



**भारतीय राष्ट्रीय राजमार्ग प्राधिकरण**  
(सड़क परिवहन और राजमार्ग मंत्रालय, भारत सरकार)  
**National Highways Authority of India**  
(Ministry of Road Transport & Highways, Government of India)  
**क्षेत्रीय कार्यालय, मदुरै / Regional Office, Madurai**

दूसरा व तीसरी तल, विजय कृष्ण प्लाज़ा, संख्या-1, लेक एरिया, मेलूर मेन रोड, माटुतावनी, मदुरै-625 007  
2<sup>nd</sup> & 3<sup>rd</sup> Floor, Vijay Krishna Plaza, No.1, Lake Area, Melur Main Road, Mattuthavani, Madurai-625 107  
दूरभाष / Tele : +91-452-258 8999 वेब / Website : www.nhai.gov.in ई-मेल / E-mail : romadurai@nhai.org



NHAI/15018/4.4/04/2023/RO Madurai/E:211056/1172

17<sup>th</sup> July, 2023

**INVITATION OF PUBLIC COMMENTS**

**विषय:** भाराराप्रा - क्षे.का. मदुरै- पकाई, थंजावुर - Permission for laying of Ennore-Thiruvallur-Bengaluru-Puducherry-Nagapattinam- Madurai- Tuticorin R-LNG pipeline along with OFC across at Km 103.425 of Sethiyathope-Cholapuram section of NH-45C in the limits of National Highways -Invitation of Public Comments - Reg.

**प्रसंग:** PD, Thanjavur Lr. No-NHAI/PIU/Thanj/11021/115/2021/Km.103.425/1806 dated 27.06.2023.

The proposal received from PD, Thanjavur vide Lr. No-NHAI/PIU/Thanj/11021/ 115/2021/Km.103.425/1806 dated 27.06.2023 there by requesting permission for laying of Ennore-Thiruvallur-Bengaluru-Puducherry-Nagapattinam- Madurai- Tuticorin R-LNG pipeline along with OFC across at Km 103.425 of Sethiyathope-Cholapuram section of NH-45C in the state of Tamil Nadu as proposed by Chief Manager, M/s IOCL, Chennai.

Accordingly, as per Policy Guidelines issued by Ministry vide letter No. RW/NH-33044/29/2015/S&R(R) dated 22.11.2016, the application is being uploaded on public domain for 30 days for seeking claims and objections (on grounds of public inconvenience, safety and general public interest).

In view of the above, comments of the public on the above proposal is invited to the below mentioned address:

Regional Officer,  
National Highways Authority of India,  
No.2nd & 3rd Floor, Vijay Krishna Plaza,  
No.1, Lake Area, Melur Main Road, Mattuthavani,  
Madurai - 625 007.

*महेन्द्र मीना*  
17/07/2023

महेन्द्र मीना | MAHENDRA MEENA  
उप प्रबंधक (तक) | DY. MGR (Tech)

**संलग्न:** As above

**प्रतिलिपि:**

1. The NIC, New Delhi - for uploading in the Ministry's website.
2. The PD, Thanjavur- for information.



# भारतीय राष्ट्रीय राजमार्ग प्राधिकरण (सड़क परिवहन और राजमार्ग मंत्रालय, भारत सरकार)

## National Highways Authority of India

(Ministry of Road Transport & Highways, Government of India)

**Office of the Project Director, Project Implementation Unit,**

No. 54, Natarajapuram North Colony,

Medical College Road, Thanjavur - 613 004, Tamilnadu.

टेलीफोन / Telephone : 04362 - 246473, 241777

ई-मेल / E-mail : tanjavor@nhai.org, tanjavor\_nhai@yahoo.co.in

वेब / Web: www.nhai.gov.in



No.NHAI/PIU/Thanj/11021/115/2021/Km.103.425/1806 Dated.27.06.2023

To

The Regional Officer,  
National Highways Authority of India,  
2<sup>nd</sup> & 3<sup>rd</sup> Floor Vijay Krishna Plaza  
No.1 lake Area,  
Melur main Road, Mattuthavani,  
Madurai - 625 007.

**Sub:** National Highways Authority of India-PIU-Thanjavur- Request - Permission for laying of Ennore-Thiruvallur - Bengaluru - Puducherry - Nagapattinam -Madurai - Tuticorin R-LNG Pipeline along with OFC across at Km 103.425 of Sethiyathope - Cholapuram section of NH-45C in the limits of National Highways -Approval Requested - reg.

**Ref:** 1. M/s.IOCL Pipeline, Ulunderpet Lr.No.SRPL/ETBPNMTPL/ASN/-PPN/10-2/NH  
Dated 03.03.2023 (received on 15.03.2023).  
2. This office Lr.No.NHAI/PIU/Thanj/11021/31/2009/687 dated 16.03.2023.  
3. IE, M/s.TES, Kumbakonam Lr.No.TES/IE/SCP/NHAI/2022/565  
Dated.25.03.2023.  
4. This office Lr.No.NHAI/PIU/Thanj/11021/31/2009/847 Dated 29.03.2023  
5. MORTH NOC Portal ref.No.20230308/2/14/17187/2277 Dt.08.06.2023  
6. M/s.IOCL Ulunderpet Lr.No.SRPL/ETBPNMTPL/ASN/-PPN/10-2/NH  
Dated 10.06.2023 (received on 12.06.2023).

Sir,

It is to submit that the M/s.Indian Oil Corporation Ltd, Pipeline, Ulunderpet vide reference 1<sup>st</sup> cited has submitted proposals for laying underground Gas Pipeline along with OFC on (Sethiyathope -Cholapuram section) NH-45C across the Road at Km 103.425 in the limits of National Highways. Vide ref 2<sup>nd</sup> cited the proposal was forwarded to Authority Engineer M/s.Theme Engineering Services (P) Ltd for inspection & report. They have submitted their report vide reference 3<sup>rd</sup> cited and the same is enclosed. Meanwhile, it was requested to Applicant to submit the proposal through MORTH Portal vide this office reference 4<sup>th</sup> cited.

Now, vide 5<sup>th</sup> & 6<sup>th</sup> cited, the M/s.IOCL Ulunderpet has submitted proposals for laying underground R-LNG Pipeline along with OFC in the project stretch of Sethiyathope - Cholapuram section NH-67

The proposal is examined as per Ministry's Circular No. NH 111/P/66/76 dated 18/19.11.1976, RW/NH 33044/27/2005/ S&R(R) pt. dt.06.08.2013 and RW-

*Handwritten signature*

## National Highways Authority of India

NH/33024/29/2015/S&R(R) dt.22.11.2016 and other circulars. The following observations are made:

1. M/s.Indian Oil Corporation Ltd, Pipeline, Ulunderpet has proposed crossing at Km 103.425 for laying of underground Gas Pipeline along with OFC by HDD method. In the proposal M/s.Indian Oil Corporation Ltd, Pipeline, Ulunderpet has mentioned that the OFC line will be laid at 8 m below the G.L by using trench less method by Horizontal Direction Drilling, which is more than the minimum required of 1.50m below G.L as per norms of Ministry Circular.
2. M/s.Indian Oil Corporation Ltd, Pipeline, Ulunderpet has proposed underground R-LNG pipeline along with OFC line across the road at a depth of 7 m below GL by trench less method by Horizontal Direction Drilling with 24" OD (610.mm), 3LPE Coated Pipe.
3. The Independent Engineer, M/s.Theme Engineering Services (P) Ltd, Kumbakonam after on site verification has recommended the proposal (copy enclosed).
4. The applicant has to submit an undertaking to NHAI for restoration of the excavated stretch to the normal condition without damages to the utilities such as drinking water lines, sewage lines, electrical cable and other OFC cables.
5. The strip plan showing the details of proposed laying of Gas Pipeline and OFC and necessary checklist are furnished.
6. The licensee has to cross the NH by HDD (trenchless technology only). In case any damage is caused to the road pavement in this process. M/s.Indian Oil Corporation Ltd, Pipeline, Ulunderpet will have to restore the same to the original condition at their own cost.
7. The levy fee and other conditions stipulated in the new circular of Ministry have also been included in the undertaking
8. The above stretch of Sethiyathope - Cholapuram section of NH-45C from Km 65.960 to Km 116.440 is under construction.
9. They have also applied through Online Portal to get the R-LNG pipeline along with OFC permission from NHAI vide reference ID 20230308/2/14/17187/2277 Dt.08.06.2023.

### A. Restoration Charges to be collected

Across the road in 1 location (1x100000) = Rs. 100000/-

Total = Rs 100000/-

### B. License fee to be collected

Sl.No.	Description	Length in Meters	Width	Area occupied in Sqmt
A	Area occupied across the road/Area			Rural

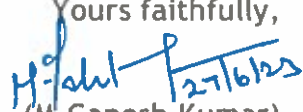
*H. Jay*

## National Highways Authority of India

B	At Km 103.425	60	0.179	10.740
C	Total area to be utilized			10.740
D	Circle Rate (guideline Value for the above area as on 09.06.2017 as recommended by M/s.IOCL, Ulunderpet).	The guideline value is Rs.380/Sq.m in Vembukudi village at Km 103.425 and the details enclosed.		
E	License Fees (Rs/sqm/month) = (Utilized NH land area x prevailing Circle rate of land per unit area)/(10x12)			
F	Total amount for industrial utilities per month (Rs.)			11
G	License fee for initial 5 years in Rs. = Total amount x 5 years (Rs.11*5*12)			660

Hence the proposal of M/s.Indian Oil Corporation Ltd, Ulunderpet seeking permission for laying R-LNG pipeline along with Optical Fiber Cable (OFC) on (Sethiyathope - Cholapuram section) NH-45C across at Km 103.425 (HDD) method in the limits of National Highways as detailed above may please be considered and approval accorded.

Encl: 3 sets of proposal (1 original +2copy).

Yours faithfully,  
  
 (M.Ganesh Kumar)  
 DGM(T) & Project Director.  
 NHAI-PIU-Thanjavur

Copy to:

1. The Authorized Signatory, M/s.IOCL, Ulunderpet for kind information.
2. The Team Leader, M/s.TES, Kumbakonam for kind information.
3. The Authorized Signatory, the M/s.PSCHPL, for kind information.

LICENSE FEES FOR PRIVATE UTILITY (OFC) (Rs/Sqm/Month)								
[Utilized NH Land area X prevailing Circle Rate of Land per unit area ] / (10X12)]								
S. NO	Name of village	CHAINAGE IN KM		SIDE	LENGTH (L) (m)	DIA OF THE PIPE(D) (m)	UTILIZED NH LAND AREA (D x L) (sq.m)	PREVAILING CRICLE RATE OF LAND PER UNIT AREA (sq.m) (Rs)
		FROM	TO					
1	Venbukudi	103.425		Crossing	60	0.179	10.740	380
						0.179	10.740	
TOTAL LICENSE FEE FOR 5 YEARS (60 MONTHS) = Rs.11x 60 = 660/- (Rupees Six Hundred and Sixty Only)								
								11
								11

**Note:**

ALONG THE ROAD - 2 PLB pipe of DIA 0.04m(40mm) by TRENCH METHOD

UTILIZED NH LAND AREA = outer Diameter/Width of the concerned utility line X length

As PER PARA 5 & ANNEXURE 1 OF MINISTRY'S GUIDELINE WIDE LETTER REF. F.NO. RW/NH-33044/29/2015/S&R(R) dated 22.11.2016

The license fee for public utility, the Electrical cable by Public utility provider shall be 33% of the fee prescribe for Public utilities



# राष्ट्रीय राजमार्ग प्राधिकरण

(सडक परिवहन और राजमार्ग मंत्रालय, भारत सरकार)

## National Highways Authority of India

(Ministry of Road Transport & Highways, Government of India)

**Office of the Project Director, Project Implementation Unit,**

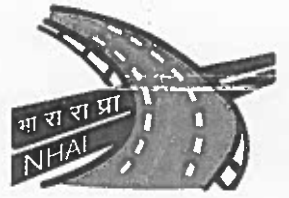
No. 54, Natarajapuram North Colony,

Medical College Road, Thanjavur - 613 004, Tamilnadu.

टेलीफोन / Telephone : 04362 - 246473, 241777

ई-मेल / E-mail : tanjavor@nhai.org, tanjavor\_nhai@yahoo.co.in

वेब / Web: www.nhai.gov.in



No.NHAI/PIU/Thanj/11021/31/2009/847  
To

Dated: 29.03.2023

The Chief Construction Manager  
M.s.Indian Oil Corporation Ltd  
Southern Region Pipelines  
Chennai - Trichy Madurai Pipeline  
Sidco Industrial Estate Aeenur village  
Ulunderpet Taluk  
Viluppuram District

Sub: National Highways Authority of India-PIU-Thanjavur- Permission for laying Ennore Thiruvallur- Bengaluru Puducherry Nagapattinam - Madurai - Tuticorin R-LNG pipeline along with Optical Fiber Cable (OFC) on (Sethiyathope - Cholapuram section) NH-45C across at Km 10.425(HDD) method in the limits of National Highways -Proposal Returned - Reg.

