



भारतीय राष्ट्रीय राजमार्ग प्राधिकरण  
(सड़क परिवहन और राजमार्ग मंत्रालय, भारत सरकार)  
**National Highways Authority of India**  
(Ministry of Road Transport and Highways)  
Project Implementation Unit : Puducherry.  
#29, Sun City, ECR, Bommaiypalayam,  
Tamil Nadu - 605 104.



Phone : 0413 - 2969493  
E-mail : piupuducherry@nhai.org  
nhaipuducherry@gmail.com

11014/NH-45A/08/05/2021/PIU-PDY/ 0627

31<sup>st</sup> March 2022

**Invitation of Public Comments**

Sub: NHAI - PIU - Puducherry - Four laning of Sattanathapuram (Km.123/800) to Nagapattinam (Km.179/555) Section of NH-45A on HAM under NHDP Phase-IV in the state of Tamil Nadu - Request for permission to lay Ennore - Thiruvallur-Bengaluru-Puducherry-Nagapattinam-Madurai-Tuticorin R-LNG Pipeline along with Optical Fiber Cable (OFC) across NH-45A by Horizontal Directional Drilling Method (HDD) - Invitation of Public Comments - Reg.

The proposal is regarding permission sought by M/s. Indian Oil Corporation Limited, South Region Pipelines for laying of Ennore - Thiruvallur-Bengaluru-Puducherry-Nagapattinam-Madurai-Tuticorin R-LNG Pipeline along with Optical Fiber Cable (OFC) across NH-45A by Horizontal Directional Drilling Method (HDD) submitted to this office by vide letter No. SRPL/ETBPNMTPL/ASN-PPN/10-2/NH dated 11.02.2022.

2. M/s. Indian Oil Corporation Limited, South Region Pipeline has proposed to lay the underground Optical Fibre Cable (OFC) across the road at a depth of 7.0m from the Original Ground Level.

S.No	Description	Proposed Side	Design Chainage in KM	Length in KM
1	Across NH45A (New NH32)	LHS to RHS	152+878	0.06

3. M/s. Indian Oil Corporation Limited has proposed to lay the underground Optical Fibre Cable (OFC) along the National Highways by HDD Method duly keeping top of the pipeline at a depth of 7.0m below the OGL. The diameter of the OFC Cable is 40mm provided with 80mm MS Pipe.

4. The submitted proposal is in conformity with Ministry's latest guidelines, regarding accommodation of public and industrial utility services along and across National Highways, issued vide letter dated 22.11.2016.

5. M/s. Indian Oil Corporation Limited has furnished an undertaking for shifting of the pipeline at their cost during future widening of the above road.

6. As per the guidelines issued by the Ministry vide letter No.RW/NH-33044/29/2015/ S&R(R) dated 22.11.2016, the proposal submitted by M/s. Indian Oil Corporation Limited will be made available for 30 days for public comments/objections and the comments are to be furnished within 30 days from the day of closure.

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

The Project Director  
National Highways Authority of India  
(Ministry of Road Transport and Highways)  
Project Implementation Unit - Puducherry.  
No.28 & 29, 1<sup>st</sup> Cross,  
Ganapathy Nagar,  
Arumparthapuram,  
Puducherry-605110  
Tel: 0413-2969493

Yours faithfully,

  
31/03/22  
(S.Sakthivel)

DGM (T) & Project Director  
NHAI, PIU-Puducherry

**Copy to:**

1. Web-admin, NHAI HQ, New Delhi - For uploading in the Ministry's website
2. The NIC, New Delhi - For uploading in the Ministry's website.
3. The RO Chennai - for information



## इंडियन ऑयल कार्पोरेशन लिमिटेड

दक्षिणी क्षेत्र पाइपलाइन  
चेन्नै - तिरुच्ची - मदुरै पाइपलाइन  
सिडको इंडस्ट्रियल एस्टेट, आसनुर गाँव  
उलुंदूरपेट तालुक, तमिलनाडु - 606305  
दूरभाष : 9384698005/6

### Indian Oil Corporation Limited

Southern Region Pipelines  
Chennai - Trichy - Madurai Pipeline  
Sidco Industrial Estate, Asanur Village P.O.  
Ulundurpet (TK), Tamil Nadu - 606305  
Tel. : 9384698005 / 6



IndianOil

पाइपलाइन प्रभाग  
Pipelines Division

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

To  
The Project Director  
PIU, NHAI  
#29, Sun City Road, ECR  
Bommayarpalayam  
Puducherry-605104

NHAI-PIU, PUDUCHERRY	
DATE	22 FEB 2022
DIARY No	1574
DGM (T) & PD	
Mgr. (Tech)	
Dy.Mgr.(T)	
Site Eng.	
ACCOUNTANT	
LAO	

11.02.2022

Gopi

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

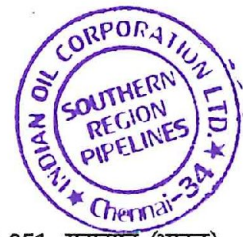
Dear Sir,

M/s Indian Oil Corporation Limited, A Fortune 500 and Maharatna Company, is proposing to lay underground dedicated Pipelines for transportation of Natural Gas from LNG Import Terminal at Kamarajar Port, Ennore to various anchor customers in Tamil Nadu, Karnataka, Andhra Pradesh and Puducherry. The said Project is being monitored by Prime Minister's Office (PMO) as a part of National Gas Grid for supplying gas to industries as well as for domestic consumption as City Gas Distribution (CGD).

The Total Length of the Pipeline is 1,477 KM approx. and is passing through several districts including Thiruvallur, Vellore, Kancheepuram, Chengalpattu, Villupuram, Kallakurichi, Cuddalore, Trichy, Perambalur, Nagapattinam, Mayiladuthurai, Virudhnagar, Ariyalur, Thanjavur, Tiruvarur, Pudukkottai, Sivagangai, Madurai, Ramanathapuram and Thoothukudi in Tamil Nadu apart from Puducherry.

As a part of subject Project, One Section will be laid from Ennore to Trichy along with Spurlines to various anchor customers in Tamil Nadu and Puducherry. Spurlines (12.75" Dia Pipeline) from Asanur Village for supplying Natural Gas to Lanco Tanjore Power, Kuttalum Gas Turbine and PPN Power Plant, 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-45A	118.769	152.878	Thirukaddaiyur	Tharangambadi	Mayiladuthurai



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 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. Route Map of the Pipeline                     | Annexure-III  |
| 4. Crossing Drawing of National Highway          | 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. Certificate                                  | Annexure-X    |
| 11. Methodology of HDD Crossing                  | Annexure-XI   |

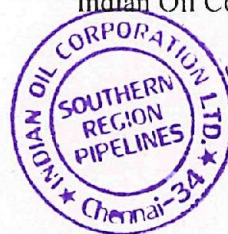
We request you to kindly accord permission for laying the R-LNG pipeline along with Optical Fiber Cable across the above National Highway under your jurisdiction.

Thanking You,

Yours faithfully,

 (S KUMAR) (COM)

Chief Construction Manager  
Southern Region Pipelines  
Indian Oil Corporation Limited





इंडियन ऑयल कार्पोरेशन लिमिटेड

दक्षिणी क्षेत्र पाइपलाइन्स

हाउस ऑफ फोर फ्रेम्स

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

दूरभाष : 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**

पाइपलाइन प्रभाग  
Pipelines Division

SRPL/ETBPNMTPL/GEN

22.02.2021

**TO WHOMSOEVER IT MAY CONCERN**

**POWER OF ATTORNEY OF THE AUTHORIZED SIGNATORY**

This is to certify that Shri. S Kumar, Chief Construction Manager, 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 R-LNG Pipeline along with Optical Fibre Cable for the Ennore-Thiruvallur-Bengaluru-Puducherry-Nagapattinam-Madurai-Tuticorin underground R-LNG Pipeline Project.

Specimen Signature:

