भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सड़क परिवहन और राजमार्ग मंत्रालय, भारत सरकार)
National Highways Authority of India
(Ministry of Road Transport and Highways, Government of India)
क्षेत्रीय कार्यालय, मदुरै / Regional Office, Madurai
दूसरा व तीसरा तल, विजय कृष्णा प्लाजा, सं. 1, लेक एरिया, मेलुर मैन रोड, माट्टुतावनी, मदुरै - 625107
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NHAI/15018/4.5/01/2025/RO Madurai/E-275071/492 19th March,2025

INVITATION OF PUBLIC COMMENTS

विषय: भाराराप्रा - क्षे.का. मदुरै- पकाई, नागरकोइल - Issue of NOC for laying of IOCL Gas pipeline along Madurai - Kanyakumari stretch of NH-44 - Laying of 10.75" steel pipe and 89mm OD HDPE pipe along with OFC from Km 133/349 to Km 148/038 (RHS), Km 148/038 to Km 159/422 (LHS),125mm Dia MDPE pipeline from Km 158.740 to Km 159.342(BHS), Km 144/238 to Km 150/038(RHS), Km 148/038 to Km 150.438(LHS), 8.625" OD Steel pipeline with OFC from Km 148/038 to km 150/000 (RHS), 4.5" steel pipe with OFC from Km 157/010 to Km 157/341 (RHS), Km 158/740 to Km 159/342(RHS),10.75" OD steel pipeline with OFC across NH-44 at Km 148/038, 125mm Dia MDPE pipeline with OFC at Km 148/038 & Km 158/740, 4.5" steel pipe across NH-44 at Km 138/478, Km 157/341, Km 158/740 as a part of City Gas Distribution(CGD) project in Tuticorin District, Tamilnadu- **Invitation of Public Comments - Reg.**

प्रसंग: PD, Nagercoil Lr. NHAI/PD/PIU/NGL/NH-44/IOCL/2025/385 dated 17.02.2025.

The Proposal is regarding permission for laying of gas pipe lines by M/s IOCL - SRPL laying of 10.75" steel pipe and 89mm OD HDPE pipe along with OFC from Km 133/349 to Km 148/038 (RHS), Km 148/038 to Km 159/422 (LHS),125mm Dia MDPE pipeline from Km 158.740 to Km 159.342(BHS), Km 144/238 to Km 150/038(RHS), Km 148/038 to Km 150.438(LHS), 8.625" OD Steel pipeline with OFC from Km 148/038 to km 150/000 (RHS), 4.5" steel pipe with OFC from Km 157/010 to Km 157/341 (RHS), Km 158/740 to Km 159/342(RHS),10.75" OD steel pipeline with OFC across NH-44 at Km 148/038, 125mm Dia MDPE pipeline with OFC at Km 148/038 & Km 158/740, 4.5" steel pipe across NH-44 at Km 138/478, Km 157/341, Km 158/740by using HDD method in Madurai - Kanyakumari stretch of NH-44 in the State of Tamil Nadu by Senior Manager (CGD), SRPL, Tuticorin has been submitted to this office by the PD, Nagercoil Lr. NHAI/PD/PIU/NGL/NH-44/IOCL/2025/385 dated 17.02.2025 in accordance with Ministry's latest guidelines dated 22.11.2016.

2. The alignment proposed by Senior Manager (CGD), SRPL, Tuticorin for laying of gas pipe lines by M/s IOCL - SRPL 10.75" steel and 89mm OD HDPE pipe along with OFC from Km 133/349 to Km 148/038 (RHS), Km 148/038 to Km 159/422

NHAI/15018/4.5/01/2025/RO Madurai/E-275071/492 19th March,2025

(LHS),125mm Dia MDPE pipeline from Km 158.740 to Km 159.342(BHS), Km 144/238 to Km 150/038(RHS), Km 148/038 to Km 150.438(LHS), 8.625" OD Steel pipeline with OFC from Km 148/038 to km 150/000 (RHS), 4.5" steel pipe with OFC from Km 157/010 to Km 157/341 (RHS), Km 158/740 to Km 159/342(RHS),10.75" OD steel pipeline with OFC across NH-44 at Km 148/038, 125mm Dia MDPE pipeline with OFC at Km 148/038 & Km 158/740, 4.5" steel pipe across NH-44 at Km 138/478, Km 157/341, Km 158/740 by using HDD method in Madurai - Kanyakumari stretch of NH-44 is as detailed under:

Stretch in Km	Length (m)	Dia of pipe	Available ROW (m)	Remarks
Along NH- 44: Km 133/349 to Km 148/038(RHS)	14689	10.75" Dia steel pipe with 6.4mm thickness & 89mm OD pipe for OFC	60	Laying of pipe line along the extreme edge of ROW at a distance of 1.0m from ROW edge.
Km 148/038 to km 159/422(LHS)	11384			
Km 148/038 to Km 150/000(RHS)	1962	8.625" Dia OD steel pipe with 6.4mm thickness & 89mm OD pipe for OFC		
Km 157/010 to Km 157/341 (RHS)	331	4.5" Dia steel pipe with 6.4mm thickness & 89mm OD pipe for OFC		
Km 158/740 to Km 159/342(RHS)	602			
Km 158/740 to Km 159/342 (BHS)	1204	125mm Dia MDPE pipe & 89mm OD pipe for OFC		
Km 144/238 to Km 150/038 (RHS)	5800			
Km 148/038 to Km 150/438(LHS)	2400			

NHAI/15018/4.5/01/2025/RO Madurai/E-275071/492 19th March,2025

Across NH - 38: Km 148/038	60	10.75" Dia Carbon steel pipe with 6.4mm thickness & 89mm OD HDPE pipe for OFC	60	Laying of pipe line across by HDD Method at minimum depth of 1.5 m from top of the subgrade.
Km 138/478	60	4.5" Dia Carbon steel pipe with 6.4mm thickness &89mm OD HDPE pipe for OFC		
Km 157/341	60			
Km 158/740	60			

3) The Right of Way is 60 m in the aforesaid stretch. Senior Manager (CGD), SRPL, Tuticorin has proposed for laying of gas pipe lines by M/s IOCL - SRPL 10.75" steel and 89mm OD HDPE pipe along with OFC from Km 133/349 to Km 148/038 (RHS), Km 148/038 to Km 159/422 (LHS),125mm Dia MDPE pipeline from Km 158.740 to Km 159.342(BHS), Km 144/238 to Km 150/038(RHS), Km 148/038 to Km 150.438(LHS), 8.625" OD Steel pipeline with OFC from Km 148/038 to km 150/000 (RHS), 4.5" steel pipe with OFC from Km 157/010 to Km 157/341 (RHS), Km 158/740 to Km 159/342(RHS),10.75" OD steel pipeline with OFC across NH-44 at Km 148/038, 125mm Dia MDPE pipeline with OFC at Km 148/038 & Km 158/740, 4.5" steel pipe across NH-44 at Km 138/478, Km 157/341, Km 158/740 by using HDD method in Madurai- Kanyakumari section of NH-44 in the State of Tamil Nadu which is in conformity with Ministry's guidelines dated 22.11.2016.

4) Senior Manager (CGD), SRPL, Tuticorin has furnished an Undertaking to the effect that the applicant will move the laid gas pipeline in future if required by NHAI at any time for expansion of the NH at their own cost without claiming any compensation from NHAI. Further, mentioned that Senior Manager (CGD), SRPL, Tuticorin will also undertake that laying of gas pipeline will not have deleterious effects on any of the bridge components and roadway safety for traffic.

5) 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 the applicant will be made available for public comments and the comments is invited within 30 days from the day of uploading.

NHAI/15018/4.5/01/2025/RO Madurai/E-275071/ 492 19th March,2025

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.

भवदीय

19/3/25

(आर.मुरुगप्रकाश | R .Murugaprakash)
उप महाप्रबंधक(तक)|Dy.General Manager (Tech)
क्षे.का. मदुरै |RO-Madurai

संलग्न: As above

प्रतिलिपि:

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

CHECK – LIST

Guidelines for Project Directors for processing the proposal of laying 10.75", 8.625" & 4.5" Carbon Steel Natural gas pipeline along with 125mm MDPE and 89mm HDPE pipes for OFC by IOCL Pipelines division in the land along National Highway NH-44 vested with NHAI.

- **Relevant circulars**

1) MoRTH Circular No: RW/NH-33044/29/2015/S&R(R) Dated 22.11.2016
2) MoRTH Circular No: NH-36094/01/2022-S&R(P&B) Dated 17.04.2023

Check list for getting approval for laying of 10.75" Carbon steel Natural Gas Pipelines along with 125mm MDPE and 89mm HDPE pipes for OFC on NHAI land.

Sl. No.	Item	Information/ Status	Remarks	Page No
1	**General Information**			
1.1	Name and Address of the Applicant	Sh. Ranjith Kumar N Senior Manager (CGD) Indian Oil Corporation Limited, Southern Region Pipelines, City Gas Distribution (CGD) Project Office 1st Floor, JJ Center, No. 4/7/5, Ettayapuram Road, Sankaraperi Village, Thoothukudi – 628002.	Authorization attached	
1.2	National Highway Number	NH-44		
1.3	State	Tamilnadu		
1.4	Location	Tirunelveli KTC Nagar flyover to Chandra fuels (k.kailasapuram), Gangaikondan		
1.5	(Chainage in km)	Increasing Chainage from KM 133/349 to KM 159/442		
1.6	Length in Meters	26,093		
1.7	Width of available ROW			
	(a) Left side from center line towards increasing Chainage/ km direction	30 metres		
	(b) Right side from center line towards increasing chainage/ km direction	30 metres		
1.8	Proposal to lay underground Gas Pipeline along with OFC			
	(a) Left side from center line towards increasing chainage/ km direction	Increasing Chainage from KM 148/038 to KM 159/442	10.75" OD Steel pipe	
	(b) Right side from center line towards increasing chainage/ km direction	1. Increasing Chainage from KM 133/349 to KM 148/038 2. Increasing Chainage from KM 148/038 to KM 150/000	10.75" OD 8.625" OD	

Senior Manager
IOCL CGD Thoothukudi

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Project Director
NHAI, Nagercoil

Sl. No.	Item	Information/ Status	Remarks	Page No
		3.Increasing Chainage from KM 157/010 to KM 157/341, Increasing Chainage from KM 158/740 to Km 159/342	4.5" OD	
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	Yes		
	If not, then where to lay the Pipeline	NA		
1.11	Details of already laid services, if any, along the proposed route	3 OFC Cables		53-78
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 / 6/8 lanes)	NA		
1.14	Service road existing or not	YES		
	If yes, then which side			
	(a) Left side from center line	5.45- 6.70m (Shown in Strip Plan)		53-78
	(b) Right side from center line	5.45 - 6.70m (Shown in Strip Plan)		53-78
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	It is proposed to lay the pipeline after the service road and in the Utility Corridor. i.e, within 2m from ROW.		
1.17	Whether carrying of sewage/gas pipeline has been proposed on highway bridge If "Yes", then mention the methodology proposed for the same.	No. Bridges and Structures encountered shall be crossed through HDD Technique		
1.18	Whether carrying of sewage/gas pipeline has been proposed on the parapet/any part of the bridge. If "Yes", then the methodology proposed for the same.	No. Bridges and Structures encountered shall be crossed through HDD Technique		
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 expense of agency owning the line.	Yes, 4.5" OD pipe along with 89mm M.S conduit crossing NH-44 at Ch km 138/478, km 157/341, Ch. km 158/740, 10.75" OD pipe along with 89 mm MS conduit crossing at Ch. Km 148/038 through horizontal directional drilling (HDD) Technique.	5 locations	
	a) whether existing structure allowed to carry ~~sewage~~/gas pipeline	NA		

Senior Manager
IOCL CGD Thoothukudi

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Project Director
NHAI, Nagercoil

Sl. No.	Item	Information/ Status	Remarks	Page No
	b) It is in the line normal to NHAI	YES		
	c) What is the distance of crossing the sewage/gas pipeline from the existing structure Crossing should not be too near to existing structure on National Highway, the minimum distance should be 15 meters	Noted for compliance		
	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	Not applicable, as crossing will be executed through HDD Technique		
	e) End of the casing/conduit shall be sealed from the outside, so that it does not act as drainage path	Not applicable		
	f) The casing/conduit should, as minimum extended minimum drain to drain curs and toes of slope in the fills	Not applicable		
	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	Not applicable		
	h) Mention the methodology for crossing of road for the proposed ~~sewage~~/gas pipeline. Crossing shall be by boring machine (HDD) [TRENCHLESS TECHNOLOGY], specially, where the existing road pavement is of cement concrete or dense bitumen concrete type.	Through HDD Technique. HDD of gas pipeline shall be carried out without casing/conduit pipe following the safety precautions and codes mentioned in Annexure -II of MoRTH Circular No: NH-36094/01/2022-S&R(P&B) Dated 17.04.2023	Safety precaution and HDD plan enclosed	31-46
	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	Not applicable, as crossing will be executed through HDD Technique		
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 meters from the centre lines of the nearest carriage way. c) Shall not be permitted to run along the	Underground pipe trenches cross section showing steel, MDPE and HDPE pipes is attached. a) Noted & Complied b) It is proposed to lay the underground gas pipeline in the 2 mtr corridor from the edge of NHAI ROW. c) Noted & complied.		90

Senior Manager
IOCL CGD Thoothukudi

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Project Director
NHAI, Nagercoil

Sl. No.	Item	Information/ Status	Remarks	Page No
	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.	d) Minimum 1.2 mtr Pipe cover is proposed.		
2.2	Cross section showing the size of pit and location of cable for HDD method	Enclosed		79-89
2.3	Strip plan/ Route Plan showing the natural gas pipeline, Chainage, width of ROW, distance of proposed, cable from the edge of ROW, important mile stone, intersections, cross drainage works etc.	Enclosed		53-78
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.	Excavate the area 1.6m (Depth) x 1.0m(Width), place the pipe inside and refill the trench with the excavated soil in layers not exceeding 150mm and compaction will be done		
	a) The trench width should be at least 30cm, but not more than 60cm wider than outer diameter of the pipe.	Yes, noted for compliance		
	b) For the filling of the trench, bedding should 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	Yes, noted for compliance		
	c) The backfill shall be completed in two stages side fill to the level of the top of the pipe and overall, to the bottom of the road crust.	Yes, noted for compliance		
	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 permitted.	Yes, noted for compliance		
	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.	Yes, noted for compliance		

Senior Manager
IOCL CGD Thoothukudi

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Project Director
NHAI, Nagercoil

Sl. No.	Item	Information/ Status	Remarks	Page No
	f) The excavation shall be protected by flagman, signs, and barricades, and red-light during night hours.	Noted for compliance		
	g) If required, diversion shall be constructed at the expenses of agency owing utility line.	Noted for compliance		
2.4.2	Horizontal Directional Drilling (HDD) Method	Total 600m (approx) for crossing roads,Pipeline/concrete Culverts. Cross Section drawing attached.		79-89
2.4.3	Laying Natural gas pipeline through CD works and method of laying. In case where the carrying of natural gas pipeline on bridge becomes inescapable.	NA		
3	Draft License Agreement signed by two witnesses	Enclosed		1-7
4	Performance Bank guarantee in favor of NHAI must 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 gas 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.	Security amount to be deposited in the form of Performance BG is calculated as per MoRT&H policy guidelines dt/.22.11.2016 and attached herewith.		14, 21-30
4.1	Confirmation of BG has been obtained as per NH guidelines	Noted for compliance		
5	Affidavit / Undertaking from the Applicant for the following is to be furnished			
5.1	Not to Damage to other utility, if damaged then to pay the losses either to NH or to the concerned agency	Undertaking enclosed		9
5.2	Renewal of Bank Guarantee	Undertaking enclosed		4
5.3	Confirming all standard condition of NH`s guideline and ministry circular	Undertaking enclosed		
5.4	Shifting of Natural gas pipeline as and when required by NHAI	Undertaking enclosed		4
5.5	Shifting of Natural gas pipeline due to 6 lanning / widening of NHAI	Undertaking enclosed		4
5.6	Indemnity against all damages and claims clause (xxiv)	Undertaking enclosed		13
5.7	Traffic movement during laying of Natural gas pipeline to be managed by the applicant.	Undertaking enclosed		5,6
5.8	If any claim is raised by the Concessionaire, then the same has to be paid by the applicant	Undertaking enclosed		9

Senior Manager
IOCL CGD Thoothukudi

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Project Director
NHAI, Nagercoil

Sl. No.	Item	Information/ Status	Remarks	Page No
5.9	Prior approval of NHAI shall be obtained before taking any work of installation, shifting or repair or alternative to Natural gas pipeline/any other utility located in national Highway ROW	Undertaking enclosed		5,8
5.10	Expenditure, if any, incurred by NHAI for repairing any damage cause to NH by the laying, maintenance or shifting of Natural gas pipeline borne by applicant agency owning the line.	Undertaking enclosed		9
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.	Undertaking enclosed		4,9
5.12	Certificate from applicant in following format 1. Laying of Natural gas 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		12
6	Who will sign the agreement on behalf of Natural gas pipeline agency	Senior Manager (CGD) Thoothukudi		
	Power of Attorney to sign the agreement is available or not.	Yes, enclosed		16
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		12
7.2	Certificate from PD in following format a) "It is certified that any other location of the Natural gas pipeline would be extremely difficult and unreasonably costly and installation of Natural gas 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	Yes		12

Senior Manager
IOCL CGD Thoothukudi

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Project Director
NHAI, Nagercoil

Sl. No.	Item	Information/ Status	Remarks	Page No
	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"			
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. *"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."*	Noted for compliance		
9	Who will supervise the work of laying Natural gas pipeline? a) On behalf of applicant b) On behalf of NHAI	 Senior Manager (CGD) Thoothukudi PIU/AE/IE		
10	Who will ensure that the defects in road portion after laying of Natural gas pipeline are corrected and if not corrected then what action will be taken. a) On behalf of applicant b) On behalf of NHAI	Yes Senior Manager (CGD) Thoothukudi PIU/AE/IE		
11	Who will pay the claims for damages done/disruption in the working of Concessionaire if asked by the Concessionaire? On behalf of applicant	 Senior Manager (CGD) Thoothukudi		
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)	Enclosed		12
13	If any previous approval is accorded for laying of Natural gas pipeline, then Photocopy of register of records of permissions accorded as maintained by PD (copy enclosed).	NA		

Senior Manager
IOCL CGD Thoothukudi

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Project Director
NHAI, Nagercoil

भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU

11 DEC 2024

EY 217117

Indian Oil Corporation Ltd

பா. ஜீவானந்தம்
முத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண். 11 / தூடி / 2008
ஸ்ரீவைகுண்டம் - 628 907

AGREEMENT FOR LAYING OF UNDERGROUND 10.75" OD STEEL, 125 MM MDPE AND HDPE PIPE ALONG WITH OFC ALONG NATIONAL HIGHWAY – NH -44 FROM CHAINAGE KM 133/349 TO KM 148/038 (RHS) AND FROM CHAINAGE KM 148/038 TO KM 159/442 (LHS), 8.625" OD STEEL PIPELINE WITH OFC FROM CHAINAGE KM 148/038 TO KM 150/000 (RHS), 4.5" STEEL PIPE WITH OFC FROM CHAINAGE KM 157/010 TO KM 157/341 (RHS) AND FROM KM 158/740 TO KM 159/342 (RHS), 10.75" OD STEEL PIPELINE WITH OFC ACROSS NH-44 AT CHAINAGE KM 148/038 AND 4.5" OD STEEL PIPELINE WITH OFC ACROSS NH-44 AT CHAINAGE KM 138/478, KM 157/341 AND KM 158/740 FOR INDIAN OIL CORPORATION LIMITED, CITY GAS DISTRIBUTION PROJECT, SOUTHERN REGION PIPELINES, THOOTHUKUDI

Agreement to lay Underground 10.75" Steel, 125mm MDPE and 89mm OD HDPE pipe along with OFC National Highway NH -44 from Chainage KM 133/349 to KM 148/038 (RHS) and from Chainage KM 148/038 to KM 159/442 (LHS), 8.625" Steel Pipe With OFC from Chainage KM 148/038 to KM 150/000 km, 4.5" Steel Pipe With OFC From Chainage KM 157/010 to KM 157/341 (RHS) and from KM 158/740 to KM 159/342, 10.75" OD Steel Pipeline with OFC Across NH-44 at Chainage KM 148/038, and 4.5" Steel Pipe across NH-44 at Chainage KM 138/478, KM 157/341 and KM 158/740 for Indian Oil Corporation Limited, Southern Region Pipelines Thoothukudi City Gas Distribution project, by Open Cut method and HDD Technique wherever applicable.

AN AGREEMENT made this..... day of.....month of..... Between the NATIONAL HIGHWAYS AUTHORITY OF INDIA (hereinafter called the "Authority" 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

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

PIPELINES, THOOTHUKUDI (hereinafter called the 'Licensee' which expression shall, unless excluded by or repugnant to the context, include his successors/ administrator assignees on the second Part.

WHEREAS, the Authority is responsible, inter-alia, for development and maintenance of lands in increasing Chainage KM 133/349 to KM 148/038 (RHS) and from Chainage Km 148/038 to Km 159/442 (LHS).

WHEREAS, the licensee proposes to lay 10.75" Steel, 8.625" Steel, 4.5" Steel & 125mm MDPE and 89mm HDPE Pipelines along with OFC cable referred to as utility services in subsequent paras. Whereas the licensee has applied to the Authority for permission to lay 10.75" OD Steel Pipe along NH-44 Chainage KM 133/349 to KM 148/038 (RHS) and from Ch. KM 148/038 to KM 159/442 (LHS), 8.625" OD Steel pipe along NH-44 from Chainage KM 148/038 to KM 150/000 (RHS), 4.5" Steel Pipe With OFC From Chainage KM 157/010 to KM 157/341 (RHS) and from Chainage KM 158/740 to KM 159/342 (RHS), 10.75" OD steel pipeline with OFC across NH-44 at chainage km 148/038 and 4.5" Steel pipe across NH-44 at Chainage KM 138/489, KM 157/341 and KM 158/740 for City gas distribution (CGD) project.

AND WHEREAS, the Authority has agreed to grant such permission for way leave on the NH RoW as per terms and conditions hereinafter mentioned.

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 Authority hereby grants to the licensee permission to lay utility services (underground Natural gas steel pipeline for City gas distribution network) 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 National Highway 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 and 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 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_____/sqm/Month to the Authority. The license fee shall become payable from the date of handing over of RoW land 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 highways, there shall be separate agreement regime.

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

5. Fee shall have to be paid in advance for the period for which permission is granted for entering in to 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 2.00m wide utility corridor on either side of the extreme edge of RoW. In cases where utility ducts with sufficient space are already available along NH, 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 carriage way, 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 structures, 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 case where RoW is restricted the utility services can be allowed beneath the carriage way of the service road if available, subject to the condition that the utility services be laid in concrete ducts, which shall be designed to carry traffic on top. The width of the duct shall not be less than one lane. In such cases, it is also needs to ensure the 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 drainage of the road land and maintenance of the National Highways. Towards this the top of the utility services shall be at least 0.6 meter 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 National Highways wither 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 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 subgrade or the existing ground level whichever is lower subject to being at least 0.3m below the drain inverts. A typical sketch showing the clearances is given in the attachment-I.

14. The utility services shall cross the National Highway preferable on a line normal to it or as nearly as practicable.

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

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 30cm but not more than 60cms wider than the outer diameter of pipe. Filling of the trench shall conform to the specifications contained herein 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 stages (1) side fill to the level of the top of the pipe (2) overfill to the bottom of the road crust.
    c. The side fill shall consist of granular material laid in 15cm. Layers each consolidated by mechanical tamping and controlled addition of moisture to 95% of Proctor density. Overall shall be compacted to the same density as a material that has 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 the 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 50m 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 metre/ Rs.------ Per Sq.m 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 one year 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 facility.

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

21. The licensee shall shift the utility service within 90days (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 conditions at his own cost and risk.
22. The Licensee shall be responsible to ascertain from the respective agency in coordination 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 coordination 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 the highways. 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 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 15day 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 so that utility services 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 concern agency in coordination 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 default exits. In case of renewal, rate prevailing

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

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 a 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 alterations to the utility services without prior written permission of the concerned agency in coordination 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 NH RoW will be permitted for any other than that specified in the Agreement.

33. During the subsistence of this Agreement, the utility services located in 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 the utilities (hard and soft copies) with geo-tagged photographs and geo-tagged video recordings of laying of cables in the trench (with respect to NH) 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 the 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 coordination with the Authority has been obtained. Notwithstanding anything contained herein, this agreement may be cancelled at any time by the Authority for the 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 not shall it be absolved from any liability already incurred

38. The Licensee shall ensure adherence to relevant Indian Standards and follow the 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 manufacturers,
    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.

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

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 the 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 the 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 least50m 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 loss incurred by the respective project concessionaries 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 concessionaries. MoRT&H/NHAI/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 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 ON BEHALF OF AUTHORITY.

BY SHRI_____

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

BY SHRI RANJITH KUMAR.N

रंजीत कुमार एन / RANJITH KUMAR N
वरिष्ठ प्रबंधक (सीजीडी) / Senior Manager (CGD)
इंडियन ऑयल कॉर्पोरेशन लिमिटेड
Indian Oil Corporation Limited
Southern Region Pipelines
City Gas Distribution Project,
1st Floor (South) J.J.Centre,
4/7/5, Ettayapuram Road, Tuticorin - 628 002. TN

HOLDER OF GENERAL POWER OF ATTORNEY DATED _____

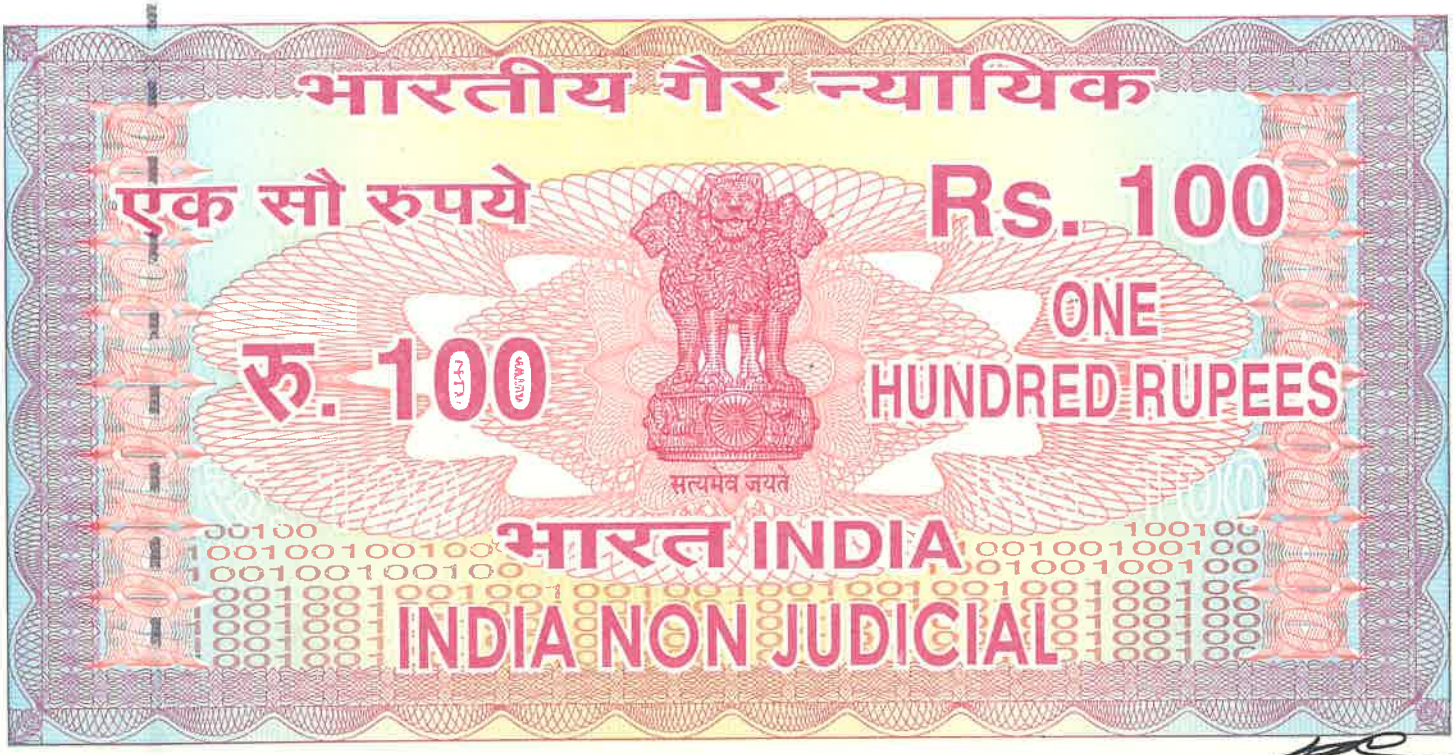
EXECUTED IN ACCORDANCE WITH RESOLUTION NO._____ DATED

PASSED BY THE BOARD OF DIRECTORS IN THE MEETING HELD ON _____

IN THE PRESENCE OF (WITNESS):

1.

2.



தமிழ்நாடு तमिलनाडु TAMILNADU 11 DEC 2024 EY 217122

Indian Oil Corporation Ltd

பா. சீவானந்தம்
முத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண். 11/தூத்/2008
சாத்தான்குளம் - 628 907

UNDERTAKING FOR LAYING OF UNDERGROUND 10.75" OD STEEL, 125 MM MDPE AND HDPE PIPE ALONG WITH OFC ALONG NATIONAL HIGHWAY – NH -44 FROM CHAINAGE KM 133/349 TO KM 148/038 (RHS) AND FROM CHAINAGE KM 148/038 TO KM 159/442 (LHS), 8.625" OD STEEL PIPELINE WITH OFC FROM CHAINAGE KM 148/038 TO KM 150/000 (RHS), 4.5" STEEL PIPE WITH OFC FROM CHAINAGE KM 157/010 TO KM 157/341 (RHS) AND FROM KM 158/740 TO KM 159/642 (RHS), 10.75" OD STEEL PIPELINE WITH OFC ACROSS NH-44 AT CHAINAGE KM 148/038 AND 4.5" OD STEEL PIPELINE WITH OFC ACROSS NH-44 AT CHAINAGE KM 138/478, KM 157/341 AND KM 158/740 FOR INDIAN OIL CORPORATION LIMITED, CITY GAS DISTRIBUTION PROJECT, SOUTHERN REGION PIPELINES, THOOTHUKUDI

Indian Oil Corporation Limited, Pipelines Division, City Gas Distribution, Thoothukudi 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.

