR, misuse and misappropriation (inclusive but not limited to the misuse or misappropriation by the CONTRACTOR and the CONTRACTOR's servants and/or agents) whatsoever to, or of in the said materials or any part of them thereof from the date that the same or relative part of item thereof was supplied to the CONTRACTOR up to and until the date of return to OIL of the said materials or relative part of item thereof or completed fabricated works(s) incorporating the said material and undertake to pay to OIL forthwith on demand in writing without protest or demur the value as specified by OIL of the said material or item or part thereof, lost, damaged, destroyed, misused and/or misappropriated, as the case may be or, together with OIL's costs and expenses (inclusive of but not limited to handling, transportation, cartage, insurance, freight, packing and inspection costs/or expenses up to) and aggregate limit of _____ (In words _____

_____ Only).

AND THE CONTRACTOR hereby agrees with OIL that:

i) This Indemnity/Undertaking shall be a continuing Indemnity/ Undertaking and shall remain valid and irrevocable for all claims of OIL arising hereunder up to and until the midnight of _____. However, if the CONTRACT for which this Indemnity/Undertaking is given is not completed by this date, the CONTRACTOR hereby agrees to extend the Indemnity/Undertaking till such time as is required to fulfill the CONTRACT.

ii) This Indemnity/Undertaking shall not be determined by any change in constitution or upon insolvency of the CONTRACTOR but shall be in all respects and for all purposes be binding and operative until payment of all moneys payable to OIL in terms of hereof.

iii) The mere statement of allegation made by or on behalf of OIL in any notice or demand or other writing addressed to the CONTRACTOR as to any of the said material or item or part thereof having been lost, damaged, destroyed, misused or misappropriated while in the custody of the CONTRACTOR and/or prior to completion of the completed fabricated work(s) and delivery to job site thereof incorporating the said materials shall be conclusive of the factum of the said material or item or part thereof having been supplied to the CONTRACTOR and/or the loss, damage, destruction, misuse or misappropriation thereof, as the case may be, while in the custody of the CONTRACTOR and/or prior to the completion of the completed fabricated work(s) and delivery to job site thereof incorporating the said materials without necessity on the part of OIL to produce any documentary proof or other evidence whatsoever in support of this.

iv) The amount stated in any notice of demand addressed by OIL to the CONTRACTOR as to the value of such said materials lost, damaged, destroyed, misused or misappropriated, inclusive relative to the costs and expenses incurred by OIL in connection therewith shall be conclusive of the value of such said materials and the said cost and expenses as also of the amount liable to be paid to OIL to produce any voucher, bill or other documentation or evidence whatsoever in support thereof and such amount shall be paid without any demur and on demand and no dispute shall be raised concerning the same.

The undersigned has full power to execute this Indemnity Bond on behalf of the CONTRACTOR under the Power of Attorney dated _____.

Place:

Dated:

(SIGNED BY COMPETENT AUTHORITY)
Official seal of the CONTRACTOR

CHECKLIST

DATE:

TENDER NO: **CGI2448P20**

BIDDER:

☑ = SUBMITTED, ☒= NOT SUBMITTED

DOCUMENTS TO BE SUBMITTED ALONG WITH THE BID	*SUBMITTED*	*REMARKS*
Annexure AA: CERTIFICATE OF ANNUAL TURNOVER & NETWORTH		
Annexure-BEC/I: WORK EXPERIENCE		
DOCUMENTARY PROOF FOR WORK EXPERIENCE AS PER BEC/ BRC		
PART-VIII: INTEGRITY PACT		
PROFORMA – B: BID FORM		
PROFORMA – C: LETTER OF AUTHORITY		
PROFORMA – D: STATEMENT OF NON-COMPLIANCE		
PROFORMA- E: FORMAT FOR E-REMITTANCE		
PROFORMA-F: FORM OF BID SECURITY		
PROFORMA-H: FORMAT FOR UNDERTAKING IN NON-JUDICIAL STAMP PAPER OF Rs.100/-		
PROFORMA-I: FORMAT FOR E–PAYMENTS VIDE RTGS/NEFT		
PROFORMA-J: UNDERTAKING BY BIDDER FOR SUBMISSION OF AUNTHETIC INFORMATION (ON FIRM'S LETTERHEAD)		
PROFORMA-K: PROFORMA OF INDEMNITY BOND		
EMD PAYMENT DOCUMENTS		