Shri. S Kumar

Chief Construction Manager

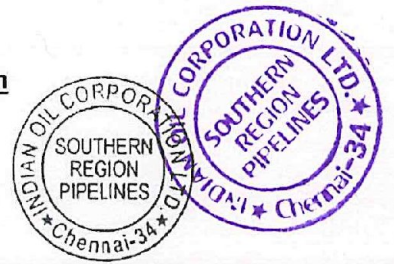
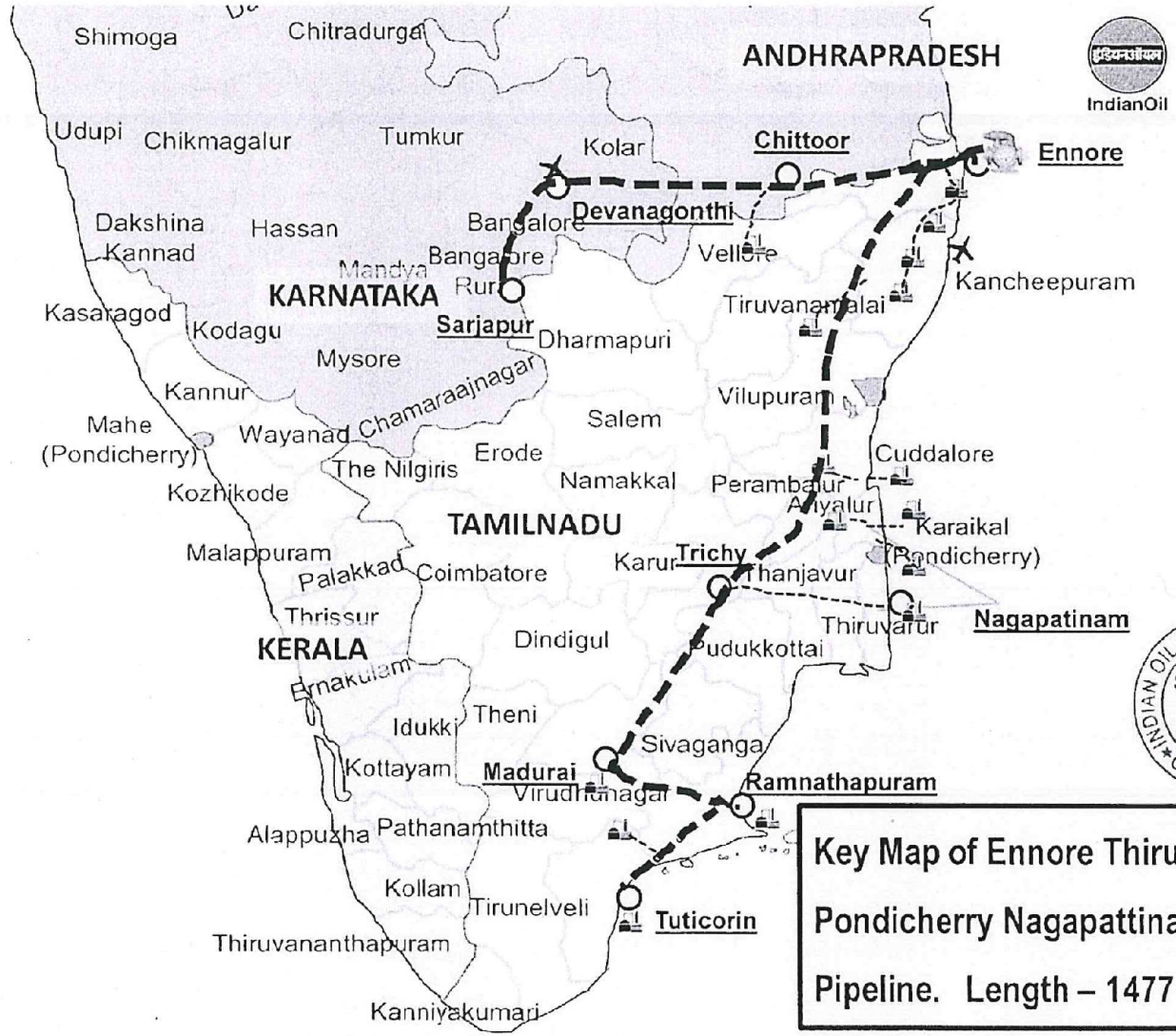
(G Yohan Kumar)  
General Manger (Construction)  
SRPL - Chennai

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

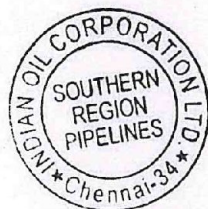
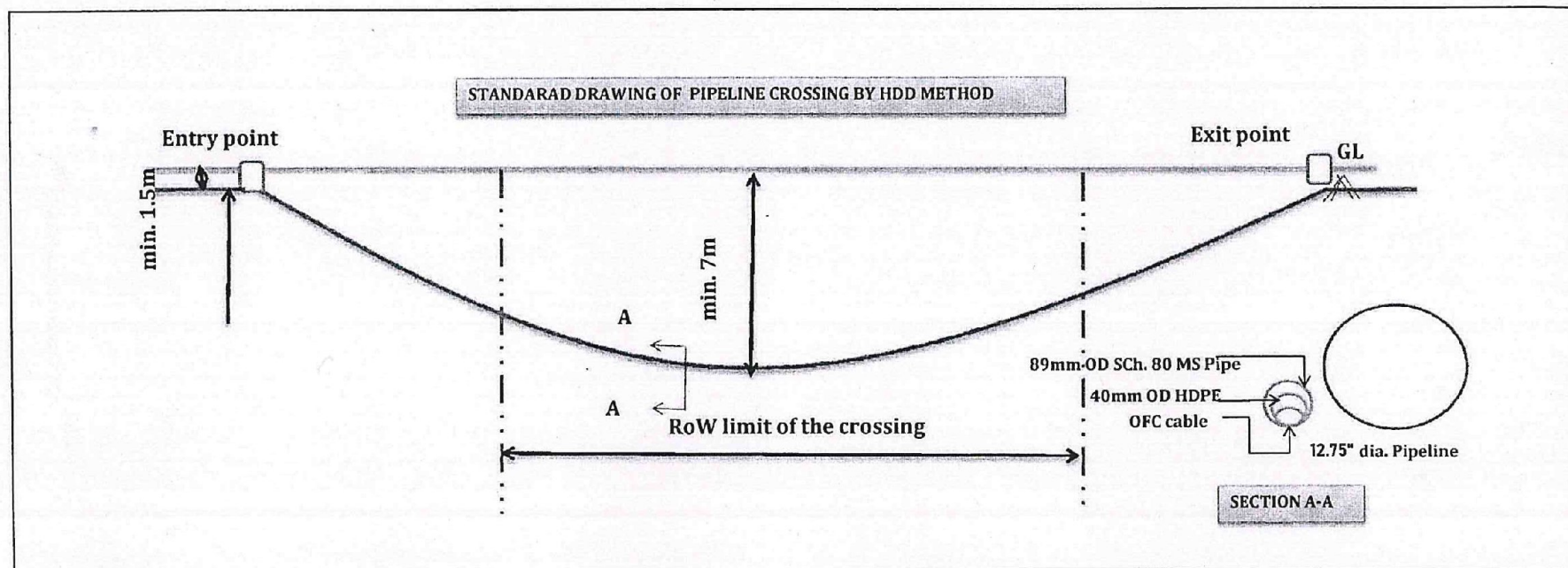
**LEGEND**