1. The Indian Oil Corporation Limited, Pipelines Division, City Gas Distribution, Thoothukudi shall inform the concerned officer of NHAI appointed at least 15 days in advance before starting of work.
2. The Indian Oil Corporation Limited, Pipelines Division, City Gas Distribution, Thoothukudi shall not, without the prior permission in writing to the concerned officer of NHAI undertake any work of shifting, repairs, or alternations to the laid utilities.

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

3. NHAI shall not be responsible for any damage caused to the underground CGD pipeline or by any activity of NHAI on the permitted highway. The parties are agreed that the Indian Oil Corporation Limited, Pipelines Division, City Gas Distribution, Thoothukudi is laying underground CGD Natural Gas pipeline across the permitted highway at its own cost.

4. The Indian Oil Corporation Limited, Pipelines Division, City Gas Distribution, Thoothukudi shall make good, excavated trench for laying underground CGD Natural Gas 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 the debris /loose earth produced from the execution of trenching to the satisfaction of NHAI.

5. In any accident that occurs during the execution or completion of work by the agency, the complete responsibility will be fully on the head or agency.

6. The Indian Oil Corporation Limited, Pipelines Division, City Gas Distribution, Thoothukudi agrees to abide by the directions of the concerned officer of NHAI appointed in accordance with the National Highways act 1956 and rules in force.

7. 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 NHAI.

8. Indian Oil Corporation Limited, Pipelines Division, City Gas Distribution, Thoothukudi agrees not to damage to other utility. If damages, then to pay losses either to NHAI or to the concerned agency.

9. We do indemnity against all damages.

10. We do if any claim is raised by the concessionaire, then the same has to be paid by the applicant.

11. We do expenditure, if any incurred by NHAI for repairing any damage caused to the NHAI by the laying, maintenance or shifting of the underground CGD Natural Gas pipeline will be borne by the agency owning the line.

12. Indian Oil Corporation Limited, Pipelines Division, City Gas Distribution, Thoothukudi agrees if the NHAI 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 NHAI at the cost of the agency owning the utility line within a reasonable time (not exceeding 60 days) of the intimation given.

INDIAN OIL CORPORATION LIMITED
SRPL
TUTICORIN

13. Laying of underground CGD Natural Gas pipeline will not have deleterious effects of any of the bridge components and roadway safety for traffic.

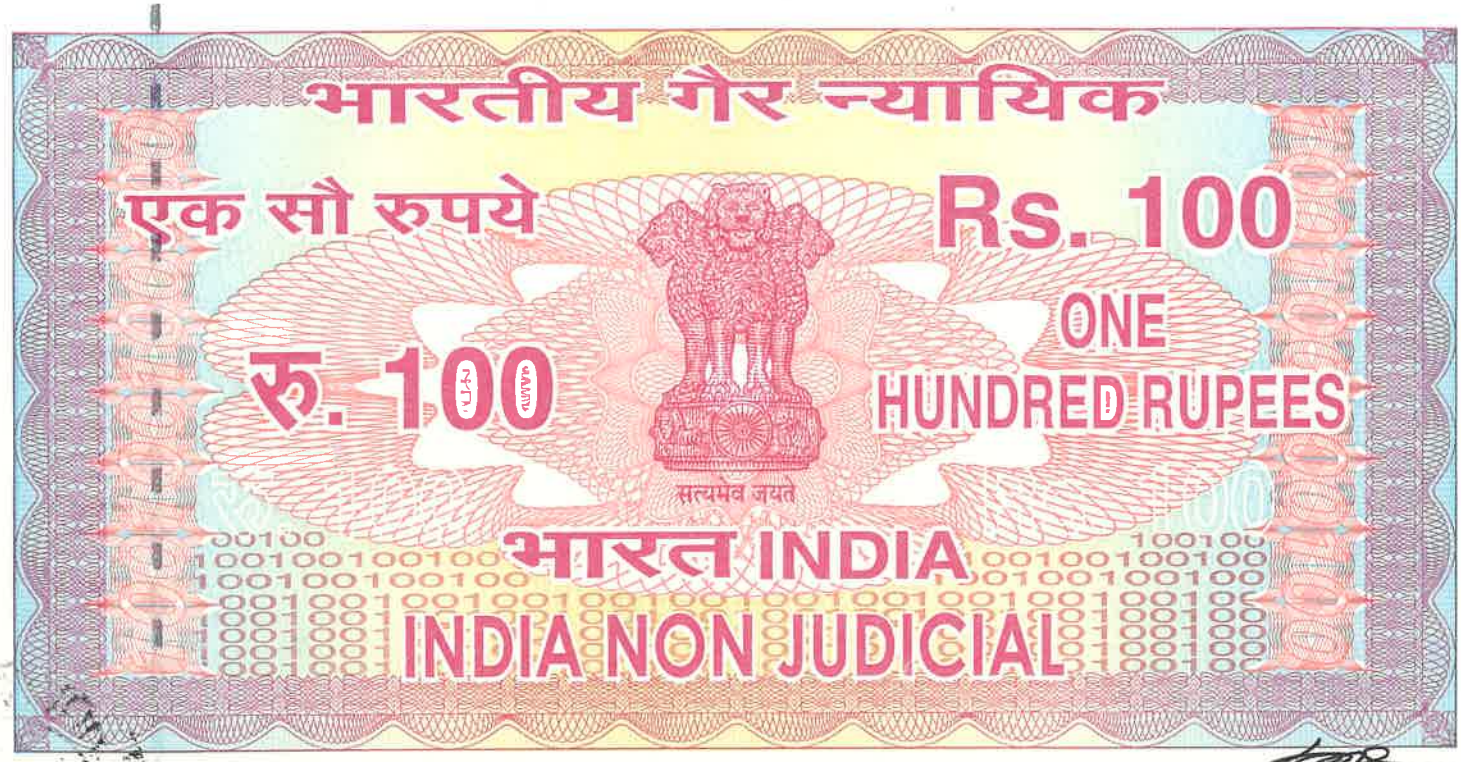
14. For 6-laning "we do undertake that I will relocate service road/approach road /utilities at my own cost notwithstanding the permission granted within such time as will be stipulated by NHAI for future six laning or any other development".

15. All the restoration work will be carried out by Indian Oil Corporation Limited, Southern Region Pipelines, City Gas Distribution, Thoothukudi up to the satisfaction of NHAI.

16. The Licensee shall make his own arrangement for crossing of cross drainage structures, 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 by the concerned Highway Administration. Additional cost on account of fixing and supporting arrangement as assessed by the Authority shall be payable by the licensee.

INDIAN OIL CORPORATION LIMITED SRPL

(Ranjith Kumar N)
Senior Manager (CGD), Thoothukudi



தமிழ்நாடு तमिलनाडु TAMILNADU

Indian oil Corporation Ltd

11 DEC 2024

EY 217112

பா. ஜீவானந்தம்
முத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண். 11/தூத்/2008
தூத்துக்குடி - 628 907

UNDERTAKING FOR LAYING OF UNDERGROUND 10.75" OD STEEL, 125 MM MDPE AND HDPE PIPE ALONG WITH OFC ALONG NATIONAL HIGHWAY – NH -44 FROM CHAINAGE KM 133/349 TO KM 148/038 (RHS) AND FROM CHAINAGE KM 148/038 TO KM 159/442 (LHS), 8.625" OD STEEL PIPELINE WITH OFC FROM CHAINAGE KM 148/038 TO KM 150/000 (RHS), 4.5" STEEL PIPE WITH OFC FROM CHAINAGE KM 157/010 TO KM 157/341 (RHS) AND FROM KM 158/740 TO KM 159/342 (RHS), 10.75" OD STEEL PIPELINE WITH OFC ACROSS NH-44 AT CHAINAGE KM 148/038 AND 4.5" OD STEEL PIPELINE WITH OFC ACROSS NH-44 AT CHAINAGE KM 138/478, KM 157/341 AND KM 158/740 FOR INDIAN OIL CORPORATION LIMITED, CITY GAS DISTRIBUTION PROJECT, SOUTHERN REGION PIPELINES, THOOTHUKUDI

We here by 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.

(Ranjith Kumar N)
Senior Manager (CGD), Thoothukudi

INDIAN OIL CORPORATION LIMITED TUTICORIN

भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU

11 DEC 2024

EY 217119

Indian oil Corporation Ltd

CERTIFICATE

Name of the Work: Laying of Underground 10.75” Steel, 125mm MDPE and 89mm OD HDPE pipe along with OFC National Highway NH -44 from Chainage KM 133/349 to KM 148/038 (RHS) and from Chainage KM 148/038 to KM 159/442 (LHS), 8.625” OD steel pipeline with OFC from Chainage KM 148/038 to KM 150/000 (RHS), 4.5” Steel Pipe With OFC From Chainage KM 157/010 to KM 157/341 (RHS) and from KM 158/740 to km 159/342 (RHS), 10.75” OD steel pipeline with OFC across NH-44 at chainage KM 148/038 and 4.5” Steel Pipe across NH-44 at Chainage KM 138/478, KM 157/341 and KM 158/740 for Indian Oil Corporation Limited, City Gas Distribution project, Southern Region Pipelines Thoothukudi, by Open Cut method and HDD Technique wherever applicable.

This proposal when implemented will not affect the design, stability and traffic safety of Highway.

1. This proposal if implemented now will not affect any likely further improvement to Geometric.
2. 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.
3. Certificate to effect that they have inspected the site and there will not be any hindrance for the NH Road for further Developments.

(Ranjith Kumar N)
Senior Manager (CGD), Thoothukudi

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

தமிழ்நாடு तमिलनाडु TAMILNADU

EY 217125

11 DEC 2024

பா. ஜீவானந்தம்
முத்திரைத்தாள் விற்பனையாளர்
உரிமம் எண். 11/தூடி/2003
ஸ்ரீவைகுண்டம் - 628 902

Indian oil corporation

INDEMNITY BOND

Name of the Work: Laying of Underground 10.75" Steel, 125mm MDPE and 89mm OD HDPE pipe along with OFC National Highway NH -44 from Chainage KM 133/349 to KM 148/038 (RHS) and from Chainage KM 148/038 to KM 159/422 (LHS), 8.625" OD steel pipeline with OFC from Chainage KM 148/038 to KM 150/000 (RHS), 4.5" Steel Pipe With OFC From Chainage KM 157/010 to KM 157/341 (RHS) and from KM 158/740 to km 159/342 (RHS), 10.75" OD steel pipeline with OFC across NH-44 at chainage KM 148/038 and 4.5" Steel Pipe across NH-44 at Chainage KM 138/478, KM 157/341 and KM 158/740 for Indian Oil Corporation Limited, City Gas Distribution project, Southern Region Pipelines, Thoothukudi.

Indemnity against all damages and Claims

We Indian Oil corporation, Pipelines division, Thoothukudi or in do hereby Indemnity Project director, NHAI, PIU, binding ourselves to the all the losses and claims in respect of laying 10.75" Steel, 8.625" Steel, 4.5" Steel, 125mm MDPE, 89mm HDPE pipes along with OFC pipeline by IOCL along NH-44

Or maintenance, thereof 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 for recovery of such claims affected from any of our assets.

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

(Ranjith Kumar N)
Senior Manager (CGD), Thoothukudi.

Security Amount as Perfomance BG calculated in line with the MoRT&H policy guidelines dt/.22.11.2016 for 26.073 km stretch along/across NH44 from Chainage 133/349 to 159/422 as detailed below:							
S No	Description	Chainage		UoM	Total Length	Rate per m in ₹	Amount in ₹
		From	To				
1	Along the Road	NH44 -Ch. 133/349 (M/s Chandru Indian Oil Petrol Bunk, Gangaikondan)	NH44 - Ch. 159/422 (NH-138 & NH-44 Junction Point Near KTC Nagar, Tirunelveli)	Meter	26,093	100	₹ 26,09,300.00
2	Along the Road	NH44 -Ch. 148/038 (Near Sankar Nagar)	NH44 - Ch. 150/000 (Near Thalaiyuthu Roundabout)	Meter	1,962	100	₹ 1,96,200.00
3	Along the Road	NH44- Ch. 157/010 (Near Flyover towards Sivalaperi Road)	NH44- Ch. 157/341 (Near Flyover towards Sivalaperi Road)	Meter	331	100	₹ 33,100.00
4	Along the Road	NH44- Ch. 158/740(Near Flyover towards Sivalaperi Road)	NH44- Ch. 159/342(Near Flyover towards Sivalaperi Road)	Meter	602	100	₹ 60,200.00
5	Across the Road	At Ch. 138/478(M/s Deepam Agencies, Indian Oil Petrol Bunk, Gangaikondan)		Meter	60	100	₹ 6,000.00
6	Across the Road	At Ch. 148/038(NH-44 towards Tirunelveli)		Meter	60	100	₹ 6,000.00
8	Across the Road	At Ch. 157/341 (NH 44 towards Sankarankovil)		Meter	60	100	₹ 6,000.00
9	Across the Road	At Ch. 158/740 (NH-138 & NH-44 Junction Point towards Tirunelveli)		Meter	60	100	₹ 6,000.00
Amount towards total running meter (in ₹)							**₹ 29,22,800.00**
Charges for Crosing NH-44 @ 138/478, 148/038, 157/341, 158/740 (in ₹),							**₹ 4,00,000.00**
Total Amount on account of Restoration (in ₹)							**₹ 33,22,800.00**
Centage Charges @ 23.5 % (in ₹)							**₹ 7,80,858.00**
Total Amount on account of Restoration including Centage Charges (in ₹)							**₹ 41,03,658.00**

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Licence fee calculation			
S.No	**Description**	**Licence Fee**	**Reference**
1	*Laying of Underground* 10.75" Steel, 125mm MDPE and 89mm OD HDPE pipe along with OFC National Highway NH -44 from Chainage KM 133/349 to KM 159/422 (LHS), 4.5" Steel Pipe With OFC From Chainage 157/010 to KM 157/341 (RHS), 8.625" OD Steel Pipeline with OFC Across NH-44 at Chainage KM 150/005, 6.625" OD steel pipeline with OFC across NH-44 at chainage km 144/338 and 4.5" Steel Pipe across NH-44 at Chainage KM 133/349, KM 157/341 and KM 159/422 for Indian Oil Corporation Limited, City Gas Distribution project, Southern Region Pipelines Thoothukudi	Not applicable	Clause III.2.b of the MoU signed Between IOCL and NHAI dated 08.06.2022 (MoU Enclosed)

(Jaiphin. R)
AM-CHD

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

इंडियन ऑयल कॉर्पोरेशन लिमिटेड
दक्षिणी क्षेत्र पाइपलाइन्स
हाउस ऑफ फोर फ्रेम्स
6/13, व्हीट क्राफ्ट रोड, नुंगमबाक्कम, चैन्नै - 600 034
दूरभाष : 044-2824 3129 / 3144
Indian Oil Corporation Limited
Southern Region Pipelines
House of Four Frames
6/13, Wheat Croft Road,
Nungambakkam, Chennai - 600 034.
Tel : 044-2824 3129 / 3144
IndianOil

पाइपलाइन्स प्रभाग
Pipelines Division

SRPL/CONST/GEN

11.07.2023

TO WHOMSOEVER IT MAY CONCERN

Sub: Authorized Signatory

This is to certify that Mr. N Ranjith Kumar, **Senior Manager (CGD)**, GA In-charge, Tuticorin, Southern Region Pipelines, is authorized on behalf of Indian Oil Corporation Ltd., Southern Region Pipelines for signing of agreements, lease deeds, applications etc related to land, crossing permissions, renting of space and statutory clearances for City Gas Distribution at Tuticorin.

Specimen Signature:

N Ranjith Kumar
Senior Manager (CGD)

(Shailesh Tiwari)
Executive Director
Southern Region Pipelines, Chennai

|16|

Government of India
Ministry of Road Transport and Highways
(Highway Administration Cell)
Transport Bhavan, 1, Parliament Street, New Delhi — 110 001

No. NH-36094/01/2022-S&R(P&B) Dated: 17th April, 2023

To

1. The Chief Secretaries of all the State Governments/UTs
2. The Principal Secretaries/ Secretaries of all States/ UTS Public Works Department dealing with National Highways, other centrally sponsored schemes.
3. All Engineers-in-Chief and Chief Engineers of Public Works Department of States/ UTs dealing with National Highways, other Centrally Sponsored Schemes.
4. The Director General (Border Roads), Seema Sadak Bhawan, Ring Road, New Delhi110 010.
5. The Chairman, National Highways Authority of India, G-5 & 6, Sector-10, Dwarka, New Delhi-110 075.
6. The Managing Director, NHIDCL, PTI Building, New Delhi-110001
7. ROs, ELOs and PIUs of the MoRTH.

Subject- Accommodation of Public and Industrial Utility Services along and across National Highways- Policy guidelines; Clarifications regarding OFC/Telecom cables.

Sir,

Following amendments are issued herewith with reference to Ministry's policy circular no RW/NH-33044/29/2015-S&R(R) dated 22.11.2016 regarding permission for laying of underground OFC/telecom cables in NH ROW with immediate effect:

Clause	Existing provision	Amendments
3.1	The utility services shall be permitted to cross the National Highway 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.	The utility services shall normally be permitted to cross the National Highway 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. Alternatively, for crossing of NH by pipelines for petroleum products, Horizontal Directional Drilling (HDD) method may be used

|17|

		without casing/ conduit pipe following the safety precautions and Codes as given in Annexure II.
5.	**Charges for granting licence for use of highway land:** For the purpose of license fee/lease rentals, the utilities have been divided into two categories; i) Public utilities and b) Industrial utilities as per the details given in Annexure I. License Fee/lease rentals described below is for Industrial utilities. The license fee for Public utilities shall be 33% of the fee prescribed for Industrial utilities.	**Charges for granting licence for use of highway land:** For the purpose of license fee/lease rentals, the utilities have been divided into two categories; i) Public utilities and b) Industrial utilities as per the details given in Annexure I.
5.1	The following methodology shall be followed for license fees/lease rental determination for utility service lines other than localized infrastructure facilities like towers, repeaters and junction boxes). **License Fees (Rs/sq m/ month) = (Utilized NH land area X Prevailing Circle Rate of land per unit area) / (10 X 12) where,** Utilized NH land area = Outer diameter/width of the concerned utility line X length	License Fee for Industrial Utilities shall be equal to utilized NH land area X Prevailing Circle Rate of land per unit area X 10% per annum. Utilized NH land area shall include projection of utility on ground including area of support system / tower. License fee for total term of license (up to maximum of 5 years) shall be deposited in advance.
5.2	The following methodology shall be followed for license fees/lease rental determination for utility services such as towers/repeaters junction boxes etc. **License Fees (Rs/sq m/ month) = (Utilized NH land area X Prevailing Circle Rate of land per unit area) / (10 X 12) where,**	License Fee for public utility shall be equal to utilized NH land area X Prevailing Circle Rate of land per unit area X 1.5% per annum, subject to minimum of Rs. 10,000/-, with 6% annual increment. Utilized NH land area shall include area of support system / tower but not include projection of utility on ground.

/18/

	Utilized NH land area = Projection of utility on the ground including area of support system/tower. However, for public utilities, area below the support system/tower shall only be charged.	There shall be no license fee for OFC cables crossing the NH through HDD method. License fee for total term of license (up to maximum of 5 years) shall be deposited in advance.

2. This issues with the approval of competent authority.

Yours faithfully

17/4/23

(Rakesh Prakash Singh)
Superintending Engineer (HA)

Copy to:

1. AS/ JS/CEs in MoRTH
2. Director, IAHE
3. The Secretary General, Indian Roads Congress
4. Technical circular file of S&R(P&B) Section and Road Safety Engineering Cell
5. NIC-for uploading on Ministry's website under "What's new"

Copy for information to:

1. PS to Hon'ble Minister (RT&H)/ PS to Hon'ble MOS (RT&H)
2. Sr. PPS to Secretary (RT&H)/ Sr. PPS to AS(H)/ Sr. PPS to AS&FA
3. Sr. PPS to DG (RD) & SS/ Sr. PPS / PPS /PS to ADG-I/II/III/IV

17/4/23

(Rakesh Prakash Singh)
Superintending Engineer (HA)

19

Annexure II

A. Codes/ publications for guidance on design of Horizontal Directional Drilling crossing for Petroleum Pipelines

a) Oil Industry Safety Directorate Code: IOSD Code-141.

b) American Gas Association PR-227-9424 "Installation of Pipelines by Horizontal Directional Drilling an Engineering Design Guide".

c) American Society of Civil Engineering Practice No.89 – "Pipeline Crossings Handbook".

d) Directional Crossing Contractors Association publications "Guidelines for a Successful Directional Crossing Bid Package", "Directional Crossing Survey Standards" and "Guidelines for Successful Mid-Sized Directional Drilling Projects."

B. Safety precautions and plan to be submitted along with the proposal for HDD crossings:

a) Before taking up the HDD work, area to be scanned by suitable methods like GPR to locate all underground utilities. Accordingly, crossing plan and profile drawings to be developed showing all pipelines, utilities, cables and structures that cross the drill path, are parallel to and within 30m of the drill path and that are within 30m of the drilling operation, including mud pits and bore pits.

b) Damage prevention plan to reduce or avoid the likelihood of damage to adjacent underground facilities, including pipelines, utilities, cables and other subsurface structures considering the accuracy of the method in locating existing structures and in tracking the position of the pilot string during drilling. Consideration should be given to having an auxiliary location system to include manual excavation to ensure that the drilling bit or reamer is following the projected path and does not encroach upon crossing or parallel lines. The damage prevention plan should include provision for sending notification to all affected parties.

c) Safety plan to include contingency plans in the event the drilling string impacts subsurface facilities and identify facilities and resources to be utilized in the event of an emergency or any personnel injuries. The safety plan shall be reviewed on site with all construction personnel prior to the commencement of drilling operations.

d) Plan for containment and disposal of drilling fluids, if used.

e) Hydrostatic test plan that should consider pretesting of the fabricating string(s) prior to installing the crossing.

f) Testing plan be agreed upon the measures like Cathodic protection, periodic inspection be outlined and Supplementary extra thickness of pipe be ensured to compensate for corrosion.

g) Pipeline laying agencies to submit annual certificates of inspection after laying.

120

17/4/23

सत्यमेव जयते

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

Certificate No.	:	**IN-DL43131039471235U**
Certificate Issued Date	:	07-Jun-2022 11:13 AM
Account Reference	:	IMPACC (SH)/ dlshimp17/ SUPREME COURT/ DL-DLH
Unique Doc. Reference	:	SUBIN-DLDLSHIMP17709177172027 87U
Purchased by	:	INDIAN OIL CORPORATION LIMITED
Description of Document	:	Article 5 General Agreement
Property Description	:	Not Applicable
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	INDIAN OIL CORPORATION LIMITED
Second Party	:	Not Applicable
Stamp Duty Paid By	:	INDIAN OIL CORPORATION LIMITED
Stamp Duty Amount(Rs.)	:	100 (One Hundred only)

Please write or type below this line

MEMORANDUM OF UNDERSTANDING

BETWEEN

INDIAN OIL CORPORATION LIMITED

AND

NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)

|21|

This Memorandum of Understanding (hereinafter referred to as "MoU") made at **NHAI, G-3, Sector-10, Dwarka, New Delhi** on this **8th of June 2022** ("Effective Date"),

by and between:

INDIAN OIL CORPORATION LIMITED, a company duly incorporated under the Companies Act, 1956 and having its registered office at G-9, Ali Yavar Jung Marg, Bandra (East), Mumbai – 400 051 (hereinafter referred to as "IOCL" which expression shall, unless repugnant to the context or meaning thereof, be deemed to include its successors and permitted assigns) of the First Part.

And

NATIONAL HIGHWAY AUTHORITY OF INDIA (hereinafter called NHAI) an autonomous Authority constituted by Act of Parliament, having its registered office at Sector 10, Dwarka, New Delhi - 110075, India, which expression shall, unless the context required otherwise, include its legal successors and permitted assigns (hereinafter referred to as "NHAI") of the Second Part.

IOCL and **NHAI** are individually referred to as "Party" and collectively as "Parties".

RECITALS:

WHEREAS; IOCL, a Maharatna Central Public Sector Undertaking under the administrative control of Ministry of Petroleum and Natural Gas (MoPNG), Government of India and is India's flagship national oil company with business interests straddling the entire hydrocarbon value chain – from refining, pipeline transportation and marketing of petroleum products to natural gas and petrochemicals.

WHEREAS; NHAI, is an autonomous agency of the Government of India under the Ministry of Road Transport and Highways (MoRTH) for development, maintenance, and management of National Highways across the country.

WHEREAS; In ever expanding networks of cross-country pipelines of IOCL and National Highways of NHAI, interfacing of these two structures and many locations is unavoidable.

22

WHEREAS: Parties are desirous of simplification of the process of obtaining crossing permissions, optimization of the expenditure on the crossings and bringing about uniformity of such proceedings across the country.

WHEREAS; in furtherance of the same, NOW THEREFORE, it is understood between the parties as under:

I. **SCOPE AND APPLICABILTY**: The terms and conditions mentioned in this MoU will be applicable for complete network of NHAI's National Highways in National Highways Right of Way and IOCL's gas/ petroleum pipeline(s) across the country.

II. **DESCRIPTION OF PURPOSE**: This MOU is an understanding between the parties to express the mutual interest of the parties, within the framework of this MoU for amicable mutual interface for laying of gas/ petroleum pipeline(s) along and across National Highways Corridors and vice versa.

III. **OBLIGATIONS, DUTIES AND UNDERTAKINGS OF NHAI**

1. **In respect of already laid gas/ petroleum pipeline(s):**
   a. Wherever, the alignment of a National Highway ("NH") crosses an already laid gas/ petroleum pipeline(s) (i.e., pipeline(s) existing prior to declaration of said National Highway vide relevant Notification), NHAI shall either construct portal structure(s) over the existing pipeline (as per **Annexure-A**) or cause shifting of such operating pipeline(s) at NHAI's cost under supervision of IOCL.
   b. NHAI will inform IOCL regarding upcoming alignment of National Highways over IOCL's existing gas/ petroleum pipeline(s) as soon as NHAI becomes aware of such operating pipeline(s) to expedite the interface related formalities. However, NHAI may explore possibilities of expediting the information to IOCL regarding crossing of National Highways to IOCL's existing gas/ petroleum pipeline(s) during the land acquisition stage to expedite the crossing related formalities.

23

c. NHAI will try to maximize the crossing angle i.e., near to 90 Deg to IOCL's gas/ petroleum pipeline(s).

d. For crossing length exceeding 30m, NHAI to provide rectangular vent of minimum size, 3ft x 3ft in the RCC portal structure.

e. NHAI will extend all possible support to IOCL during any exigency in IOCL's gas/ petroleum pipeline(s).

f. Wherever, the alignment of an existing National Highway ("NH") crosses an already laid gas/ petroleum pipeline(s) (i.e., pipeline(s) laid after declaration of said National Highway vide relevant Notification), NHAI will allow IOCL to either shift or take suitable measures to protect its pipeline(s) at IOCL's cost within mutually agreed period of time upon receipt of notice from NHAI, if such pipeline obstructs the upgradation of the National Highway(s).

2. In respect of laying of new gas/ petroleum pipeline(s):

a. NHAI will issue NOC to IOCL for laying gas/ petroleum pipeline(s) along and across National Highways in National Highways land (Right of Way) in 60 days period from the date of formal application by IOCL. Beyond this period of 60 days, it is understood by both the parties that the NOC stands issued.

b. NHAI shall not levy any charges from IOCL and its agencies for laying new gas/ petroleum pipeline(s) along or across National Highways in National Highways Right of Way.

c. NHAI will obtain Performance Security from IOCL before issuance of permission for laying gas/ petroleum pipeline(s) along and across National Highways in National Highways land (Right of Way).

d. NHAI will extend all possible support during any exigency in IOCL's gas/ petroleum pipeline(s) at crossing location of NHAI to IOCL.

IV. OBLIGATIONS, DUTIES AND UNDERTAKINGS OF IOCL

1. In respect of already laid gas/ petroleum pipeline(s):

a. Wherever, the alignment of a National Highway ("NH") crosses an already laid gas/

|24|

petroleum pipeline(s) (i.e., pipeline(s) existing prior to declaration of said National Highway vide relevant Notification), IOCL will allow NHAI to either construct portal structures over the existing pipeline (as per **Annexure-A**) or cause shifting of such operating pipeline(s) at NHAI's cost under supervision of IOCL.

b. Wherever, the alignment of an existing National Highway ("NH") crosses an already laid gas/ petroleum pipeline(s) (i.e., pipeline(s) laid after declaration of said National Highway vide relevant Notification), IOCL to either shift or take suitable measures to protect its pipeline(s) at IOCL's cost within mutually agreed time period upon receipt of notice by NHAI, if such pipeline obstructs the upgradation of the National Highway(s).

c. IOCL will not levy any charges on NHAI for constructing National Highways over their already laid gas/ petroleum pipeline(s).

d. IOCL will obtain Insurance Cover from NHAI before allowing construction of National Highways over their already laid gas/ petroleum pipeline(s).

e. IOCL will issue NOC to NHAI whenever under construction National Highway crosses over an already laid gas/ petroleum pipeline(s) (i.e. pipeline(s) existing prior to declaration of said National Highway vide Notification) in 60 days period from the date of formal application by NHAI. Beyond this period of 60 days, it is understood by both the parties that the NOC stands issued.

f. IOCL will extend all possible support during any exigency in NHAI's National Highways in National Highways Right of Way at crossing location of IOCL to NHAI.

2. In respect of laying of new gas/ petroleum pipeline(s):

a. IOCL, while laying gas / petroleum pipeline(s) across already constructed National Highways, will adopt Trenchless method throughout National Highways land (Right of Way) with the depth of topmost point of pipeline being at-least 1.5m below ground level/ bottom of any National Highway structure/ facility.

b. IOCL shall bear all cost for laying of new pipeline along or across existing NH land (Right of Way).

125

c. IOCL will try to maximize the crossing angle i.e., near to 90 Deg to NHAI's National Highways in National Highways Right of Way.

d. IOCL will inform NHAI regarding crossing of IOCL's pipeline to National Highways during the land acquisition stage to expedite the crossing related formalities.

e. IOCL will extend all possible support during any exigency in NHAI's National Highways in National Highways Right of Way at crossing location of IOCL to NHAI.