Ref: M/s.IOCL Trichy Lr.No.SRPL/ETBPNMTPL/ASN/-PPN/10-2/NH-Dated.03.03.2023  
(received on 15.03.2023)

\*\*\*\*\*

Sir,

This has reference to the subject cited above, vide ref 1<sup>st</sup> cited the M/s.IOCL Trichy vide reference cited has submitted proposals for laying Ennore Thiruvallur- Bengaluru Puducherry Nagapattinam - Madurai - Tuticorin R-LNG pipeline along with Optical Fiber Cable (OFC) on (Sethiyathope - Cholapuram section) NH-45C across at Km 103.425 (HDD) method in the limits of National Highways.


2. In this regard, it is to inform that

- MoRTH has issued guideline vide letter dated 13.05.2022 (copy enclosed) has informed that Portal for access and utility permission category including Industrial & Public Utilities, Wayside Amenities & such other facilities along the National Highways has been made live and competent authority has directed that w.e.f. 17.05.2022, all permission cases shall invariably be processed through portal only.
- The proposal is not submitted through online portal (morthnoc.nic.in)

3. It is to inform that under such circumstances, the proposals are returned herewith and requested to resubmit the proposal after incorporating the above comments.

Encl: Copy of proposals

Yours faithfully,

  
(U.Udhayasankar),  
Project Director  
NHAI-PIU-Thanjavur



75  
Azadi  
Amrit Mahotsav

NHA I - PIU - THANJAVUR	
15 MAR 2023	
Dy.No:	1477
M(T)	
LAO	
PA	
SE/RS	
SE/SB	
SE/AN	
ACCOUNTS	

इंडियन ऑयल कॉर्पोरेशन लिमिटेड

दक्षिणी क्षेत्र पाइपलाइन्स,  
चेन्नई-त्रिची-मदुरै पाइपलाइन,  
सिडको इंडस्ट्रियल एस्टेट,  
एन.एच. -45, निकट कि.मी. स्टोन 211 आसनूर विलेज पीओ,  
उलुंदुरपेट (तासुक), जिला: कल्लक्कुरिची,  
तमिलनाडु- 606305, दूरभाष: 9384698005/7550009938

Indian Oil Corporation Limited

Southern Region Pipelines,

Chennai-Trichy-Madurai Pipeline,

Sidco Industrial Estate,

NH-45, Near Kilo meter Stone 211 Asanur Village P.O.,

Ulundurpet (TK), Dist: Kallakurichi,

Tamil Nadu- 606305. Tel: 9384698005/7550009938



IndianOil

पाइपलाइन्स प्रभाग  
Pipelines Division

03.03.2023

SRPL/ETBPNMTPL/ASN-PPN/10-2/NH

To  
The Project Director,  
PIU, NHA I,  
Tanjavur,  
Tamil Nadu-613004

**Sub: : Permission For Laying of Ennore-Thiruvallur-Bengaluru-Puducherry-Nagapattinam-Madurai- Tuticorin R-LNG Pipeline along with Optical Fiber Cable (OFC) across NH-45C by Horizontal Directional Drilling Method (HDD)**

**Ref :** 1) IOCL Letter No. SRPL/ETBPNMTPL/ASN-PPN/10-2/NH Dtd 15.12.2021  
2) NHA I Letter No. NHA I /PIU /Tanj/11021/115/2021/3630 Dtd. 16.12.2022

Dear Sir,

At the outset, we would like to express our sincere thanks and gratitude to you and your good office for extending continuous support in implementation of Ennore-Tiruvallur-Bengaluru-Pondicherry Nagapattinam- Madurai-Tuticorin R-LNG (Re-Gasified Liquefied Natural Gas) Pipeline Project (ETBPNMTPL Project) across the Government Roads under National Highways, Villupuram.

Permission for laying 24" OD Underground R-LNG pipeline has been sought vide our letter No. SRPL/ETBPNMTPL/ASN-PPN/10-2/NH Dtd 15.12.2021(Ref 01). Vide reference cited 02 , PD, NHA I-PIU - Thanjavur requested to submit Indemnity Bond and License Deed as per MoRTH Guidelines. We are here with submitting the revised proposal as requested in the reference cited 02.

This 24" R-LNG pipeline is crossing the following National Highway (NH) and its details are as follows:

S.No.	Description	IOCL Pipeline Chainage (KM)	NH Chainage (KM)	Village	Taluk	District
1	NH-45C	63.835	103.425	Vembukudi	Udayarpalayam	Ariyalur

The Pipeline Design and Construction shall conform to International Standard ANSI B 31.8. The Pipeline Laying Methodology also complies with the International Standards and ensures Road

Page 1 of 2

पंजीकृत कार्यालय : इंडियन ऑयल भवन, जी-9, अली यावर जंग मार्ग, बान्द्रा (पूर्व), मुंबई - 400 051, महाराष्ट्र (भारत)  
Regd. Office : Indian Oil Bhavan, G-9, All Yavar Jung Marg, Bandra (East), Mumbai - 400 051, Maharashtra (India)  
CIN : L 23201 MH1959 GOI 011388





Safety with no interruption to the traffic. The method adopted is Trenchless Technology Method without cutting the road so as to avoid disturbance to traffic. The Trenchless Method proposed to be used here is Horizontal Directional Drilling (HDD) Method wherein the entry and exit points of the crossing will be outside the Road ROW limits and the depth of the pipeline from the C/L of the Road shall be minimum 7m.

The following documents along with Application are enclosed for your kind perusal:

- |                                                  |               |
|--------------------------------------------------|---------------|
| 1. Power of Attorney of the Authorized Signatory | Annexure-I    |
| 2. Key Map of Project                            | Annexure-II   |
| 3. HDD Crossing Drawing of National Highway      | Annexure-III  |
| 4. Standard HDD Crossing Drawing                 | Annexure-IV   |
| 5. Key Plan of National Highway Crossing         | Annexure-V    |
| 6. Checklist and Special Annexure                | Annexure-VI   |
| 7. License Deed                                  | Annexure-VII  |
| 8. Undertaking-1                                 | Annexure-VIII |
| 9. Undertaking-2                                 | Annexure-IX   |
| 10. Indemnity Bond                               | Annexure-X    |
| 11. Certificate                                  | Annexure-XI   |
| 12. Methodology of HDD Crossing                  | Annexure-XII  |

We request you to kindly accord permission for laying the R-LNG pipeline along with Optical Fiber Cable across the above National Highway under your jurisdiction.

Thanking You,

Yours faithfully,



(Mubassir Ibrahim NC)  
Assistant Manager ( Construction )  
SRPL Asanur  
Indian Oil Corporation Limited





TES

**Theme Engineering Services Pvt. Ltd.**  
 Plot No.2, Annai Anjugam Nagar, Ullur,  
 Kumbakonam-612001, Thanjavur Dist., Tamil Nadu.  
 Email: themekumbakonam@gmail.com

TES/IE/SCP/NHAI/2022/565

Date: 25.03.2023

To

The Project Director

Project Implementation Unit

National Highways Authority of India

No 54, First Floor, Natarajapuram Colony

Medical College Road, Thanjavur - 613004

NHAI - PIU - THANJAVUR
30 MAR 2023
EDy.No: 1797
M(T)
LAO
PA
SE/RS
SE/SB
SE/AN

**Sub:** NHAI - PIU - Thanjavur - Four laning of Sethiathope - Cholapuram Section of NH-45C from Km 65 960 to Km 116 440 in the State of Tamil Nadu under NHDP Phase-IV on Hybrid Annuity Mode - (Package-II) -UPC- N/08045/02001/TN - Permission for laying Ennore Thiruvallur- Bengaluru Puducherry Nagapattinam - Madurai - Tuticorin R-LNG pipeline along with Optical Fibre Cable (OFC) on (Sethiathope - Cholapuram section) NH-45C across at Km 103.425 (HDD) method in the limits of National Highways- IE remarks-reg.

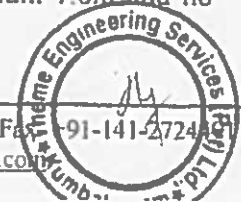
**Ref:** Authority letter NHAI/PIU/Thanj/11021/31/2009/687 dated 16/03/2023

Dear Sir,

With reference to the above subject and pursuant to the site verification by IE we furnish our remarks/comments for your reference and perusal.

1. Drawing and other details of the installation of pipeline has been checked and verified.
2. The ROW details of the new alignment of the project for the stretches mentioned in the proposal have been checked and verified at site by IE and the report attached herewith for information.
3. The longitudinal section and cross section details pertaining to the location are attached herewith.
4. We herewith reiterate the conditions stipulated in the proposal as such:
  - a) The pipeline laying methodology shall comply with International Standards ensuring Road safety without interruption to traffic on the National Highway, without damage the existing electrical transformer and edges of the road.
  - b) The crossing of pipeline shall always be normal to the National highway and no skew is permissible.
  - c) The method proposed is Trenchless Technology Method without cutting of the road.
  - d) Horizontal Directional Drilling (HDD) method is to be used wherein the entry and exit points of the crossing will be outside the ROW limits
  - e) The depth of the pipeline from the C/L of the road shall be minimum 7.0m and no deviations are permissible in the methodology proposed.

Head Office: B-24, Gokul Vatika, Jawahar Circle, Jaipur-302018, Ph. No. +91-141-2724495-97 Fax: +91-141-2724497  
 E mail: [theme@themeengineering.com](mailto:theme@themeengineering.com), Website: [www.themeengineering.com](http://www.themeengineering.com)



TES

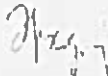


Theme Engineering Services Pvt. Ltd.  
Plot No.2, Annai Anjugam Nagar, Ullur,  
Kumbakonam-612001 Thanjavur Dist, Tamil Nadu.  
Email: [themekumbakonam@gmail.com](mailto:themekumbakonam@gmail.com)

In this regard we wish to inform that we have attached the photos of the field conditions at the subject locations for your information and reference and hence, approval for laying of Petroleum product pipeline along with OFC may be granted as per the guidelines of the relevant provisions as applicable.

This is for your kind information, reference and records, please.

Yours Sincerely,  
For Theme Engineering Services Pvt Ltd

  
Antony Selvaraj  
Team Leader



Copy to: 1. The Authorized Representative, M/s Patel Sethiyathopu-Cholapuram Highways Pvt Ltd.  
2. The Authorized Representative, Sethiyathopu – Cholapuram Project, Theme Engineering Services Pvt. Ltd., Jaipur.

Encl: As referred above

718727/2023/PIU-THANJAVUR

Four laning of Sethiyathope - Chalapuram from Km. 65.960 to 116.440  
section of NH-45C in the state of Tamil Nadu under NHDP-IV on Hybrid  
Annuity Mode.

ROW Details				
Sl No	Chainage	Distance from Center line (R5)		Remarks
		LHS	RHS	
1	103350	23.21	22.659	
2	103360	23.133	22.491	
3	103370	23.065	23.311	
4	103380	23.007	22.121	
5	103390	22.959	21.92	
6	103400	22.921	21.709	
7	103410	22.894	21.538	
8	103420	22.876	21.472	
9	103430	22.868	21.396	
10	103440	22.892	21.31	
11	103450	22.883	21.219	
12	103460	22.884	21.127	
13	103470	22.891	21.036	
14	103480	22.899	20.944	
15	103490	22.906	20.854	
16	103500	22.913	20.762	



CH 103+425 & 103+430



718727/2023/PIU-THANJAVUR



Azadi Ka  
Amrit Mahotsav

NHAI . PIU . THANJAVUR	
12 JUN 2023	
Dy No	3235
MTI	
LAO	
PA	
SE/SS	
SE/AN	
ACCOUNTS	

पाइपलाइन्स प्रभाग  
Pipelines Division

SRPL/ETBPNMTPL/ASN-PPN/10-2/NH

10.06.2023

To  
The Project Director,  
PIU, NHAI,  
Tanjavur,  
Tamil Nadu-613004

इंडियन ऑयल कॉर्पोरेशन लिमिटेड  
दक्षिणी क्षेत्र पाइपलाइन्स,  
चेन्नई-त्रिची-मदुरै पाइपलाइन,  
सिडको इंडस्ट्रियल एस्टेट,  
एन.एच. -45, निकट कि.मी स्टोन 211 आसनूर विलेज पीओ,  
उलुंदरपेट (तालुक), जिला: कल्लाकुरिची,  
तमिलनाडु- 606305, दूरभाष: 9384698005/7550009938  
**Indian Oil Corporation Limited**  
Southern Region Pipelines,  
Chennai-Trichy-Madurai Pipeline,  
Sidco Industrial Estate,  
NH-45, Near Kilo meter Stone 211 Asanur Village P.O.,  
Ulundurpet (TK), Dist: Kallakurichi,  
Tamil Nadu- 606305. Tel: 9384698005/7550009938



**Sub: Permission For Laying Ennore-Thiruvallur-Bengaluru-Puducherry-Nagapattinam-Madurai- Tuticorin R-LNG Pipeline along with Optical Fiber Cable (OFC) across NH-45C by Horizontal Directional Drilling Method (HDD)**

**Ref:** 1) IOCL Letter No. SRPL/ETBPNMTPL/ASN-PPN/10-2/NH Dated 03.03.2023  
2) NHAI Letter No. NHAI/PIU/Thanj/11021/31/2009/847 Dated 29.03.2023  
3) Online Portal Application No. 20230308/2/14/17187/2287

Dear Sir,

Permission for laying 24" OD Underground R-LNG pipeline has been sought vide our letter SRPL/ASN/ETBPNMTPL/ASN-PPN/10-2/NH dated 03.03.2023(Ref 01). **Vide Reference Cited 02, as per PD, NHAI-PIU-Thanjavur request, we have submitted the Proposal through Online Portal (Ref 03).**

This is for your kind information and approval please.