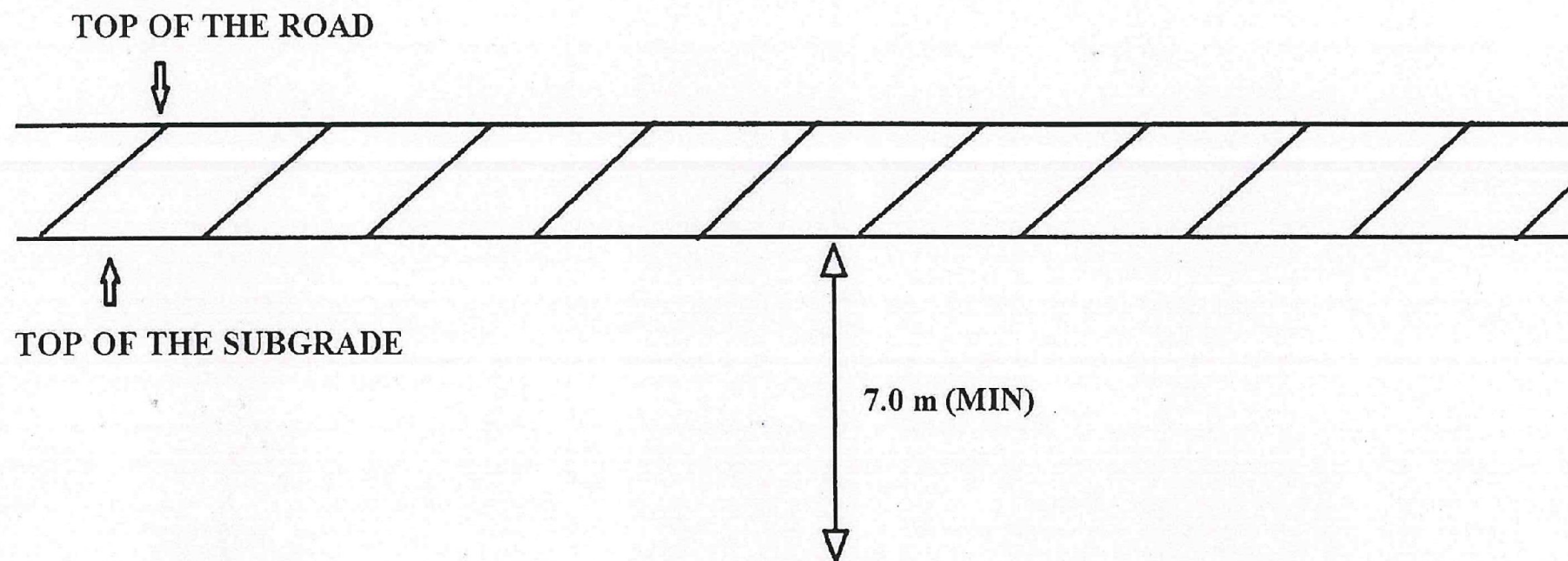
LNG  
Consumer  
Points

Pumping /  
Boosting  
stations



**Key Map of Ennore Thiruvallur Bangalore  
Pondicherry Nagapattinam Madurai Tuticorin  
Pipeline. Length – 1477 Kms.**



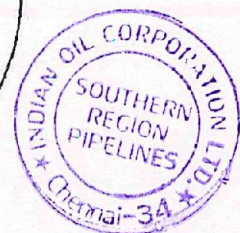


89MM (OD) SCH.80  
MS PIPE

40 MM(OD) HDPE

OFC CABLE

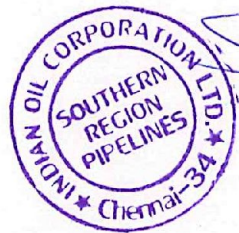
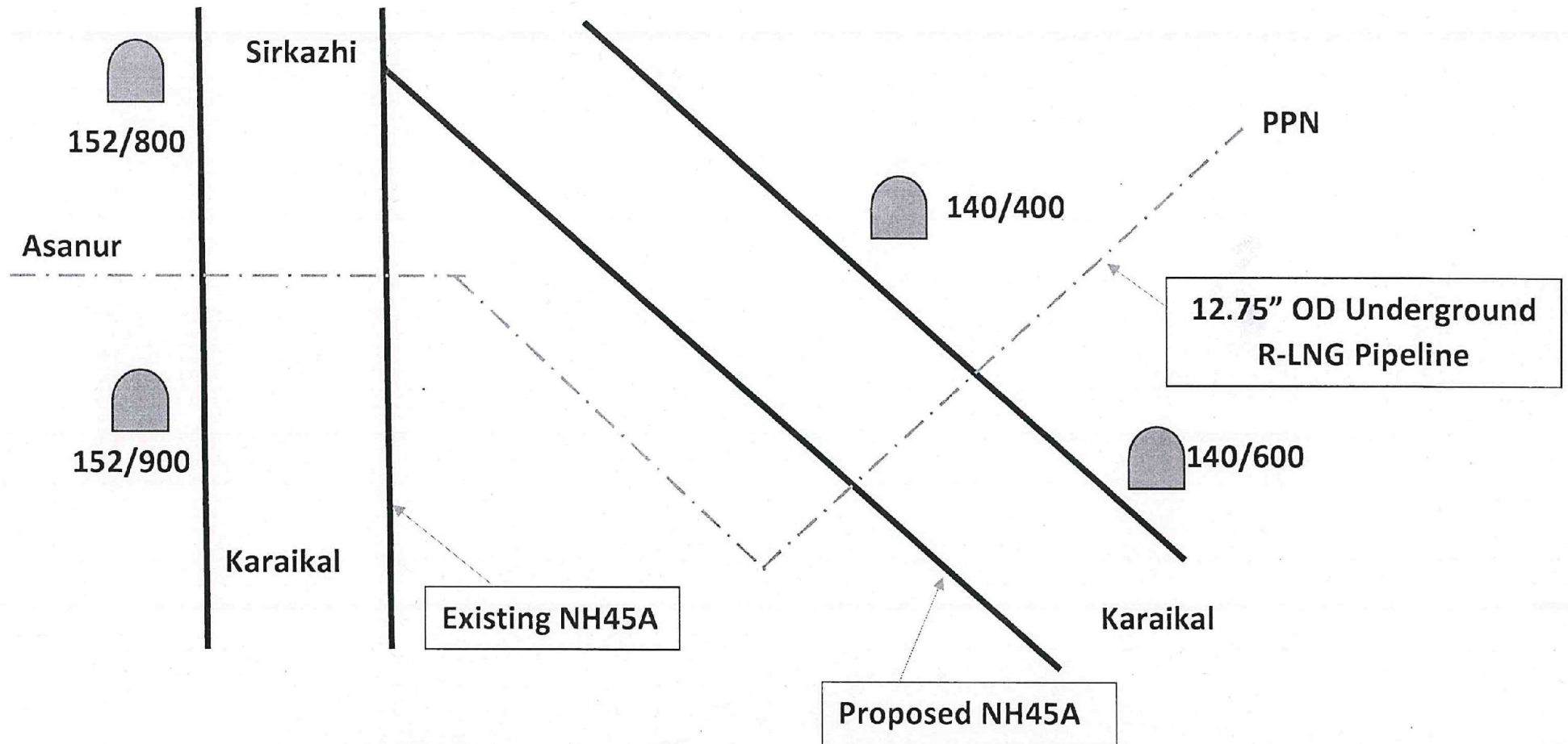
12.75"OD, 3 LPE COATED PIPE



### SECTION A-A

NAME OF THE PROJECT	ETBPNMTPL R-LNG PIPELINE PROJECT
OWNER	INDIAN OIL CORPORATION LIMITED, PIPELINES DIVISION, NOIDA
TITLE	CROSS SECTION

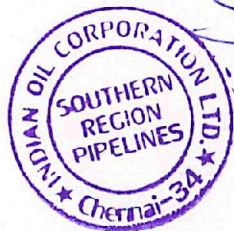
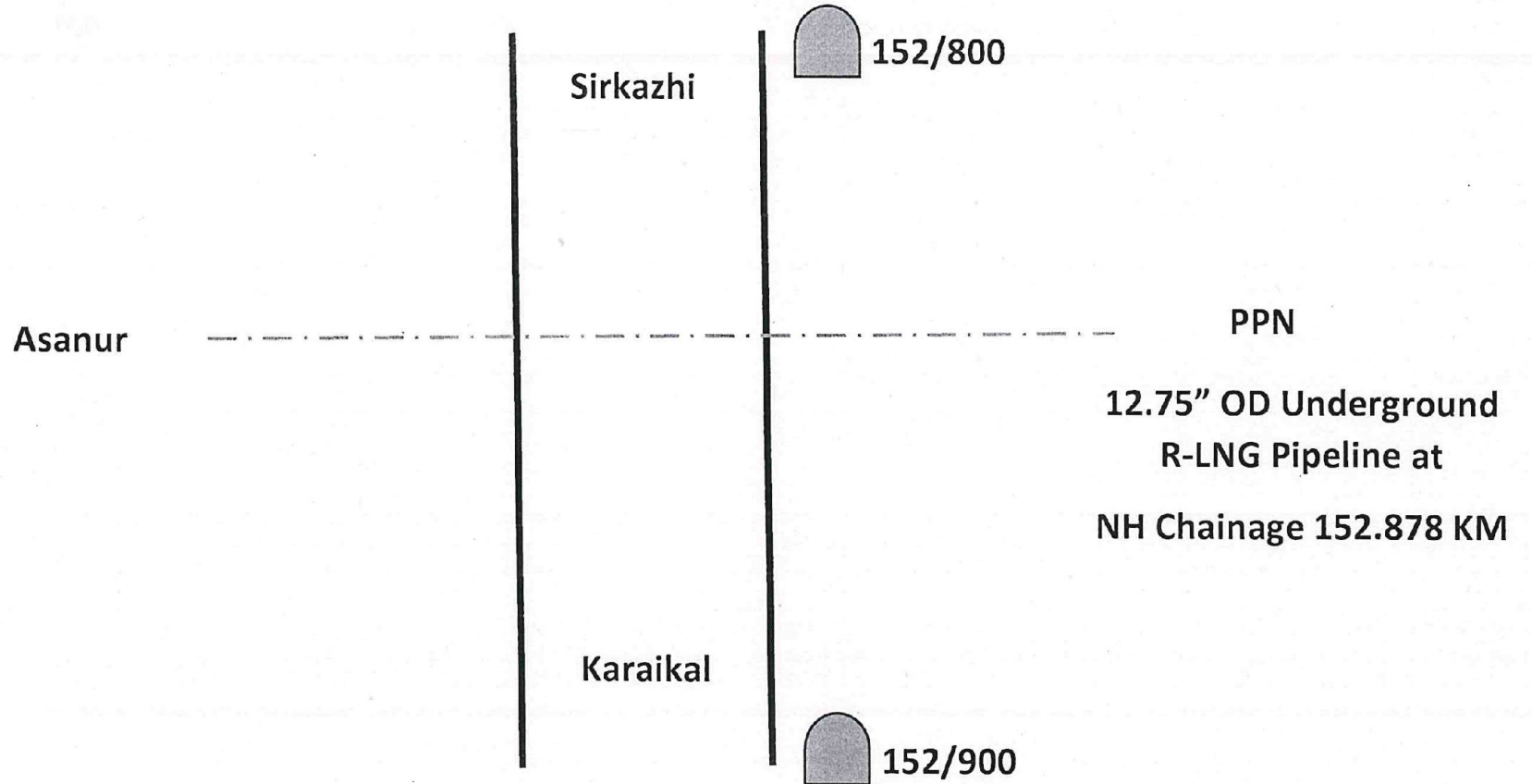
# KEY PLAN FOR NH-45A



*S. K. (COM)*

INDIAN OIL CORPORATION LIMITED  
ASANUR - PPN SPURLINE CROSSING  
NH-45A

# KEY PLAN FOR NH-45A



*S. K. (COM)*

INDIAN OIL CORPORATION LIMITED

ASANUR - PPN SPURLINE CROSSING

NH-45A at Chainage 152.878 KM

# **INDIAN OIL CORPORATION LIMITED**



**IndianOil**

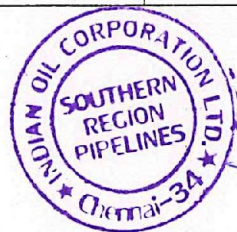
**PROPOSAL FOR LAYING UNDERGROUND R-LNG PIPELINE ACROSS  
NH-45A NEAR CHAINAGE 152.878 KM AT THIRUKADDAIYUR  
VILLAGE, THARANGAMBADI TALUK, MAYILADUTHURAI DISTRICT  
BY HDD METHOD**

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

**PROPOSAL FOR LAYING ENNORE-THIRUVALLUR-BENGALURU-PUDUCHERRY-  
NAGAPATTINAM-MADURAI- TUTICORIN R-LNG PIPELINE ACROSS NH-45A NEAR  
CHAINAGE 152.878 KM AT THIRUKADDAIYUR VILLAGE, THARANGAMBADI TALUK,  
MAYILDUTHURAI DISTRICT**