V. DEFINITIVE AGREEMENT:

1. The Parties may enter into separate agreement(s) in terms of this MoU on specific work association of the parties for crossing permissions and shall identify inter alia the methodology of crossing, division of their individual scope of work, division of responsibilities and respective liabilities, expenses etc.

2. Such definitive agreements would be binding on the parties and would be entered into generally as per the understanding contained in this MoU, upon approval by competent authorities of the parties.

3. In case of any contradiction/ discrepancy in any of the clauses of MoU and the definitive agreement(s), the definitive agreement shall prevail. However, clauses of the definitive crossing agreement (s) to be made in line with this MoU conditions for both the parties.

VI. NON-EXCLUSIVITY:

The understanding between the Parties under this MoU shall be initially on non-exclusive basis. However, the understanding shall be on exclusive basis contingent upon parties entering into definitive agreement as stipulated above.

VII. BINDING UNDERSTANDING:

1. The Parties undertake to act in good faith with respect to each other's rights and obligations under the objectives of this MoU,

26

2. The Parties recognize the impracticality of providing for every contingency, which may arise during or after the expiry of the MoU and hereby agree to operate fairly and without detriment to the interests of either of them,
3. Subject to any definitive agreements entered into, this MoU is binding in nature, and is a definite expression and record of the purpose and intention of the Parties concerned.

VIII. TRANSFER AND ASSIGNMENT

1. None of the Parties shall assign or transfer this MoU or any of its respective rights or obligations hereunder, to any other third party without the prior written consent of the other.
2. This consent requirement shall not apply in the event that a Party shall change its corporate name.

IX. DISPUTE RESOLUTION AND GOVERNING LAW:

1. This MoU will be construed and governed by the laws of India.
2. Any dispute arising out of this MoU shall be amicably resolved in first instance, through discussions in good faith with a view to expeditiously resolve such differences or disputes in a spirit of mutual understanding and cooperation.
3. In the event of any dispute or difference relating to the interpretation and application of the provisions of this agreement, such dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in DPE OM No. 4(1)/2013-DPE (GM)/FTS-1835 dated 22.05.2018 issued by Ministry of Heavy Industries and Public Enterprises.

X. DURATION AND TERMINATION OF THIS MOU:

1. This MoU shall enter into force on the Effective Date.
2. This MoU shall remain in force for a period of three (3) years from the Effective Date (i.e. the date on which this MoU is signed).
3. The Parties may elect to extend the period of this MoU for an additional period of time or multiple periods of time as may be mutually agreed upon by the Parties in writing.
4. Each party has a right to terminate the MoU at any time during the validity of this MoU,

27

in writing, with at least one (1) month notice of such intention to the other party. However, the termination of this MoU shall not affect the actions that may have been formalized during its operation.

XI. CONFIDENTIALITY

1. The Parties hereto agree that they will not at any time during the Term of this MoU, without the prior written consent of the other Party, disclose the existence of, or the terms and conditions set forth in this MoU unless otherwise required by law or regulation.
2. Only those individuals and representatives of the Parties, and their respective legal and financial advisors, with a need to know and for the sole basis of advising the respective Parties concerning the transactions contemplated hereby, shall be permitted to receive knowledge of the information contained herein.

XII. AMENDMENT

1. This MoU may be amended in writing by mutual agreement between the Parties.
2. Any such amendment shall enter into force from the date agreed to by the Parties.

XIII. NOTICES

1. Notices in connection with this MOU must:
   a) Be in writing, in the English language.
   b) All notices or other information required or deemed necessary to be given to:
      i. **For NHAI:**

      Name: Chairperson, NHAI

      Address: NHAI 2nd Office Building, G-3, Sector-10, Dwarka, New Delhi-110075

      Email Id: chairman@nhai.org, chairperson@nhai.org

|28|

ii. **For IOCL**

Name: Executive Director (Operations), PLHO

Address: Indian Oil Bhavan, A-1, Udyog Marg, Sector 1, Noida (UP)-201301

Email Id: edoplho@indianoil.in

c) Notices shall be delivered by courier or hand or sent by email to the respective addresses and email which are specified above or if the addressee specifies another address or email, in writing, then to that address or email.

XIV. COUNTER PARTS

This MoU shall be executed in two counterparts. Both Parties shall each have one counterpart of this MoU. Both counterparts shall constitute one and the same MoU.

In witness whereof, the undersigned being duly authorized thereto, by their respective parties, have signed this MoU.

Signed at **NHAI, G-3, Sector 10, Dwarka, New Delhi** on **8th June 2022** in two originals text in English language.

Signature.....

Signed by: **Udeep K Singhal**
General Manager (Tech.) &
Regional Officer, Delhi

For and on behalf of;
National Highway Authority of India

Signature.....

Signed by: **Rajesh Gupta**
Executive Director (Const.)
PLHO, Noida

For and on behalf of;
Indian Oil Corporation Limited

Witnesses:

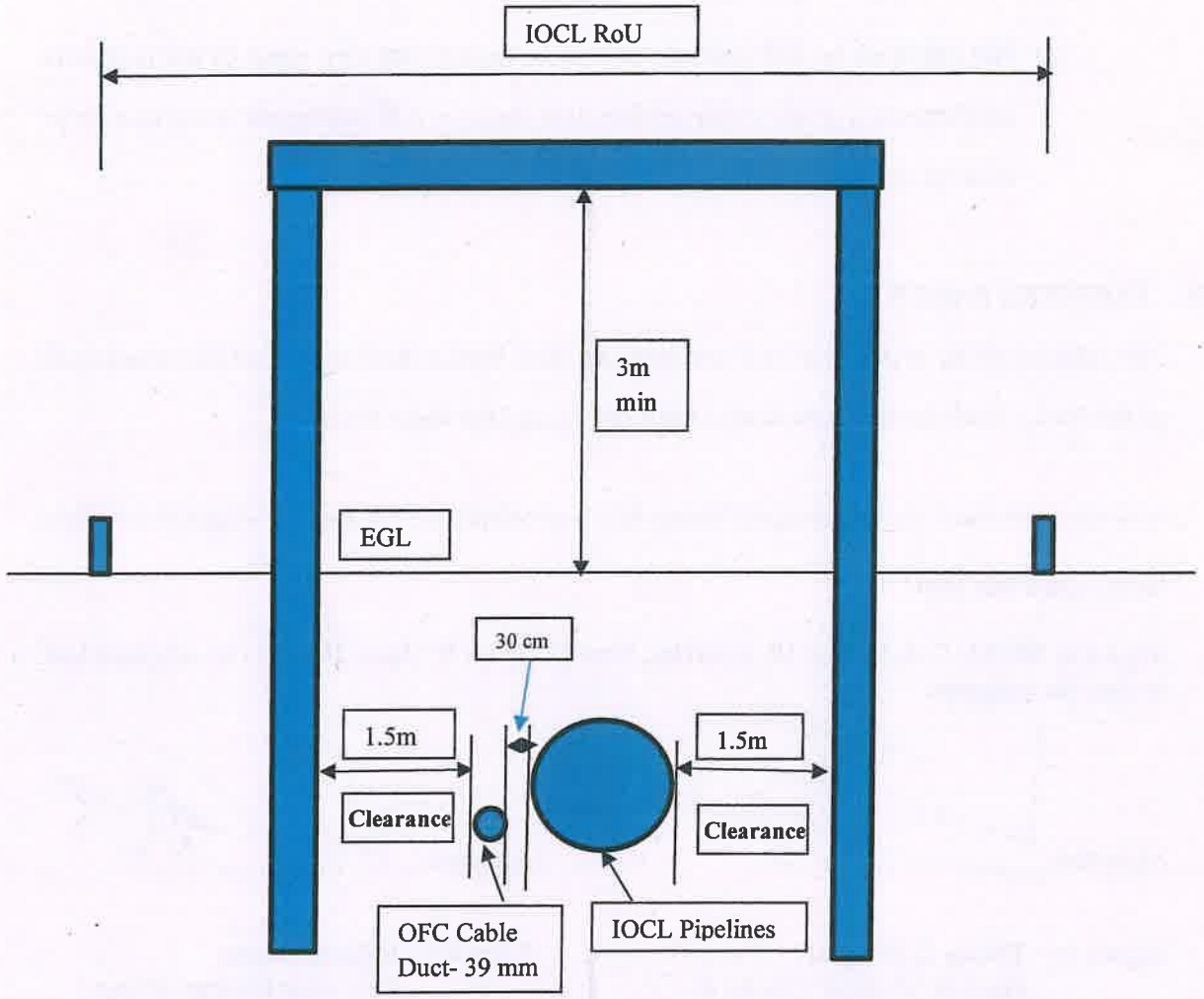
Signature.....

Signed by Manoj Kumar
Member (P)
NHAI
29

Signature.....

Signed by S. S. Sawant
ED (Operations)
PLHO, Noida

Annexure A



PROPOSED RCC PORTAL STRUCTURE ACROSS IOCL'S ROU

Note:

i. EGL- Existing Ground Level

ii. Clearance of minimum 1.5 meter to be kept from outside edges of Pipeline and OFC as shown above

iii. In case of multiple pipelines in the same ROU, single portal or more than one portal as per site condition can be built with minimum distance of 1.5-meter from outside edges of Pipeline and OFC as shown above

|30|

IndianOil	TRACTEBEL ENGIE	Tpl
Document No. TPL/IOCL/TE/TC/WP003		

Project	Laying of 3LPE Coated Steel Pipeline Network & Associated Works in Group – TC- Thoothukudi GA
Project No.	Works 2318
Client	Indian Oil Corporation Limited
PMC	Tractebel Engie
Contractor	Taurant Projects Limited

PROCEDURE FOR

HORIZONTAL DIRECTIONAL DRILLING

REV	DATE	DESCRIPTION		PREPARED & CHECKED BY	REVIEWED & APPROVED BY
0	27.07.2024	For Review & Approval	Name & Sign		
				TPL	Tractebel/IOCL

TAURANT PROJECTS LIMITED New Delhi

31

RANJITH KUMAR N
Senior M
SRPL

S.No	DESCRIPTION	PAGE NO.
1.0	PURPOSE	3
2.0	SCOPE OF WORK	3
3.0	REFERENCE	3
4.0	RESPONSIBLITIES	3
5.0	EQUIPMENT DETAIL	4
6.0	PRE-CONSTRUCTION SURVEY	4
7.0	DESIGN AND ENGINEERING	4
8.0	CONSTRUCTION	6
9.0	DOCUMENTATION	11
10.0	HEALTH, SAFETY AND ENVIRONMENT	12

TAURANT PROJECTS LIMITED New Delhi

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

1.0 PURPOSE

The purpose of this procedure is to provide a frame work for TPL to plan and develop guidelines and requirements to establish a method to carry out HDD crossing work.

2.0 SCOPE OF WORK

The Purpose of this procedure is to define the methodology equipment and safety precautions to be taken in the Laying of 3LPE Coated Steel Pipeline Network & Associated Works in Group – TC- Thoothukudi GA by Horizontal Directional Drilling (HDD) technique and associated Works in Tamil Nadu State. The work shall be carried out in accordance with the IOCL specifications and the permissions from concerned authorities.

3.0 REFERENCE DOCUMENT

Following documents in totality or in part shall form the reference documents:

- IOCL Standard specification / AFC drawings.
- Alignment sheets & crossing drawing No. as Per tender by IOCL and route survey by TPL.
- Design and construction for cross country Hydrocarbon pipeline Doc. No. OISD- 141
- ASME B 31.4 & ASME B31.8
- Provision made by statutory authorities in permissions.
- Contract Document.

4.0 RESPONSIBILITIES

- HDD Engineer / Foreman is responsible for implementing this method statement at site. To Coordinate with QC Inspectors and crews during pipe line HDD activities and also to ensure all HSE and Quality requirements mentioned in the contract & project specifications are implemented.
- Surveyor is responsible for follow all the underground movements of the headpiece.
- Operators (Side Boom) are responsible for safe operations of side boom cranes and also for safe handling of pipe line sections with instructions from Engineers/ Foreman.
- QC Inspector is responsible to ensure all welding, Coating, NDT activities are strictly carried out as per approved procedures and project specifications and also to coordinate with construction team for related inspections. All records to be prepared and maintained.
- HSE Officer is responsible to ensure HSE plan is implemented during HDD activities particularly safe disposal of bentonite mud/slurry.
- Contractor at his own cost and initiatives shall arrange access to site from the nearest road, additional ROW for placing equipment's etc., including temporary storage yard.

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

5.0 EQUIPMENTS DETAILS:

- The drilling rig of required/approved capacity and support equipment shall consist.
- Rig Power unit and control Panel
- Support Equipment
- Crane (1 nos; 12-20T)
- Welding generator (As Required)
- Diesel Generator set (As Required)
- Mud mixing unit with a pumps
- Rubber Rollers (Load Bearing capacity 6T) as per requirement
- Tractor trolley or trucks 1 nos (as required to mobilize the drilling rig and allied equipment)

6.0 PRE CONSTRUCTION SURVEY

- ✓ TPL will carry out the pre-construction survey.
- ✓ After completion of Pre-construction survey a detail drawing & design calculation will be prepared with relevant data such as elevations, levels etc. and will be submitted to IOCL for approval.

7.0 DESIGN & ENGINEERING

- The minimum requirements of limits of each crossing shall be defined in the approved drawings. Slight changes can be made to suit the equipment and installation technique meeting the contract specification.
- Within the entire limits crossing as defined in the approved profile drawings, the cover shall be maintain as defined in the profile drawing as a minimum. With Approval only from IOCL.
- The entry and Exit points of pipeline at ground level shall not come within the limits of the crossing as defined for individual crossings. The entry and exit angle of pipeline at ground level shall generally be in range of 8° to 12° as defined in crossing drawings.
- Lateral allowance of calculated or theoretical exit point - 0.5% of crossing length or 3.0 m whichever is less.
- Longitudinal allowance - max 2% of the approved crossings length.

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- Minimum Cover Requirements for Pipe

The minimum top cover to the pipeline from the road top level, lowest bed level of canal/drain bed shall be between 10m as indicated in approved profile drawings and a min. of 15m cover to be maintained for major river crossings.

All the minimum cover requirement are as stated in typical drawing CONTRACTOR shall provide additional cover to pipeline in areas identified in the drawings.

- The pipe cover shall be as per approved drawings for all Road, Rail , Drain/Canal or river crossings which are crossing through HDD.
- Design calculations submitted to IOCL duty for the maximum permissible overburden on pipe, to check that the empty pipeline is safe from collapse at any point along the drilled crossing section. Drilled hole shall be checked against collapse / caving under overburden and pipe shall be checked against buckling / collapse under axial tension and bending stress.
- Design calculation has been carried out to ensure total maximum longitudinal stress in the pipeline due to tension and bending shall not exceed 95% of SMYS of the pipe material. In order to check this requirement, evaluate the maximum tension forces to which the pipeline is subjected at any phase of its installation during the pulling operation.
- The required pipeline configuration shall be ensured in order to allow smooth pull in the crossing entry point and admissible stress in the supported pipeline string. Total maximum longitudinal stress in the pipeline due to tension and bending at any location shall not exceed 75% of the SMYS of the pipe material.
- After installation the pipeline shall be hydrostatically tested at a pressure stipulated in the special conditions of the contract. During hydrostatic testing the combined equivalent stress in the pipeline and test pressure shall not exceed 95% of the SYMS of pipe material.
- Minimum allowable radius of curvature = Elastic radius + Drilling in auxiliaries (or) (Elastic radius x 1.05)
- Permissible value of pipeline maximum equivalent stress during service shall be governed by the requirements of ASME B31.8/ 31.4 /31.3, as applicable.
- The Required pipeline configuration along the supported string before entry point shall be calculated. The number of required roller supports shall be used specified along with the description of the supports, their coordinates and the capacity in metric tons. The distance between each roller shall also be specified.
- Based on the results of design and engineering profile construction drawing are generated and approved by IOCL for each HDD crossing. Construction drawing shall indicate the levels furnished at sufficient intervals for proper control during construction. Other relevant details like entry and exit angles, radius of bend etc., shall also be indicated.
- Calculations are made to determine the total length of pipeline required as well as the maximum tension required on the pull head of the rig.
- All construction works shall be carried out in accordance with approved construction drawings.

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8.0 CONSTRUCTION:

- **Site Visit and Site preparation**
  - Prior to the commencement of any crossing with HDD , the profile of crossing shall be inspected and all underground third party crossings shall be marked.
  - Row shall be clear and grade the length as required for installation of on land portion and drilled crossing for ensure safe construction.

- **String Preparation:**
  - Complete pipe string shall be proposed as a single string for pulling. Stringing of pipes with various thickness shall be made ready as per contract specifications and the alignment sheet for each crossing.

- **Welding :**
  - Welding of pipeline shall be in accordance with the approved welding procedure.
  - All the welded joints shall be subjected to 100% visual & NDT (X-Ray)

- **Pre- Hydro Test**
  - Section of pipeline subjected to hydro testing as per SCC during the test TPL will check all welds for leakage. Failure if any during the test shall be specified by the contractor. If failure on account of any cause other than defect in IOCL supplies materials. The repairs shall be done at free of cost & defect in IOCL material shall be jointly inspected and agreed upon.
  - Actual length of crossing between hook-up point with mainline on both sides shall not vary more than ± 5% of the length indicated in the contract unless and until specifically allowed by owner due to site conditions.
  - The pipe strings shall be tested for 6 hours.
  - Pre- Hydrotest shall be carried out only after getting 100% NDT clearance

- **Field Joint Coatings:**
  - The complete field joint coating shall be blast cleared to near white metal finished to Swedish standard |SIS055900 Grade SA 2 1/2. The coating edges shall be suitably roughed and chamfered to provide smooth transition. The joint coating material shall be Berry Plastic

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"DIRAX" or other IOCL approved equivalent. The method of application shall be strictly prior to use. Coating of field weld joints shall be carried out after pre-hydro test.

- Radiographic inspection of joints & joint coating of the string shall be performed in accordance with specifications included in the contract.
- Visual and Holiday checks of entire section shall be carried out prior to insertion.

Installation :

- The installation of each pipe string shall be done as per approved design calculations and HDD profile drawings.

A) Pilot or Steering:

- Installation of the entire drilled crossing shall be accomplished in a single operation.
- Pilot hole shall be done by 6.5" Bit (Depending on strata).
- Appropriate tracking system like Mag shall be used during drilling to ensure that the drilled path is as per approved HDD profile.
- The lateral offset of the actual exit point of the Pilot hole from the calculated and theoretical exit point shall not exceed 0.5% of the length of the crossing or 3.0m whichever is less. However for the parallel pipelines the minimum distance between the each line shall be maintained as per alignment sheet/ construction drawings. The length tolerance shall not exceed 1% of the approved crossing length, subject to the condition that actual exit point shall not be within the limits of crossing as defined in the drawings.
- the ground level differences on the cross section, the distance between the machine and the pipe to be guided should be drawn on a graph paper by marking.
- Details of bentonite to be used, it velocity & pressure to be maintained during/reaming, disposed methodology for bentonite slurry.

B) Back Reaming :

- Back reaming shall be done separately from the pipeline pulling operation. The size of the back reamed hole shall be adequate (1.5 times of line pipe size or as per IOCL specs) to allow enough clearance for smooth pull back of the pipeline.
- The reaming shall be done in accordance with the Dia" of Main pipe. However the HDD crew on site will finally decide the reaming sequence depending on the soil strata encountered during pilot and each reaming pass.
- In order to optimize the crossing design in terms of pipeline stresses and equipment requirement, shall be derived from these parameters:-
- i) Back reamed hole size.
- ii) Bentonite density.

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- Iii) Pipeline submerged weight in bentonite.
- Maximum shear stress in the pipeline coating will result from above parameters shall not exceed the permissible.
- Subjected to maximum shear stress in pipeline coating results from these set of parameters.
- Reamers of reputed make like In rock (make) shall be used.

a) On the normal ground clayey and sandy ground:

- If the length of crossing is 50m and below then the reamed hole should be at least 10% wider or if the hole is between 100-150 m. then should be at least 30% wider than the diameter of the pipe.
- The diameter of hole will be determined according to the composition of the ground if it is composed of loose material and /or consisting debris.
- The size of the final reamed hole (with or without MS Conduit for OFC) shall be adequate (approximately 10 inch more than diameter of the pipe and pipe bundle up to carrier pipe size of 24" OD

b) **If the ground has a stony or rocky composition:**

- If the length to be crossed is up to 50m, then the hole should be at least 20% wider than the diameter of the pipe or if the length to be crossed is above 50m, then the hole should be at least 30% wider than the diameter of the pipe.
- Size of back reamed hole is approximately 1.5 times of the diameter of pipeline to allow enough clearance for a smooth pull back of the pipeline.

B) **Pulling :**

- Depending on the composition of the route the pipe to be guided the density mud weight to make the best excretion will be maintained after ascertained by viscosity cup.
- During pulling operation the buoyancy of the pipeline shall be controlled by suitable approved methods so as to maintain the buoyancy as close possible to zero during pull back in order to reduce friction forces of the pipeline in the hole.
- Liquid polymers shall be added into the more homogenous mud in order to increase its viscosity and into the drilling mud so as to prevent the swell and spill of clay.
- Bentonite slurry of specified viscosity shall be pumped into the hole, preventing the wall from collapsing and protecting the pipeline coating.
- In order to decrease e rotation torque and circulation pressure to the least, to increase the clearness of the hole and core percentage to drill the water in sensitive formation and to form drilling mud, modified cellulosic polymers suspension is added.

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- Calculations of maximum pulling force on the rig and recommended maximum pulling velocity shall be submitted.
- To prevent clay materials stuck in the reamer and in the pipes due to the pressure differentiations and high cohesion and to make the dug material carried out faster along the tunnel in shale formations where the surface tension of the drilling liquid will be reduced, insoluble progressing rate improver will be used.
- Specially formulated inorganic and unfermented material with pull fiber and easily dissolved leakage control is used.
- By Channel grading in the route of the pine to be guided, the installation of the pipe without any damage on the tunnel walls will be maintained.
- Completing procedures listed above, a funnel shaped headpiece resistant to the pulling strength (in order not to collect the chemicals deposited before during the regression) will be welded to the pipe.
- Prepared drilling mud, lubricant chemicals and chemicals increasing the insulation of the pipe will be added.
- Inspection shall be carried out at all the stages of construction.
- Depth of the drilled pipe shall measure by suitable equipment like pipeline mapper which shall be duly witnessed/ verified by IOCL site Engineer.
- The pipe before this stage been already placed on rollers on the ground and held by a crane or backhoe /excavator at the rear end, in order to minimize the friction and to ensure its smooth entry down the drilled hole. Rollers are bell shaped and lined with rubber/PU/Teflon coating approx. 10mm thick. Roller spacing shall be as per the roller spacing design in the design calculations submitted. The crossing length divided by the roller span shall give the number of rollers required at the crossing.
- Holiday activity of the carrier pipe will be carried out simultaneously during pulling. The pipe string is then pulled back from the exit end and towards the entrance end by the drill jig.
- The pulling force shall be recorded at every drill rod, which will show in the gauge fixed to drill machine.
- After pulling the pipeline across the drilled crossing cut the extended portion of the pipeline at the entry and the exit points. thereafter the drilled portion of the pipeline shall be cut at suitable location/ depth and extended on either side by installing a bend with minimum bend radius of 6 times of pipe diameter unless specified otherwise and a straight pipe length (1 Joint) Such that the top of the pipeline is minimum 1.5mtr to 2.0 mtr below the natural ground level.
- The method of pipeline coating inspection after pulling operation shall be as following:
  - ❖ Pulling the pipe to the extent possible with normal rig-up at the exit point.
  - ❖ Excavating the adjacent portion up to and including the first field selection.

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- The Pipeline and joint coating shall be examined visually and with holiday detector for defect. The length to be inspected shall as a minimum be one pipe length and one joint coating. In case any coating damage / holiday detected in the first pipe length / joint, the subsequent pipe length / joint shall be exposed and coating integrity checks shall be made. If Found acceptable by IOCL, the first pipe length / joint shall be repaired and / or replaced as per instruction by IOCL.
- If the coating of second pipe length/joint is also found damaged shall be repaired as per approved coating procedure and in case of any coating issue, suitable TCP/CP shall be additionally provided for resolution.

- Coating integrity test :-

- After pull back operation in order to ensure the integrity of pipe coating megger test of the coating shall be carried out in accordance with the following steps:
  - ✓ Measure the natural potential of the HDD pipe at both ends.
  - ✓ Set up the temporary impressed current system with position the test electrode/anode a far (not closer than 10 meters) from the HDD pipe.
  - ✓ Impress a current into the HDD pipe start at Zero amp. And increase slowly until the HDD pipe potential is depressed to 1.5 V with respect to the reference electrode.
  - ✓ Place the reference electrode at remote end (opposite to impressed current system) to monitor the HDD pipe potential.
  - ✓ The desirable value calculated current density should be less than 95 micro ampere per square meter of drilled pipe surface in contact with the soil.

- Arrangements shall be made for safe disposal of all surplus soil and bentonite slurry so as to avoid any harm to the environment /occupants at locations approved by authorities and pollution control boards having jurisdiction and or as instructed. The bentonite slurry will be shifted by septic Tank and disposed at safe unpopulated area.

C) Gauging Test (Before Final Hydro Test) : (As Required)

- After completion of HDD the pipe strings shall be cleaned and gauging shall be carried out by passing a gauge plate consisting of two discs with a diameter equal to 95% of the nominal diameter of the pipe connected rigidly together at a distance equal to 300mm. If the gauging fails due to any reasons (buckling, dents or ovality) the pipe or pipe section shall be replaced and re-gauging shall be carried out.

D) Final Hydro Test :

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- After acceptance of gauging the pipe sections shall be post- hydro tested for 24 hour and recorded by man thermograph at specified test pressure given in the scope of work.
- The hydrostatic test shall be considered positive if pressure has kept a constant value throughout the test duration except for changes due to temperature effects meeting hydro test specification and there is no abrupt pressure drop throughout the test duration.
- The test pressure shall be 1.4 times of MAOP as per SCC.
- The hydro testing shall be carried out in accordance with approved procedures.
- If the test section fails to maintain specified test pressure then HDD shall be abandoned

9.0 DOCUMENTATION

a) DURING HDD EXECUTION (Record all the below but not limited to the following)

- ✓ Measurement of mud pressure, mud flow rate, pulling force, X-Y coordinates of the dial head.
- ✓ Standoff operations.

b) AFTER HDD EXECUTION (but not limited to following)

- ✓ Quality of mud used.
- ✓ Mud pressure.
- ✓ Density of drilling fluid & soil cutting.
- ✓ Location of storage site for waste from the drilling operation and measures taken to comply with environmental constraints.

c) DURING DRILLING OPERATION

- ✓ Maximum force applied.
- ✓ Time duration for assembling 2 drill pipe elements.
- ✓ Drill head position in X-Y coordinate.
- ✓ Deviation compared to the required position.

d) DURING PIPE PULL BACK

- ✓ Pull back duration per element.
- ✓ Maximum pulling force per elements.

e) ALIGNMENT SHEET WITH LENGTH PROFILE

- ✓ Showing locations of each weld joints & then X-Y-Z coordinates
- ✓ Location of entry and exit points & angles of entry and exit points.
- ✓ Locations of Pipeline markers.

(F) Permits from authorized

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(G) Records of hydro test NDT of welds (with digitization).

(H) Clearance certificate (NOC) from land owners/ Authorities.

For construction the documents /records shall be submitted to IOCL as following:

- **During the execution of crossing detailed drill hole data.**
  - a) Torque / Reaming bore log with
    *Torque and pull force
    * Pumping rate
  - b) Permits obtained from authorities having jurisdiction for the various works.
  - c) Plan and profile of the drilled hole along with the water level variations.
  - d) Mechanical clearance with pipe book log for pre hydro test and Post hydro test.
- **After completion of crossing the following minimum information shall be furnished in the As-build drawing:**
  - a) Actual profile of the crossing after completion of pipeline installed and the depth of cover to top of pipe at regular intervals.
  - b) Location of entry and exit points and angles of entry and exit along with lateral offset of exit point from the original pipeline alignment.
  - c) Location of angle of field bends. Joining the mainline hookup
  - d) Location of surrounding details enrooting the pipeline to be mentioned.

10.0 Health, safety and Environment

The HDD technique will be expedited in the shortest time frame possible.

2. In case of trench less crossing are adopted when man entry is required inside the pipe following additional safety means shall be taking care.
3. All workers should have mandatory PPEs and regular tool Box Talk should be given to workers.
4. Width of excavated pit to be maintained as >5 m and steps should be provided.
5. Clear and safe access must be maintained continuously while the workers are in confined space.
6. Adequate lighting shall be provided at all access and egress points (use only 24 volts/ torch can also be used)
7. First Aid box to be maintained at site.
8. Standby persons and vehicle (In case of emergency)
9. Whistle to be provided to worker going under the road (use in case of emergency)
10. Warning display board to be installed in English and Regional language. (Work in Progress) (Deep Excavation)
11. All machine tools & tackles to be maintained as a tested, certified, validated.
12. Continuously efficient dewatering system must be in operation.

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13. Any specific requests from the authorities will be adopted by TPL and will form part of the permit for the works.

14. Provision will be given for the continuation of normal traffic during the activity.

15. Construction entrances /exit locations will be constructed to the minimum width and length with consideration to existing topography, change in road edge height, existing soil geography including compaction characteristics right of way constraints etc.

16. Safe disposal of bentonite slurry mud with consent of concerned authorized Person/authority shall be ensured.

Note: In case of any conflict between the requirements of this procedure and contract specification, drawings, EIC instruction shall govern.