Thanking You,

Yours faithfully,

*Neelish*

(Angajala Sri Neelesh Kumar)  
Project Engineer (Construction)  
SRPL Asanur  
Indian Oil Corporation Limited



# इंडियन ऑयल कॉर्पोरेशन लिमिटेड

दक्षिणी क्षेत्र पाइपलाइन्स,  
चेन्नई-त्रिची-मदुरै पाइपलाइन,  
सिडको इंडस्ट्रियल एस्टेट,  
एन.एच. -45, मिक्ट कि.मी. स्टोन 211 आसनूर विलेज पीओ,  
उलुंदरपेट (तालुक), जिला: कल्लकुरिची,  
तमिलनाडु- 606305, दूरभाष: 9384698005/7550009938

**Indian Oil Corporation Limited**

Southern Region Pipelines,

Chennai-Trichy-Madurai Pipeline,

Sidco Industrial Estate,

NH-45, Near Kilo meter Stone 211 Asanur Village P.O.,

Ulundurpet (TK), Dist: Kallakurichi,

Tamil Nadu- 606305. Tel: 9384698005/7550009938



पाइपलाइन्स प्रभाग  
Pipelines Division

SRPL/ASN/CONS/CBR-ASN/NH

03.03.2023

To  
The Project Director,  
PIU, NHA1,  
Tanjavur,  
Tamil Nadu-613004

**Sub: Permission For Laying of CBR-Asanur Petroleum Product Pipeline along with Optical Fiber Cable (OFC) across NH-45C by Horizontal Directional Drilling Method (HDD)**

Dear Sir,

At the outset, we would like to express our sincere thanks and gratitude to you and your good office for extending continuous support in implementation of Ennore-Tiruvallur-Bengaluru-Pondicherry Nagapattinam- Madurai-Tuticorin R-LNG (Re-Gasified Liquefied Natural Gas) Pipeline Project (ETBPNMTPL Project) across the Government Roads under National Highways, Villupuram.

Permission for laying 24" OD Underground R-LNG pipeline has been sought vide our letter SRPL/ETBPNMTPL/ASN-PPN/10-2/NH Dtd 15.12.2021. Now, M/s Indian Oil has decided to lay another 16" OD Petroleum Product pipeline from Cauvery Basin Refinery Nagapattinam to IOCL Pump Station at Asanur in the same ROW.

Total Length of the Pipeline is 139 KM and is passing through Nagapattinam, Thiruvarur, Mayiladuthurai, Tanjavur, Ariyalur, Cuddalore and Kallakurichi districts of Tamil Nadu. This petroleum product pipeline is proposed to meet the demand of petroleum product requirement in Villupuram, Kallakurichi, Cuddalore, Ariyalur, Tanjavur, and Salem Districts of Tamil Nadu. This 16" Product pipeline is crossing the following National Highway (NH) and its details are as follows:

S.No.	Description	IOCL Pipeline Chainage (KM)	NH Chainage (KM)	Village	Taluk	District
1	NH-45C	72.012	103.430	Vembukudi	Udayarpalayam	Ariyalur

The Pipeline Design and Construction shall conform to International Standard ANSI B 31.8. The Pipeline Laying Methodology also complies with the International Standards and ensures Road

Page 1 of 2

पंजीकृत कार्यालय : इंडियन ऑयल भवन, जी-9, अली यावर जंग मार्ग, बान्द्रा (पूर्व), मुम्बई - 400 051, महाराष्ट्र (भारत)  
Regd. Office : Indian Oil Bhavan, G-9, Ali Yavar Jung Marg, Bandra (East), Mumbai - 400 051, Maharashtra (India)  
CIN : L 23201 MH1959 GOI 011388



Safety with no interruption to the traffic. The method adopted is Trenchless Technology Method without cutting the road so as to avoid disturbance to traffic. The Trenchless Method proposed to be used here is Horizontal Directional Drilling (HDD) Method wherein the entry and exit points of the crossing will be outside the Road ROW limits and the depth of the pipeline from the C/L of the Road shall be minimum 7m.

The following documents along with Application are enclosed for your kind perusal:

- |                                                  |               |
|--------------------------------------------------|---------------|
| 1. Power of Attorney of the Authorized Signatory | Annexure-I    |
| 2. Key Map of Project                            | Annexure-II   |
| 3. HDD Crossing Drawing of National Highway      | Annexure-III  |
| 4. Standard HDD Crossing Drawing                 | Annexure-IV   |
| 5. Key Plan of National Highway Crossing         | Annexure-V    |
| 6. Checklist and Special Annexure                | Annexure-VI   |
| 7. License Deed                                  | Annexure-VII  |
| 8. Undertaking-1                                 | Annexure-VIII |
| 9. Undertaking-2                                 | Annexure-IX   |
| 10. Indemnity Bond                               | Annexure-X    |
| 11. Certificate                                  | Annexure-XI   |
| 12. Methodology of HDD Crossing                  | Annexure-XI   |

We request you to kindly accord permission for laying the Petroleum Product pipeline along with Optical Fiber Cable across the above National Highway under your jurisdiction.

Thanking You,

Yours faithfully,



(Mubassir Ibrahim NC)  
Assistant Manager ( Construction)  
SRPL Asanur  
Indian Oil Corporation Limited







पाइपलाइन प्रभाग  
Pipelines Division

इंडियन ऑयल कॉर्पोरेशन लिमिटेड

दक्षिणी क्षेत्र पाइपलाइन्स

हाउस ऑफ फोर फ्रेम्स

6/13, व्हीट क्रॉफ्ट रोड, नुंगम्बक्कम, चेन्नै-600 034

टेलीफोन : 044-2824 3182 / 3181

फैक्स : 044-2824 3121 / 3122 / 3123

**Indian Oil Corporation Limited**

Southern Region Pipelines

House of Four Frames

6/13, Wheat Croft Road, Nungambakkam, Chennai - 600 034

Tel. : 044-2824 3182/181 Fax : 044-2824 3121/3122/3123

E-mail : ioclsrcpl@indianoil.in Website : www.iocl.com



**IndianOil**

SRPL/CBR-ASN/GEN

03.11.2022

TO WHOMSOEVER IT MAY CONCERN

**POWER OF ATTORNEY OF THE AUTHORIZED SIGNATORY**

This is to certify that Shri. Mubassir Ibrahim NC, Assistant Manager (Construction), Southern Region Pipelines, is authorized to sign and submit applications on behalf of Indian Oil Corporation Limited, Southern Region Pipelines for obtaining all statutory clearances/permissions in connection with Laying of Product Pipeline along with Optical Fibre Cable for the CBR-Asanur Product line Project

Specimen Signature:

Mubassir Ibrahim NC

Assistant Manager (Construction)

SRPL Asanur

(G Yohan Kumar)

Chief General Manager (Construction)

SRPL-Chennai



**जी. योहान कुमार / G. YOHAN KUMAR**

मुख्य महाप्रबन्धक (निर्माण)  
Chief General Manager (Construction)

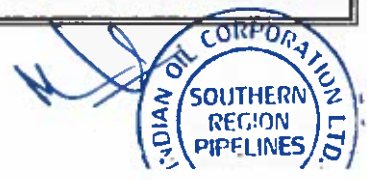
इंडियन ऑयल कॉर्पोरेशन लिमिटेड

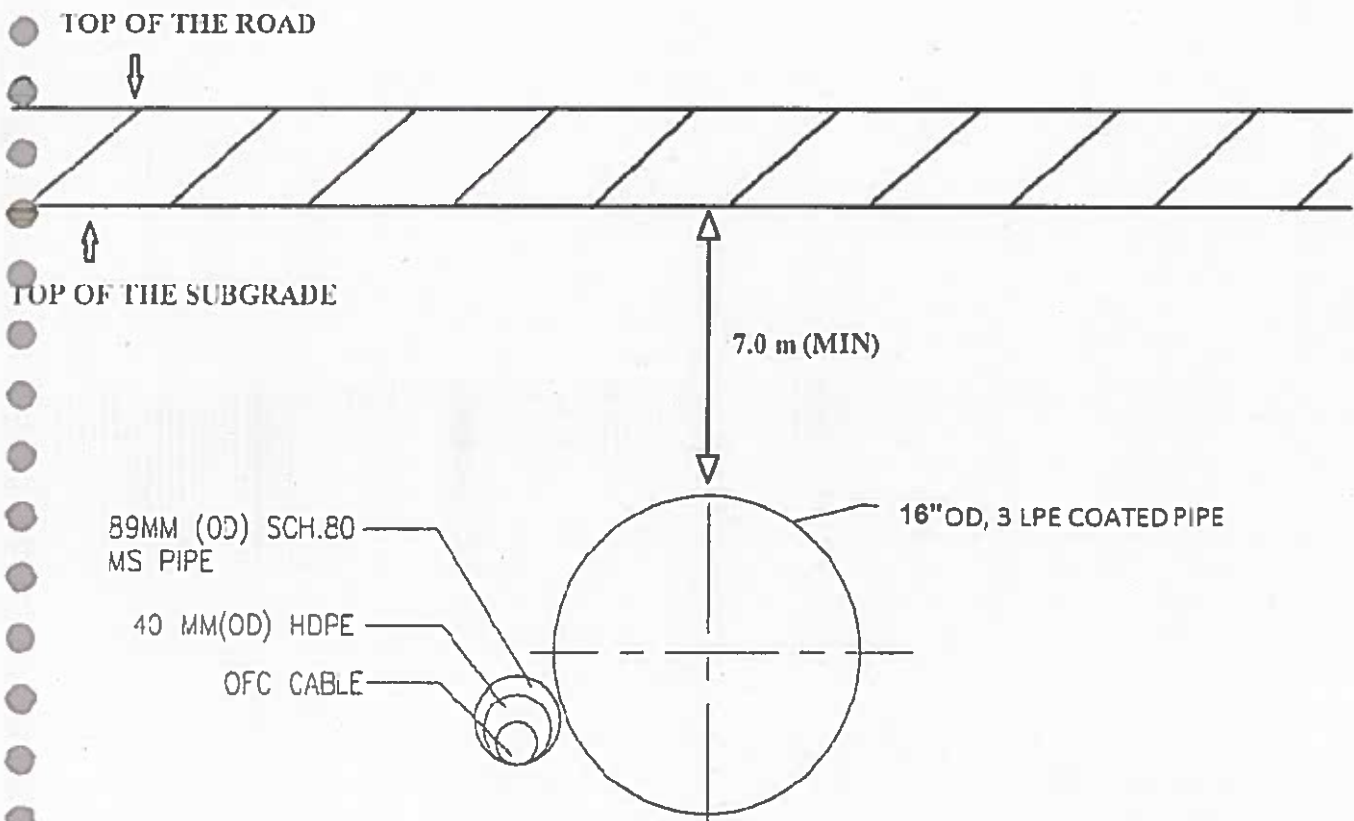
Indian Oil Corporation Limited

Southern Region Pipelines

"House of Four Frames" 6/13, Wheatcroft Road,  
Nungambakkam, Chennai - 600 034

पंजीकृत कार्यालय : इंडियन ऑयल भवन, जी-9, अली यावर मार्ग बान्द्रा (पूर्व), मुम्बई - 400 051, महाराष्ट्र (भारत)  
Regd Office : Indian Oil Bhavan, G-9, Ali Yavar Jung Marg, Bandra (East), Mumbai-400 051 Maharashtra (India)  
CIN - L23201MH1959GOI011388