**GENERAL CHECK LIST**

1	Whether the site plan is drawn to scale of 1:2000 or 1:1000 and enclosed	Yes
2	Whether the details for 100 m on either side of the utility laying have been furnished	Yes Furnished
3	Does the site plan show in fully?	Yes
a)	The N.H. boundary line with distance from C/L of the road at salient points where the N.H. land width changing and also at 100m intervals.	Yes. Marked in the Plan
b)	The Berms line and distance form C/L at 100m intervals and also at salient points of change of width of NH land	Yes
c)	C/L of pavement and pavement edge line marked distinctly.	Yes
d)	Medians, if any marked to scale	Yes
e)	The location of the utility line of proposal with chainage showing exact location and distance from NH C/L	Yes
f)	The existing C.D. works with dimensions.	-
II		
a)	Purpose of the proposal in details	Transporting R-LNG from LNG Import Terminal at Ennore to various anchor customers in Tamil Nadu, Andhra Pradesh, Karnataka & Puducherry.
b)	Exact location of the proposal	Across NH-45A Near Chainage 152.878 At THirukaddaiyur Village, Tharangambadi Taluk, Mayiladuthurai District
c)	Whether the applicant is private agency / Public sector / Local body / Government Department.	Indian Oil Corporation Limited, Public Sector (Government of India Undertaking)
d)	Any time schedule fixed for the completion of the proposal made.	The Work will be completed within Two Months from the date of commencement of Work. IOCL shall inform National Highways before commencement of work.

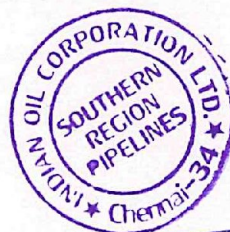


*S. K. (com)*

e)	Reasons why the proposal could not be accommodated outside the NH land	ETBPNMTPL is a 1477 KM Pipeline passing in Tamil Nadu, Andhra Pradesh, Karnataka and Puducherry. The Pipeline cannot be laid without crossing National Highways, Railways & Rivers etc.
f)	Whether any other location other than this is not possible if so, the reasons therefore.	No Other Location is Possible
g)	Whether any location other than this would be difficult or costly.	No Other Possibility
h)	Whether this proposal when implemented will affect the design stability and traffic safety of NH.	No. The Pipeline shall be designed as per API 1104 through Horizontal Directional Drilling (HDD) Method which is Trenchless Method. The Designing shall be carried out considering the Stability and Traffic Safety. Further, the pipeline will be laid generally at a depth of 7 m below the ground level from the center of the road.
i)	Whether this proposal, if implemented now will affect any future improvements to geometrics.	No
j)	Is there any proposal for improvements in this stretch or likely to be sanctioned in near future and whether they will be affected by this proposal.	No

### CONDITIONS

1)	The Pipe line should not be laid longitudinally for considerable length along the National Highways.	Pipeline is not proposed to lay longitudinally to NH
2)	The crossing of Pipe / Cable lines shall be square (i.e) it should be normal to National Highways.	Pipeline is passing Normal to NH
3)	Existing drainage structures shall not be used to carry the Pipe lines across unless specially permitted by the Government of India.	No Drainage Structure is being used to carry the pipelines.
4)	Pipe line shall be provided with a encasing pipe of larger dia. and width 0.30m bedding the casing pipe, if laid across the road.	As HDD Method is used to lay the pipeline, casing pipe is not required



*[Handwritten signature]*

**SPECIAL ANNEXURE FOR (I) ACCOMPANY PROPOSALS SUCH AS LAYING OF PIPELINE  
ALONG NATIONAL HIGHWAYS**

<b>A.</b>	Laying Utility line along National Highway	No
<b>B.</b>	Laying Utility line across National Highways.	Yes (Laying of R-LNG Underground Pipeline with OFC Duct to carry OFC Cable)
1.	Chainage at which it crosses to National Highways	NH-45A Near Chainage 152.878 KM
2	Does the proposal cross the NH line normal to it/ if so, the reasons therefore any why it can be taken normal to road.	The Pipeline crosses NH-45A normal to road.
3	Is the proposal for irrigation purpose / if so whether the concurrence of the Revenue Department has been enclosed	Not Applicable
4	Whether there is any structure existing within 15m from the Crossing if so, the details of such structure.	No
5	The reason why the crossing cannot be shifted to more than 15 m from the existing structure.	Not Applicable
<b>C</b>	<b>Conduct or Casting pipe:</b>	
a.	Does it pass through special conducts or other structures Built for this purpose.	No
b.	Does it use any of the existing drainage structures	No
c.	Whether the conduct pipe line has been encased.	Not Applicable
d.	Whether the ends of casing or conduit pipe are sealed from outside so that it may not act as drainage patch.	Not Applicable
e.	The details of casing pipe such as its dia. materials etc.,	Not Applicable
f.	Does the casing / conduit pipe extend from drain to drain if this is cut or from the top of slope to tie of slope in case of this full	Not Applicable



g.	Whether the top casing / conduit pipe is 1.2m below the road level subject to the condition that lies atleast 0.3 mm below the drain invests.	No Casing Pipe. The Mainline Pipe is laid at a minimum depth of 7m below the ground level through HDD Method.
<b>D.</b>	<b>Method of Laying</b>	
1	Will the pipe be installed under road embankment by boring or Trench method ( in case of C.C roads or dense bituminous concrete roads only boring method should be adopted)	Across the road by Horizontal Directional Drilling (Trenchless Technology) Through Boring Method.
2	Is the trench method is adopted	No
3	Are the sides of the trench nearly vertical	Not Applicable
4	What is the width of the trench is it not less than 30 cm and not more than 60 cm than the outer dia of the casting pipes.	Not Applicable
5	Whether the bedding is of 30 cm thick below the pipes	Not Applicable
6	Does it consists of granular materials to give Firm structure	Not Applicable
7	Are the above details shown in the sketch	Not Applicable
8	Whether the back fill shall be completed in 2 stages.	Not Applicable
9	Whether the side fill shall consists of good materials and whether will it be compacted to 95% of its proctor's density.	Not Applicable
10.	Whether the road will restored to its original stage	Yes
11.	Whether the all precautions will be taken during execution	Yes
12	Whether the party agrees to meet the cost restoring the road to its original portion.	Yes



*[Handwritten signature]*

**CHECKLIST FOR GETTING APPROVAL FOR LAYING OF 12.75" OD R-LNG PIPELINE ALONG WITH OFC  
ACROSS NH-45A**

National Highways Permission for Laying of 12.75" OD R-LNG Pipeline across NH-45A at Chainage 152.878 Km Near Thirukaddaiyur Village, Tharangambadi Taluk, Mayiladuthurai District by Horizontal Directional Drilling Method (HDD)		
1	General Information:	
1.1	Name and Address of the Applicant	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-45A
1.3	State	Tamil Nadu
1.4	Location	Near Thirukaddaiyur Village, Tharangambadi Taluk, Mayiladuthurai District
1.5	Chainage in Km.	NH-45A Chainage 152.878 Km
1.6	Length in Meters	-
1.7	Width of available NH ROW	-
1.8	Proposals to lay the pipeline	Laying of 12.75" OD R-LNG Underground Natural Gas Pipeline across NH-45A at Chainage 152.878 Km
	(a) Left side from Centre line towards increasing chainage/ Km direction	-
	(b) Right side from Centre line towards increasing chainage/ Km direction	-
1.9	Proposal to acquire land	
	(a) Left side from Centre line	No Acquisition
	(b) Right side from Centre line	No Acquisition
1.1	Whether Proposal is in the same side where land is not to be acquired	NA
	If Not , then where to lay the pipe line	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	-
1.13	Proposed number of lanes( 2 lane with paved shoulders /4/6/8 lanes )	NA
1.14	Service road existing or not	NA
	If yes, then which side	NA
	(a) Left side from Centre line	NA
	(b) Right side from Centre line	NA
1.15	Proposed service road	
	(a) Left side from Centre line	NA
	(b) Right side from Centre line	NA



1.16	Whether proposal to lay pipe line is after the service road or between the service road and main carriageway	NA
1.17	The permission for laying pipe line shall be consider for approval / rejection	The Proposed Project is essential to evacuate the R-LNG Product from the Import Terminal at Ennore to various Anchor Customers across Tamil Nadu.
(a)	Carrying of pipe line bridges shall not be permitted as Furness / gases pipes can accelerate the process of corrosion or may cause explosion, thus being much more injurious than leakage of water	NA
(b)	Carrying pipe line lines on bridges shall also be discouraged. However, if the water supply authorities seem to have no other viable alternative and approach the highway authority well in time before the design of bridges is finalized , the way may be permitted to carry the pipe line on independent superstructure, supported on extended portion of piers and abutments in such a manner that in the final arrangement enough free spade around the super structure of the bridge remains available for inspection and repairs, etc. ,	NA
(c )	Cost of required extension of the substructures as well as that of the supporting super structure shall be borne by the agency -in-charge of the utilities	NA
(d)	Services are not being allowed indiscriminately on the parapet and part of the bridges, safety of the bridges has to be kept in view while permitting various services along the bridge. Approvals are to be according in this regard with the concurrence of the ministry's project chief engineers only	NA
1.18	If crossing of the road involved if yes. It shall be either encased in pipes or through structure or conduits specially built for that purpose at the expense of the agency owning the line	Crossing through Horizontal Directional Drilling Method (HDD) which is Trenchless Method
(a)	Existing drainage structure shall not be allowed to carry the lines	Yes
(b)	Is it on a line normal to NH	Yes
(c)	Crossing shall not be too near the existing structures on the National Highways, the minimum distance being 15 m. what is the distance from the existing structures?	No Structures