143

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Project :- Laying of 3LPE Coated Steel Pipeline Network & Associated Works in Group – TC- Thoothukudi GA

Owner : M/S Indian Oil Corporation Limited

Consultant : M/S TRACTEBEL ENGIE

Contractor : M/S Taurant Projects Limited

Doc No : TPL/IOCL/TE/TC/WP003/IR01

INSPECTION REPORT FOR PILOT HOLE DRILL LOG SHEET

HDD Crossing name :- Pilot Dia : Format No. 01

PIPE Specification :- Pipe OD& THK : Report No:

From :- To: Pilot Length :

S.NO	DATE	ROD NO	Pitch (Angle)	Distance from Entry pt. to Exit Pt.(Mtrs)	Depth from NGL Level (Mtrs)	Push force (KN)	ROTATION TORQUE	Pump Rate (L/Min)	Remarks

Remarks (If any): -

CHECKED AND VERIFIED BY

FOR TPL	FOR TRACTEBEL/IOCL
SIGN :	SIGN :
NAME :	NAME :
DATE :	DATE :

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Project	Laying of 3LPE Coated Steel Pipeline Network & Associated Works in Group – TC- Thoothukudi GA
Owner :	M/ S Indian Oil Corporation Limited
Consultant :	M/S TRACTEBEL ENGIE
Contractor :	M/S Taurant Projects Limited
Doc No :	TPL/IOCL/TE/TC/WP003/IR02

INSPECTION REPORT FOR REAMING

HDD Crossing name :- | Reamer Size : | Format No 02
PIPE Specification :- | Pipe OD & THK : | Report No:
From :- | To: | Reaming Length : | Date:

S.NO	DATE	ROD NO	Length From Entry Side (Mtrs)	RIG Output Load		Pump Rate (L/M)	Remarks
				Push/Pull Force (KNm)	Torque Force/ Rotation Load (KNm)		

Remarks (If any): -

CHECKED AND VERIFIED BY

FOR TPL	FOR TRACTEBEL/~~Gail~~ IOCL
SIGN :	SIGN :
NAME :	NAME :
DATE :	DATE :

RANJITH KUMAR N
Senior Manager (CGD)
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इंडियनऑयल IndianOil	TRACTEBEL ENGIE	tpl
Document No. TPL/IOCL/TE/TC/WP003		

Project :- Laying of 3LPE Coated Steel Pipeline Network & Associated Works in Group – TC- Thoothukudi GA							
Owner : M/ S Indian Oil Corporation Limited							
Consultant: M/S TRACTEBEL ENGIE							
Contractor : M/S Taurant Projects Limited							
Doc No : TPL/IOCL/TE/TC/WP003/IR03							
INSPECTION REPORT FOR PULLING							
HDD Crossing Name :-				Reamer Size :		Format No. 03	
PIPE Specification :-				Pipe OD & THK :		Report No:	
From :-		To:		Reaming Length :		Date:	
S.NO	DATE	ROD NO	Length From Exit Side (Mtrs)	RIG Output Load		Pump Rate (L/M)	Remarks
				Pull Force (mPA/Psi)	Rotation/ Torque Force Load (KNm)		
Remarks (If any): -							
CHECKED AND VERIFIED BY							
FOR TPL				FOR TRACTEBEL/~~Gail~~ IOCL			
SIGN :				SIGN :			
NAME :				NAME :			
DATE :				DATE :			

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Project	Laying of 3LPE Coated Steel Pipeline Network & Associated Works in Group – TC- Thoothukudi GA
Project No.	Works 2318
Client	Indian Oil Corporation Limited
PMC	Tractebel Engie
Contractor	Taurant Projects Limited

PROCEDURE FOR

HAZARD IDENTIFICATION AND RISK ASSESSMENT

TAURANT PROJECTS LIMITED New Delhi

REV	DATE	DESCRIPTION	PREPARED & CHECKED BY	REVIEWED & APPROVED BY
0	01.07.2024	For Review & Approval	Name & Sign	
			TPL	Tractebel/IOCL

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Senior Manager (CGD)
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IOCL THOOTHUKUDI PROJECT

STEP	Activity	Hazard	Risk	4. IR			5. Control Measures& Controls required	6. Responsible	7. RR		
				E	P	R			E	P	R
	Assembling of HDD/ Boring machine	Use of regular riggers as Helpers for erection/ installation of Boring machine	Physical Injuries	3	4	H	• Only authorized person shall be allowed to operate the equipment • The HSE personnel Operator and task supervisor shall conduct a pre job safety meeting/TBT prior to installation and erection of HDD/Boring machine which will include the HIRAs, Standard Operating Procedures, types of potential hazards, and actual hazards present and controls for those hazards • All employees assigned for this task shall be present during TBT	Task Supervisor / Site In-Charge	2	3	
		Personal/ Pedestrian movement	Personnel Injury	3	4	H	• Area of operation shall be barricaded • Supervisors shall monitor that entry of unauthorized person is strictly restricted	Task Supervisor / Site In-Charge	2	2	M
		Use of Hand tools	Crush / Cut Injury Ergonomics injuries	3	4	H	• Maintain hand tools in proper working condition. Use the correct tool for the task. Avoid "knuckle-banging" (i.e., pay attention to direction of torqued tool slips) and wear leather gloves when possible. • Lift heavy objects using the legs and not the back. Use wheeled transport equipment for heavy loads. • Keep hands away from potential pinch points during handling. Wear steel toe boots. • Wear protective eye goggles or face shield. • A crane is used to lift longer (10 ft) lengths of casing preventing manual handling.	Task Supervisor / Site In-Charge	2	3	M
		Striking of Overhead electrical line or object during equipment erection	Electrocution/Dame to Overhead electrical cable	3	3	H	• Necessary precautions shall be taken while erection of equipment under over head electrical lines • Safe distance to be maintained while boring under OHE line • Obtain all necessary permission from concern department before executing work at site. • Restrict unauthorized entry at site	Task Supervisor / Site In-Charge	2	2	M

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2.	HDD Drilling	Generating High noise level	Damage to Hearing due to High sound Fatigue	3	4	H	• Drilling Machine shall be inspected and ensured fit for use • Air mufflers and packing if necessary may be provided to reduce sound • Person involved in the boring activity shall be provided earplug • Over exposure to High sound shall be avoided by maintaining necessary distance from the operation zone when not required • Noise monitoring to be done as per HSE plan. • Fitness certificate of HDD machine and attached JIB crane to be ensure before executing work at site.	Task Supervisor / Site In-Charge	1	3	L
		Inhalation of hazardous dust	Chest pain Lung disease	3	4	H	• Water mist may be sprayed to settle dust from blowing away • Dust mask shall be provided and worn by all involve in the activity	Task Supervisor / Site In-Charge	2	2	M
		Overheating of machineries	Fire	3	4	H	• Overheating of machinery to be avoided • Coolant and water level wherever necessary shall be checked frequently • Necessary lubrication to be done on all moving parts of the machineries	Task Supervisor / Site In-Charge	2	2	M
		Exposure with moving parts of machineries	Physical injury from moving parts of machinery, including change out of drill pipe and core barrel	3	4	H	• Maintain safe distance from moving parts of machinery • Keep fingers, hands, and arms away from rotating drill head near the top (connection to drive) or near the bottom (hole entrance). • Wear leather gloves when handling objects, and steel-toed boots and hard hat at all times. • Keep hands away from hydraulic clamps when activated. • Keep fingers away from pinch points when screwing pipe joints together. • Keep all drill bits secured when not in use, to prevent rolling off the rig or other movement.	Task Supervisor / Site In-Charge	2	2	M
		Hoisting Cable	Physical injury from cables under tension that suddenly	3	4	H	• Do not come near cables under tension, such as those lifting drill pipe, as they tend to twist rapidly until the tension is equalized. • Inspect cable and hooks frequently	Task Supervisor / Site In-Charge	2	2	M

491

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			release				for signs of damage and wear.				
		Removing cores from core barrel	Hanging core barrel can swing and potentially knock someone on ground	4	3	H	• When core barrel is not in use, it should be secured to prevent movement. • When loosening material inside the core barrel, position yourself at safe place to avoid being struck by potential deflection of Hammer	Task Supervisor / Site In-Charge	2	2	M
3.	Sample Collection: Soil or Groundwater.	Inhalation of dirt or dust during work activities.	Chest pain Lung disease	3	4	H	• To avoid inhalation of dust, wear a fit-tested half-face respirator with appropriate cartridges for particles and other potential contaminants, including radio nuclides. • Wear rubber or latex gloves to prevent contact with hands and arms. • To avoid inhalation or dermal contact from dirt and dust that can accumulate on clothing, wear coveralls or suits that protect regular work clothes, boots, and hair from exposure to dust and dirt. • Remove work clothes, including boots, before entering environments outside of the work site • Use leather gloves when handling hot soil cores from the sonic rig. If collection of a soil sample from the core is required, allow the core to cool before handling, or wear decontaminated insulated rubber gloves. • If water is present in the core barrel above the soil, the person collecting the soil into a plastic sleeve should remove the soil sleeve before all soil is collected, stand back, and allow remaining soil and water to eject from the core barrel. • Protect your face with face shield used by grinders to avoid injury	Task Supervisor / Site In-Charge	2	2	M
		Contact of dirt or dust after work activities.	Dermatitis	2	4	H		Task Supervisor / Site In-Charge	2	2	M
		Splashing water and mud	Eye Injury	2	4	H		Task Supervisor / Site In-Charge	2	2	M

150

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8.	Night Work	Low Visibility	Personnel Injury Conflict with the Villagers	3	3	H	• No work to be done after dark unless necessary permission is obtained from Client/consultant • Sufficient light arrangement to be done to maintain proper illumination • Permission from local residence to be obtained as drilling sound may be a nuisance for some villagers	Task Supervisor / Site In-Charge	2	2	M

HDD WOOK	b) Damage prevention plan to reduce or avoid the likelihood of damage to adjacent underground facilities, including pipelines, utilities, cables and other subsurface structures considering the accuracy of the method in locating existing structures and in tracking the position of the pilot string during drilling. Consideration should be given to having an auxiliary location system to include manual excavation to ensure that the drilling bit or reamer is following the projected path and does not encroach upon crossing or parallel lines. The damage prevention plan should include provision for sending notification to allc) Safety plan to include contingency plans in the event the drilling string impacts subsurface facilities and identify facilities and resources to be utilized in the event of an emergency or any personnel injuries. The safety plan shall be reviewed on site with all construction personnel prior to the commencement of drilling	1. We will lay down the pipe line below existing utilities in presence of utilities holder. 2. In case of damage, we will rectify the utilities then and there before we further carry on the our drilling work. 3. Add manual trenching will be done to locate other utlilities in the corridor 4. While Carrying out HDD, drilling and piloting shall be tracked to avoid damage to other utilities	Task Supervisor / Site In-Charge Task Supervisor / Site In-Charge Task Supervisor / Site In-Charge Task Supervisor / Site In-Charge	

[9]

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HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA)
HDD ACTIVITY

IOCL THOOTHUKUDI PROJECT

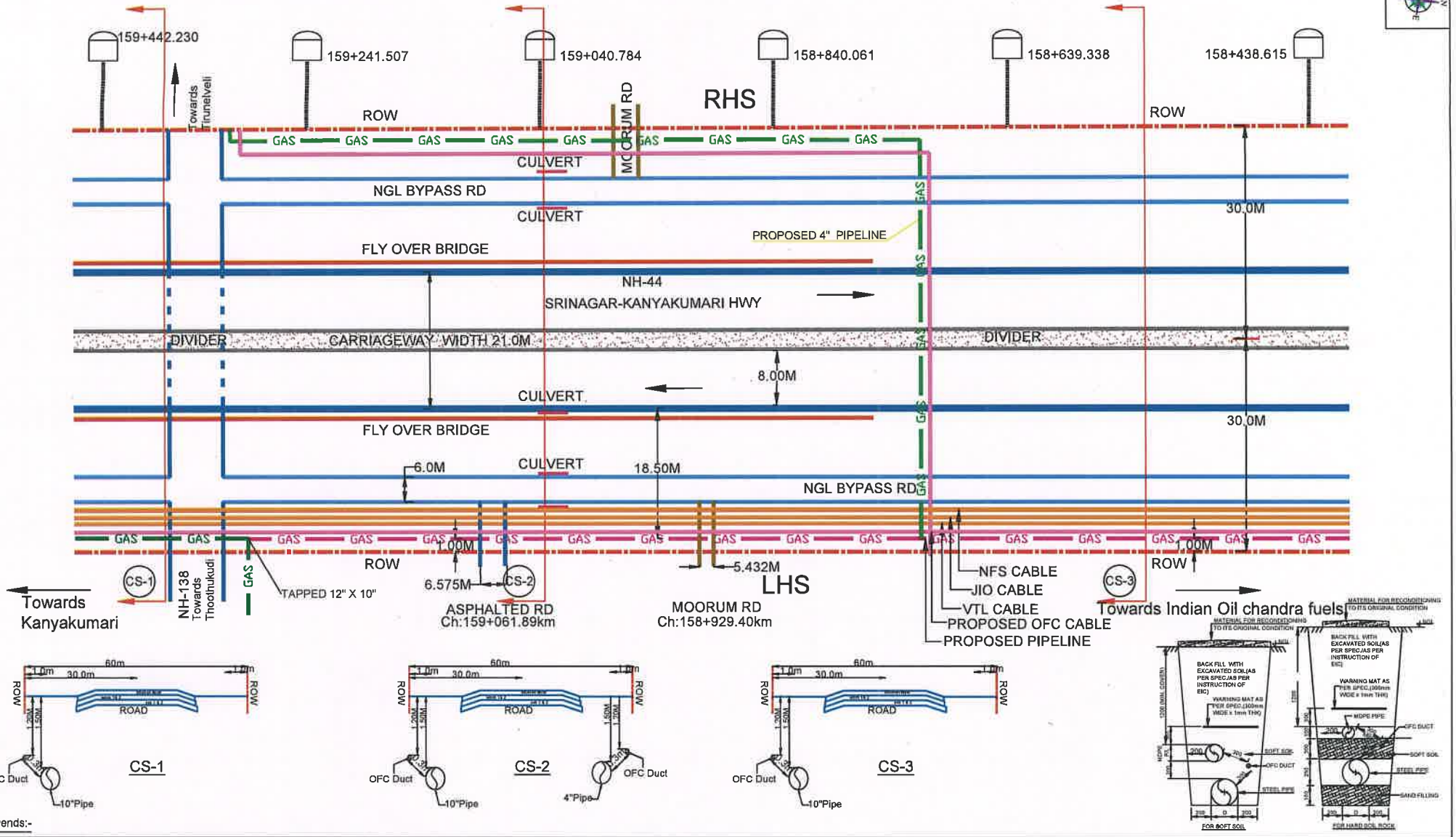
RISK MATRIX

Probability (Likelihood of the Occurance)	Severity				
	1. **Minor** No or Minor Injury	2 **Moderate** Off Site Medical Treatment	3 **Serious** Serious Injury & LTI	4. **Major** More than One LTI	5. **Significant** Permanent Disability and Fatality
5. Will Occur in present state	5	10	15	20	25
4. More likely to occur than not	4	8	12	16	20
3. Possible 50/50 chance	3	6	9	12	15
2. Unlikely Could occur less than 50/50 chance	2	4	6	8	10
1. Very Unlikely little or no chance of occurrence	1	2	3	4	5

	1-3	Low Risk	Managed by routine procedures May be acceptable,however review to see if risk can be reduced further
	4-6	Modrate Risk	Task should only proceed with appropriate management authorisation
	8-12	High Risk	Task needs further review and consultation with specialists and where possible the task should be re-defined to take account of the hazards involved or the risk should be reduced to further before the task is allowed to commence
	15-25	Extreme Risk	Task should not proceed

52

RANJITH KUMAR N ★
Senior Manager (CGD)
SRPL, Tuticorin.



Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Moorum Road	
Proposed Ofc cable		Proposed pipeline12" OD	GAS
NH Row		Proposed pipeline 4" OD	GAS
Asphalted road		Existing Ofc cable	
Divider			
Fly over bridge			
Culvert			
Service Road			

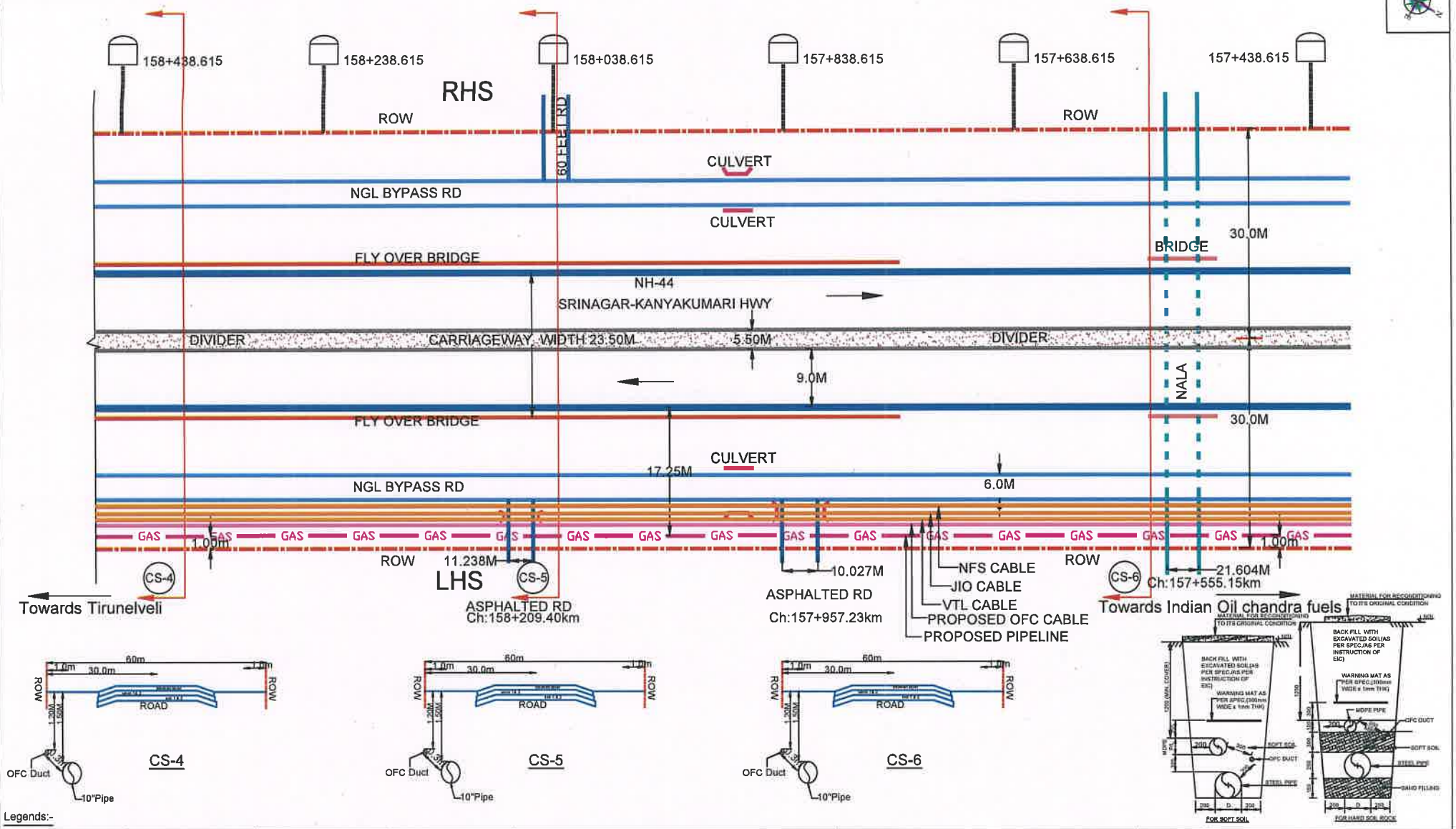
NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-158+442.230km to 158+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-01	53 OF 90



Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Service Road	
Proposed Ofc cable		Bridge	
NH Row		Existing Ofc cable	
Asphalted road			
Divider			
Nala			
Fly over bridge			
Culvert			

NOTES:

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3. DRAWING NOT TO SCALE.

NOTES:

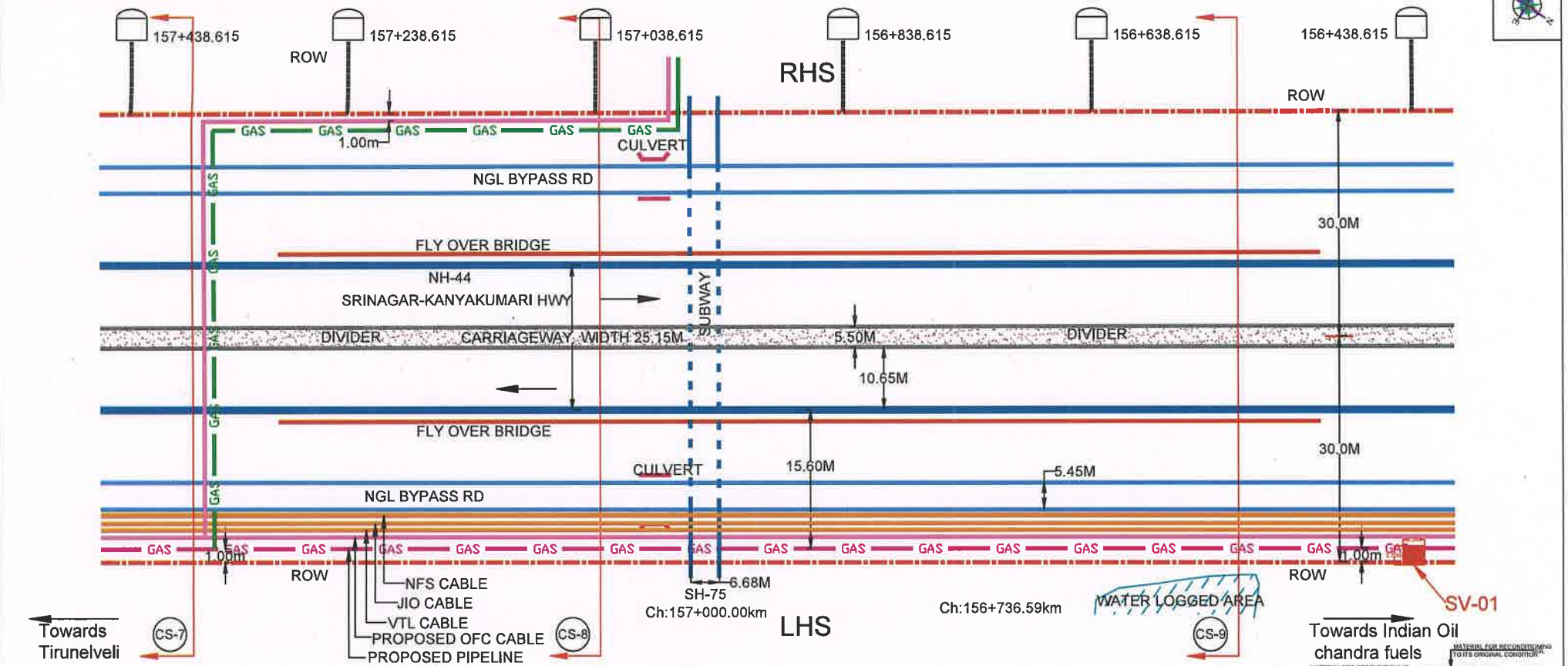
1. ASPHALTED RD.-Ch:158+209.40km
   The road is connected into right side service road.
2. ASPHALTED RD.-Ch:157+957.23km
   The road is connected into right side service road.

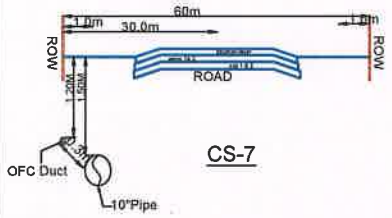
T.Vetrai

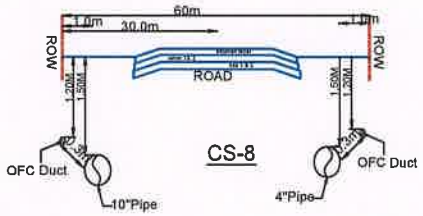
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

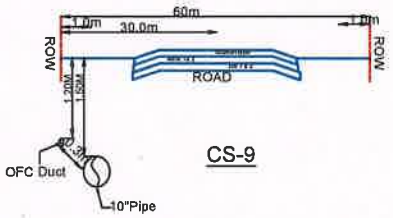
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

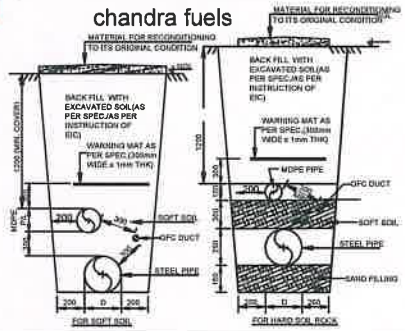
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-158+438.615km to 157+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-02	54 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Existing Ofc cable	
Proposed pipeline 4" OD	GAS	NH Row	
Proposed Ofc cable			
Asphalted road			
Divider			
Fly over bridge			
Culvert			
Service Road			

NOTES:

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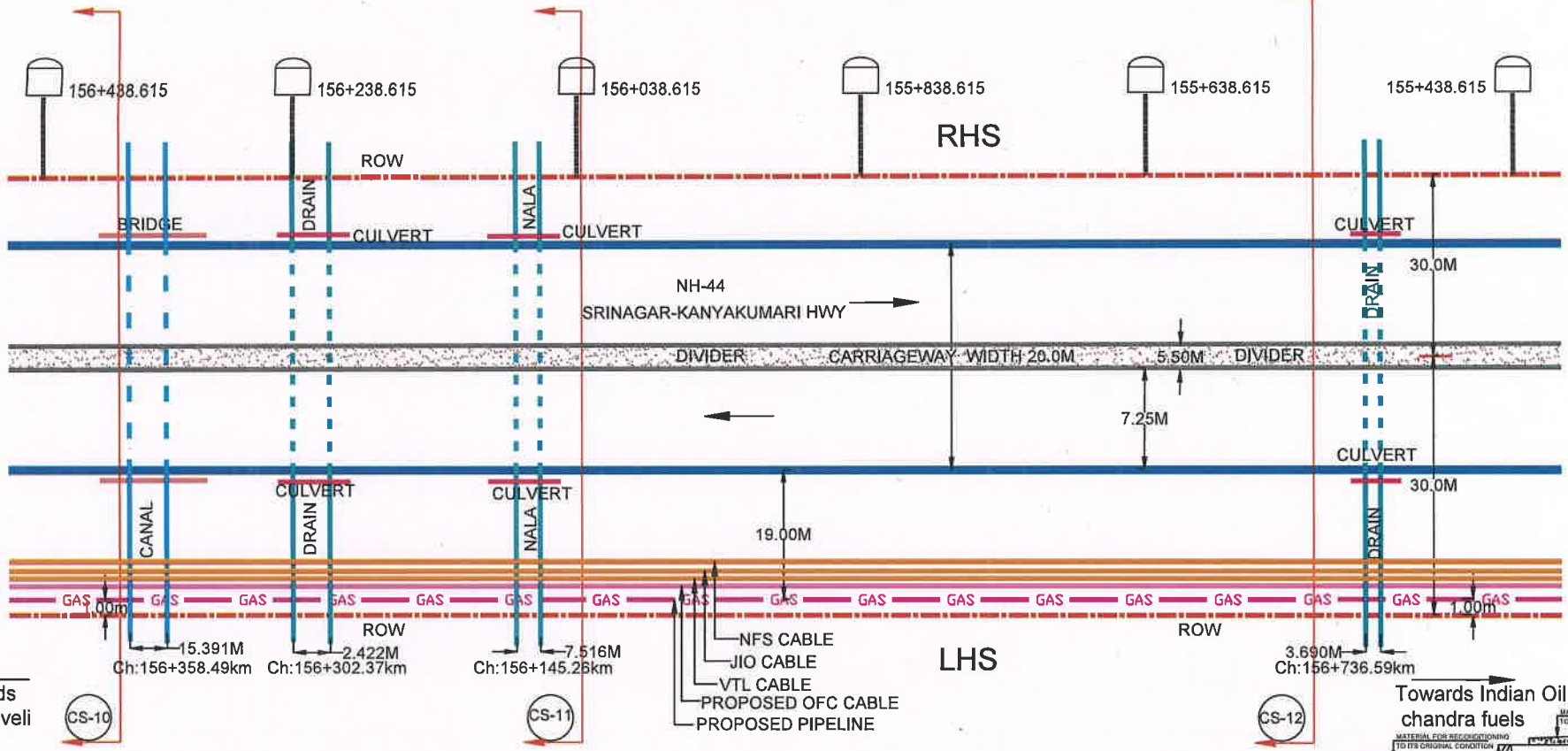
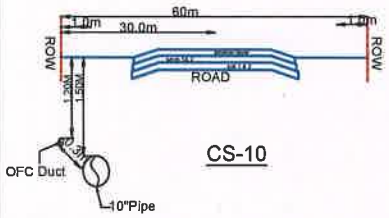
3. DRAWING NOT TO SCALE.