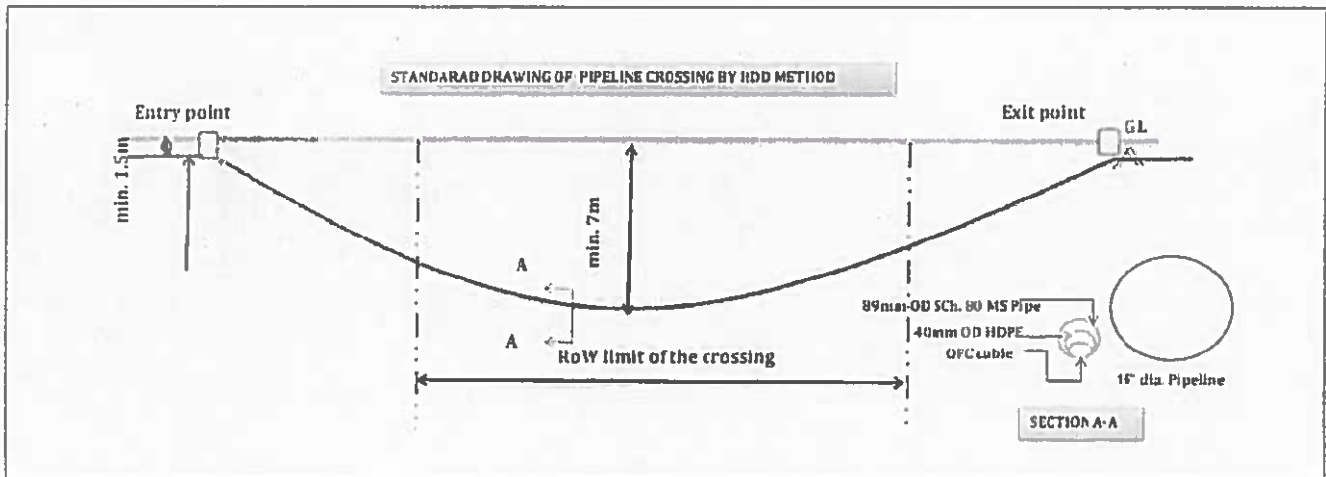


SECTION A-A

NAME OF THE PROJECT	CBR-ASANUR PETROLEUM PRODUCT PIPELINE PROJECT
OWNER	INDIAN OIL CORPORATION LIMITED, PIPELINES DIVISION, NOIDA
TITLE	CROSS SECTION

*M. J. Lakshmi*  
 DGM (T) & PROJECT DIRECTOR  
 NATIONAL HIGHWAYS AUTHORITY OF INDIA  
 PIU - THANJAVUR.



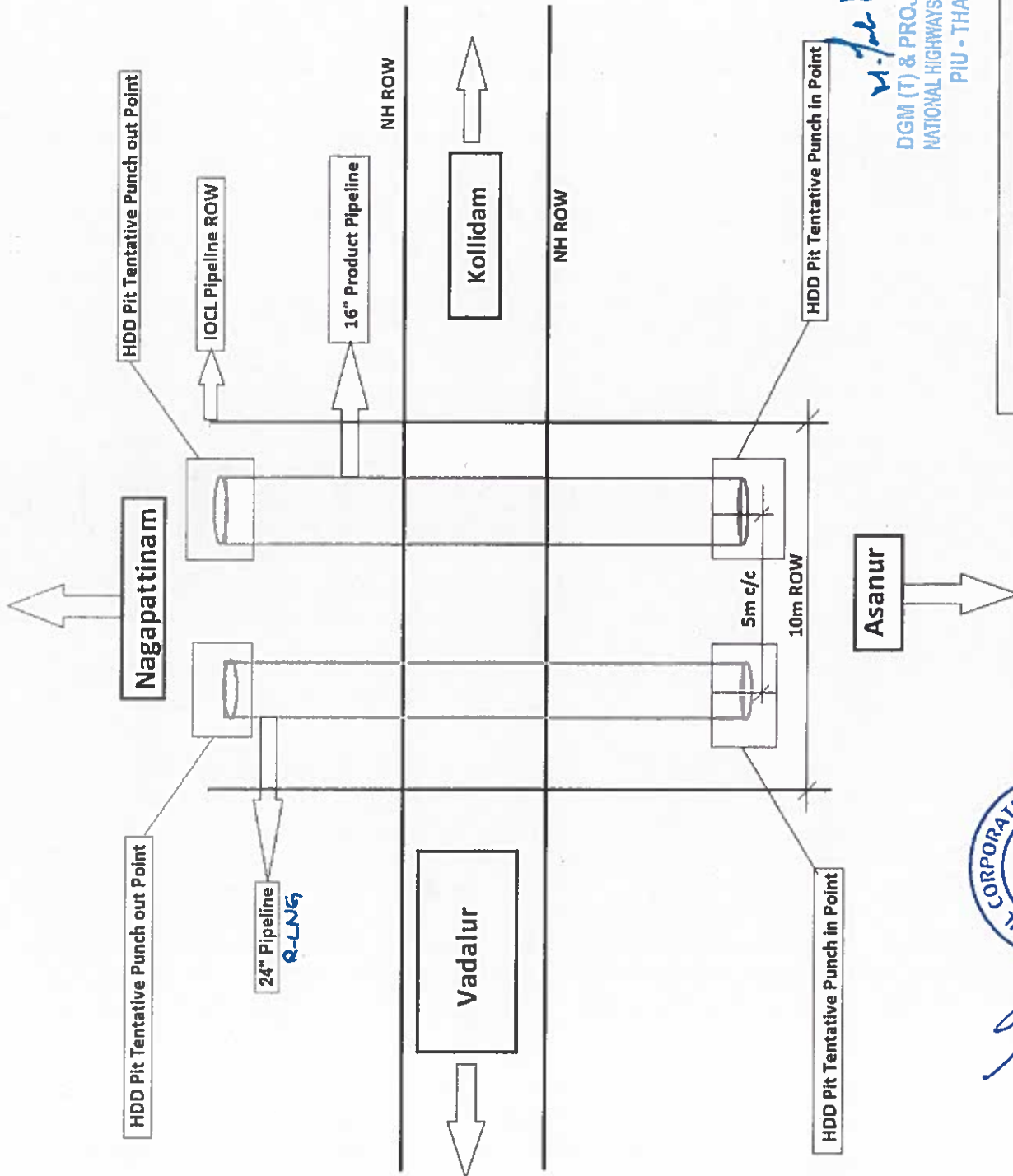


*H. K. H. F.*

DGM (T) & PROJECT DIRECTOR  
NATIONAL HIGHWAYS AUTHORITY OF INDIA  
PIU - THANJAVUR.





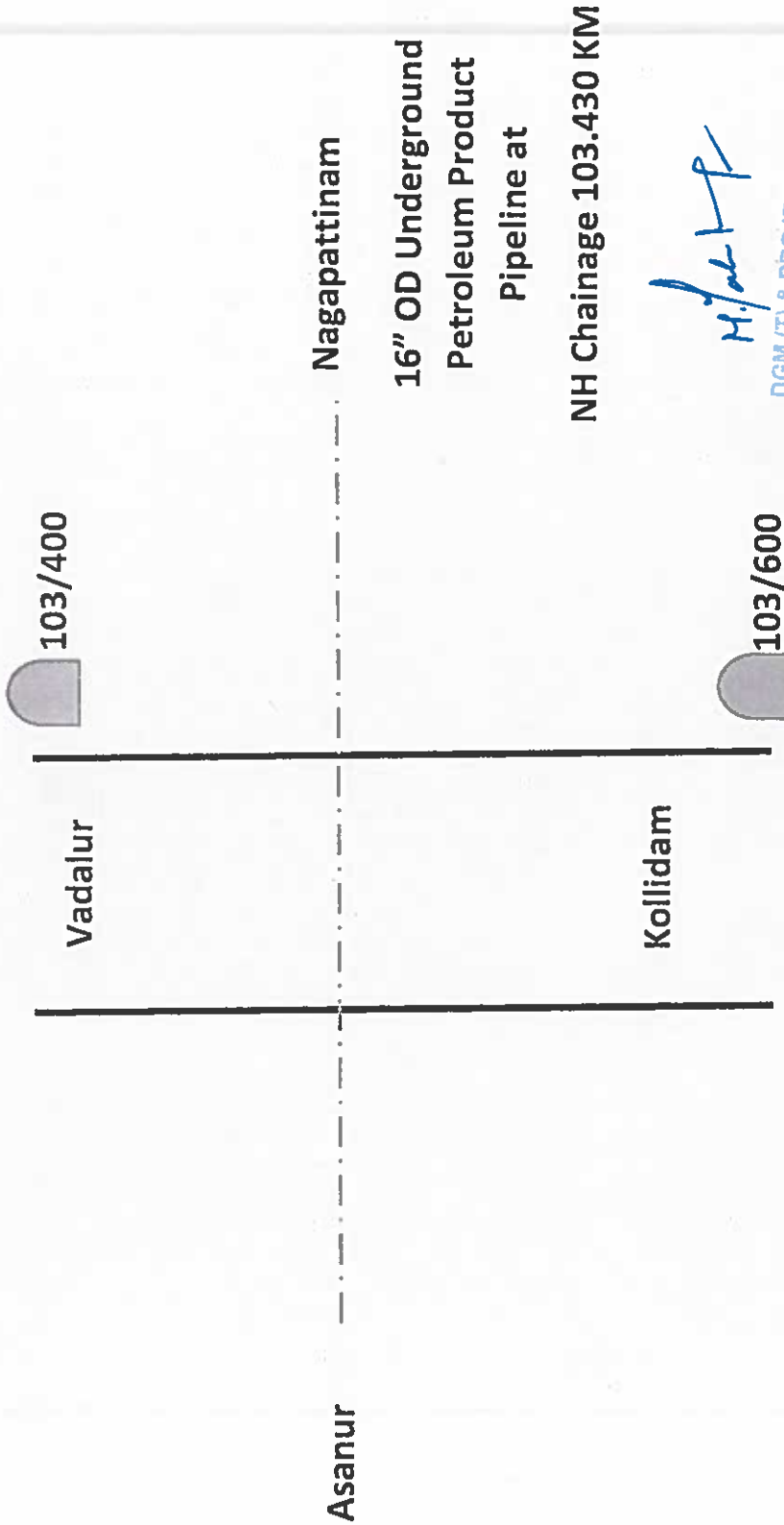


DGM (T) & PROJECT DIRECTOR  
NATIONAL HIGHWAYS AUTHORITY OF INDIA  
PIU - THANJAVUR.

INDIAN OIL CORPORATION LIMITED  
CBR-ASANUR PETROLEUM PRODUCT PIPELINE  
CROSSING  
NH-45C at Chainage 103.430 KM



KEY PLAN FOR NH-45C



*H. J. L. P.*

DGM (T) & PROJECT DIRECTOR  
NATIONAL HIGHWAYS AUTHORITY OF INDIA  
PIU - THANJAVUR.