(d)	The casing pipe ( or conduit pipe in the case of electric cable) carrying utility line shall be steel, cast iron or reinforcement cement concrete and have adequate strength and be large enough to permit repay withdrawal of the carrier pipe / cable	No Casing Pipe is required as the Pipeline is being laid through HDD Method
(e)	Ends of the casing / conduit pipe shall be sealed from outside, so that it does not act as a drainage path	NA
(f)	The casing / conduit pipe should as minimum extend from drain to drain in cuts and toe of slope in the fills	NA
(g)	The top of the casing / conduit pipe should be at least 1.6 meters below the surface of the road subjected to being at least 0.3 m below drain inverts	NA
(h)	Crossing shall be by boring method(HDD specially where the existing road pavement is cement concrete dense bituminous concrete type)	Pipeline is laid across the NH through HDD Method which is a Trenchless Method
i)	The casing / conduit pipe shall be installed with an even bearing throughout its length in such a manner as to prevent the formation of water way along it	No Casing Pipe is being installed
	i)Whether the ROW is more than 45 m then the duct cable shall be laid at the edge of the Right of Way within the utility corridor 2m width , duly keeping in view the future widening	-
	ii)Where the land is at to be acquired for 4 lining and the position of new carriageway has been decided then the cable shall be laid at the edge of Right of Way within the utility corridor of 2m width, on that side of existing carriageway where extra land is not proposed to be acquire for 4 lining	-
	iii)Where the widening plan for 4 lining is not yet decided and available ROW is around 30 m or less, a judicious decision would need be taken for permitting the laying of cable or duct. This could be within 1.5 m to 2.0 m of the utility corridor at the edge of existing ROW, duly keeping in view the possible widening plans.	-
	iv)Where the ROW is restricted and adequate	



	only to accommodate the carriageway, central verge, shoulders and drains (e.g. highways in cutting through hilly/ rolling terrain), the cable shall be laid clear of the drain	-
	v)Where land strips for utility corridor cannot be conveniently earmarked( available ROW restricted to the toe of the embankment) for laying pipe line the permission may be refused	No Land Acquisition
1.19	Number of applicants on the same stretch	-
1.2	Whether the case of multiple licenses	NA
1.21	If so furnish a joint implementation program to lay their respective ducts within stipulated time frame	NA
	i)If crossing of the road involved, if yes it shall only be through trench-less technology.	Yes
2	Documents/ Drawing enclosed with the proposals	
2.1	Cross section showing the size of trench for open trenching method. (is it normal size of 1.6 m deep X 0.5 m wide)	NA
2.2	Cross section showing the size of pit and location of pipe line for HDD method	Enclosed
2.3	Strip plan/ route plan showing the pipe line, 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 line	
2.4.1	Open trenching method	NA
2.4.2	Horizontal Directional Drilling (HDD) method	Yes
2.4.3	Laying of pipe line through CD works	No
3	Draft license agreement signed by two witnesses	Enclosed
4	Performance bank guarantee	BG will be executed after Receipt of Estimate from NH.
4.1	Performance BG as per Ministry's Circular no.RW/NH-33044/27/2000-S&R(R) dated 21.03.2006 to be obtained @ rs.100/- per meter length	Yes, Shall be submitted as per the Demand of NH.
4.2	Confirmation of BG has been obtained as per NHAI 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 NHAI or to the concerned agency.	Yes
5.2	Renewal of bank guarantee	Yes



5.3	Confirming all standard conditions of NHAI's guidelines	Yes
5.4	Shifting of pipe line as and when required by NHAI	Yes (Undertaking furnished)
5.5	Shifting due to 6 laning / widening of NH	-
5.6	Indemnity against all damages and claims clause (xxiv)	Yes
5.7	Traffic movement during laying of pipe line to be managed by the applicant	No obstruction to traffic as pipeline will be laid through HDD which is a Trenchless Method
5.8	If any client is raised by the concessionaire then the same has to be paid by the applicant	Yes
5.9	Prior approval of the NHAI shall be obtained before undertaking any work of installation shifting or repair or alternation to showing cable line located in national highway Right of Way	Yes
5.1	Expenditure, if any incurred by NHAI for repairing any damages caused to the national highway by the laying maintenance or shifting of the pipe line will be borne by the agency owing the line	Yes
5.11	If NHAI considers it necessary in future to move the utility line for any work or improvement or repairs to the road, it will be carried out as desired by the NHAI at the cost of the agency owing the utility line within a reasonable time (not exceeding 60 days of the intimation given)	Yes
5.12	Certificate from the application in the following format	Yes
5.13	Laying of pipeline will not have any deleterious effects on any of the bridge components and roadway safety for traffic	Yes
5.14	Certificate for 6-lanning from the applicant in the following format: "We do undertake that I will relocate service road/approach road/utilities at my own cost notwithstanding the permissions granted within such a time as will be stipulated by NHAI for future 6-lanning or any other development".	Yes
6	Power of attorney in favor of authorized signatory	Yes
7	Copy of approved license	IOCL
8	Certificate from the project director	



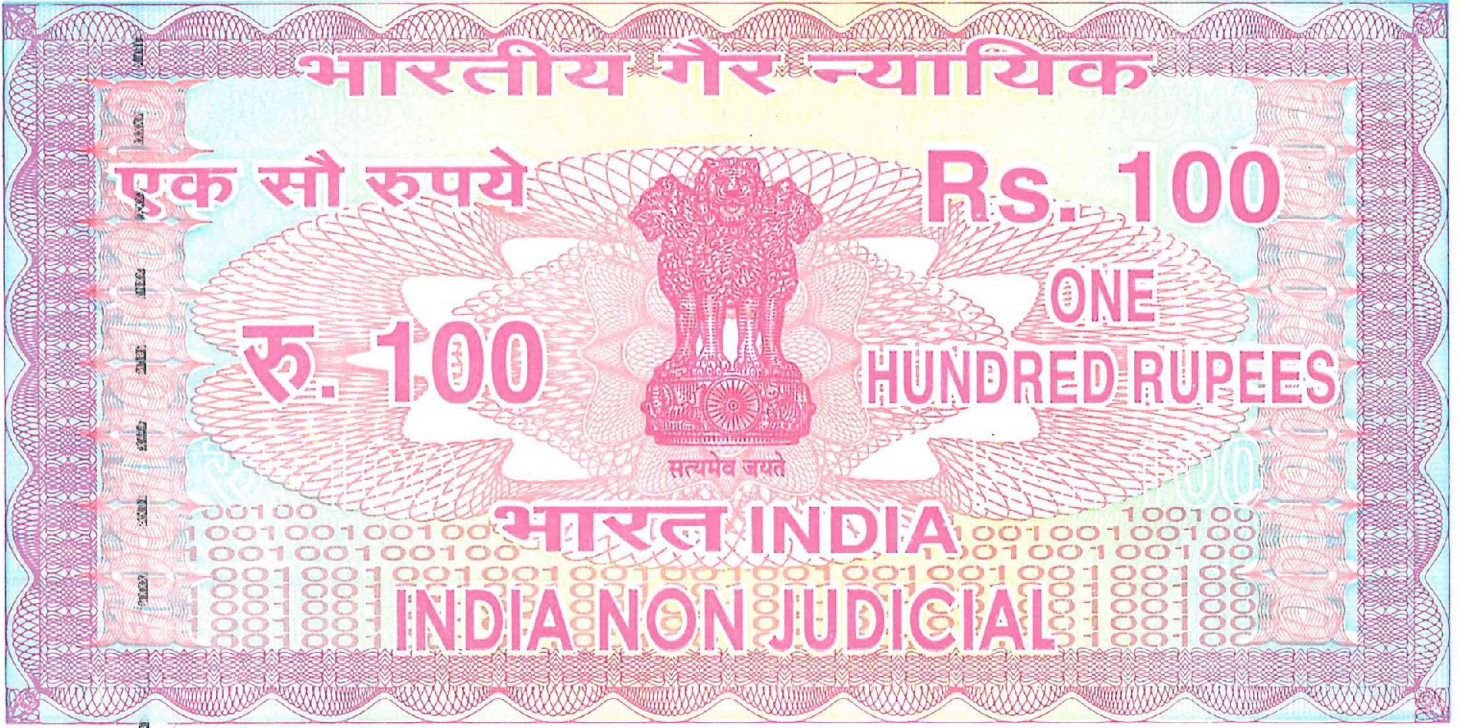
8.1	Certificate for conforming of all standard conditions vide Ministry circular NO.RW/NH-33044-17/2000-S&R dated 29.09.2000 and NHAI's guidelines issued vide no. NHAI/OEC/2k/Vol.II dated 07.11.2000 and Ministry's circular no.RW/nh-33044/27/2000-S&R@ dated 21.03.2006	Yes
	Certificate from the Project Director	
8.2	"It is certified that any other location of the pipeline would be extremely difficult and unreasonably costly and the installation of the pipeline RoW will not adversely affect the design, stability and the traffic safety of the highway nor the likely improvement such as widening of the carriage way, easing of curve etc. Cable within	Yes
8.3	Certificate for 6-lanning	-
	(a) Where feasibility is available" I do certify that there will be no hindrance to proposed 6-laning based the feasibility report considering proposed structure s at the said location"	
	(b) In case of feasibility report is not available" I do certify that sufficient RoW is available at site for accommodating proposed 6-lanning".	
9	The agreement fee of Rs.1/- shall be charged	Yes
10	If NH section proposed to be taken up by NHAI on BOT basis- a clause is to be instead in the agreement. "The permitted highway on which licensee have been granted the right to lay pipe has also been granted as a right of way concessionaire under the concession agreement for up-gradation of (section from Km._____ to Km._____ of NH-_____ on Build, Operate and Transfer basis) and therefore, the licensee shall honor the same."	NA
11	Who will supervise the work of laying pipeline?	IOCL/Consultants
12	Who will ensure that the defects in road portion after laying of pipeline are corrected and if not corrected them what action will be taken.	IOCL
13	Who will pay the claims for damages done/ disruption in working of concessionaire, if asked by the concessionaire?	IOCL