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

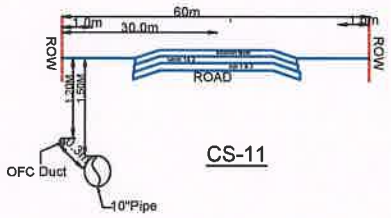
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-157+438.615km to 156+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-03	55 OF 90

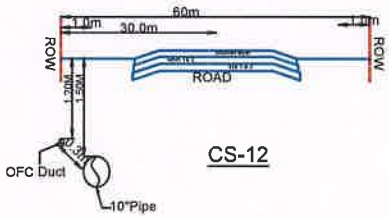




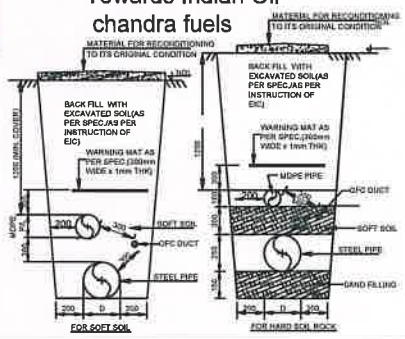
CS-10



CS-11



CS-12



Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Canal	
Proposed Ofc cable		Nala	
NH Row		Existing Ofc cable	
Asphalted road			
Divider			
Bridge			
Drain			
Culvert			

NOTES:

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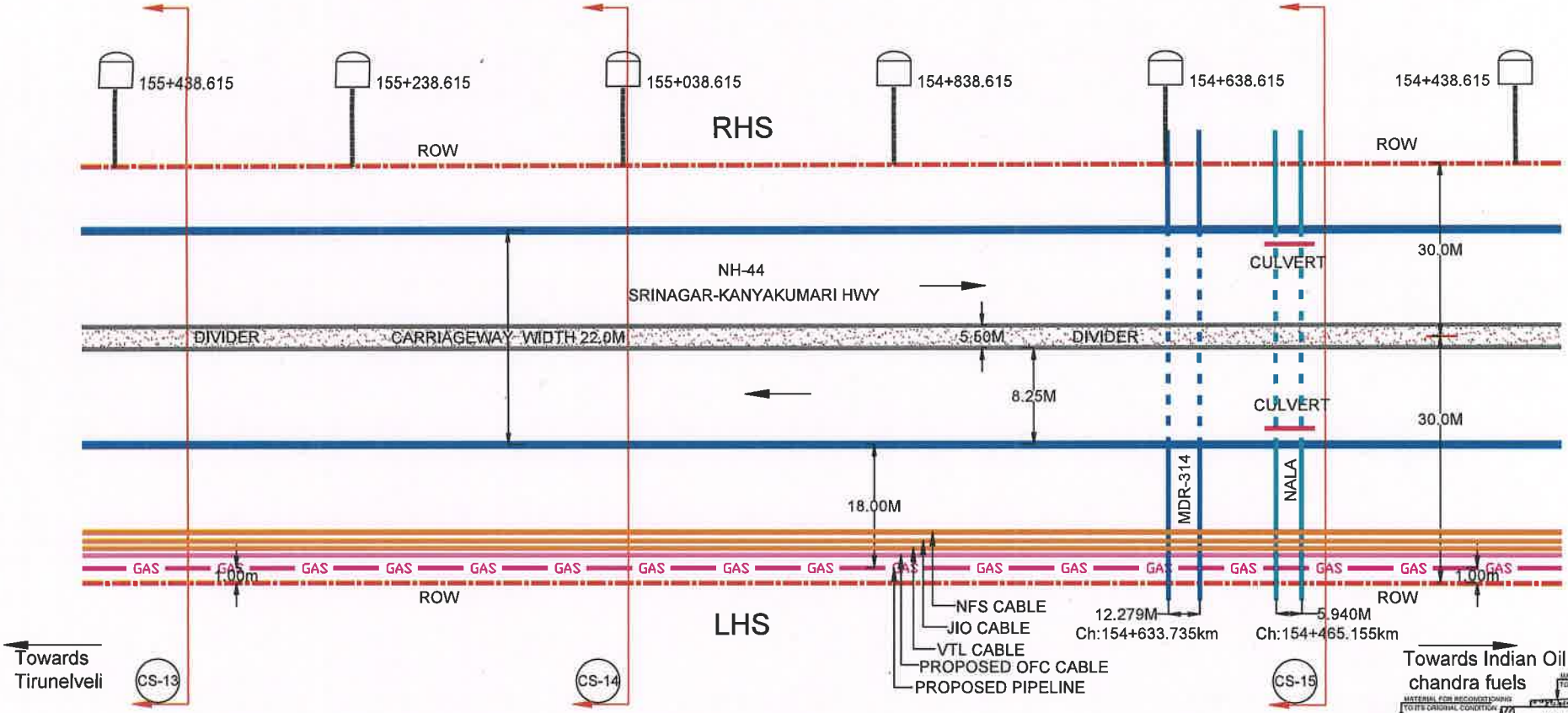
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

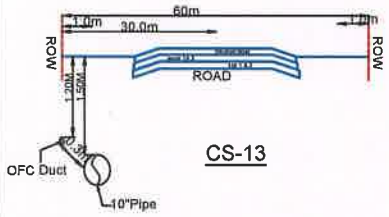
T.Vidal

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

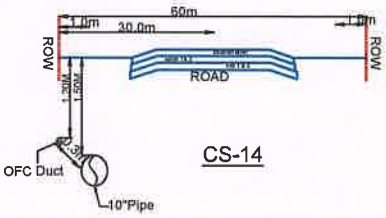
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway –44 from Ch-156+438.615km to 155+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-04	56 OF 90





CS-13



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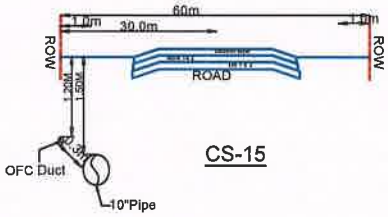

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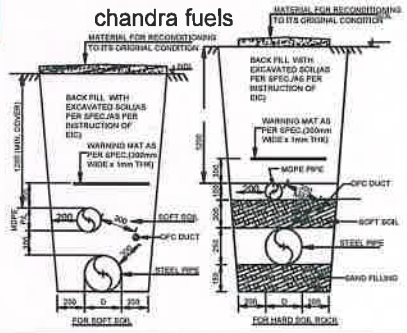

Legends:-

Particulars	Symbols
Proposed pipeline 10" OD	GAS
Proposed Ofc cable	
NH Row	
Asphalted road	
Divider	
Nala	
Culvert	
Existing Ofc cable	

T-Vetri

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

NOTES:

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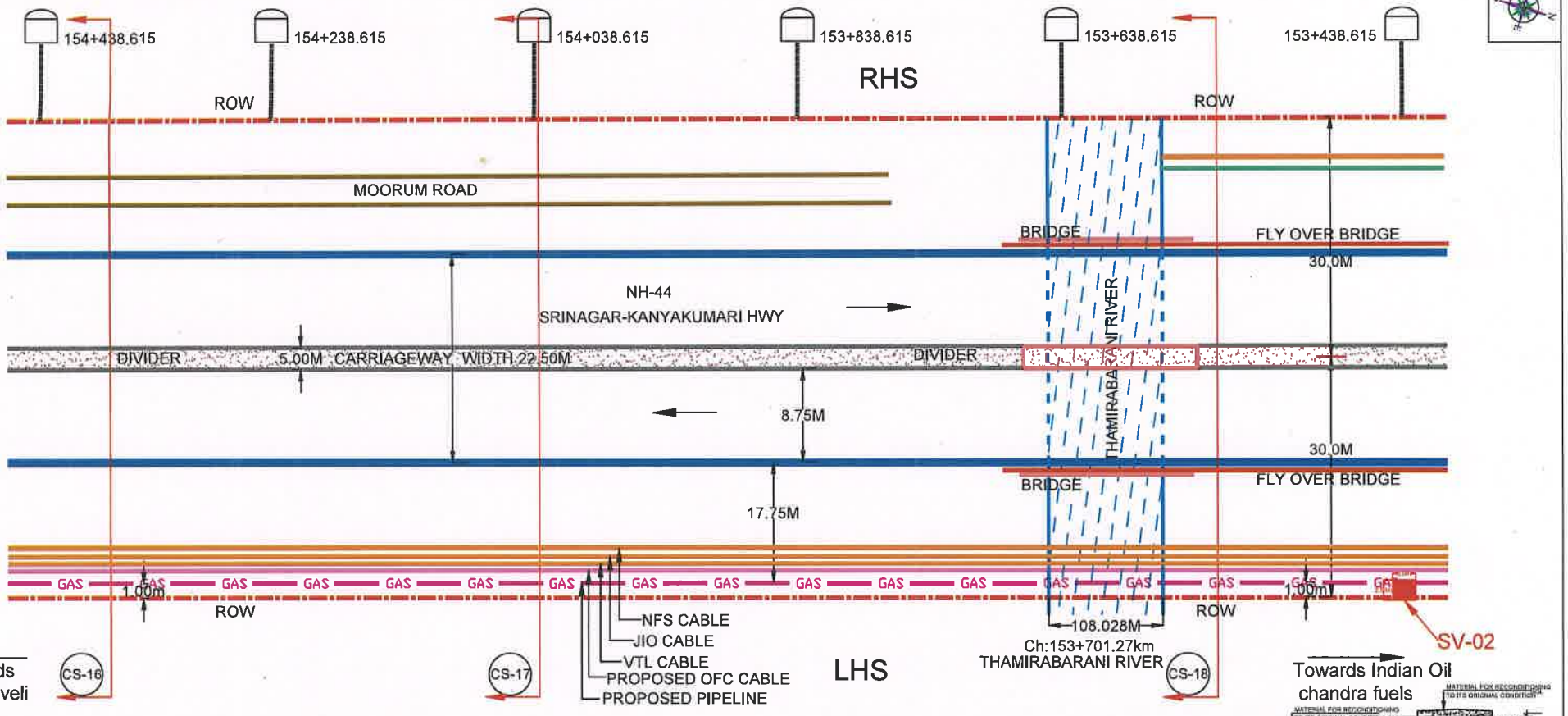
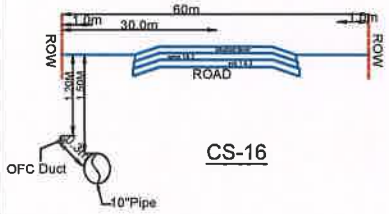
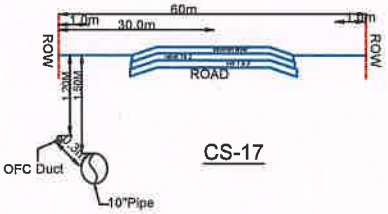
3.DRAWING NOT TO SCALE.

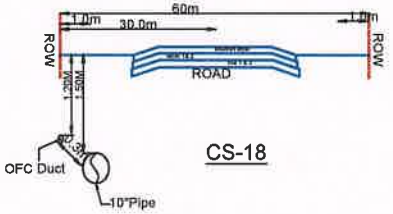
INDIAN OIL CORPORATION LTD. SRPL TUTICORIN

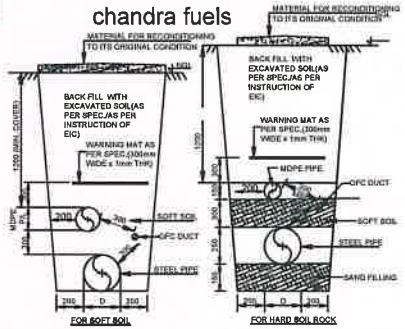
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-155+438.615km to 154+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-05	57 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Moorum Road	
Proposed Ofc cable		Fly over bridge	
Existing Ofc cable			
NH Row			
Asphalted road			
Divider			
River			
Bridge			

NOTES:

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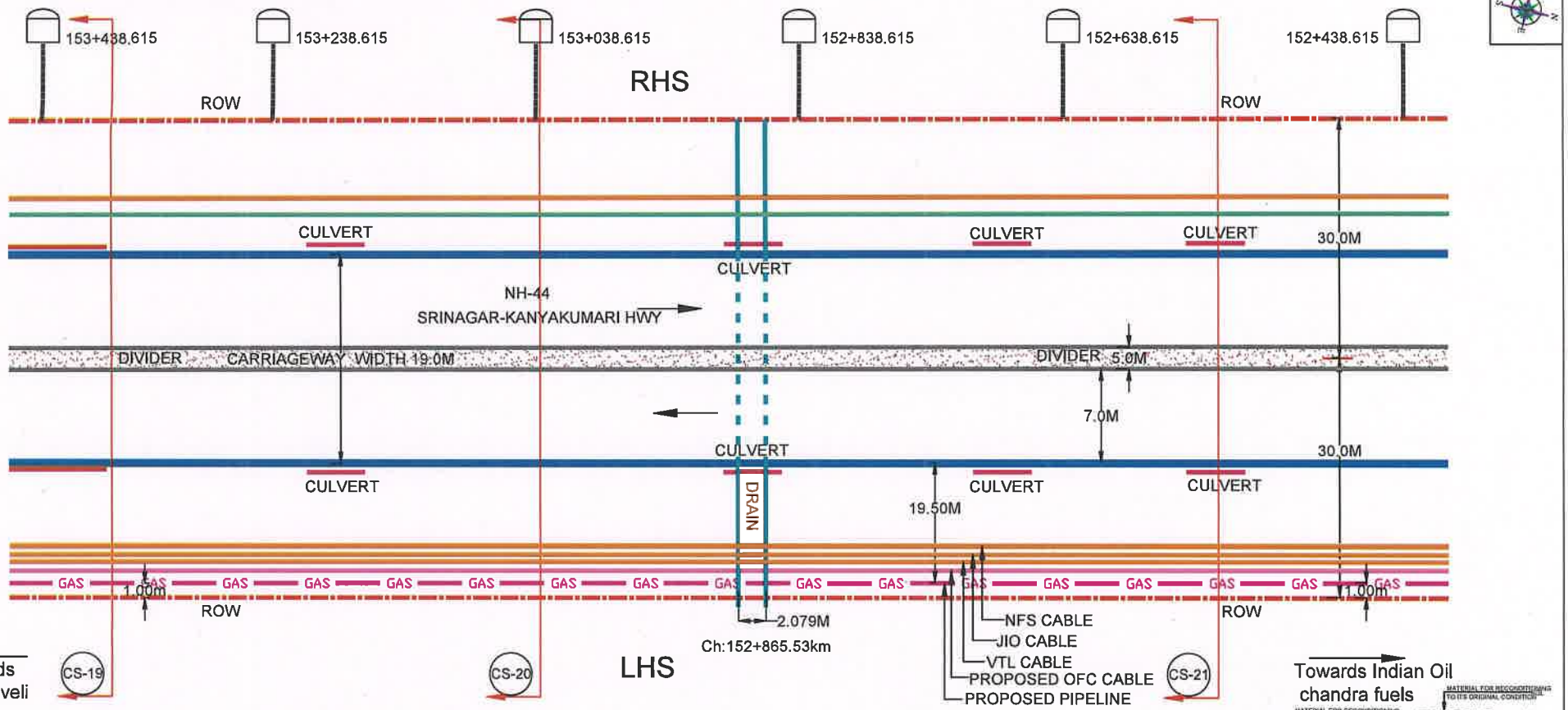
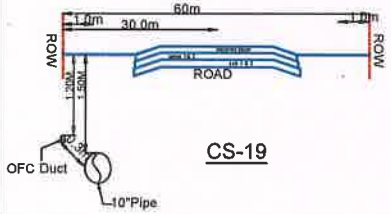
3. DRAWING NOT TO SCALE.

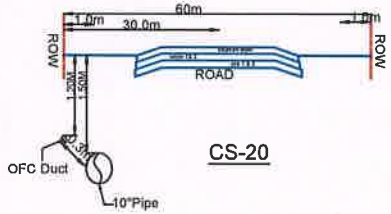
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

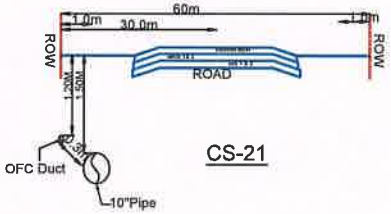
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

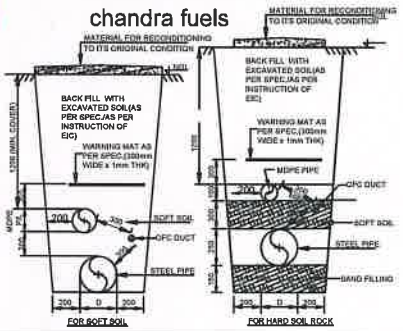
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-154+438.615km to 153+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-06	58 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Fly over bridge	
Proposed Ofc cable		Existing Ofc cable	
Water Pipeline			
NH Row			
Asphalted road			
Divider			
Drain			
Culvert			

NOTES:

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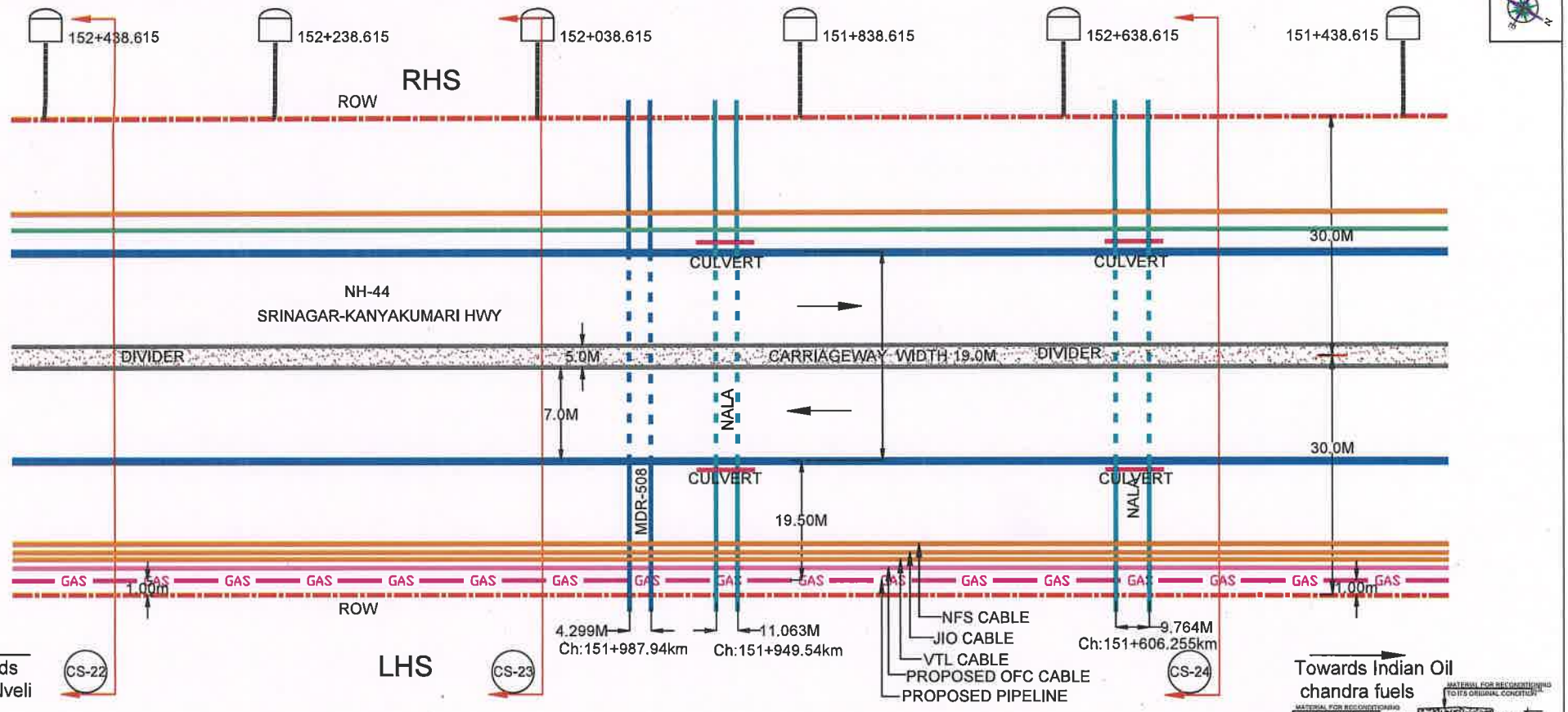
3. DRAWING NOT TO SCALE.

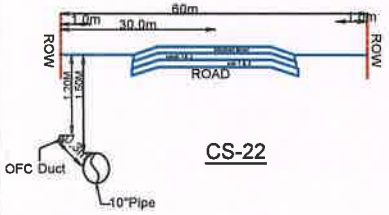
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

T-Vetri

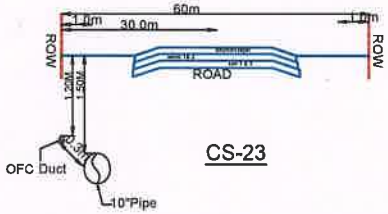
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-153+438.615km to 152+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-07	59 OF 90

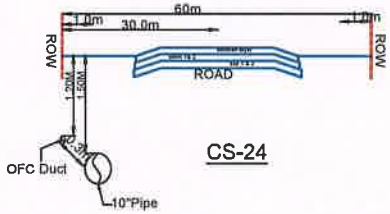




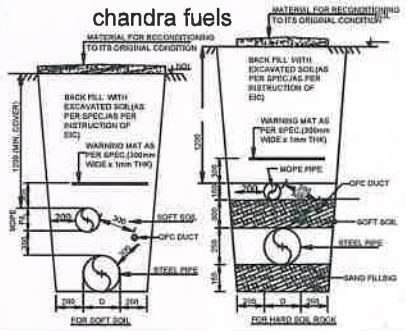
CS-22



CS-23



CS-24



Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Existing Ofc cable	
Proposed Ofc cable			
Water Pipeline			
NH Row			
Asphalted road			
Divider			
Drain			
Culvert			

NOTES:

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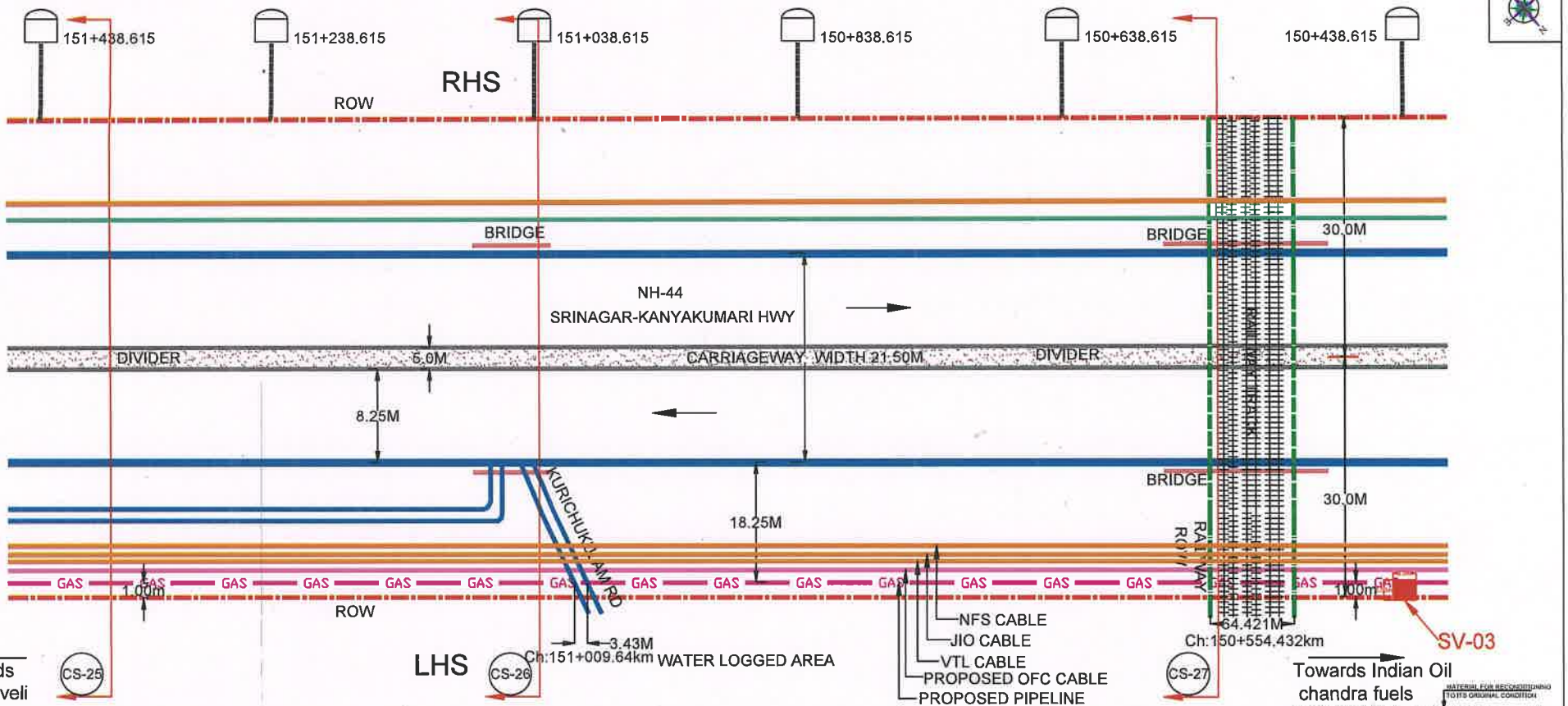
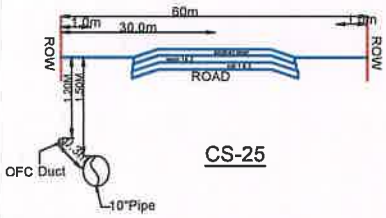
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

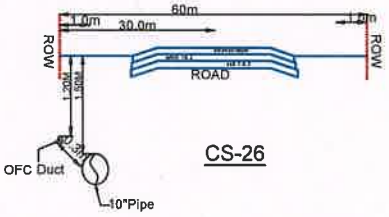
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

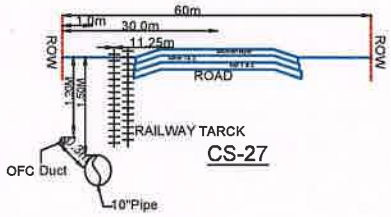
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

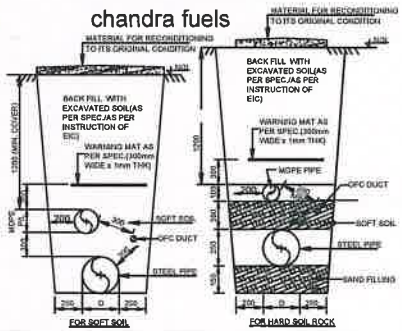
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572371/2570456
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-152+438.615km to 151+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-08	60 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Railway row	
Proposed Ofc cable		Existing Ofc cable	
Water Pipeline			
Asphalted road			
Divider			
NH Row			
Bridge			
Railway track			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

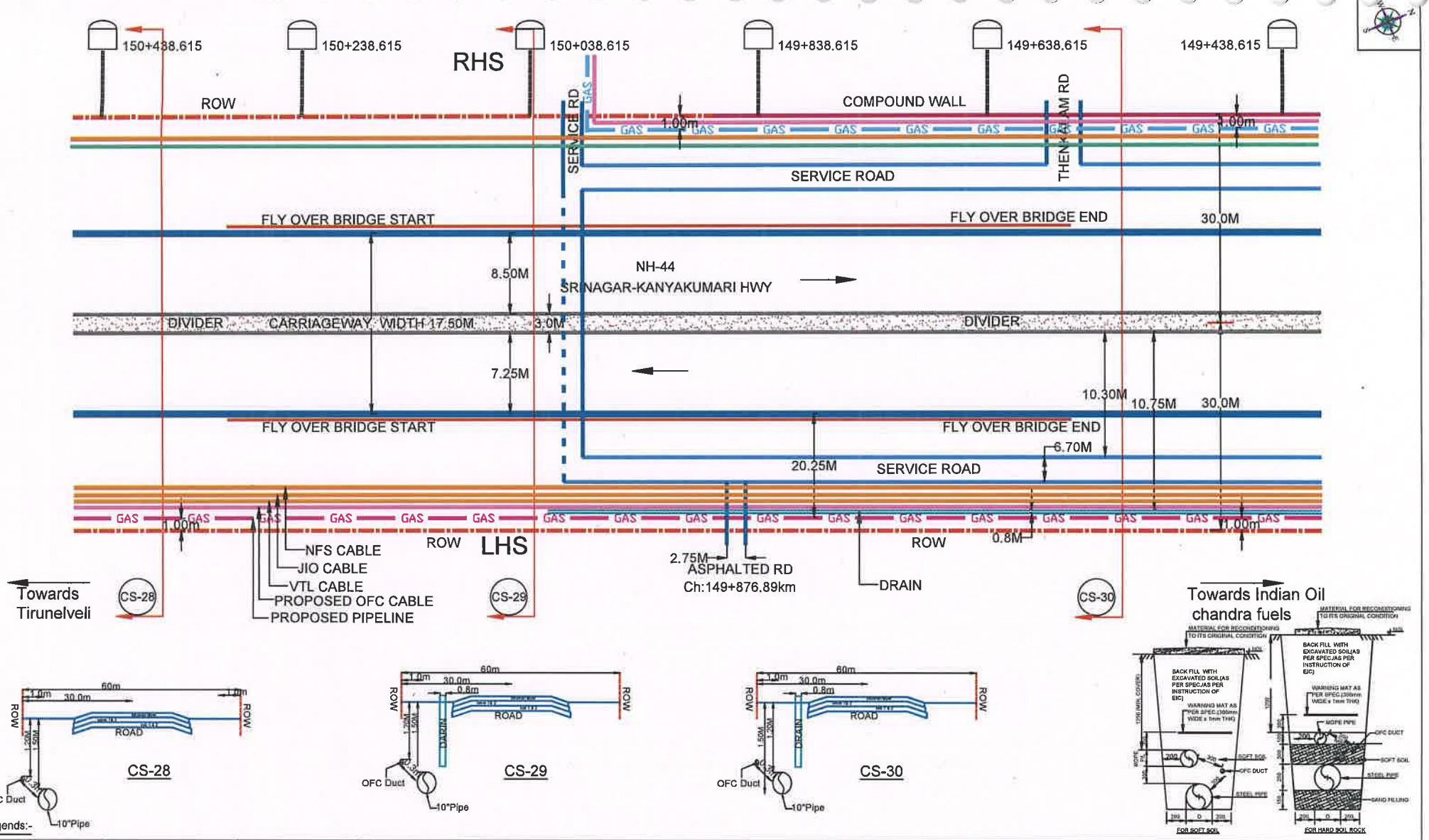
NOTES:

1. ASPHALTED RD.-Ch:151+009.64km
   The road is connected into right side service road.

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-151+438.615km to 150+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-09	61 OF 90



CS-28

CS-29

CS-30

Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Drain	
Proposed Ofc cable		Service Road	
Proposed pipeline 8" OD	GAS	Compound wall	
Asphalted road		Existing Ofc cable	
Divider		Water Pipeline	
NH Row			
Fly over bridge			
Culvert			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

T.Vehal

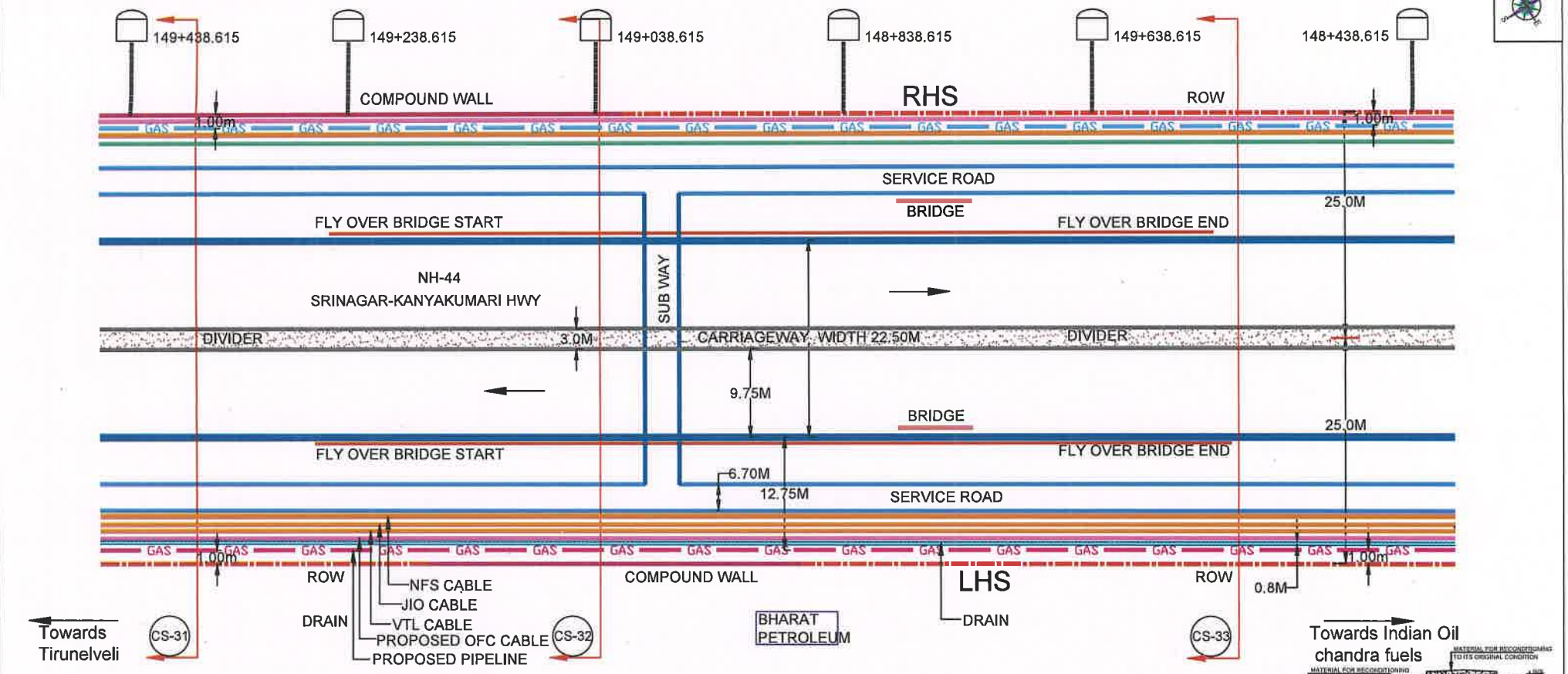
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

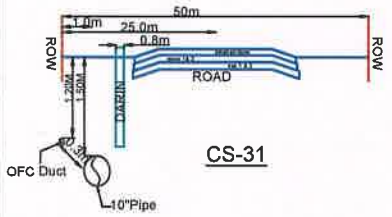
NOTES:

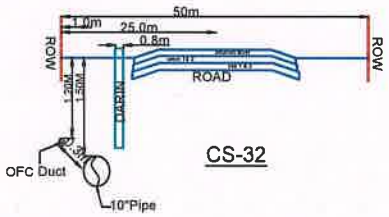
1. ASPHALTED RD.-Ch:149+876.89km
   The road is connected into right side service road.