*[Signature]*

INDIAN OIL CORPORATION LIMITED  
CBR-ASANUR PETROLEUM PRODUCT PIPELINE  
CROSSING  
NH-45C at Chainage 103.430 KM

# INDIAN OIL CORPORATION LIMITED



**IndianOil**

**PROPOSAL FOR LAYING UNDERGROUND PETROLEUM PRODUCT  
PIPELINE ACROSS NH-45C NEAR CHAINAGE 103.430 KM AT  
VEMBUKUDI VILLAGE, UDAYARPALAYAM TALUK, ARIYALUR  
DISTRICT BY HORIZONTAL DIRECTIONAL DRILLING(HDD) METHOD**

**INDIAN OIL CORPORATION LIMITED,  
SOUTHERN REGION PIPELINES, HOUSE OF FOUR FRAMES, 6/13,  
WHEATCROFT ROAD, NUNGAMBAKKAM, CHENNAI – 600 034.**





**PROPOSAL FOR LAYING CBR-ASANUR PETROLEUM PRODUCT PIPELINE ACROSS  
NH-45C NEAR CHAINAGE 103.430 KM AT VEMBUKUDI VILLAGE,  
UDAYARPALAYAM TALUK, ARIYALUR DISTRICT VESTED WITH NH**

• **Relevant circulars**

1) MoRTH Circular No: RW/NH-33044/29/2015/S&R(R) Dated: 22-11-2016

**Check list for getting approval for laying of 16" Petroleum Product Pipeline along with OFC Duct on NH land**

Sl. No.	Item	Information/ Status
1	General Information	
1.1	Name and Address of the Applicant	Chief General Manager (Construction) Indian Oil Corporation Limited, 6/13, House of Four Frames Wheat Crofts Road Nungambakkam, Chennai-600034
1.2	National Highway Number	NH-45C
1.3	State	Tamil Nadu
1.4	Location	Across NH-45C Near Chainage 103.430 Km At Vembukudi Village, Udayarpalayam Taluk, Ariyalur District
1.5	(Chainage in km)	Chainage KM 103/430
1.6	Length in Meters	-
1.7	Width of available ROW	-
	(a) Left side from center line of pipe to edge of ROW	-
	(b) Right side from center line of pipe to edge of ROW	-
1.8	Proposal to lay underground Pipeline along with OFC	
	(a) Left side from center line towards increasing chainage/ km direction	NA
	(b) Right side from center line towards increasing chainage/ km direction	NA
1.9	Proposal to acquire land	
	(a) Left side from center line	NA
	(b) Right side from center line	NA
1.10	Whether proposal is in the same side where land is not to be acquired	NA
	If not then where to lay the Pipeline	NA
1.11	Details of already laid services, if any, along the proposed route	NA
1.12	Number of lanes (2/4 / 6/8 lanes) existing	4 Lanes
1.13	Proposed Number of lanes (2 lane with paved shoulders/4 /	NA

	6/8 lanes)	
1.14	Service road existing or not	
	If yes then which side	No
	(a) Left side from center line	-
	(b) Right side from center line	-
1.15	Proposed Service road	NA
	(a) Left side from center line	NA
	(b) Right side from center line	NA
1.16	Whether proposal to lay pipe is after the service road or between the service road and main carriageway	Across NH-45C Near Chainage 103.430 Km At Vembukudi Village, Udayarpalayam Taluk, Ariyalur District
1.17	Whether carrying of pipeline has be proposed on highway bridge If "Yes", then mention the methodology proposed for the same.	NA
1.18	Whether carrying of pipeline has been proposed on the parapet/any part of the bridge. If "Yes", then the methodology proposed for the same.	NA
1.19	If crossing of the road involved If "Yes", then it shall be encased in pipes or through the structure or conduit specially built for that purpose at the expenses of agency owning the line.	NA
	a) whether existing structure allowed to carry pipeline	NA
	b) It is in the line normal to NH	Yes
	c) What is the distance of crossing the pipeline from the existing structure Crossing should not be too near to existing structure on National Highway, the minimum distance should be 15 meters	NA
	d) The reason why the crossing cannot be shifted to more than 15 m from the existing structure.	NA
	d) The casing pipe (or conduit pipe in the case of electric cable) carrying the utility line shall steel, cast iron or reinforce cement concrete and having adequate strength and be large enough to permit ready withdrawal of carrier pipe/cable. Mention type of casing	NA
	e) End of the casing/conduit shall be sealed from the outside, so that it does not act as drainage path	NA
	f) The casing/conduit should, as minimum extended minimum drain to drain curs and toes of slope in the fills	NA
	g) The top of the casing/conduit should be at least 1.2 meters below the surface of the road subject to being at least 0.3meter below the drain invert. Mention the proposed details	NA
	h) Mention the methodology for crossing of road for the proposed pipeline: Crossing shall be by boring machine (HDD) TRENCHLESS	Across NH45C by Horizontal Directional Drilling (HDD) Method

	TECHNOLOGY] or by Cased Crossing Method[TRENCHLESS TECHNOLOGY] as per site conditions, specially, where the existing road pavement is of cement concrete or dense bitumen concrete type.	
	i) the casing/conduit pipe shall be installed with an even bearing throughout its length and in such a manner as to prevent the formation of waterway along it	NA
2	Document / Drawings enclosed with the proposal	Enclosed
2.1	Cross section showing the size of trench for open trenching method (Is it normal size of 1.2m deep X 0.3m wide) a) Should not be greater than 60cm wider than the outer diameter of pipe b) Located as close to the extreme edge of the ROW as possible but not less than 15 meter from the centre lines of the nearest carriage way c) Shall not be permitted to run along the national highway when the road formation is situated in double cutting, nor shall be laid over existing culverts and bridge d) It should be laid so that their top is at least 0.6 meter below the ground level so as the obstruct of the road land.	NA
2.2	Cross section details at Pipeline Crossing Locations	Enclosed
2.2.1	Cross section showing the size of pit and location of cable for HDD method and Cross Section Details for Cased Crossing Method	Enclosed
2.2.2	Cross section showing details for Cased Crossing Method	NA
2.3	Strip plan/ Route Plan showing the Petroleum Product pipeline, Chainage, width of ROW, distance of proposed, cable from the edge of ROW, important mile stone, intersections, cross drainage works etc.	Enclosed
2.4	Methodology for laying of pipe	
2.4.1	Open trenching method. (May be allowed in utility corridor only where pavement is neither cement concrete nor dense bituminous concrete type.) If Yes, what is the methodology of refilling of trench.	No
	a) The trench width should be at least 30cm, but not more than 60cm wider than outer diameter of the pipe.	NA
	b) For the filling of the trench, bedding shall be to a depth of not less than 60cm. It shall consist of granular material, free of lumps, clods and cobbles and graded to yield a firm surface without sudden change in the bearing value. Unsuitable soil and rock edged should be excavated and replace by selected material	NA
	c) The backfill shall be completed in two stages I.sidefill to the level of the top of the pipe and overall to the bottom of the road crust.	NA
	d) The side fill shall consist of granular material laid in 15cm layer each consolidated by mechanical tampering and controlled addition to moisture to 95% of the proctor's density. Overfill shall be compacted to the same density as material has been removed. Consolidation by saturation or pounding will not be	NA

	permitted.	
	e) The road crust shall be built to the same strength as existing crunch of either side of the trench. Care shall be taken to avoid formation of dip at trench.	NA
	f) The excavation shall be protected by flagman, signs and barricades, and red light during night hours.	NA
	g) If required, diversion shall be constructed at the expenses of agency owning utility line.	NA
2.4.2	Horizontal Directional Drilling (HDD) Method	Across NH 45C at Chainage 103.430 KM with minimum depth of 7m from top of Road Subgrade.
2.4.4	Cased Crossing Method	NA
2.4.4	Laying Petroleum Product pipeline through CD works and method of laying. In case where the carrying of pipeline on bridge becomes inescapable.	NA
3	Draft License Agreement signed by two witnesses	Enclosed
4	Performance Bank guarantee in favor of NHAI has to be obtained at Rs.100/- per running meter (parallel to NH) and Rs. 1, 00,000/-per crossing of NH, for period of one year initially (extendable if require till satisfactory completion of work) as a security for ensuring/making good excavated trench for laying pipeline/duct filling and compaction, clearing debris/loose earth produced due to execution of trenching at least 50m away from the edge of ROW. No payment shall be payable by NHAI to the licensee for clearing debris/loose earth. Performance BG as per above is to be obtained.	Will be submitted on receipt of demand note from NH
4.1	Confirmation of BG has been obtained as per NH guidelines	NA
5	Affidavit / Undertaking from the Applicant for	
5.1	Not to Damage to other utility, if damaged then to pay the losses either to NH or to the concerned agency	Enclosed
5.2	Renewal of Bank Guarantee	Will be done if required
5.3	Confirming all standard condition of NH's guideline and ministry circular	Yes
5.4	Shifting of pipeline as and when required by NHAI	Undertaking enclosed
5.5	Shifting of pipeline due to 6 lanning / widening of NHAI	Undertaking enclosed
5.6	Indemnity against all damages and claims clause (xxiv)	Undertaking enclosed
5.7	Traffic movement during laying of pipeline to be managed by the applicant.	Undertaking enclosed
5.8	If any claim is raised by the Concessionaire then the same has to be paid by the applicant	Undertaking enclosed
5.9	Prior approval of NHAI shall be obtain before taking any work of installation, shifting or repair or alternative to Petroleum Product pipeline/any other utility located in national Highway ROW	Undertaking enclosed
5.10	Expenditure, If any, incurred by NHAI for repairing any damage cause to NH by the laying, maintenance or shifting of pipeline borne by applicant agency owning the line.	Yes
5.11	If NHAI consider it necessary in future to move the utility line for any work of improvement or repairs to the road, it will be carried out as desired by the NHAI at the cost of agency owning utility line.	Yes



5.12	Certificate from applicant in following format 1. Laying of Petroleum Product pipeline will not having any deleterious effect on any of the bridge component and roadway safety of traffic. 2. "We do undertake that I/we will relocate service road/approach road/utility at my own cost notwithstanding the permission granted within such time as will be stipulated by "NHAI" for future six laning or any other development work	Enclosed
6	Who will sign the agreement on behalf of Petroleum Product pipeline agency	Mubassir Ibrahim NC, Assistant Manager(Construction), SRPL-Asanur
	Power of Attorney to sign the agreement is available or not.	Yes
7.1	Certificate of conforming all standard condition issued vide Ministry of Road Transport and Highway, Circular no. NHAI-III/P/66/76 DATED 18/19.11.1976, RW/NH-III/P/66/76 DATED 11.05.1982, RW/NH-11037/1/86 DOI (ii) DATED 28.07.1993, RW/NH/34066/2/95/S&R DATED 25.10.1999 and Circular no. RW/NH-34066/7/2003/S&R(B) DATED 17.09.2003	Enclosed
7.2	Certificate from PD in following format a) "It is certified that any other location of the Petroleum Product pipeline would be extremely difficult and unreasonably costly and installation of Petroleum Product pipeline within ROW will not adversely affect the design, stability & traffic safety of the highway nor the likely future improvement such as widening the carriage way, easing the curve etc.  b) For 6-laning  i. Where feasibility is available "I do certify that there will be no hindrance to proposed 6-laning based of feasibility report considering proposed structures at the said location". ii. In case of feasibility not available " I do certify that sufficient ROW is available at site for accommodating proposed 6-laning"	Yes
8	If NH section proposed to be taken up by NHAI on BOT basis - a clause in para 17 to be inserted in the agreement. <i>"The permitted Highway on which Licensee has been granted the ROW to the concessionaire under the concession agreement for up-gradation of (.....Section from Km...to Km.....of NH No....On Build, Operate and Transfer Basis) and therefore, the licensee shall honor the same."</i>	Yes
9	Who will supervise work of laying Petroleum Product pipeline?  On behalf of applicant	IOCI

10	Who will ensure that the defects in road portion after laying of Petroleum Product pipeline are corrected and if not corrected then what action will be taken.	IOCL
11	Who will pay the claims for damages done/disruption in working of Concessionaire if asked by the Concessionaire?  On behalf of applicant	IOCL
12	A certificate from PD that he will enter the proposed permission in the register of records of the permissions in the prescribed proforma (copy enclosed)	Yes
13	If any previous approval is accorded for laying of Petroleum Product pipeline then Photocopy of register of records of permissions accorded as maintained by PD (copy enclosed).	NA



DGM (T) & PROJECT DIRECTOR  
NATIONAL HIGHWAYS AUTHORITY OF INDIA  
PIU - THANJAVUR.





தமிழ்நாடு தமில்நாடு TAMILNADU

CY 956105

Date: 24/02/2023

Indian Oil Corporation Ltd.,  
Villupuram.

க. தாமோதரன்,  
மு.தா.வி.எண். 997/C1/14  
49.வடக்கு அய்யனார்குளம் தெரு  
விழுப்புரம். தமிழ்நாடு.

**AGREEMENT REGARDING GRANTING OF RIGHT OF  
WAY PERMISSIONS FOR LAYING UTILITY SERVICES  
ON NATIONAL HIGHWAYS**

Agreement to lay Indian Oil Corporation Limited Underground Petroleum Product Pipeline across National Highway at Chainage 103/430 KM of NH-45C Land by HDD Method (Trenchless Method).

This Agreement made this \_\_\_\_\_ day of \_\_\_\_\_ (month) of 20 (year) between \_\_\_\_\_ acting his executive capacity through \_\_\_\_\_ (hereinafter referred to as the "Authority" which expression shall unless excluded by or repugnant to the context, include his successors in office and assigns) on the one part, and M/s. INDIAN OIL CORPORATION LIMITED, SOUTHERN REGION PIPELINES, CHENNAI (hereinafter called the "Licensee") which expression shall unless excluded by repugnant to the context, include this successors / administrator assignees on the second part.

*[Signature]*





Whereas the Authority is responsible, inter-alia, for development and maintenance of lands at Km 103/430 of NH 45C ROW.

Whereas the Licensee proposes to lay underground Petroleum Product Pipeline referred to as utility services in subsequent pares.