14	A certificate from PD that he will enter the proposed permissions in the prescribed Performa issued vide Ministry circular No.RW/NH/33044/17/2000/S&R, dated 23.07.2003.	Yes
15	If any previous approval is accorded for laying of pipeline then photocopy of register of records of permission accorded as maintained by PD (as per ministry circular no.RW/NH/33044/17/2000/S&R dated 23.07.2003) as referred in par a13 above is enclosed or not.	-



*S. K.*



தமிழ்நாடு தமில்நாடு TAMILNADU  
1/2/2022 Indian Oil Corporation Ltd  
Villupuram

S. JANSIKIRANE  
L.No: 16/2000  
STAMP VENDOR,  
MARUDUR, VILLUPURAM

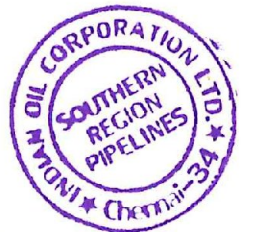
CP 544615



LICENSE DEED FOR LAYING OF UNDERGROUND R-LNG PIPELINE ACROSS  
NATIONAL HIGHWAY LAND

Agreement to lay R-LNG Underground Pipeline across National Highway-45A Near Chainage 152.878 KM for Indian Oil Corporation Limited, Southern Region Pipelines, Chennai by HDD Method (Trenchless Method).

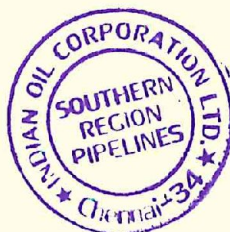
1. AN AGREEMENT made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ between the NATIONAL HIGHWAYS (hereinafter called the NH which expression shall, unless excluded by or repugnant to the context, include his successors in office and assigns of the one part and INDIAN OIL CORPORATION LIMITED, SOUTHERN REGION PIPELINES, CHENNAI (hereinafter called the 'Licensee' which expression shall, unless excluded by or repugnant to the context, include his heirs its successors/ their successors and assigns) of the other Part.
2. WHEREAS the licensee has /licensees have applied to the NH for permission to lay the underground R-LNG Pipeline across National Highway -45A Near Chainage 152.878 KM.
3. AND WHEREAS the NH have agreed to such permission on the terms and conditions hereinafter mentioned.



S. K.

4. Now this Agreement witness that, in consideration of the conditions hereinafter contained and on the part of the Licensee to be observed and performed, the NH hereby grants to the licensees permission to lay underground R-LNG Pipeline as per the approved drawing attached hereto subject to the following condition namely:-

- i. That the Licensee shall within three months from the date hereof but without interfering with the road traffic complete the laying of the underground R-LNG Pipeline to the satisfaction of the Divisional Engineer/Project Director in charge of the National Highways (hereinafter referred to as the Divisional/Executive Engineer/ Project Director as applicable) in accordance with the drawings and specifications approved by the Divisional/Executive Engineer/Project Director.
- ii. That the Licensee shall be responsible for restoring the road and at his/their own cost to its original condition after laying the underground R-LNG Pipeline or after any damage caused due to inadequate maintenance/operation of the underground R-LNG Pipeline.
- iii. That in case of any burst or leak of the underground R-LNG Pipeline the Licensee shall bear the entire cost of restoration of damage caused to the road.
- iv. That the Licensee shall not without the prior permission in writing of the Divisional/Executive Engineer/ Project Director undertake any work of shifting, repairs or alterations to the said underground R-LNG Pipeline.
- v. That the Licensee shall at all time permit any duly authorized officer or servant of the NH to inspect the said underground R-LNG Pipeline.
- vi. That the Licensee shall be liable for any loss or damage caused to the NH by drainage obstruction or any other like cause due to the said underground R-LNG Pipeline.
- vii. That the Licensee within two months of a notice duly given to him to this behalf by the NH shall at his/their own cost remove the underground R-LNG Pipeline and restore the road land to its original condition when required to do so by the NH or by any person authorized on its behalf. The Licensee shall not be entitled to any compensation on account of such removal or restoration.
- viii. That if the Licensee fails /licensees fail to any work which he has/they have agreed to execute under this agreement to the entire satisfaction for the Project Director NH/ Government. The work shall be executed by the project director NH at the cost of the Licensee and the amount shall be recoverable from the Licensee as arrears of land revenue without prejudice to any other remedies which may be open to the NH in this behalf.
- ix. That the Licensee shall not sell, transfer or otherwise dispose of the premises without obtaining the previous consent of the NH in writing.
- x. That this agreement will remain in force for a period of five years from the date of execution in the first instance and be terminated by a notice of two months and the permission may not be renewed after the expiry of the said period.
- xi. That the permission granted by this license shall not in any way to be deemed to convey to the Licensee any right to over or any interest in Government land other than what is herein expressly granted.



*[Handwritten signature]*


- xii. That during the subsistence of this license. The underground R-LNG Pipeline located on the road shall be deemed to have been constructed and continued only by the consent and permission of the Government so that the right of the Licensee to the use thereof shall not become absolute and indefeasible by lapse of time.
- xiii. That the Licensee shall bear the stamp duty charges on this agreement
- xiv. NH will not be responsible for any damage of any kind by what so what so ever means natural or otherwise to the underground R-LNG pipeline.

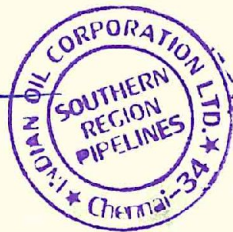
5. The underground R-LNG Pipeline shall not be brought into use by the Licensee unless a completion certificate to the effect that the underground R-LNG Pipeline have been laid in accordance with approved specifications and drawings has been obtained from the Project Director NH.

6. The Licensee shall be abide by the conditions enclosed herewith.

7. Notwithstanding anything contained in clause 4 (vii) the license may be cancelled at any time by the Government for a breach of any condition of the license and the Licensee shall not be entitled to any loss caused to it by such cancellation, nor shall it be absolved from any liability already incurred under this agreement.

8. Annexure-1 stipulating the conditions to be enclosed/ incorporated in the approval letter for permission for laying of underground R-LNG Pipeline shall be the part of the agreement.

  
(S KUMAR)  
Chief Construction Manager



(PROJECT DIRECTOR)  
National Highways Authority of India

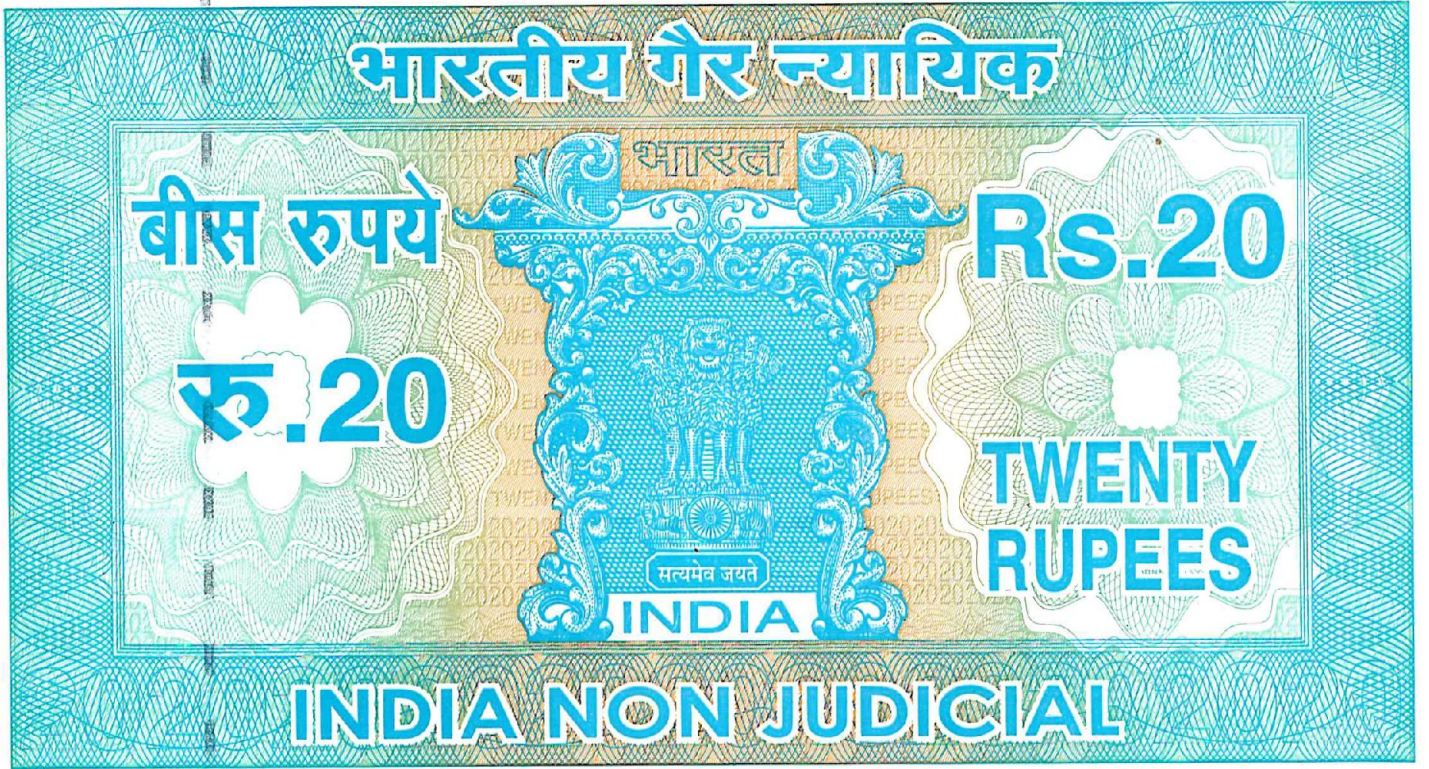
IN THE PRESENCE OF

1.