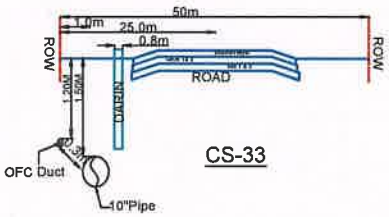
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

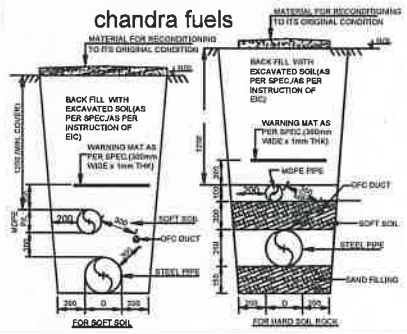
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-150+438.615km to 149+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-10	62 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Builtup area / Building	
Proposed Ofc cable		Service Road	
Water Pipeline		Compound wall	
Asphalted road		Existing Ofc cable	
Divider		Proposed pipeline 8" OD	GAS
NH Row			
Fly over bridge			
Bridge			

NOTES:

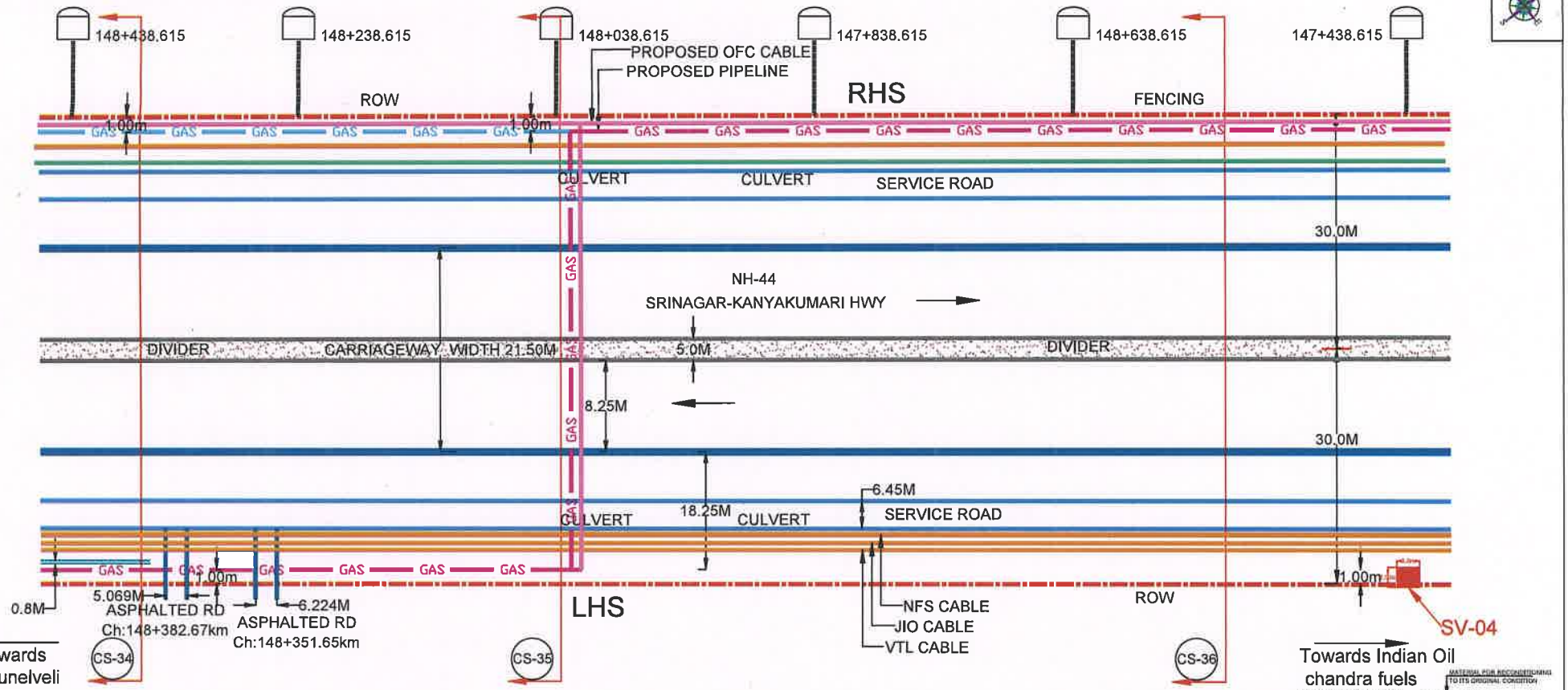
1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

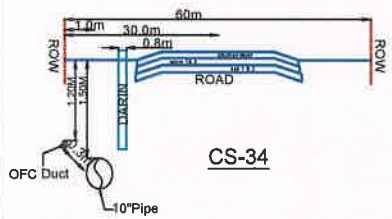
T.Vahgt

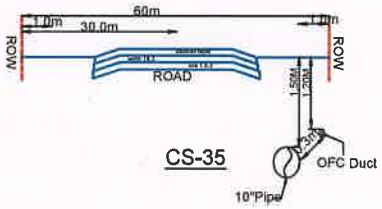
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

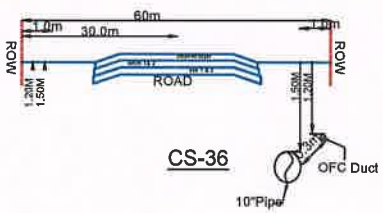
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

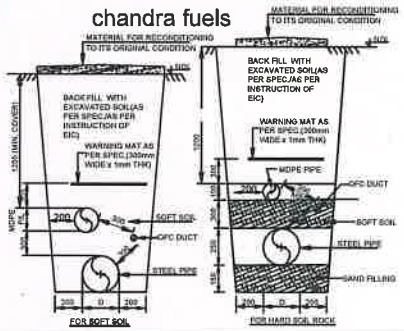
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-149+438.615km to 148+436.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-11	63 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Existing Ofc cable	
Proposed Ofc cable		Proposed pipeline 8" OD	GAS
Water Pipeline			
Asphalted road			
Divider			
NH Row			
Service Road			
Culvert			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

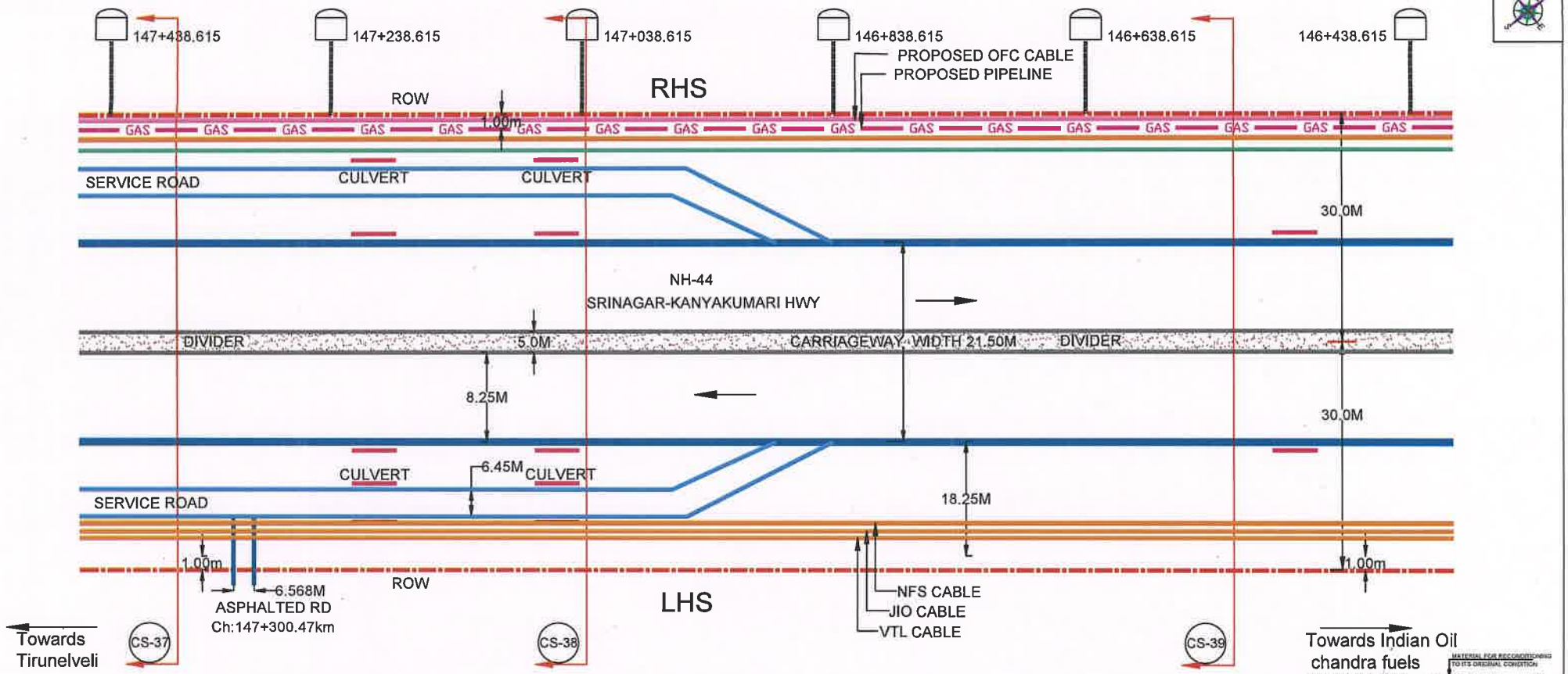
NOTES:

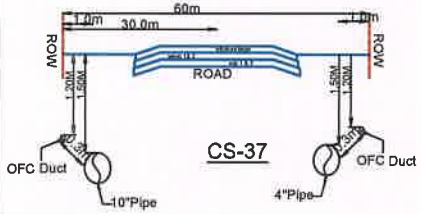
1. ASPHALTED RD.-Ch:148+382.67km
   The road is connected into right side service road.
2. ASPHALTED RD.-Ch:148+351.65km
   The road is connected into right side service road.

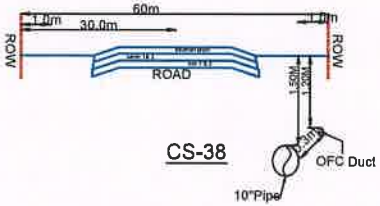
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

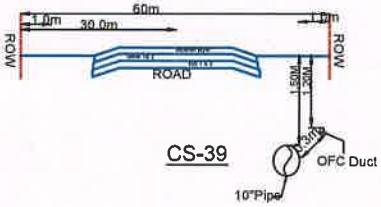
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

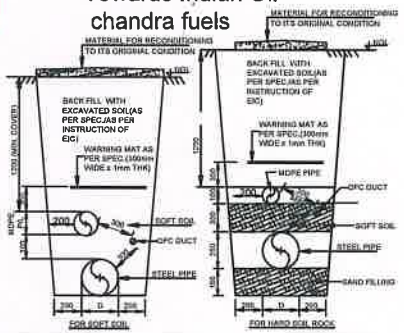
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-148+438.615km to 147+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-12	64 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD	GAS	Existing Ofc cable	
Proposed Ofc cable			
Water Pipeline			
Asphalted road			
Divider			
NH Row			
Service Road			
Culvert			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

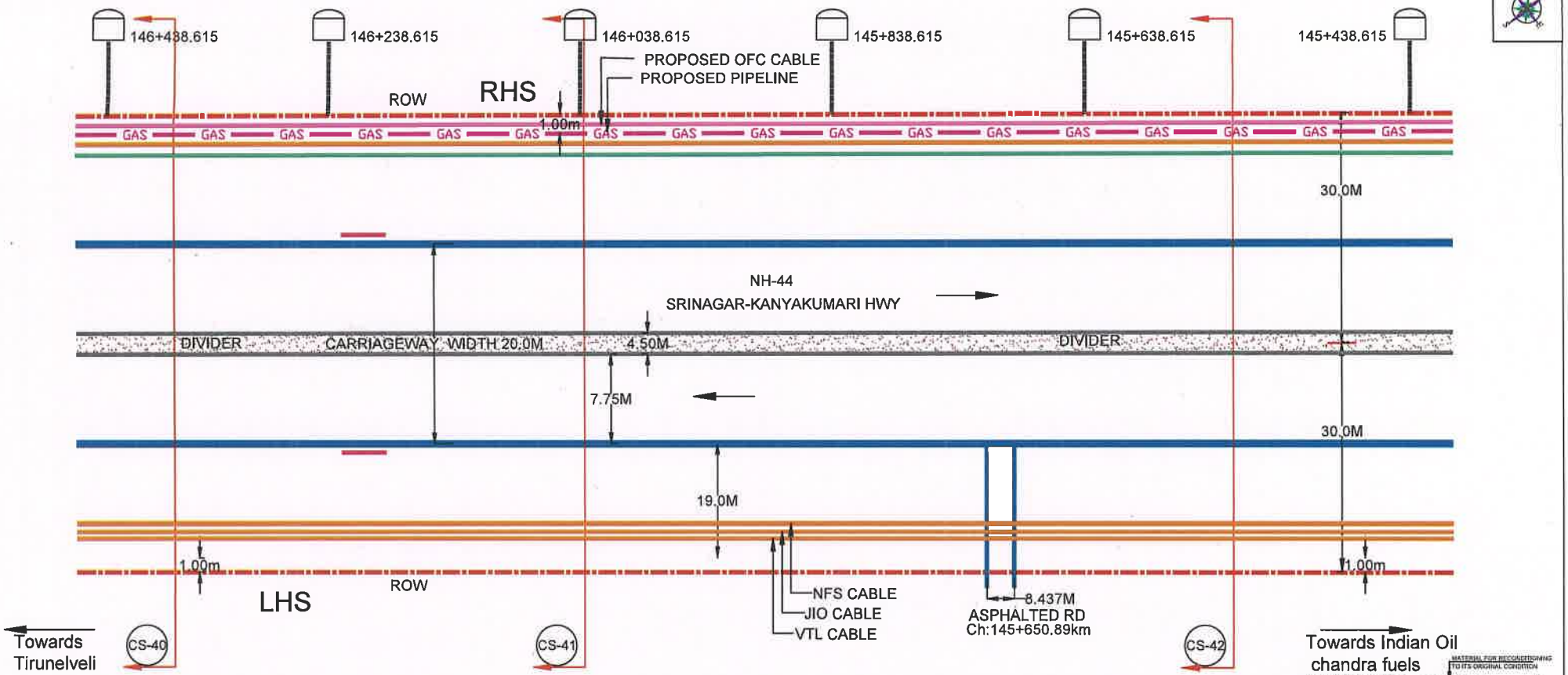
NOTES:

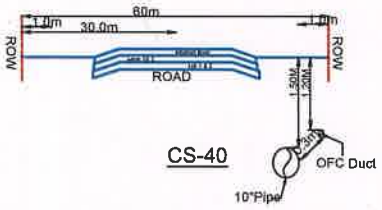
1. ASPHALTED RD.-Ch:Ch:147+300.47km
   The road is connected into right side service road.

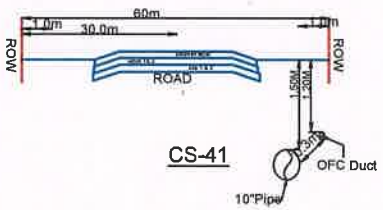
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

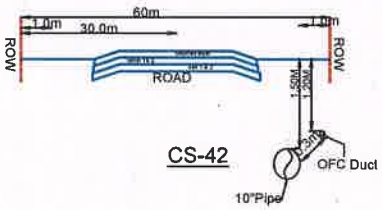
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

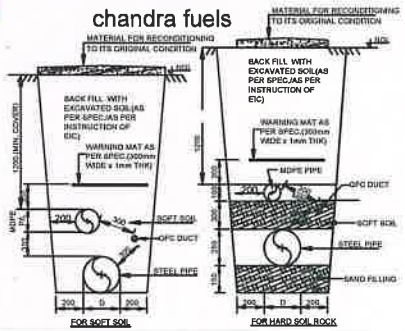
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-147+438.615km to 146+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-13	65 OF 90











Legends:-

Particulars	Symbols
Proposed pipeline 10" OD	
Proposed Ofc cable	
NH Row	
Asphalted road	
Divider	
Drain	
Water pipeline	
Existing Ofc cable	

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

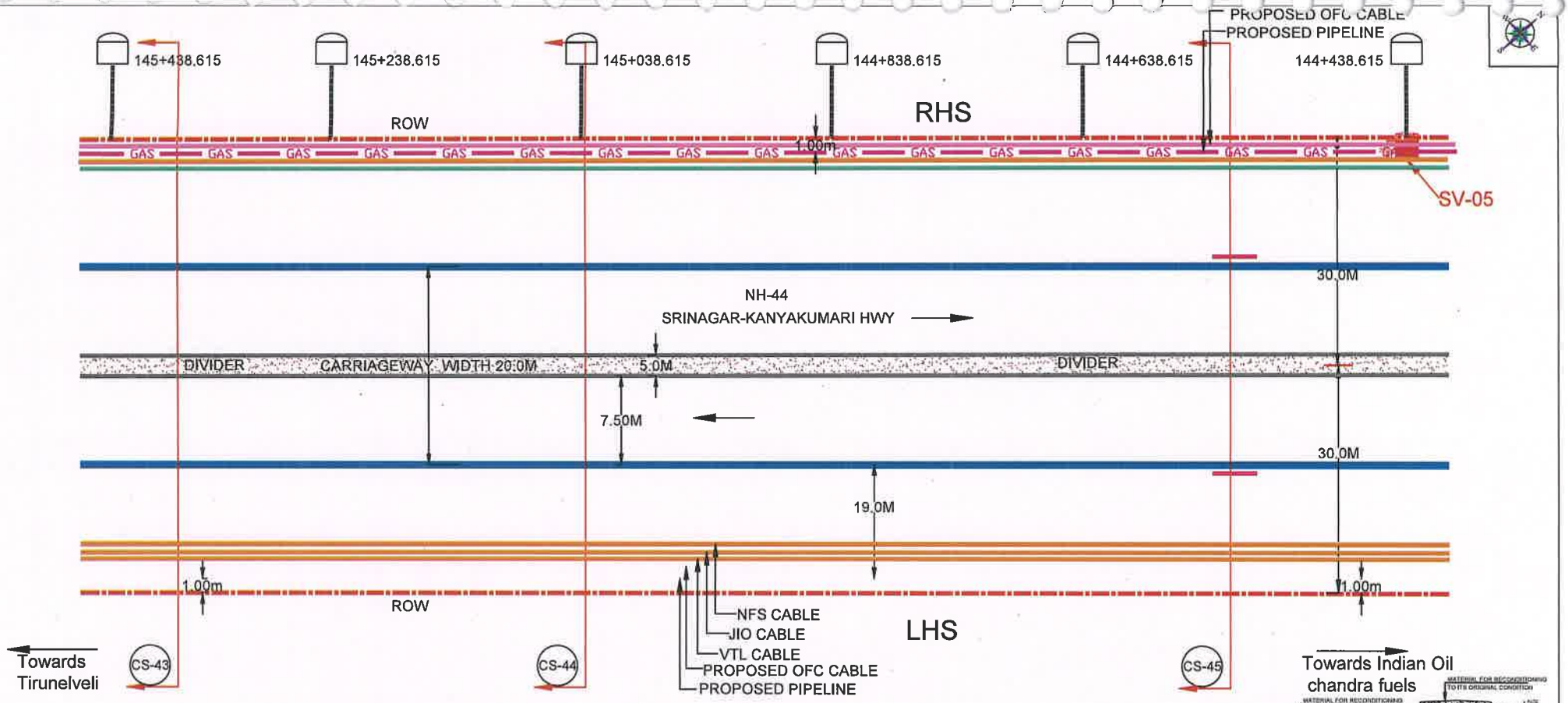
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

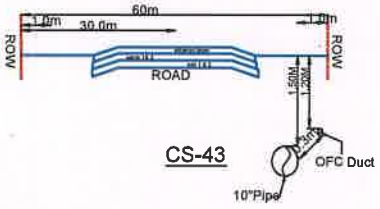
NOTES:

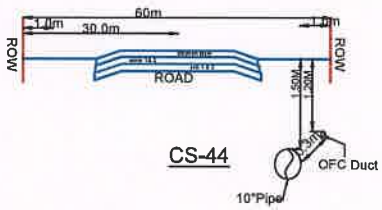
1. ASPHALTED RD.-Ch:145+650.89km
The road is connected into right side main road.

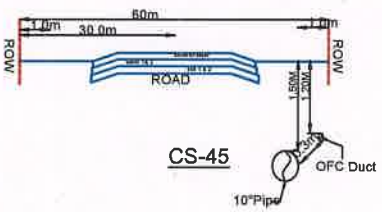
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

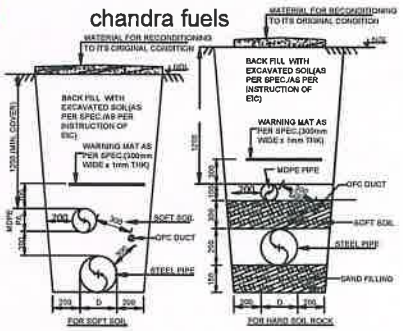
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-146+438.615km to 145+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-14	66 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Existing Ofc cable	
Proposed Ofc cable			
NH Row			
Asphalted road			
Divider			
Drain			
Culvert			
Water pipeline			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

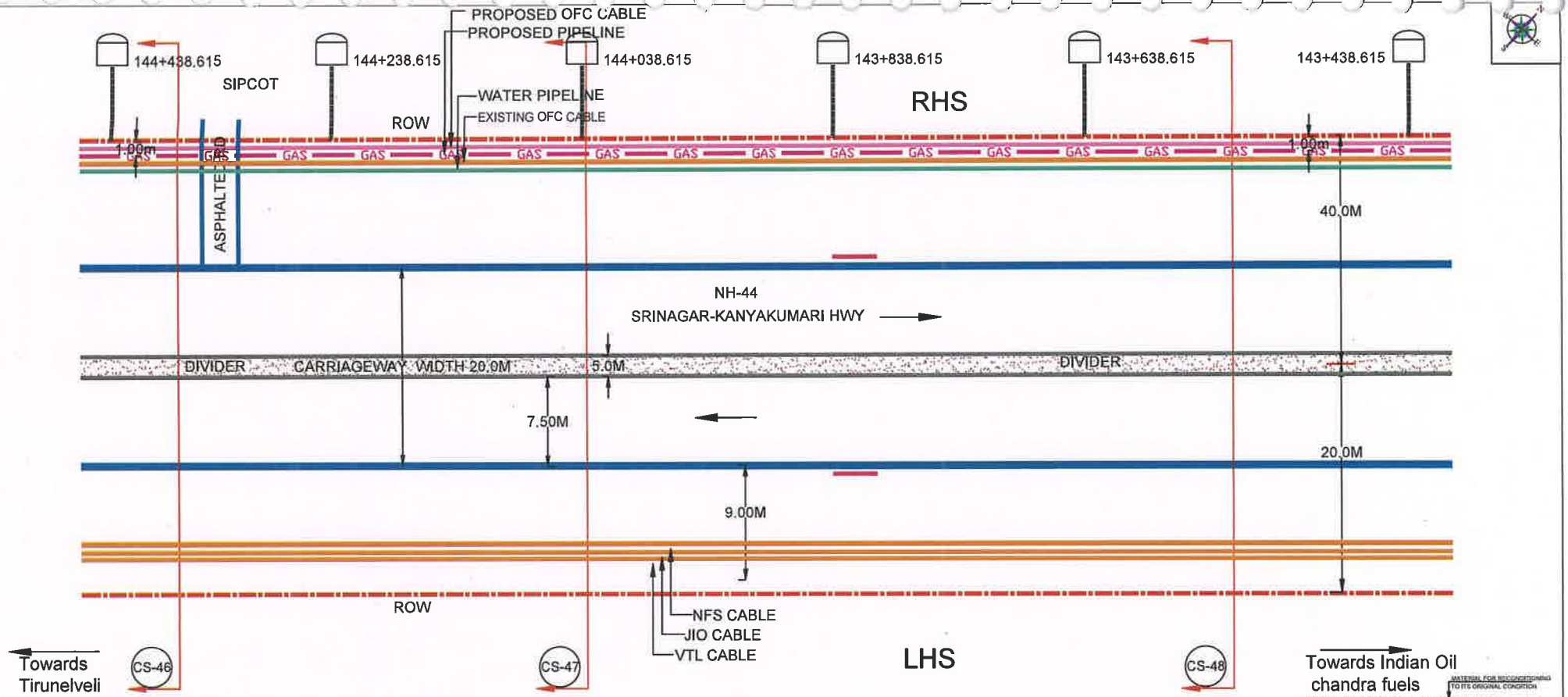
NOTES:

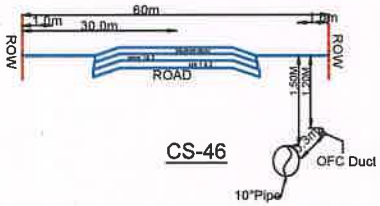
1. ASPHALTED RD.-Ch:Ch:147+300.47km
   The road is connected into right side service road.