Whereas the Licensee has applied to the Authority for permission to lay utility services across NH 45C near chainage 103/430 KM

And whereas the Authority has agreed to grant such permission for way leave on the National Highway Authority of India (NHAI) ROW as per terms and conditions hereinafter mentioned.

Now this agreement witnesseth that in consideration of the conditions hereinafter contained and on the part of the Licensee to be observed and performed, the Authority hereby grants to the Licensee permission to lay utility services as per the approved drawing attached hereto subject to the following conditions, namely.

1. ROW permissions are only enabling in nature. The purpose of extending the way leave facility on the National Highway – 45C, National Highway Authority of India (NHAI) ROW is not for enhancing the scope of activity of a utility service provider, either by content or by intent. Further, enforceability of the permission so granted shall be restricted only to the extent of provisions / scope of activities defined in the license agreement & for the purpose for which it is granted.
2. No Licensee shall claim exclusive right on the ROW and any subsequent user will be permitted to use the ROW, either above or below, or by the side of the utilities laid by the first user, subject to technical requirements being fulfilled. Decision of the Authority in relation to fulfillment of technical requirements shall be final and binding on all concerned parties. In case any disruption / damage is caused to any existing user by the subsequent user, the Authority shall not be held accountable or liable in any manner.
3. The Licensee shall be responsible for undertaking all activities including, but not limited to site identification, survey, design, engineering, arranging finance, project management, obtaining regulatory approvals & necessary clearances, supply of equipment, material, construction, erection, testing and commissioning, maintenance and operation and all other activities essential or required for efficient functioning of their own utility / industrial infrastructure facilities.
4. The Licensee shall pay license fees @ Rs..... /Sq m / month to the authority. The license fee shall become payable from date of handing over of ROW land to the Licensee, for laying of utilities/cables/conduits/pipelines for infrastructure / service provider. As regards Tariff and Terms and conditions for providing common utility ducts along National Highway – 45C, there shall be a separate agreement regime.
5. Fee shall have to be paid in advance for the period for which permission is granted for entering into a license agreement. In case of renewal, rate prevailing at the time of




renewal shall be charged. Delay in deposition of fee shall attract interest @15% per annum compounded annually.

6. Present policy of the MORT&H is to provide a 2.00 m wide utility corridor on either side of the extreme edge of ROW. In cases where utility ducts with sufficient space are already available along National Highway the utility services shall be laid in such ducts subject to technical requirements being fulfilled.
7. The utility services shall be laid at the edge of the ROW. In case of restricted width of ROW, which may be adequate only to accommodate the carriageway, central verge, shoulders, slopes of embankment, drains, other road side furniture etc.; the utility services shall be laid beyond the toe line of the embankments and clear of the drain.
8. The Licensee shall make his own arrangement for crossing of cross drainage structure, rivers etc. below the bed. In case, this is not feasible, the utility services may be carried outside the railings/parapets and the bridge superstructure. The fixing and supporting arrangement with all details shall be required to be approved in advance from the concerned Highway Administration. Additional cost on account of fixing and supporting arrangement as assessed by the Authority shall be payable by the Licensee.
9. In exceptional cases, where ROW is restricted the utility services can be allowed beneath the carriageway of service road, if available, subject to the condition that the utility services be laid in concrete ducts, which will be designed to carry traffic on top. The width of the duct shall not be less than one lane. In such cases, it also needs to ensure that maintenance of the utility services shall not interfere with the safe and smooth flow of traffic. The cost of operation and maintenance will have to be borne by the Licensee.
10. It is to be ensured that at no time there is interference with the drainage of the road land and maintenance of the **National Highway – 45C**. Towards this, the top of the utility services shall be at least 0.6 metre below the ground level. However, any structure above ground shall be aesthetically provided for / landscaped with required safety measures as directed by the concerned Authority;
11. The utility services shall be permitted to cross the **National Highway – 45C** either through structure or conduits specially built for that purpose. The casing / conduit pipe should, as minimum, extend from drain to drain in cuts and toe of slope to toe of slope in the fills and shall be designed in accordance with the provision of IRC and executed following the Specifications of the Ministry.
12. Existing drainage structures shall not be allowed to carry the lines across.
13. The top of the casing / conduit pipe containing the utility services to cross the road shall be at least 1.2m below the top of the sub grade or the existing ground level whichever is lower, subject to being at least 0.3 m below the drain inverts. A Drawing showing the clearances is attached herewith.



14. The utility services shall cross the National Highway preferable on a line normal to it or as nearly so as practicable.
15. The casing / conduit pipe for crossing the road may be installed under the road embankment either by boring or digging a trench. Installation by boring method shall be preferred.
16. In case of trenching, the sides of the trench should be done as nearly vertical as possible. The trench width should be at least 30 cm. but not more than 60 cms wider than the outer diameter of the pipe. Filling of the trench shall conform to the specifications contained here-in-below or as supplied by the Highway Authority.
  - a. Bedding shall be to a depth not less than 30 cm. It shall consist of granular material, free of lumps, clods and cobbles, and graded to yield a firm surface without sudden change in the bearing value. Unsuitable soil and rock edges should be excavated and replaced by selected material.
  - b. The backfill shall be completed in two stage (i) Side-fill to the level of the top of the pipe (ii) Overfill to the bottom of the road crust.
  - c. The side fill shall consist of granular material laid in 15 cm. Layers each consolidated by mechanical tamping and controlled addition of moisture to 95% of the Proctor's Density. Overfill shall be compacted to the same density as the material that had been removed. Consolidation by saturation or ponding will not be permitted.
  - d. The road crust shall be built to the same strength as the existing crust on either side of the trench or to thickness and specifications stipulated by the Highway Authority.
17. The Licensee shall ensure making good the excavated trench for laying utility services by proper filling and compaction, so as to restore the land in to the same condition as it was before digging the trench, clearing debris/loose earth produced due to execution of trenching at least 50 m away from the edge of the right of way;
18. All required restoration work subsequent to laying of the cable shall be required to be undertaken by the Licensee at its cost either by itself or through its authorized representative in consultation with the Authority as per predetermined time schedule and quality standards.
19. Prior to commencement of any work on the ground, a performance Bank Guarantee @ Rs. ....per route meter / Rs. .... Per sqm with a validity of one year initially (extendable if required till satisfactory completion of work) shall have to be furnished by the Licensee to the Authority / its designated agency as a security against improper restoration of ground in terms of filling / unsatisfactory compaction damages caused to other underground installations/utility services & interference, interruption, disruption or failure caused thereof to any services etc. In case of the Licensee failing to discharge the obligation of making good of the excavated trench/other restoration work,



the Authority shall have a right to make good the damages caused by excavation, at the cost of the Licensee and recover the amount by forfeiture of the Bank Guarantee.

20. In case, the Performance Bank Guarantee is invoked as mentioned above, the Licensee shall be required to replenish and reinstate the required Performance Bank Guarantee within one month of such invoking. In case the work contemplated herein is not completed to the satisfaction of the Authority, which has granted the permission, within a period of 11 months from the date of issue of the Bank Guarantee, the Licensee shall either furnish a fresh guarantee or extend the guarantee for a further period of one year. Notwithstanding this, the Licensee shall be liable to pay full compensation to the aggrieved Authority / its designated agency for any damage sustained by them by reason of the exercise of the ROW.
21. The Licensee shall shift the utility services within 90 days (or as specified by the respective Authority) from the date of issue of the notice by the concerned Authority to shift/relocate the utility services, in case it is so required for the purpose of improvement / widening of the road / route / highway or construction of flyover / bridge and restore the road/land to its original condition at his own cost and risk.
22. The Licensee shall be responsible to ascertain from the respective agency in co-ordination with Authority, regarding the location of other utilities / underground installations / facilities etc. The Licensee shall ensure the safety and security of already existing underground installations/utilities/facilities etc. before commencement of the excavation / using the existing cable ducts. The Licensee shall procure insurance from a reputed insurance company against damages to already existing underground installations / utilities / facilities etc.
23. The Licensee shall be solely responsible / liable for full compensation / indemnification of concerned agency / aggrieved Authority for any direct, indirect or consequential damage caused to them/claims or replacements sought for, at the cost and risk of the Licensee. The concerned agency in co-ordination with Authority shall also have a right make good such damages / recover the claims by forfeiture of Bank Guarantee.
24. If the Licensee fails to comply with any condition to the satisfaction of the Authority, the same shall be executed by the Authority at the cost and risk of the Licensee.
25. Grant of License is subject to the Licensee satisfying (a) minimum disruption of traffic and (b) no damage to **National Highway – 45C**. As far as possible, the Licensee should avoid cutting of the road for crossing highway, and other roads and try to carry out the work by trenchless technology. In case any damage is caused to the road pavement in this process, the Licensee will be required to restore the road to the original condition at its cost. If due to unavoidable reasons the road needs to be cut for crossing or laying utility services, the Licensee has to execute the restoration work in a time bound manner at its cost either by itself or through its authorized representative in consultation with the





Authority as per predetermined time schedule and quality standards. In case of the Licensee failing to discharge the obligation of making good of the excavated trench/other restoration work, the Authority shall have a right to make good the damages caused by excavation, at the cost of the Licensee and recover the amount by forfeiture of the Bank Guarantee.

26. The Licensee shall inform / give a notice to the concerned agency designated by the Authority at least 15 days in advance with route details prior to digging trenches for fresh or maintenance/repair works. A separate performance Bank Guarantee for maintenance/repair works shall have to be furnished by the licensee.
27. Each day, the extent of digging the trenches should be strictly regulated to that utility service is laid and trenches filled up before the close of the work that day. Filling should be completed to the satisfaction of the concerned agency designated by the Authority.
28. The licensee shall indemnify the concerned agency in co-ordination with Authority, against all damages and claims, if any due to the digging of trenches for laying cables / ducts.
29. The permission for laying utility services is granted maximum for 5 years at a time, which can thereafter be considered for renewal. On payment of additional fee at the time of renewal, the permission shall automatically be renewed, unless defaults exist. In case of renewal, rate prevailing at the time of renewal shall be charged. Delay in deposition of fee shall attract interest @ 15% per annum compounded annually.
30. The permission shall be valid only for the period it is issued and fee deposited. However, the Authority also has right to terminate the permission or to extend the period of Agreement.
31. That the Licensee shall not undertake any work of shifting, repairs or alternations to the utility services without prior written permission of the concerned agency in co-ordination with the Authority.
32. The permission granted shall not in any way be deemed to convey to the Licensee any ownership right or any interest in route/road/highway land/property, other than what is herein expressly granted. No use of **National Highway -45C** ROW will be permitted for any purpose other than that specified in the Agreement.
33. During the subsistence of this Agreement, the utility services located in **National Highway-45C** highway land / property shall be deemed to have been constructed and continued only by the consent and permission of the Authority so that the right of the Licensee to the use thereof shall not become absolute and indefeasible by lapse of time.
34. The Licensee shall bear the Stamp Duty charged on this Agreement.
35. Three copies of 'as laid drawings' of utilities (hard and soft copies) with geo-tagged photographs and geo-tagged video recordings of laying of Product Pipeline in the trench (with respect to the **National Highway – 45C** and after complete restoration shall be



submitted to the Authority for verification and record within a month of completion of works.

36. The Licensee shall allow free access to the Site at all times to the authorized representatives of Authority to inspect the Project Facilities and to investigate any matter within their Authority, and upon reasonable notice, shall provide reasonable assistance necessary to carry out their respective duties and functions.
37. The utility services shall not be made operational by the Licensee unless a completion certificate to the effect that the utility services has been laid in accordance with the approved specifications and drawings and the trenches have been filled up to the satisfaction of the concerned agency in co-ordination with the Authority has been obtained. Notwithstanding anything contained herein, this Agreement may be cancelled at any time by Authority for breach of any condition of the same and the Licensee shall neither be entitled to any compensation for any loss caused to it by such cancellation nor shall it be absolved from any liability already incurred.
38. The Licensee shall ensure adherence to relevant Indian standards and follow best industry practices, methods and standards for the purpose of ensuring the safe efficient and economic design, construction, commissioning, operation, repair and maintenance of any part of the utility lines/industrial infrastructure facilities and which practices, methods and standards shall be adjusted as necessary, to take account of :
  - a) Operation, repair and maintenance guidelines given by the manufactures,
  - b) The requirements of Law,
  - c) The physical conditions at the Site, and
  - d) The safety of operating personnel and human beings.
39. The Licensee shall have to provide safety measures like barricading, danger lighting and other necessary caution boards while executing the work.
40. While laying utility services, at least one lane of road shall be kept open to traffic at all times. In case of single lane roads, a diversion shall be constructed. If any traffic diversion works are found necessary during the working period such diversion shall be provided at the cost of Licensee.
41. After the termination/expiry of the agreement, the Licensee shall remove the utility services within 90 days and the site shall be brought back to the original condition failing which the Licensee will lose the right to remove the utility services. However before taking up the work of removal of utility services the Licensee shall furnish a Bank Guarantee to the Authority for a period of one year for an amount assessed by the Authority as a security for making good the excavated trench by proper filling and compaction, clearing debris, loose earth produced due to excavation of trenching at least 50m away from the edge of the ROW.