1.

2.

2.



தமிழ்நாடு தமில்நாடு TAMIL NADU

6/2/2022 Indian oil Corporation Ltd  
villupuram

சுதந்திரம் 1820/12

S. JANSIKIRANE,

L.No: 16/2000,

02AC 834449

STAMP VENDOR,

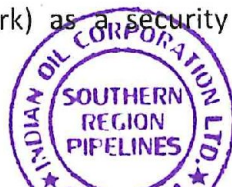
MARUDUR, VILLUPURAM.

#### UNDERTAKING

We, M/s Indian Oil Corporation Limited, 6/13, House of Four Frames, Wheat Crofts Road, Nungambakkam, Chennai, Tamil Nadu-600034, are laying proposed 12.75" OD Natural Gas Pipeline along with Optical Fiber (OFC) across NH-45A at Chainage 152.878 Km at Thirukaddaiyur Village, Tharangambadi Taluk, Mayiladuthurai District by Horizontal Directional Drilling Method (HDD) in the State of Tamil Nadu.

We hereby undertake the Standard Conditions of NH Guidelines:

1. **Not to Damage to Other Utility, if damaged then to pay the losses either to NH or to the concerned agency:** Regarding the location of other cables, underground installation/utilities etc, M/s Indian Oil Corporation Limited shall be responsible to ascertain from the respective agency in coordination with NH. M/s Indian Oil Corporation Limited shall ensure the safety and security of already existing cables/underground installation/utilities facilities etc. before commencement of the excavation.
2. **Renewal of Bank Guarantee:** M/s Indian Oil Corporation Limited shall furnish a Bank Guarantee @ Rs. 100/- per running meter to the NH, for a period of one year initially (extendable if required till satisfactory completion of work) as a security for ensuring/making good the



excavated trench for laying the pipelines/ducts by proper filling and compaction, clearing debris/loose earth produced due to execution of trenching at least 50m away from the edge of the right of way. No payment shall be payable by the NH to M/s Indian Oil Corporation Limited for clearing debris/loose earth. In case the work contemplated herewith is not completed to the satisfaction of the NH, which has granted the permission, within a period of 11 months from the date of issue of the bank guarantee, M/s Indian Oil Corporation Limited shall either furnish a fresh guarantee or extend the guarantee for a further period of one year. In case of M/s Indian Oil Corporation Limited failing to discharge the obligation of making good the excavated trench, the NH shall have a right to make good the damages caused by excavation, at the cost of M/s Indian Oil Corporation Limited and recover the amount by invoking the bank guarantee furnished by M/s Indian Oil Corporation Limited.

**3. Confirming all standard conditions of NH:**

(i) The period of validity of Way permission shall be co-terminus with the validity of licensee given by the Ministry of Petroleum and Natural Gas / DoT.

(ii) The pipeline shall be laid at the edge of the right of way within 2m utility corridors.

(iii) The top of the casing conduit pipe containing the pipelines shall be at least 1.65m below the surface of the road subject to being at least 0.3m below the drain inverts.

(iv) The licensee has to cross the NH by horizontal drilling method (trenchless technology only). In case any damage is caused to the road pavement in this process, M/s. Indian Oil Corporation Limited will be required to restore the same to the original condition at his own cost.

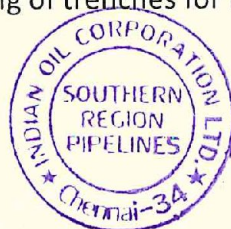
(v) Existing CD Works shall not be allowed for laying the pipeline/OFC and shall be crossed by HDD method only.

(vi) No trenching will be done on link road, boring method will be used in link road and pipeline will be laid at the extreme edge of the road in the non-BT surface only.

(vii) The Licensee shall inform/give a notice to the NH, Govt. of India or its authorized agency at least 15 days in advance with route details prior to digging trenches for fresh or maintenance/repair work. A separate work plan and a separate performance Bank Guarantee @ RS100/- per meter length for maintenance/repair work shall have to be furnished by M/s Indian Oil Corporation Limited.

(viii) Each day, the extent of digging the trenches should be strictly regulated so that pipelines are 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 NH.

(ix) The Licensee shall indemnify the concerned agency in co-ordination with NH, against all damages and claims, if any, due to the digging of trenches for laying pipelines/ducts.



(x) The NH has a right to terminate the permission or to extend the period of agreement. In case the M/s Indian Oil Corporation Limited wants shifting, repairs or alteration to pipelines/ducts, he will have to furnish a separate bank guarantee.

(xi) The Licensee shall not without prior permission in writing from the NH, Govt. of India or its authorized agency undertake any work of shifting, repairs or alterations to the said pipelines/ducts.

(xii) The permission granted shall not in any way be deemed to convey to M/s Indian Oil Corporation Limited any ownership right or any interest in route/road/highway/ land/ property, other than what is herein expressly granted.

(xiii) During the subsistence of this agreement, the laying Pipeline /ducts located in highway land/property shall be deemed to have been constructed and continued only by the consent and permission of the NH so that the right of M/s Indian Oil Corporation Limited to the use thereof shall not become absolute and indefeasible by laps of time.

(xiv) M/s Indian Oil Corporation Limited shall bear the stamp duty charged for the agreement.

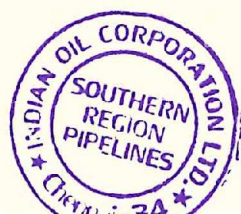
(xv) The Natural gas pipelines shall not be brought in to use by M/s Indian Oil Corporation Limited unless a completion certificate to the effect that the laying Pipeline/ducts has been laid in accordance with the approved specifications and drawings and the trenches have been filled up to the satisfactions of the concerned agency in co-ordination with the owner has been obtained.

(xvi) Notwithstanding anything NH contained herein this agreement may be cancelled at any time by the for breach of any condition of the same and the M/s Indian Oil Corporation Limited 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.

(xvii) The licensee shall have to provide barricading, danger lighting and other necessary caution boards while executing the work and during maintenance. If NH is required to do some emergent work, M/s. Indian Oil Corporation Limited will provide an observer within 24 hours. NH will not be responsible for any damage of any kind by what so ever means natural or otherwise.

(xviii) The enforceability of the Right-of Way permission granted here in shall be restricted to the extent of provisions/scope of service contained/defined in the license agreement of the License with Department of Petroleum and Natural Gas and for the purpose for which it is granted. Either by content or by intent, the purpose extending this Right-of Way facility is not to enhance the scope of M/s Indian Oil Corporation Limited.

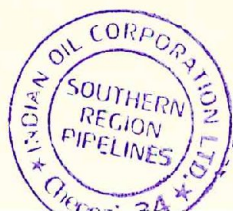
4. **Shifting of Pipeline/OFC as and when required by NH:** M/s Indian Oil Corporation Limited Natural gas pipeline/ducts within 90 days (or as specified by the respective agency/owner) from



*S. K. L.*

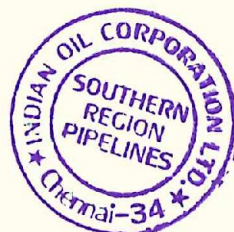
the date of issue of the notice by the NH, Govt. of India to shift/ relocate the Pipeline/ducts, in case it is so required for the purpose of improvement/widening of the road/route/highway or construction of flyover/bridges and restore the road/land to its original condition at his own cost and risk.