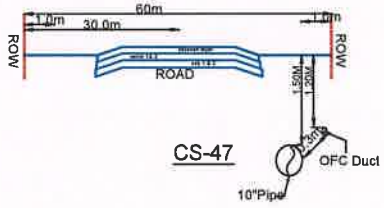
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

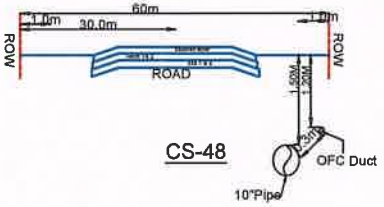
INDIAN OIL CORPORATION LIMITED
SRPL
TUTICORIN

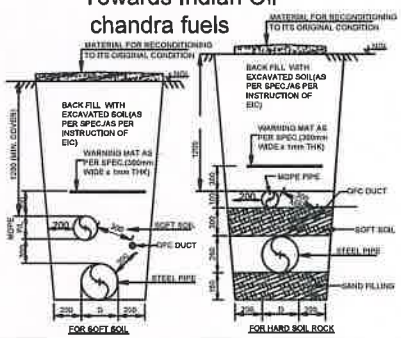
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-145+438.615km to 144+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-15	67 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		NH Row	
Proposed Ofc cable			
Existing Ofc cable			
Asphalted road			
Divider			
Drain			
Culvert			
Water pipeline			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

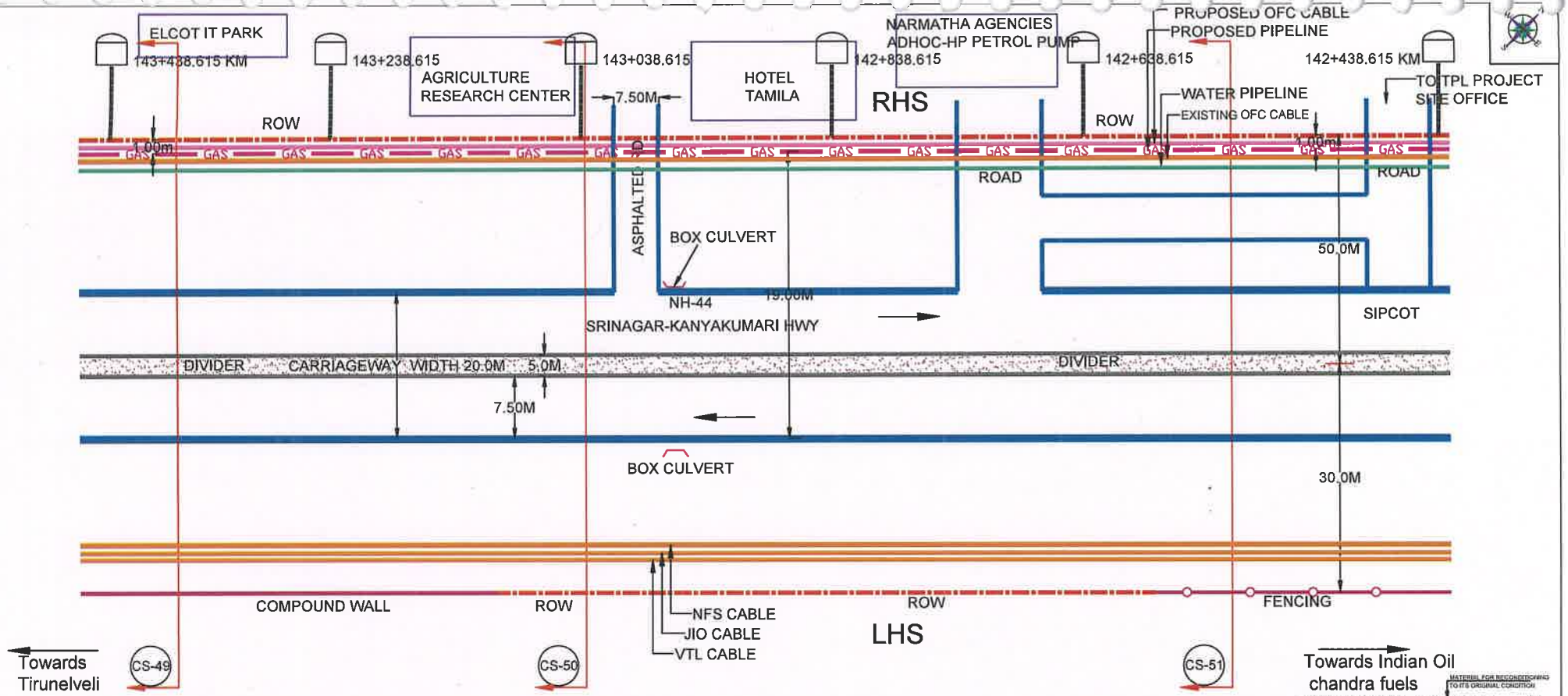
NOTES:

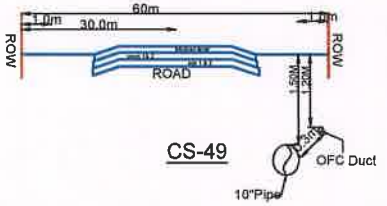
1. ASPHALTED RD.-Ch:Ch:147+300.47km The road is connected into right side service road.

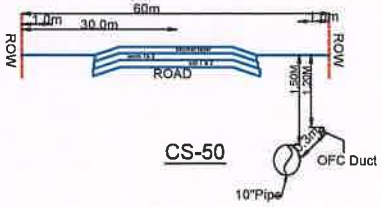
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

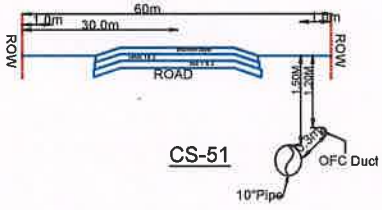
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

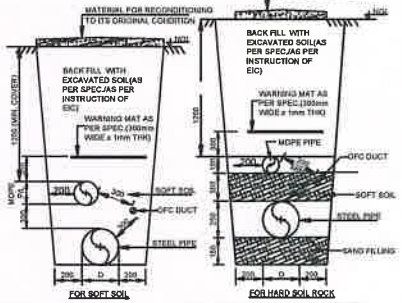
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-144+438.615km to 143+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-16	68 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Flyover Bridge	
Proposed Ofc cable		Existing Ofc cable	
NH Row		Water Pipeline	
Asphalted road			
Divider			
Culvert			
Moorum Road			
Service Road			

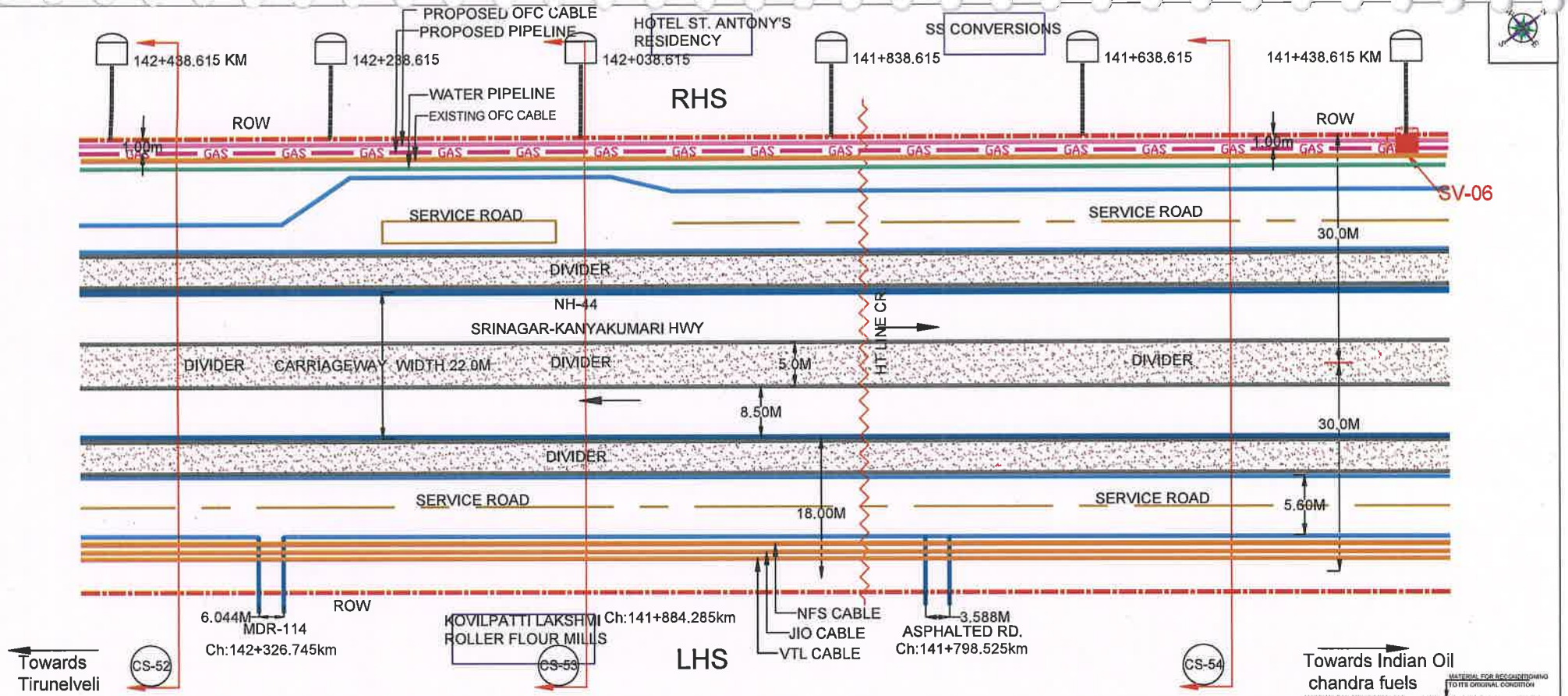
NOTES:

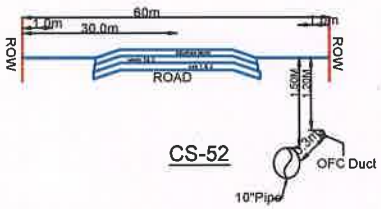
1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

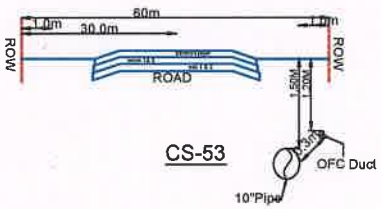
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

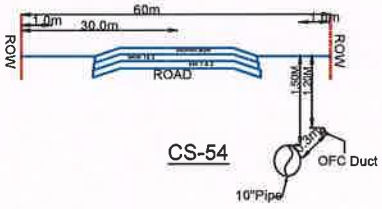
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

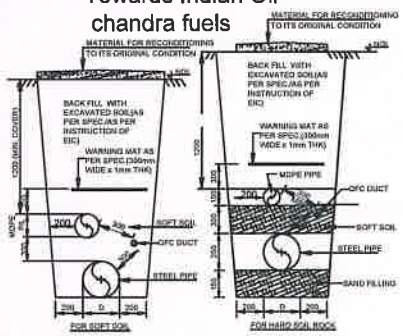
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570456
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-143+438.615km to 142+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-17	69 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Flyover Bridge	
Proposed Ofc cable		Water Pipeline	
NH Row		Existing Ofc cable	
Asphalted road			
Divider			
Culvert			
Nala			
Service Road			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

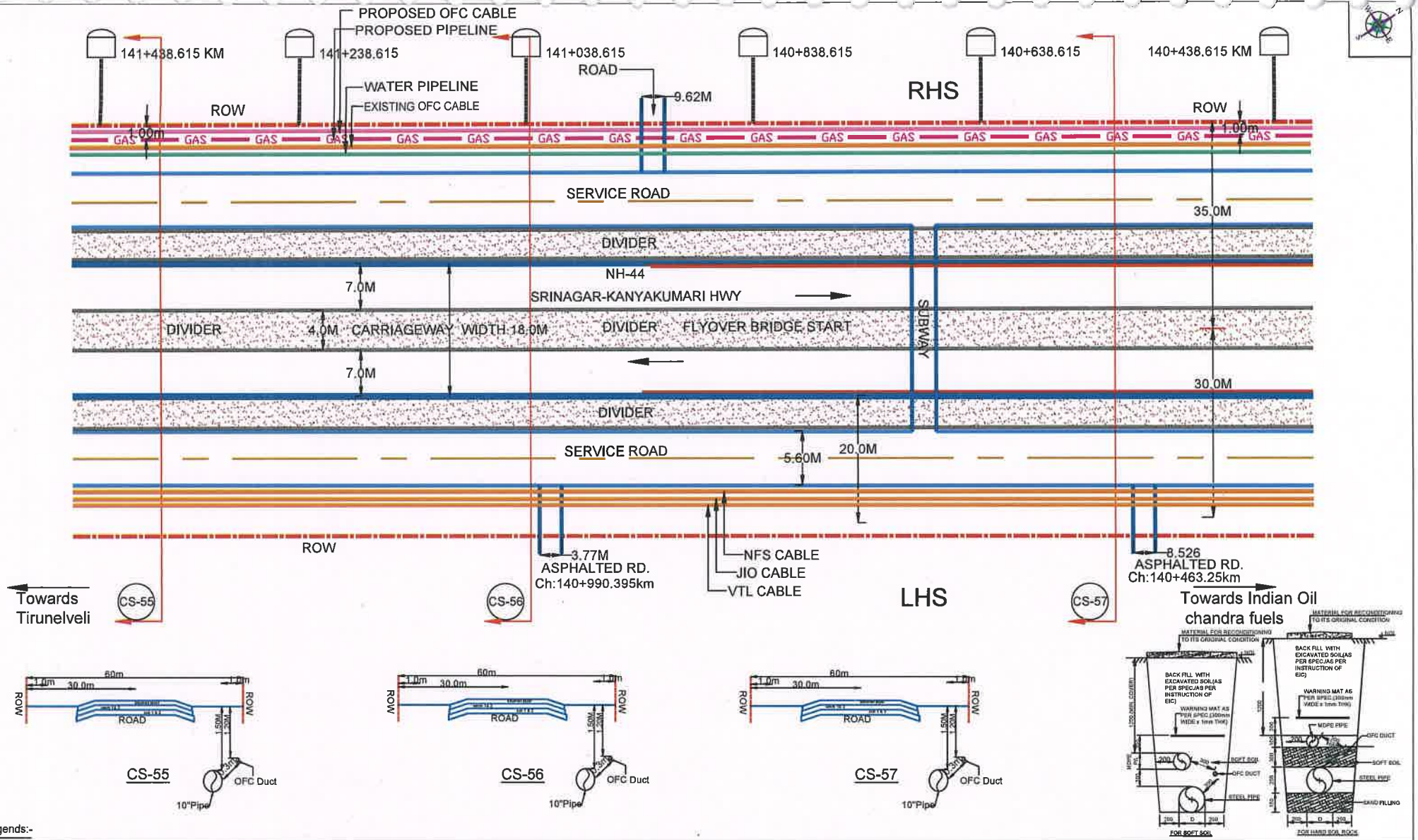
NOTES:

1. MDR-114.-Ch:148+382.67km
   The road is connected into right side service road.
2. ASPHALTED RD.-Ch:141+798.525km
   The road is connected into right side service road.

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

SRPL TUTICORIN

CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-142+438.615km to 141+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-18	70 OF 90



Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Flyover Bridge	
Proposed Ofc cable		Water Pipeline	
NH Row		Existing Ofc cable	
Asphalted road			
Divider			
Culvert			
Nala			
Service Road			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

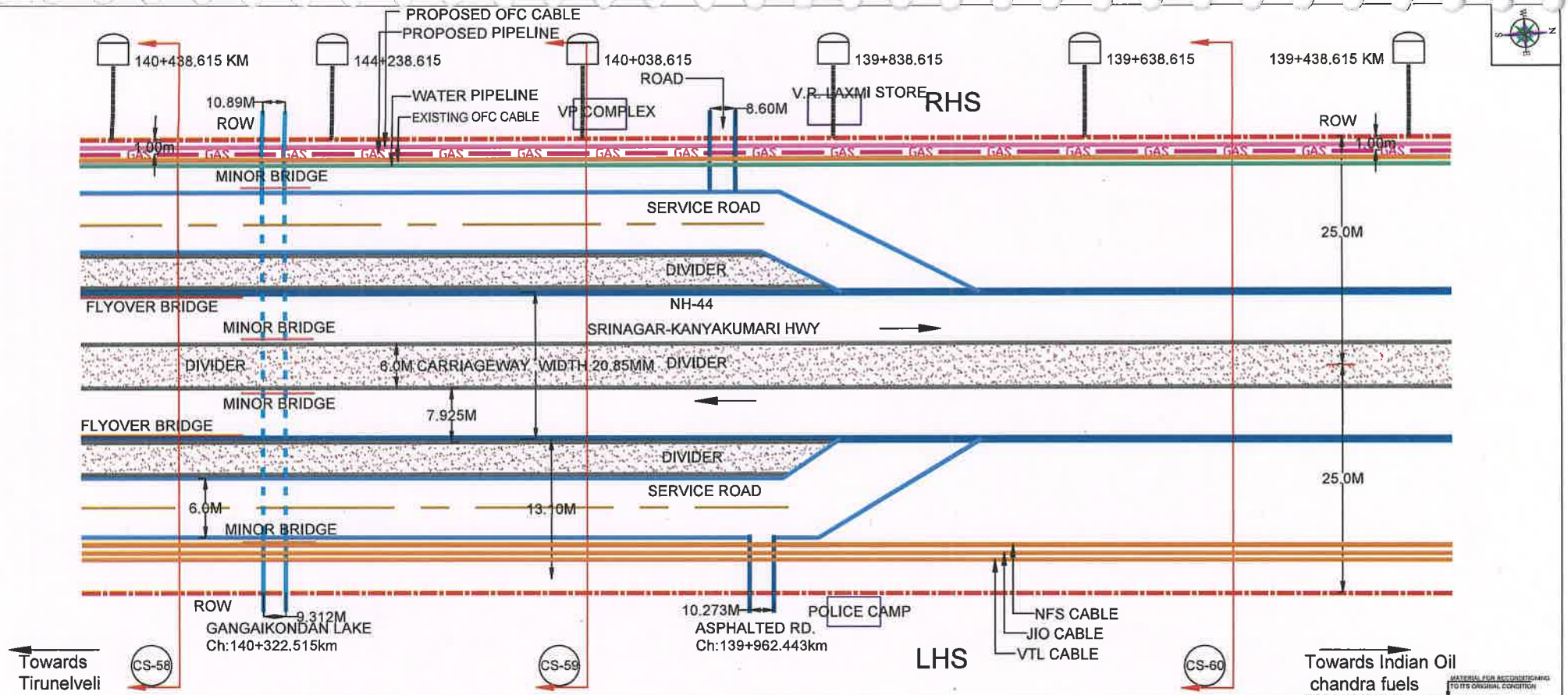
NOTES:

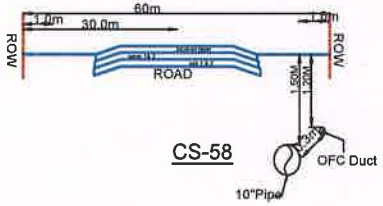
1. ASPHALTED RD.-Ch:140+990.395km
   The road is connected into right side service road.
2. ASPHALTED RD.-Ch:140+463.25km
   The road is connected into right side service road.

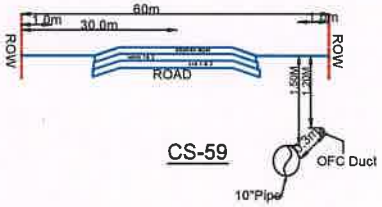
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

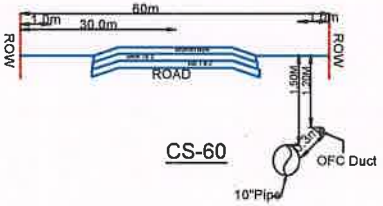
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

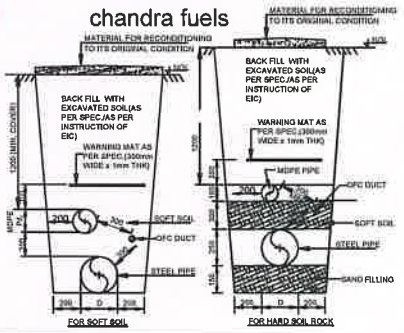
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-141+438.615 km to 140+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-19	71 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Flyover Bridge	
Proposed Ofc cable		Water Pipeline	
NH Row		Existing Ofc cable	
Asphalted road			
Divider			
Culvert			
Nala			
Service Road			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE

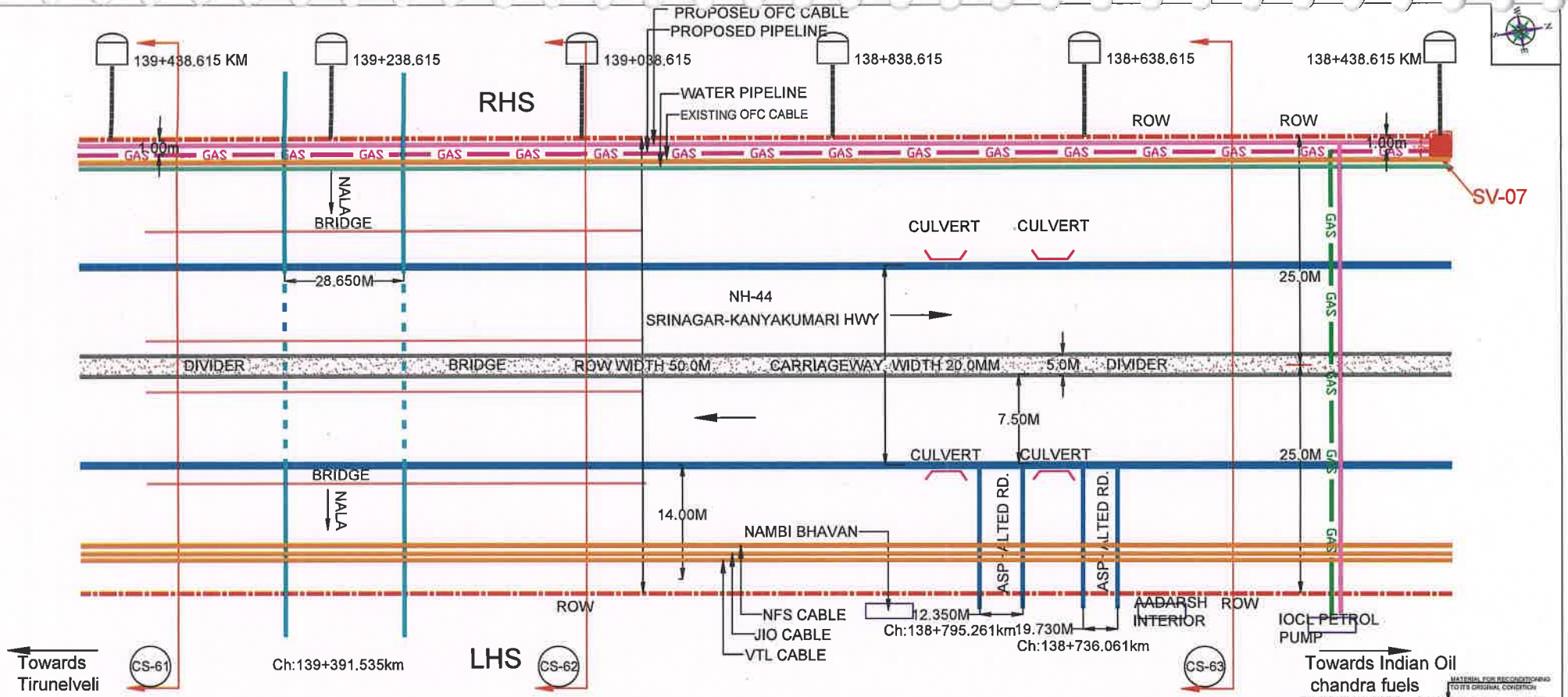
NOTES:

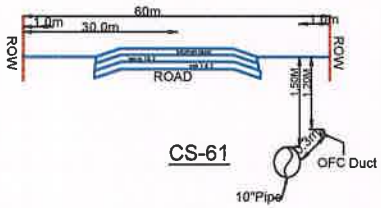
1. ASPHALTED RD.-Ch:139+962.443km
   The road is connected into right side service road.

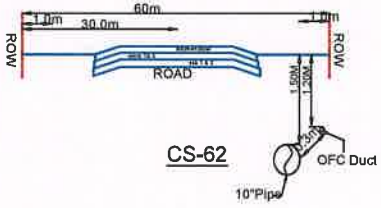
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

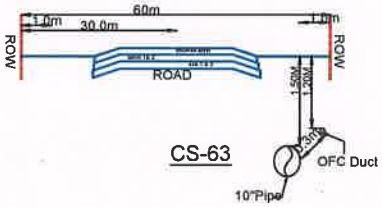
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

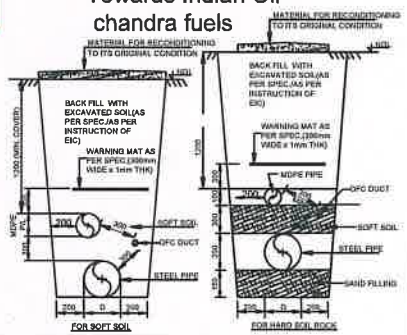
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-140+438.615 km to 139+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-20	72 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Proposed pipeline 4" OD	GAS
Proposed Ofc cable		Existing Ofc cable	
NH Row		Water Pipeline	
Asphalted road			
Divider			
Culvert			
Nala			
Flyover Bridge			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

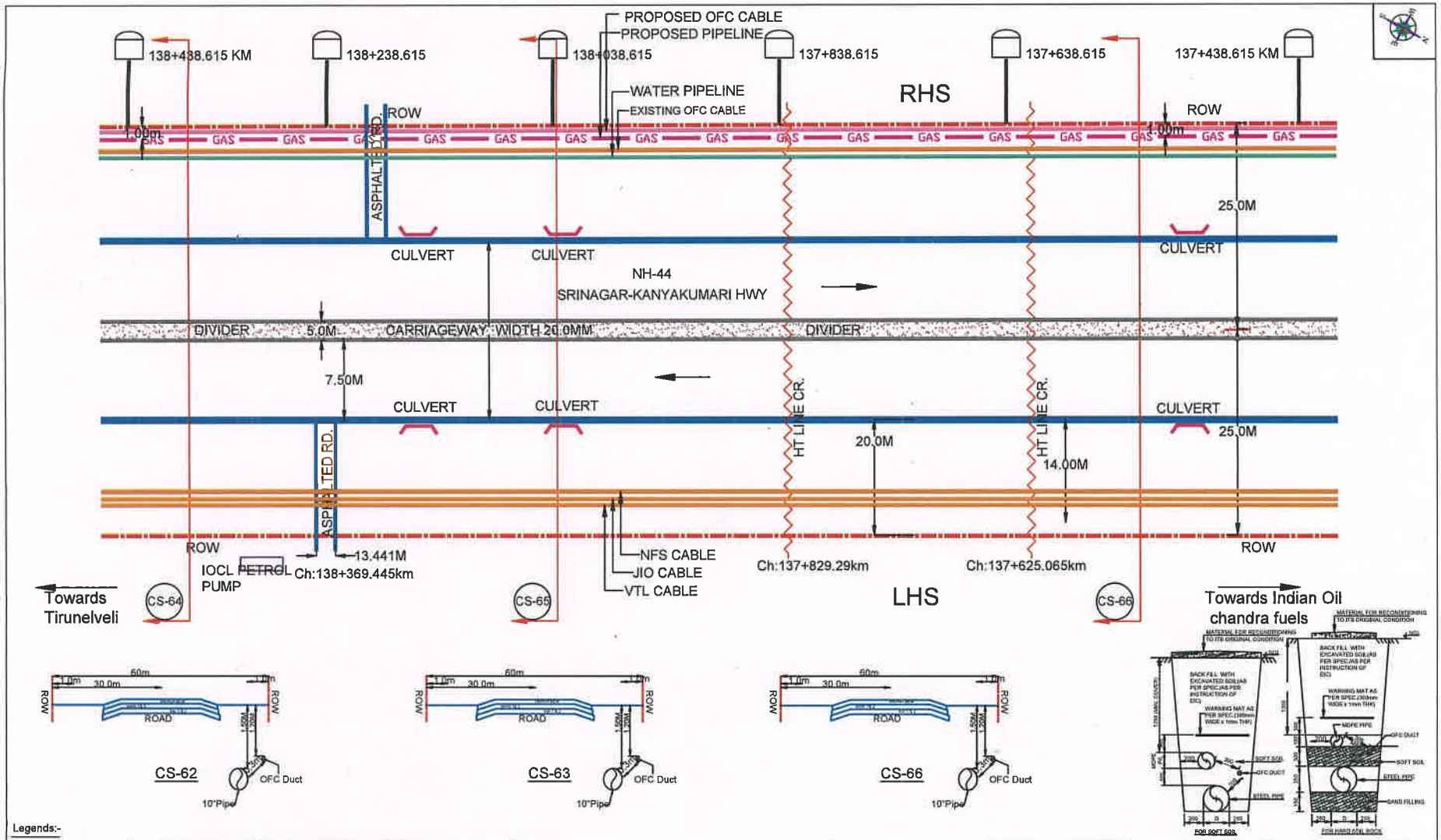
NOTES:

1. ASPHALTED RD.-Ch:138+795.261km
   The road is connected into right side main road.
2. ASPHALTED RD.-Ch:138+736.061km
   The road is connected into right side main road.

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-139+438.615km to 138+436.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-21	73 OF 90



Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		HT LINE	
Proposed Ofc cable		Existing Ofc cable	
NH Row			
Asphalted road			
Divider			
Culvert			
Moorum Road			
Water Pipeline			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

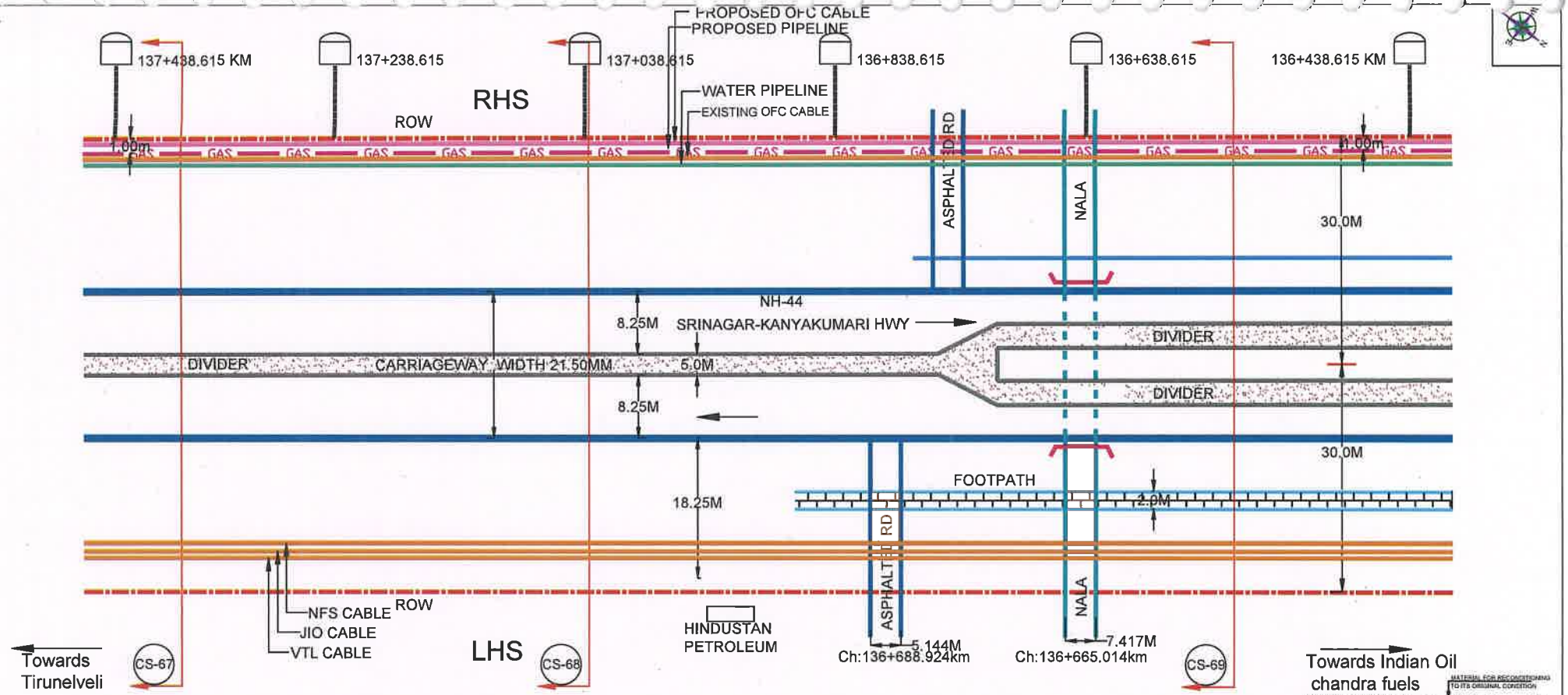
NOTES:

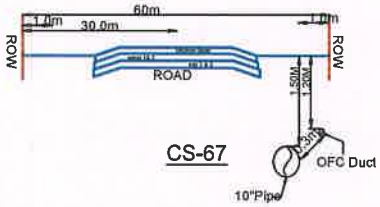
1. ASPHALTED RD.-Ch:138+369.445km
   The road is connected into right side main road.