42. Any disputes in interpretation of the terms and conditions of this Agreement or their implementation shall be referred to the redress mechanism prevailing in the Ministry and the decision of the redress mechanism shall be final and binding on all.
43. For PPP Projects, in case of any financial loss incurred by the respective project concessionaires due to such laying/shifting of utility services by the Licensee, compensation for the same shall be required to be borne by the Licensee in mutual agreement with the respective project concessionaires. MoRT&H/ NH Division/ implementing authorities for the project shall not be liable to the concessionaire in any way in this regard.

This agreement has been made in duplicate, each on a Stamp Paper, Each party to this Agreement has retained one stamped copy each.

IN WITNESS WHEREOF THE PARTIES HERETO HAVE CAUSED THIS AGREEMENT TO BE EXECUTED THROUGH THEIR RESPECTIVE AUTHORISED REPRESENTATIVES THE DAY AND THE YEAR FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED FOR AND ON BEHALF OF AUTHORITY.

By SHRI \_\_\_\_\_

(Signature, name & Address with stamp)

SIGNED ON BEHALF OF M/s. INDIAN OIL CORPORATION LIMITED (LICENSEE)

By MUBASSIR IBRAHIM NC  
Assistant Manager (Construction)  
SRPL Asanur

मुबश्शिर इब्राहीम .एन.सी.  
MUBASSIR IBRAHIM . N. C  
सहायक प्रबंधक (निर्माण) / AM (Construction)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड  
INDIAN OIL CORPORATION LIMITED  
एस आर पी एल - असनूर / SRPL- Asanur

(Holder of Letter of Authority dt. 03.11.2022 by Chief General Manager (Construction) of Indian Oil Corporation Limited, SRPL-Chennai

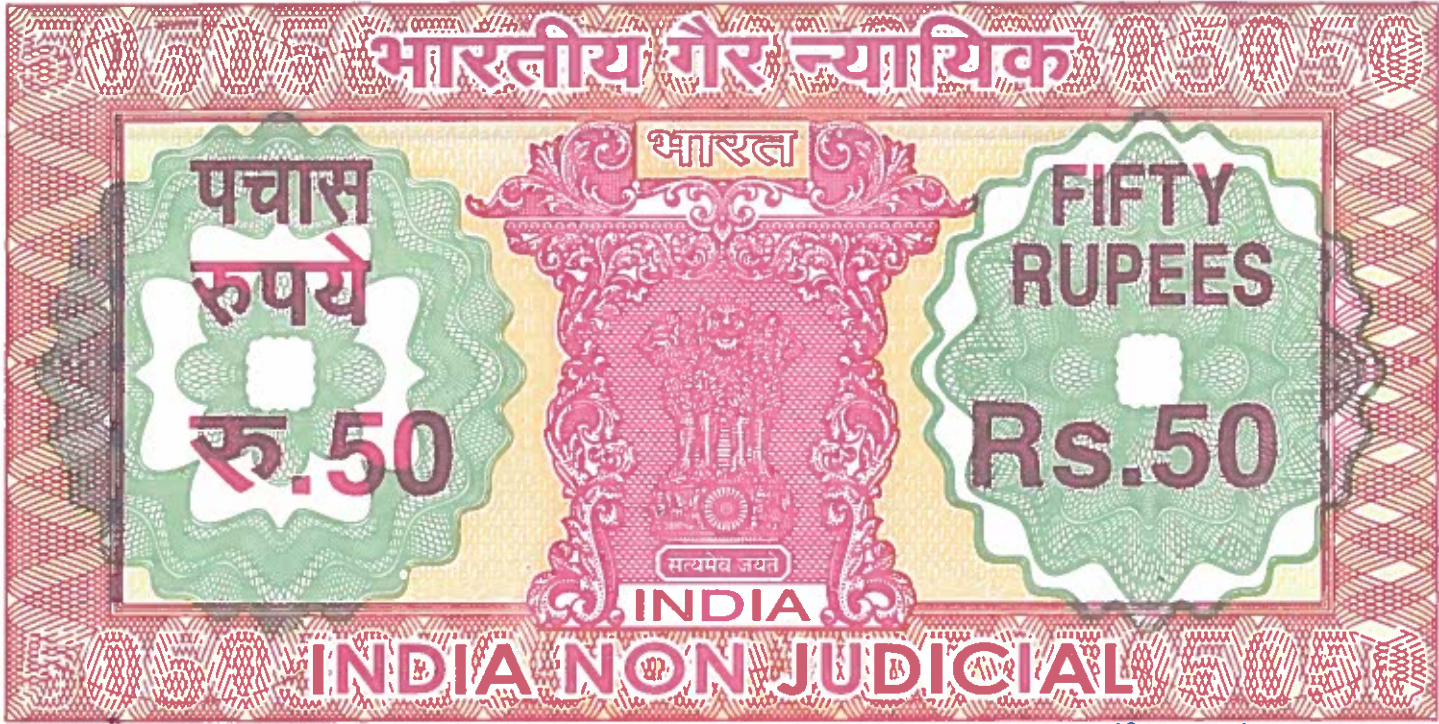
IN THE PRESENCE OF (WITNESSES) :

1. Neelish  
(A.S.Neelish kumar,  
PJE, IOCL-Asanur)

2) Sat  
(Satwik, PJE  
IOCL-Asanur)







தமிழ்நாடு தமிழ்நாடு TAMILNADU

7/1/2023

Indian oil corporation

Villupuram

S. JANSIKIRANE, 18-50/2

L.No: 16/7000,

STAMP VENDOR,

MARUDUR, VILLUPURAM

BG 899972

### INDEMNITY BOND

Name of the Project: Laying of 16"OD CBR-Asanur Petroleum Product Pipeline along with OFC Cable across the National Highways at Ch.103/430 KM of NH-45C at Vembukudi Village, Udayarpalayam Taluk, Ariyalur District in the state of Tamil Nadu.

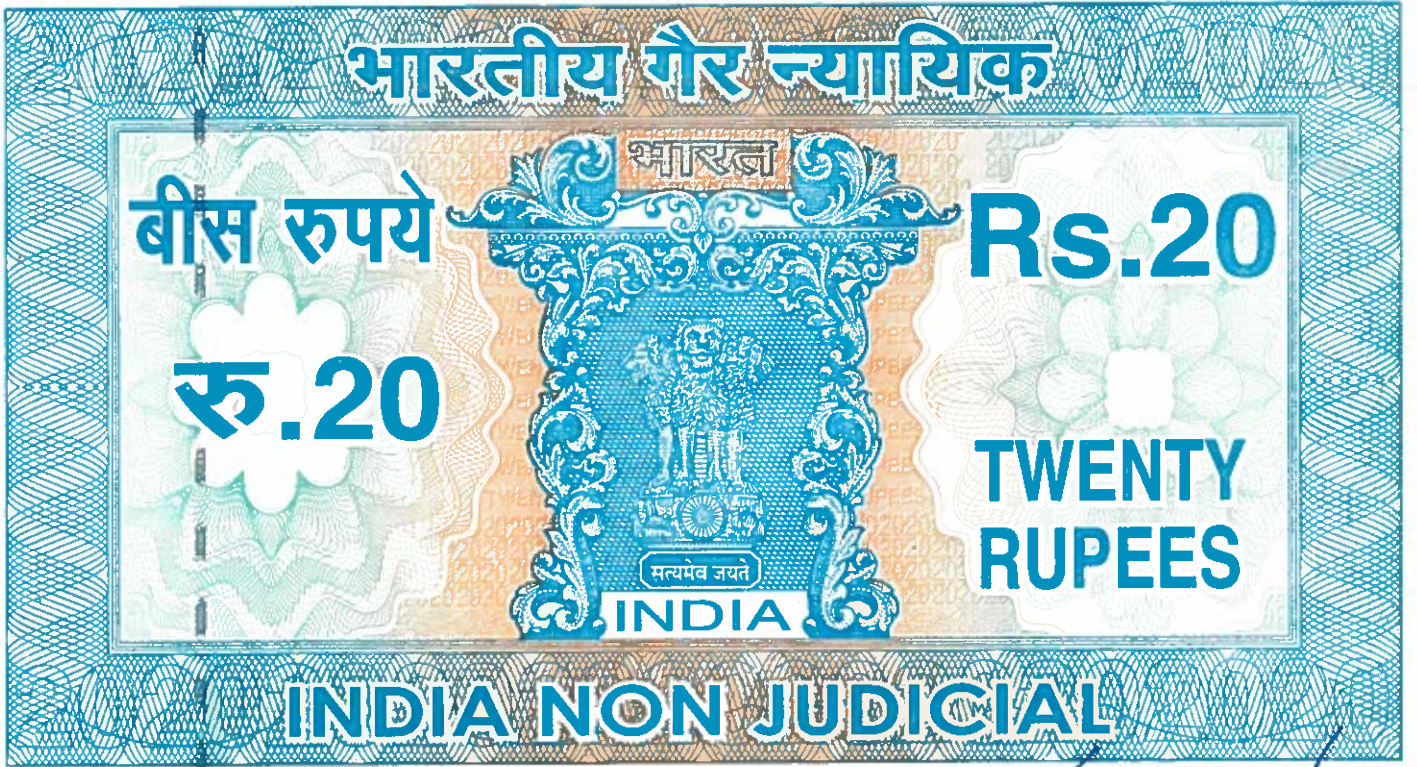
#### Indemnity against all damages and claims as per Sl.NO.5.6 of Checklist

We, M/s Indian Oil Corporation Limited, Pipelines Division, SRPL Asanur, do hereby indemnify the Project Director, PIU, National Highways Authority of India, Thanjavur, binding ourselves to pay all the losses and claims in respect of laying of 16"OD CBR-Asanur Petroleum Product Pipeline along with OFC Cable across the National Highways at Ch.103/430 KM of NH-45C at Vembukudi Village, Udayarpalayam Taluk, Ariyalur District in the state of Tamil Nadu or maintenance there of and against all claims, proceedings damages, costs, charges and expenses whatsoever in respect thereof in relation there to failing such payments of claims in the above work we abide in accepting recovery of such claims affected from any of our assets.

मुबशिर इब्राहीम .एन .सी .  
MUBASSIR IBRAHIM . N. C  
सहायक प्रबंधक (निर्माण) / AM (Construction)  
इंडियन ऑइल कॉर्पोरेशन लिमिटेड  
INDIAN OIL CORPORATION LIMITED  
एस आर पी एल - असनूर / SRPL- Asanur

(Mubassir Ibrahim NC)





தமிழ்நாடு தமில்நாடு TAMIL NADU

20AC 260338

Date: 24/02/2023

Indian Oil Corporation Ltd,  
Valluvaran.

க.தாமோதரன்,  
மு.தா.வி.எண். 997/C1/14  
49.வடக்கு அய்யனார்புளம் தெரு  
விழுப்புரம், தமிழ்நாடு

UNDERTAKING FOR LAYING OF UNDERGROUND STEEL PIPELINE WITH  
OFC DUCT ALONG NATIONAL HIGHWAY - ACROSS NH-45C NEAR  
CHAINAGE 103.430 KM AT VEMBUKUDI VILLAGE, UDAYARPALAYAM  
TALUK, ARIYALUR DISTRICT BY HDD METHOD FOR INDIAN OIL  
CORPORATION LIMITED, CBR-ASANUR PETROLEUM PRODUCT PIPELINE  
PROJECT, SOUTHERN REGION PIPELINES

We hereby undertake that we will pay necessary fees/rent as and when required by the NHAI as per their Circular No 33044 / 29 / 2015 /S&R(R) dated 22.11.2016 without any delay.