5. **Shifting due to 6 lining / widening of NH:** After the termination/expiry of the agreement, M/s. Indian Oil Corporation Limited shall remove the pipelines/ducts within 90 days and the site shall be brought back to the original condition failing which M/s Indian Oil Corporation Limited will lose the right to remove the pipelines/ducts. However, before taking up the work of removal of pipelines the M/s Indian Oil Corporation Limited shall furnish a bank guarantee to the owner for a period of one year for an amount assessed by the owner 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 right of way.
6. **Traffic movement during laying of Pipeline/duct to be managed by the applicant:** If any traffic diversion works are found necessary during the working period such diversion shall be provided at the cost of M/s Indian Oil Corporation Limited.
7. **If any claim is raised by the concessionaire then the same has to be paid by the applicant:** M/s Indian Oil Corporation Limited shall be solely responsible/ liable for full compensation/indemnification of concerned agency/aggrieved owner for any direct, indirect or consequential damage caused to them/claims or replacement sought for, at the cost and risk of M/s Indian Oil Corporation Limited. The concerned agency in co-ordination with NH shall also have a right to make good such damages/recover the claims by way of invoking of Bank Guarantee furnished by M/s Indian Oil Corporation Limited. If M/s Indian Oil Corporation Limited fails to comply with the condition 5 and 6 above to the satisfaction of the NH, the same shall be got executed by the NH at the risk and cost of the M/s Indian Oil Corporation Limited.
8. We M/s Indian Oil Corporation Limited, 6/13, House of Four Frames, Wheat Crofts Road, Nungambakkam, Chennai, Tamil Nadu-600034, hereby do undertake to furnish a Performance Bank" Guarantee" @100/- per meter for a period of one year initially (extendable if required till satisfactory completion of work) as a security against improper restoration of ground in terms of filling/unsatisfactory compaction/damages caused to other underground installation utility services & interference interruption, disruption of failure caused thereof to any services etc. In case, M/s Indian Oil Corporation Limited, failing to discharge the obligation of making good the damages caused due to excavated trench, the NH shall have a right to make good the damages caused due to excavation at the cost of the M/s Indian Oil Corporation Limited and recover the amount by invoking the BG. In case the work contemplated is not completed to the satisfaction of NH, which has granted the permission, within a period of 11 months from the date of issue of the Bank Guarantee, M/s Indian Oil Corporation Limited shall either furnish a fresh guarantee for a further period of one year.

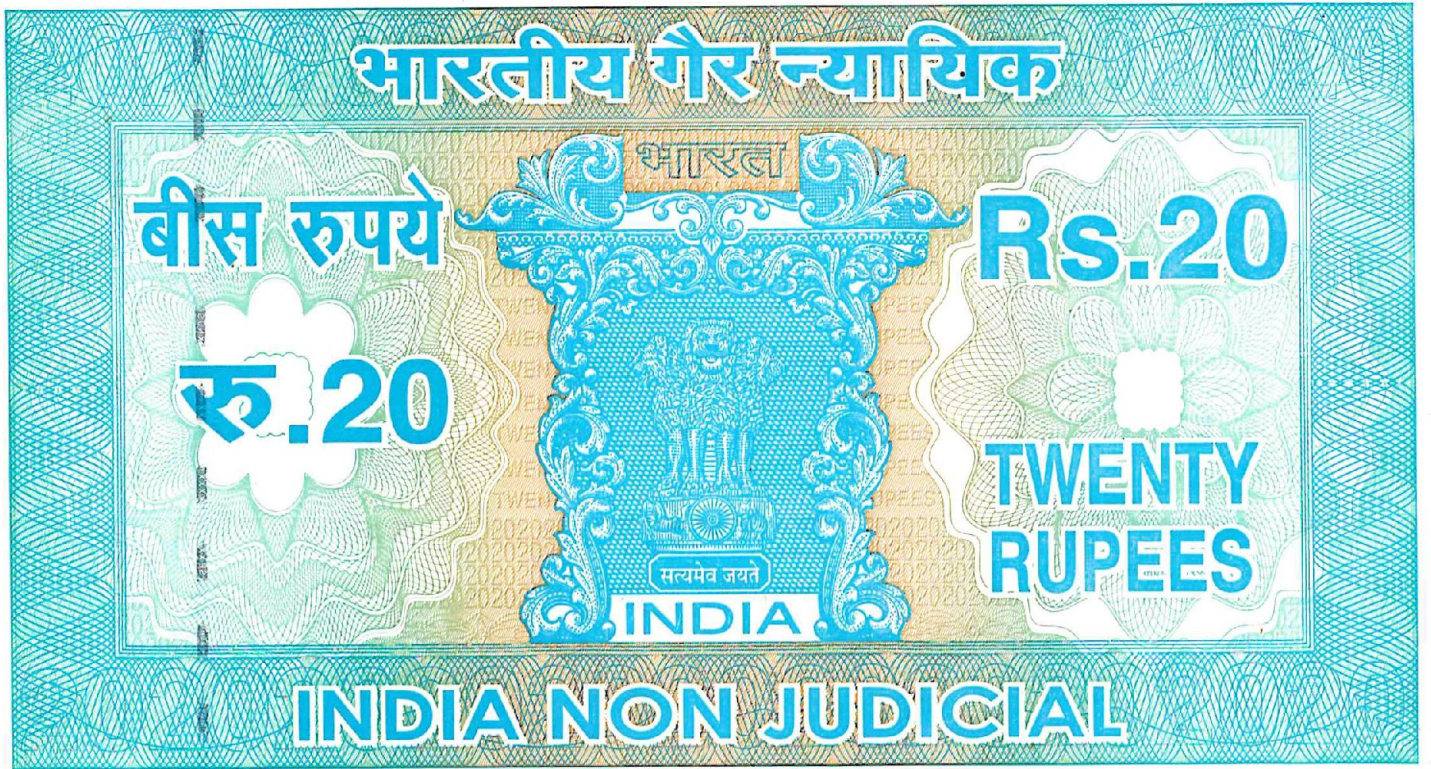


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9. Not to damage to other utility, if damaged, then to pay the losses either to NH or to the concerned agency.
10. In case the work contemplated is not completed to the satisfaction of NH, which has granted the permission within a period of 11 months from the date of issue of the Bank Guarantees. M/s Indian Oil Corporation Limited shall either furnish a fresh guarantee or extend the guarantee for a further period of one year.
11. We will relocate Pipeline/Utilities at our own cost, notwithstanding the permission granted within such time as will be stipulated by NH "for future six-lining or any other development."
12. We, M/s Indian Oil Corporation Limited, hereby undertake that "The existing avenue plantation is not affected due to the present proposed pipeline along with Optical Fiber pipelines across NH-45A at Chainage 152.878 Km at Thirukaddaiyur Village, Tharangambadi Taluk, Mayiladuthurai District.
13. We M/s Indian Oil Corporation Limited, hereby undertake to adopt trench less technology (HDD) where the available width of ROW 15.00 m or more and open trench method where the available width of ROW is less, than 15.00m.
14. We M/s Indian Oil Corporation Limited, hereby undertake that the pay the fee /rent as mentioned in the Ministry's Guidelines Lr. No. RW/NH- 33044/29/2015-S&R (R) dated 22.11.2016 as and when asked by NH.
15. We M/s Indian Oil Corporation Limited, hereby undertake that the HDD method will be adopted for crossings of all cross roads at grade separators, at grade Junctions and wherever required and in the build up areas as per the instructions of NH officials.
16. Lr. No. RW/NH-33044/29/2015-S&R (R) dated 22.11.2016 as and when asked by NH, reference circular issued by Minsitry of Road Transport & Highways, GOI, Circular No. RW/NH- 33044/29/2015-S&R (R) dated 22.11.2016. Where in, the last paragraph that "the Highway Administration Rules 2004 will be modified accordingly. This circular will come into effect from the dated of notification of the modified Highway Administration Rule" So we hereby give our consent to abide by the content of this circular from the date of its notification by MORTH, GOI and agree to pay the ground rent any other charges applicable for the section as applied by us.



SKL



தமிழ்நாடு தமில்நாடு TAMIL NADU

6/2/2022 Indian oil Corporation Ltd  
Villupuram

சென்னை 08.08/2

S. JANSIKIRANE,

L.No: 16/2000,

02AC 834450

TAMP VENDOR,  
MARUDUR, VILLUPURAM



### 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,



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(COM)

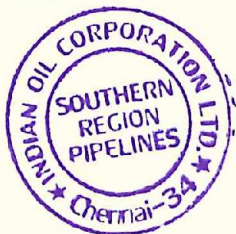
- repairs or alternations to the laid Indian Oil Corporation Limited, Pipelines Division, Chennai.
5. NH shall not be responsible for any damage caused to the underground R-LNG pipeline or by any activity of NH on the permitted highway. The parties are agreed that the Indian Oil Corporation Limited, Pipelines Division, Chennai is laying underground R-LNG 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 R-LNG 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 R-LNG 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 R-LNG 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



(S KUMAR)

CHIEF CONSTRUCTION MANAGER





## इंडियन ऑयल कार्पोरेशन लिमिटेड

दक्षिणी क्षेत्र पाइपलाइन  
चेन्नै - तिरुच्ची - मदुरै पाइपलाइन  
सिडको इंडस्ट्रियल एस्टेट, आसनुर गाँव  
उलुंदूरपेट तालुक, तमिलनाडु - 606305  
दूरभाष : 9384698005/6

**Indian Oil Corporation Limited**

Southern Region Pipelines  
Chennai - Trichy - Madurai Pipeline  
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**IndianOil**

पाइपलाइन प्रभाग  
Pipelines Division

### 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.

(S KUMAR)

CHIEF CONSTRUCTION MANAGER

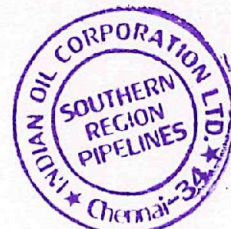


### METHODOLOGY OF CROSSING

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 12.75" 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.

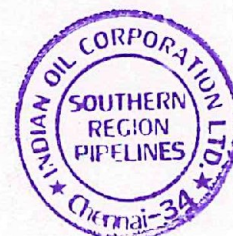
vii) Back reaming shall be done separately from the pipeline pulling operation. The size of the back-reamed hole shall be adequate (approximately 1.5 times the pipeline diameter) to allow enough clearance for a smooth pull-back of the pipeline.

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.