*(Signature)*

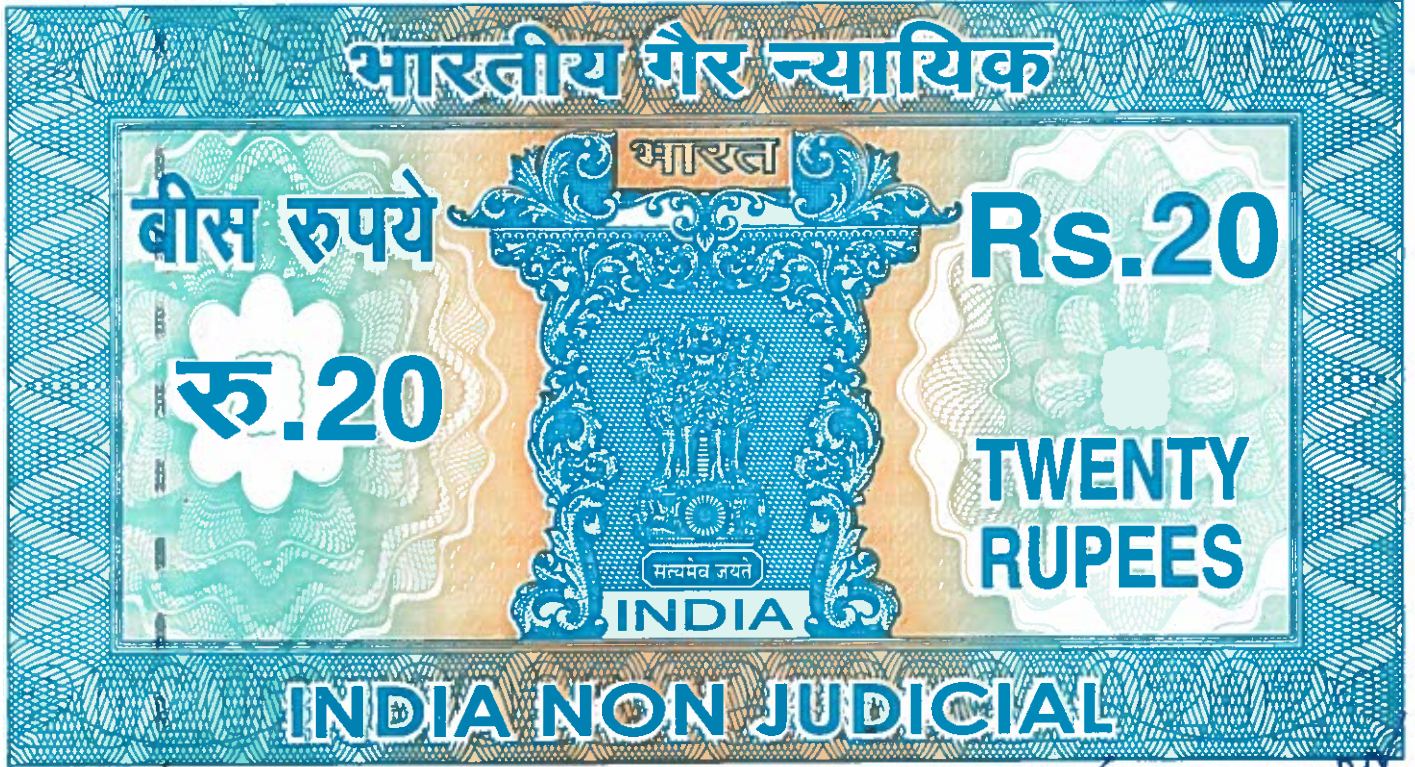
(Mubassir Ibrahim NC)

Assistant Manager(Construction)

SRPL-Asanur







தமிழ்நாடு தமில்நாடு TAMIL NADU

Date: 28/11/2022

Indian Oil Corporation Ltd.,  
Villupuram

15AC 280790

க.தாமோதரன்,  
மு.தா.வி.எண். 997/C1/14  
49.வடக்கு அய்யனார்துளம் தெரு.  
விழுப்புரம், தமிழ்நாடு.



### UNDERTAKING

1. We hereby undertake that we will pay necessary fees/rent as and when required by the NHAI as per the Circular No. RW/NH-33044/27/2005-S&R(R) dated 07.08.2013 without any delay.
2. Indian Oil Corporation Limited, Pipelines Division, Chennai shall be responsible for safety of all other underground facilities, such as electric lines, pipe of water supply and gas sewage lines etc., during trenching.
3. The Indian Oil Corporation Limited, Pipelines Division, Chennai shall inform the concerned officer of NH appointed at least 15 days in advance before starting of work.
4. The Indian Oil Corporation Limited, Pipelines Division, Chennai shall not, without the prior permission in writing to the concerned officer of NH undertake any work of shifting, repairs or alternations to the laid Indian Oil Corporation Limited, Pipelines Division, Chennai.



5. NH shall not be responsible for any damage caused to the underground Petroleum Product pipeline or by any activity of NH on the permitted highway. The parties are agreed that the Indian Oil Corporation Limited, Pipelines Division, Chennai is laying underground PETROLEUM PRODUCT pipeline across the permitted highway at its own cost.
6. The Indian Oil Corporation Limited, Pipelines Division, Chennai shall make good excavated trench for laying underground PETROLEUM PRODUCT pipeline by proper filling and compaction, so as to restore the land in the same condition as it was before digging trench and shall clear debris/loose earth produced from the execution of trenching to the satisfaction of NH.
7. If any accident occurs during the execution or completion of work by the agency, the complete responsibility will be fully on the head or agency.
8. The Indian Oil Corporation Limited, Pipelines Division, Chennai agrees to abide by the directions of the concerned officer of NH appointed in accordance with the National Highways Act, 1956 and rules in force.
9. We do undertake that we will relocate service/approach road/utilities at our own cost notwithstanding the permission granted within such times as will be stipulated by NH.
10. Indian Oil Corporation Limited, Pipelines Division, Chennai agrees not to damage to other utility. If damages then to pay losses either to NH or to the concerned agency.
11. We do indemnity against all damages and claims clause (xxiv)
12. We do if any claim is raised by the concessionaire then the same has to be paid by the applicant.
13. We do expenditure, if any incurred by NH for repairing any damage caused to the NH by the laying, maintenance or shifting of the underground PETROLEUM PRODUCT pipeline will be borne by the agency owning the line.
14. Indian Oil Corporation Limited, Pipelines Division, Chennai agrees if the NH considers it is necessary in future to move the utility line for any work of improvement or repairs to the road, it will be carried out as desired by the NH at the cost of the agency owning the utility line within a reasonable time (not exceeding 60 days) of the intimation given.
15. Laying of underground PETROLEUM PRODUCT pipeline will not have deleterious effects of any of the bridge components and roadway safety for traffic.
16. For 6-laning "we do undertake that I will relocate service road/approach road/utilities at my own cost notwithstanding the permission granted within such time as will be stipulated by NH for future six laning or any other development".
17. All the restoration work will be carried out by Indian Oil Corporation Limited, Pipelines Division, Chennai up to the satisfaction of NH.

For & On behalf of Indian Oil Corporation Limited



(Mubassir Ibrahim NC)  
Assistant Manager (Construction)  
SRPL - Asanur  
Indian Oil Corporation Limited



**CERTIFICATE**

1. This proposal when implemented will not affect the design, stability and traffic safety of Highway.
2. This proposal if implemented now will not affect any likely further improvement to Geometric.
3. The proposal is in accordance with the Specification laid down by the Ministry of Surface Transport, vide Lr. No. RW/ NH-33041/17/2000 - SNR /dated 29.09.2000 without making any inconvenience for the traffic through the road.
4. Certificate to effect that they have inspected the site and there will not be any hindrance for the NH Road for further developments.



**Mubassir Ibrahim NC**  
Assistant Manager (Construction)  
SRPL Asanur  
Indian Oil Corporation Limited





### METHODOLOGY OF CROSSING

The method of crossing the National Highway Road is by Horizontal Directional Drilling method (HDD) which is a Trenchless method. In this method, the pipeline which is of size 16" with 3LPE coating is laid across the NH. The pipeline is pulled underground by HDD method, maintaining a clear depth (As specified in the drawing) from the top of the subgrade. The duct for OFC is also laid along with this pipeline by the same method. The pits of size 2m x 2m x 1.5m for carrying out HDD are laid away from the ROW of NH. The detailed procedure is given below:

### **DESIGN & ENGINEERING**

- i) The limits of each crossing shall be determined on the basis of crossing profile, design, equipment, installation techniques and site condition.
- ii) Within the entire limits of crossing, the cover to top of coated pipe shall be as specified in the crossing drawing enclosed.
- iii) The entry and exit points of the pipeline at ground level shall not come within the limits of crossing as defined in the crossing drawings.
- iv) **Maximum longitudinal stress during installation**  
Total maximum longitudinal stress in the pipeline due to tension and bending at any Location shall not exceed 95% of the SMYS of the pipe material.
- v) **Maximum equivalent stress during final hydrostatic test**  
After installation, the pipeline shall be hydrostatically tested at a pressure stipulated in the contract. During hydrostatic testing, the combined equivalent stress in the pipeline due to bending and test pressure shall not exceed 95% of the SMYS of pipe material.
- vi) **Maximum equivalent stress during service**  
Permissible values of maximum equivalent stress during service shall be governed by the requirements of ANSI B 31.8/B 31.4, as applicable.
- vii) The minimum allowable radius of curvature for the pipeline shall be the highest value of the minimum pipeline elastic radius and above, after correction for drilling inaccuracies or multiplication by the factor 1.85, whichever results in the highest permissible value of minimum elastic bend radius.
- viii) **Pipeline configuration along the supported string before Entry Point**  
The required pipeline configuration in order to allow smooth pull in the crossing entry point and admissible stress in the supported pipeline string shall be ensured. Pipeline combined stress shall not exceed 95% of the specified minimum yield strength for line pipe material.





## CONSTRUCTION

i) **Pipe String Preparation**

Complete pipe string shall be prepared as a single string for pulling. Welding, radiographic inspection of joints and joint coating of the string shall be performed in accordance with the standard IOCL specifications.

ii) **Pre-testing**

The complete pipe string shall be hydrostatically pre-tested before installation as per approved procedure for a minimum period of 24 hours. Joint coating of the welds shall be done after this pre-test.

iii) The section of the pipeline corresponding to the crossing shall before installation, be subjected to hydrostatic test pressure as stipulated in the contract and checks for leakage of welds shall be done. Failure, if any, during the test shall be rectified immediately.

iv) **Gauging**

Before pre and post installation hydrostatic testing, gauging of the pipeline shall be done by passing a gauging pig through the pipeline. The gauging pig shall have a diameter equal to 95% of the nominal internal diameter of the pipe. Necessary temporary scraper launchers/ receivers and other equipment for piping shall be installed.

v) **Installation**

The lateral offset of the actual exit point of the pilot hole from the calculated and theoretical exit point shall not exceed half per cent (0.5%) of the length of the crossing.

vi) The length tolerance shall not exceed one per cent of the crossing length, subject to the condition that the actual exit point shall not be within the limits of crossing as defined in the drawings.

vii) Back reaming shall be done separately from the pipeline pulling operation. The size of the back-reamed hole shall be adequate (approximately 1.5 times the pipeline diameter) to allow enough clearance for a smooth pull-back of the pipeline.

viii) The drilled hole shall be maintained till such time the pipeline is pulled in.

ix) During pulling operation, the buoyancy of the pipeline shall be controlled by suitable approved methods so as to maintain the buoyancy as close as possible to zero during pull-back in order to reduce friction forces of the pipeline in the hole.

x) Bentonite slurry of specified viscosity shall be pumped into the hole, preventing the wall from collapsing and protecting the pipeline coating.

xi) The integrity of the corrosion coating shall be maintained.



- xii) After pull back operation, in order to ensure the integrity of pipe coating, meggar test of the coating shall be carried out in accordance with the following steps:
- a) The test must be carried out before the bored pipe is tied-in to the mainline pipe.
  - b) Measure the natural potential of the bored pipe at both ends.
  - c) Set up the temporary impressed current system with a digital multi meter connected to measure the output current. Position the test electrode/anode as far from the bored pipe as interconnecting cable will allow and no closer than 10 meters.
  - d) Place the reference electrode at the remote end (opposite to impressed current system) to monitor the bored pipe potential.
  - e) Impress a current into the bored pipe start at zero amp. and increase slowly until the bored pipe potential is depressed to 1.5 V with respect to the reference electrode.
  - f) Note the current from the digital multi meter and calculate the current density.
  - g) The desirable value of calculated current density should be less than 95 micro ampere per square meter of drilled pipe surface in contact with the soil.

#### FINAL HYDROSTATIC TEST

The complete crossing section shall be tested after installation. The test pressure shall be as stipulated in the Contract. After temperature stabilization, pressure shall be retained in the pipeline for a period of 6 hours and recorded by mano thermograph. The hydrostatic testing shall be carried out in accordance with approved procedures and specification detailed elsewhere in the document.

#### FINAL CLEAN UP

After completion of construction, the site shall be cleaned from balance material and debris and bentonite slurry. Site/ ROW shall be cleared to the complete satisfaction of the land OWNER's and authorities having jurisdiction.