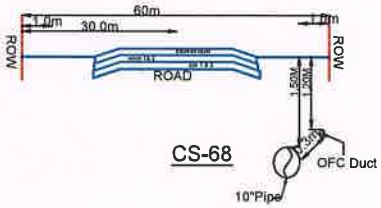
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570456
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-138+438.615km to 137+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-22	74 OF 90

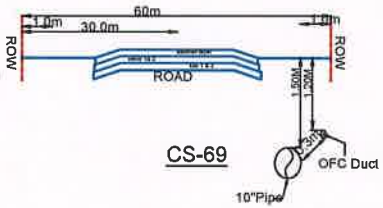
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

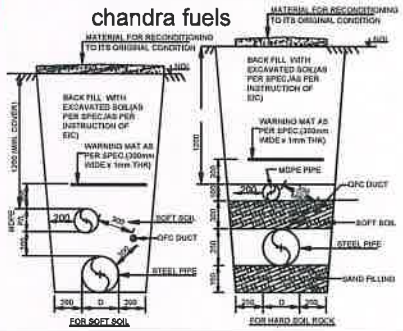
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Nala	
Proposed Ofc cable		Existing Ofc cable	
NH Row			
Asphalted road			
Divider			
Culvert			
Footpath			
Water Pipeline			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

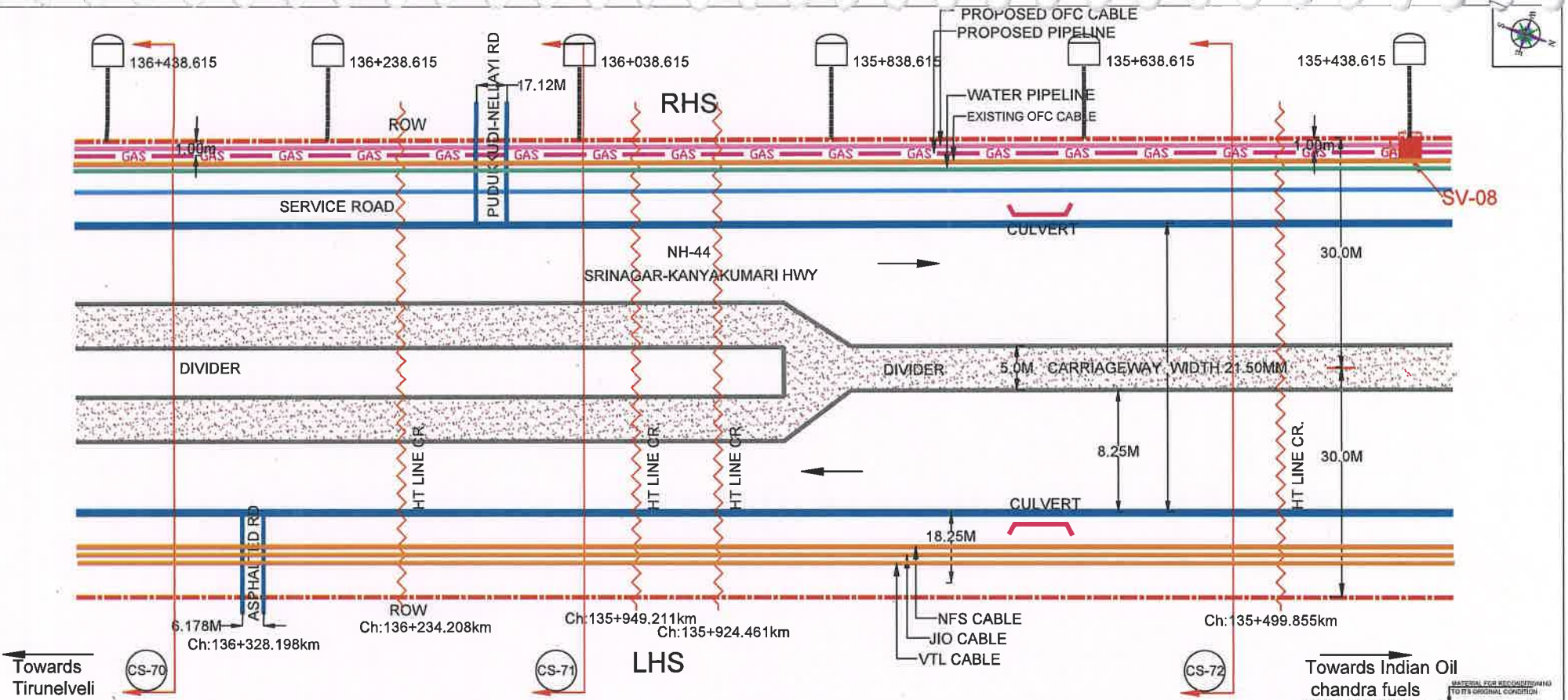
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

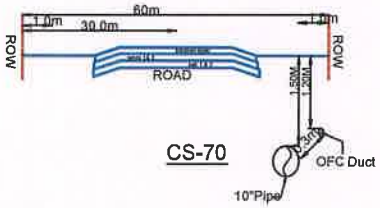
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

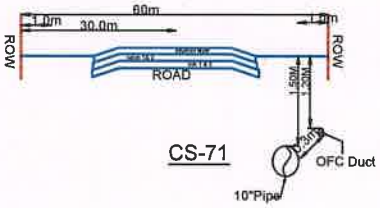
NOTES:

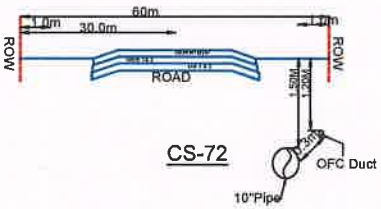
1. ASPHALTED RD.-Ch:136+688.924km
The road is connected into right side main road.

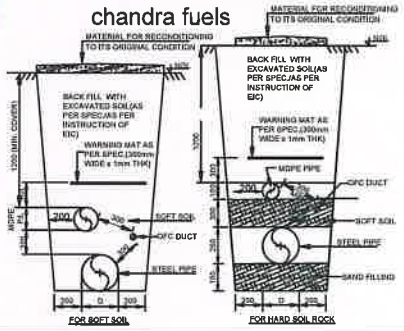
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570456
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-137+438.615km to 136+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-23	75 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Nala	
Proposed Ofc cable		Ht Line	
NH Row		Existing Ofc cable	
Asphalted road			
Divider			
Culvert			
Footpath			
Water Pipeline			

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

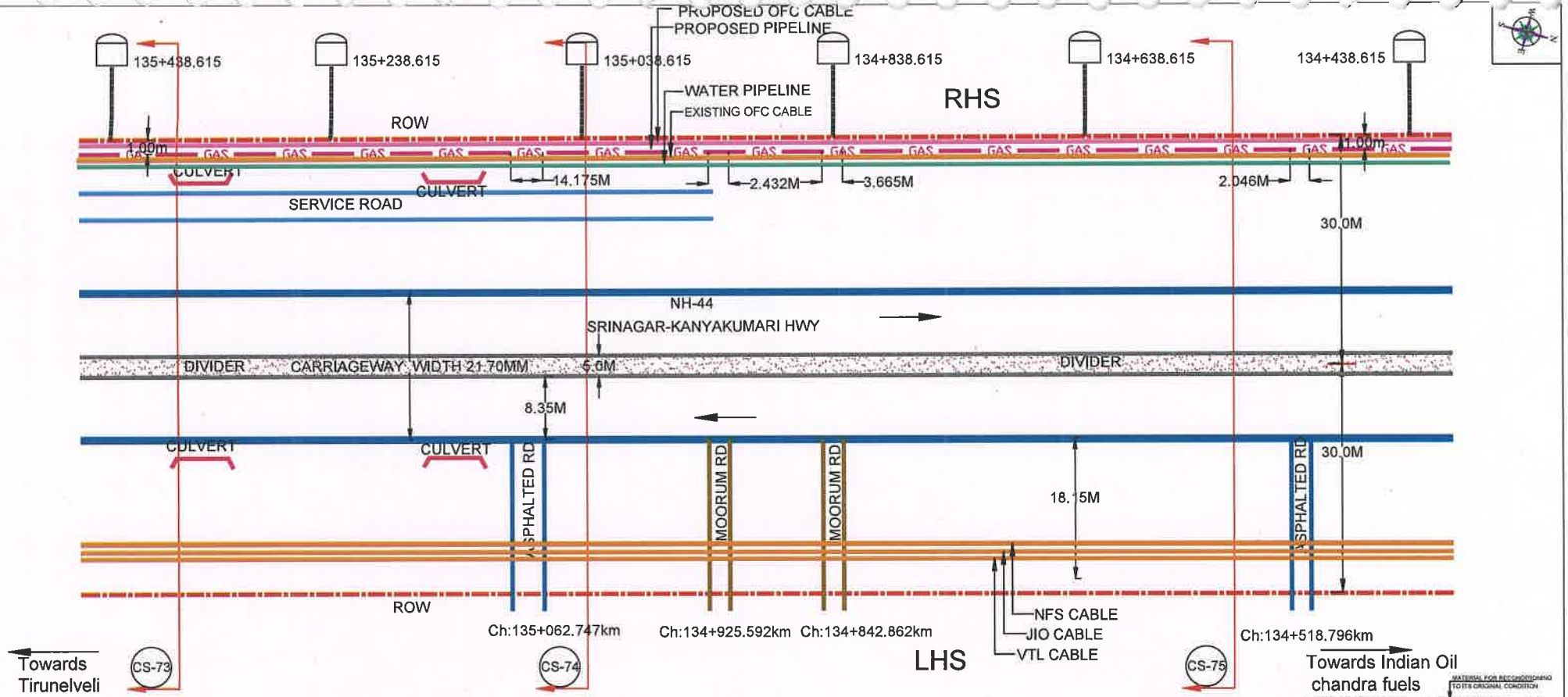
NOTES:

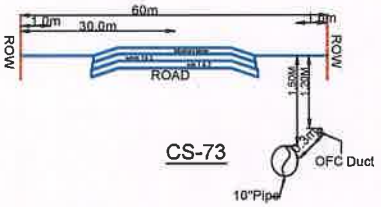
1.ALL DIMENSIONS ARE IN METER.
2.ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3.DRAWING NOT TO SCALE.

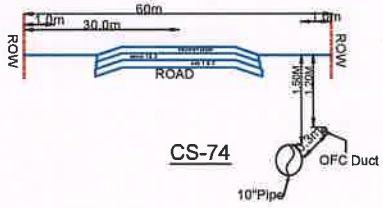
NOTES:

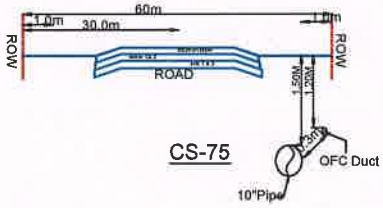
1.ASPHALTED RD.-Ch:136+328.198km
The road is connected into right side main road.

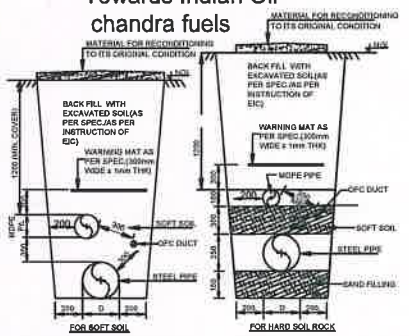
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570458
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-136+438.615km to 135+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-24	76 OF 90











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Nala	
Proposed Ofc cable		Ht Line	
NH Row		Moorum Road	
Asphalted road		Existing Ofc cable	
Divider			
Culvert			
Footpath			
Water Pipeline			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

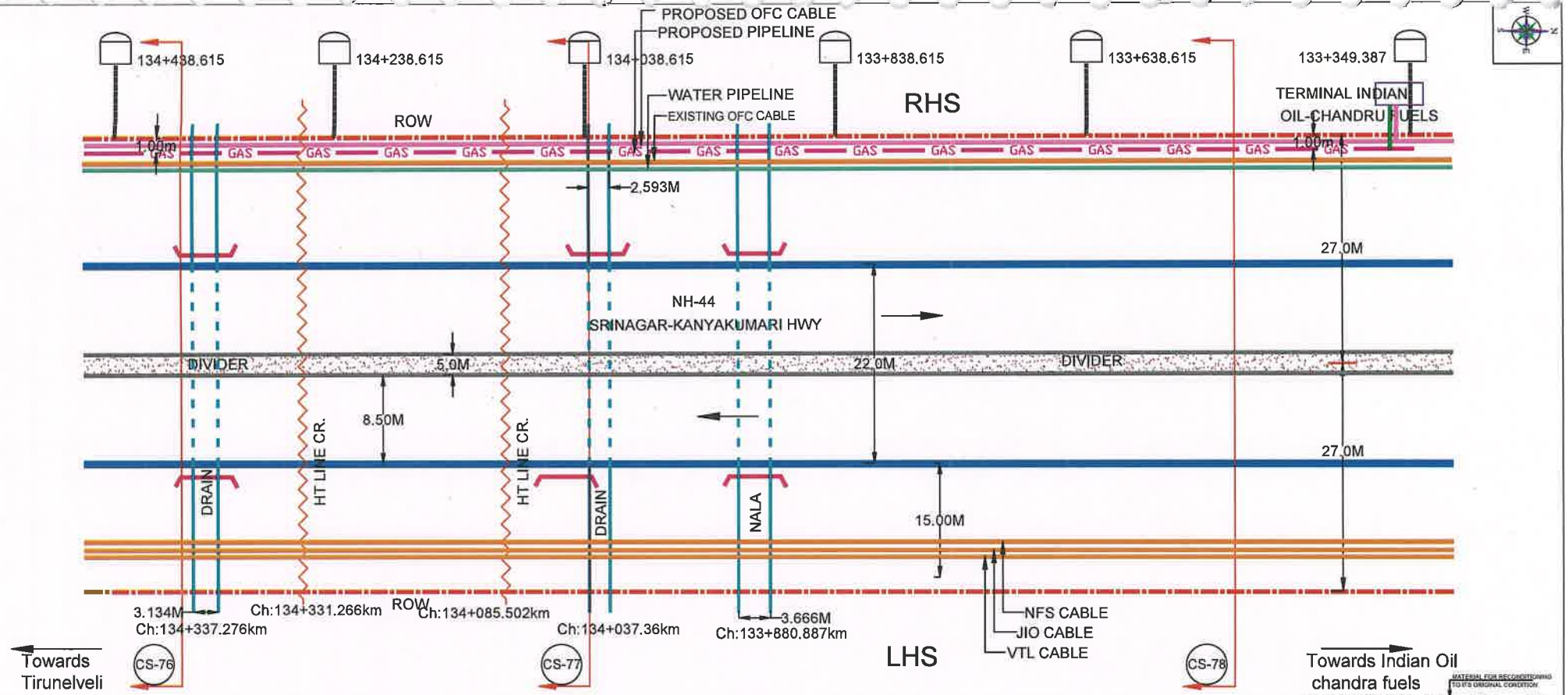
NOTES:

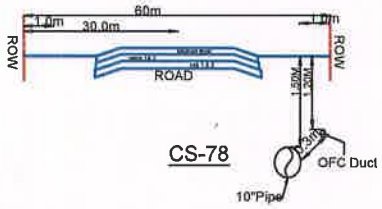
1. ASPHALTED RD.-Ch:135+062.747km
   The road is connected into right side main road.
2. MOORUM RD.-Ch:134+925.592km
   The road is connected into right side main road.
3. MOORUM RD.-Ch:134+842.862km
   The road is connected into right side main road.
4. ASPHALTED RD.-Ch:134+518.796km
   The road is connected into right side main road.

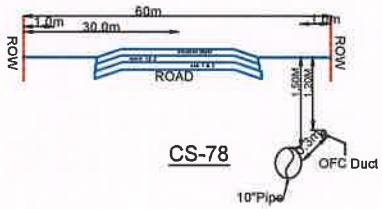
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570456
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-135+438.615km to 134+438.615km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-25	77 OF 90

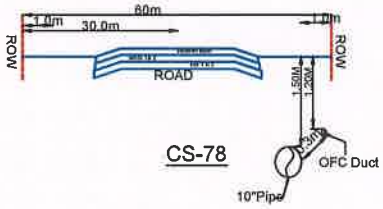
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

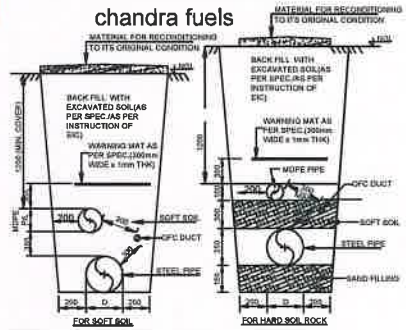
INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN











Legends:-

Particulars	Symbols	Particulars	Symbols
Proposed pipeline 10" OD		Nala	
Proposed Ofc cable		Moorum Road	
Proposed pipeline 4" OD		NH Row	
Asphalted road		Existing Ofc cable	
Divider			
Culvert			
Ht Line			
Water Pipeline			

NOTES:

1. ALL DIMENSIONS ARE IN METER.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED . DO NOT SCALE THE DRAWING.
3. DRAWING NOT TO SCALE.

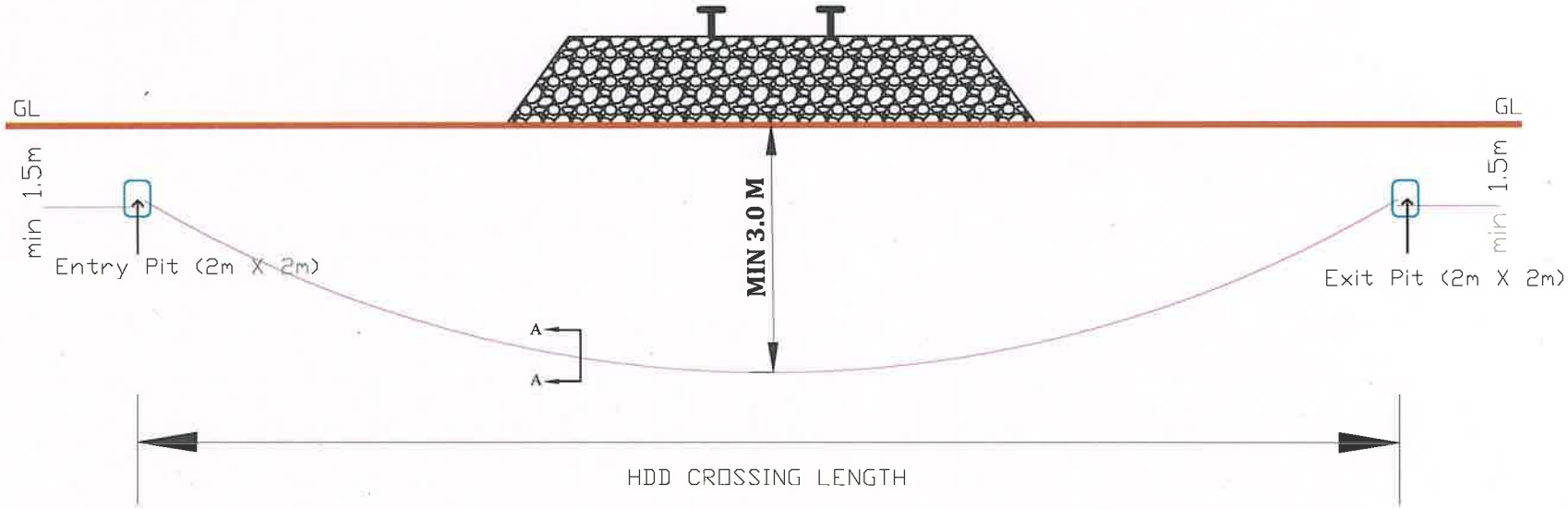
T.Vetri

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

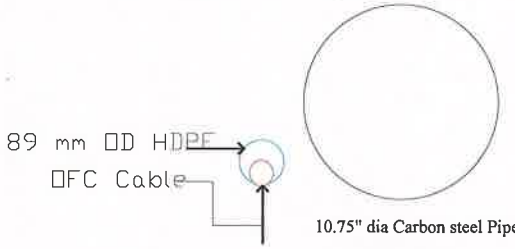
CLIENT	INDIAN OIL CORPORTION LTD.
CONSULTANT	TRACTEBEL ENGINEERING PVT. LTD.
PROJECT	IOCL - CITY GAS DISTRIBUTION PROJECT -THOOTHUKUDI GA
SURVEYED & PREPARED BY	SWAYIN ENGINEERING ASSOCIATES Pvt. Ltd. 77,SATYA NAGAR,BHUBANESWAR-7 PH - (91-0674)2570015/2572971/2570456
TITLE	PROPOSED GAS PIPELINE Along National Highway -44 from Ch-134+438.615km to 133+349.387km
DRAWING NO.	SHEET NO.
B/SE/IOCL/TEPL/TIRUNELVELI TO INDIAN OIL CHANDRA FUELS/STRIP PLAN-26	78 OF 90

CROSS SECTION DRAWING OF RAILWAY CROSSING AT NH-44 KM 150/554 BY HDD METHOD



T.Vehay

PROJECT DIRECTOR
NHAI, PIU, Nagercoil



10.75" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

SECTION A-A

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

Legends :

- Proposed Steel Gas P/L
- NH ROW
- Ground Profile

AUTHORITE SIGNATORY
FOR INDIAN OIL CORPORATION LIMITED

NOTES:

1. ALL DIMENSIONS ARE IN METER
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING
3. DRAWING NOT TO SCALE

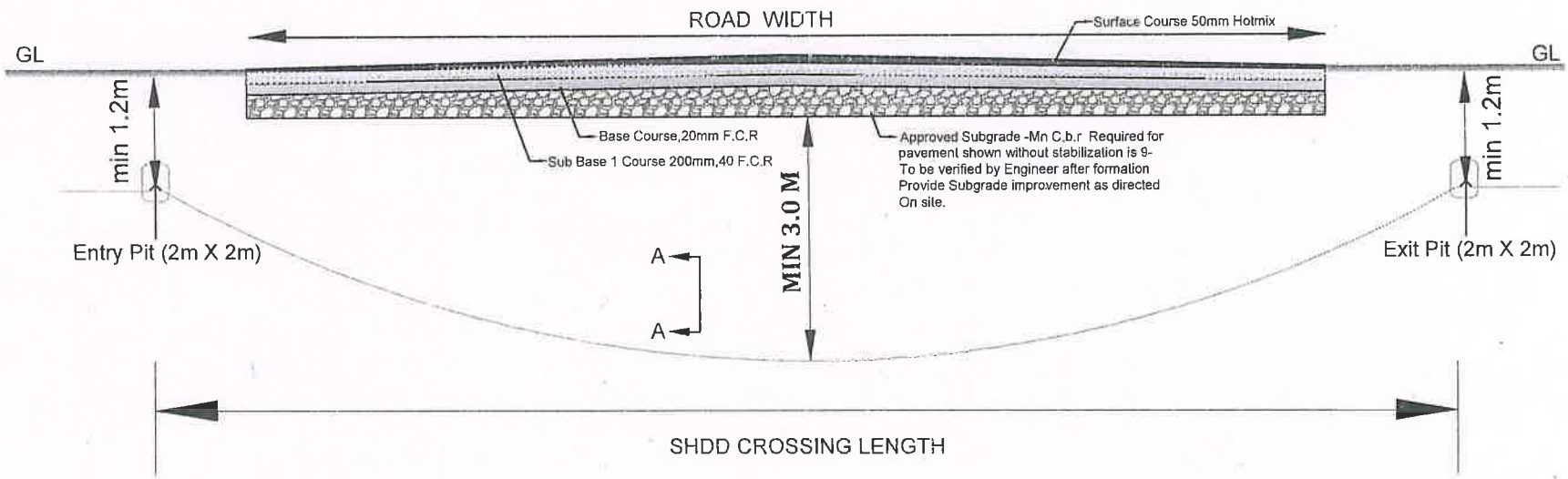
TITLE: Proposed Steel Gas Pipeline
CROSS SECTION DRAWING OF RAILWAY CROSSING AT NH-44 KM 150/554 BY HDD METHOD

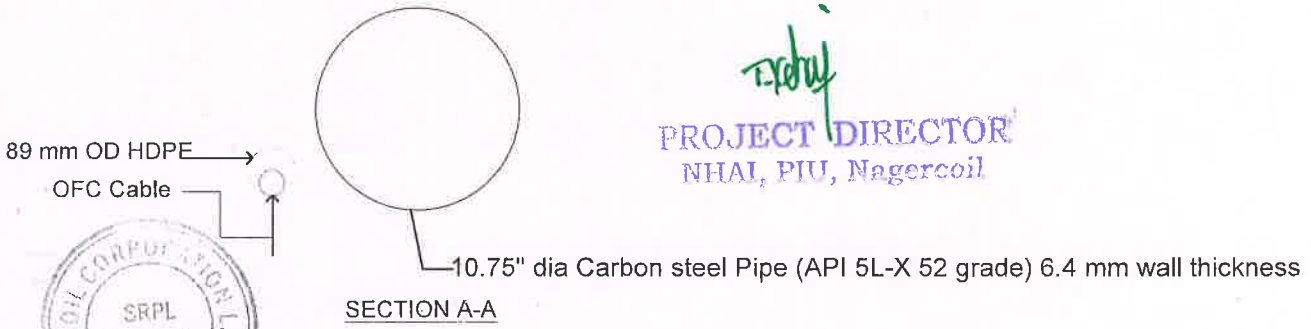
CLIENT: IndianOil

INDIAN OIL CORPORATION LIMITED
CITY GAS DISTRIBUTION PROJECT,
THOOTHUKUDI GA
Phone No. 91-120-2448844,2448888.

SHEET NO.
79 OF 90

CROSS SECTION DRAWING -TYPICAL ROAD CROSSING





SECTION A-A

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Legends :

Proposed Steel Gas P/L

Ground Profile

AUTHORITE SIGNATORY
FOR INDIAN OIL CORPORATION LIMITED

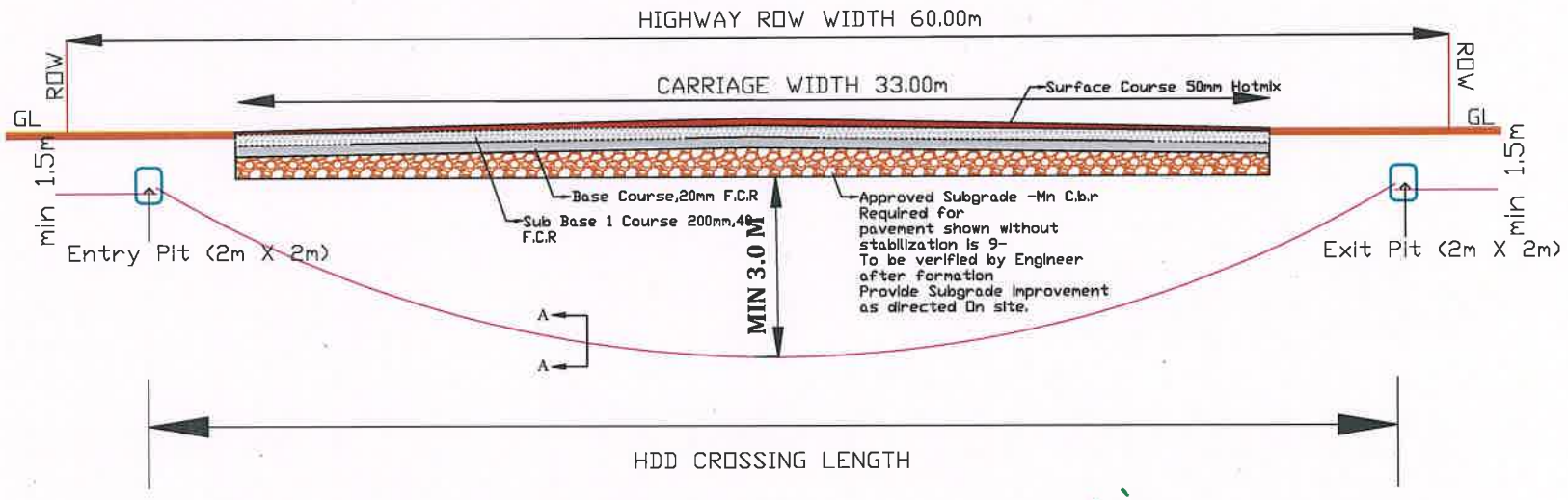
NOTES:

1. ALL DIMENSIONS ARE IN METER
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING
3. DRAWING NOT TO SCALE

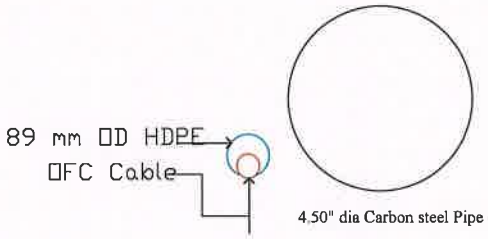
TITLE: Proposed Steel Gas Pipeline
CROSS SECTION DRAWING OF ROAD CROSSING AT NH-44 BY SHDD METHOD

INDIAN OIL CORPORATION LIMITED
CITY GAS DISTRIBUTION PROJECT,
THOOTHUKUDI GA
Phone No. 91-120-2448844,2448888.

CROSS SECTION DRAWING OF ROAD CROSSING AT KM 158/740 BY HDD METHOD



PROJECT DIRECTOR
NHAI, PIU, Nagercoil



4.50" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

SECTION A-A

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Legends :

- Proposed Steel Gas P/L
- NH ROW
- Ground Profile

AUTHORITE SIGNATORY
FOR INDIAN OIL CORPORATION LIMITED

NOTES:

1. ALL DIMENSIONS ARE IN METER
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED, DO NOT SCALE THE DRAWING
3. DRAWING NOT TO SCALE

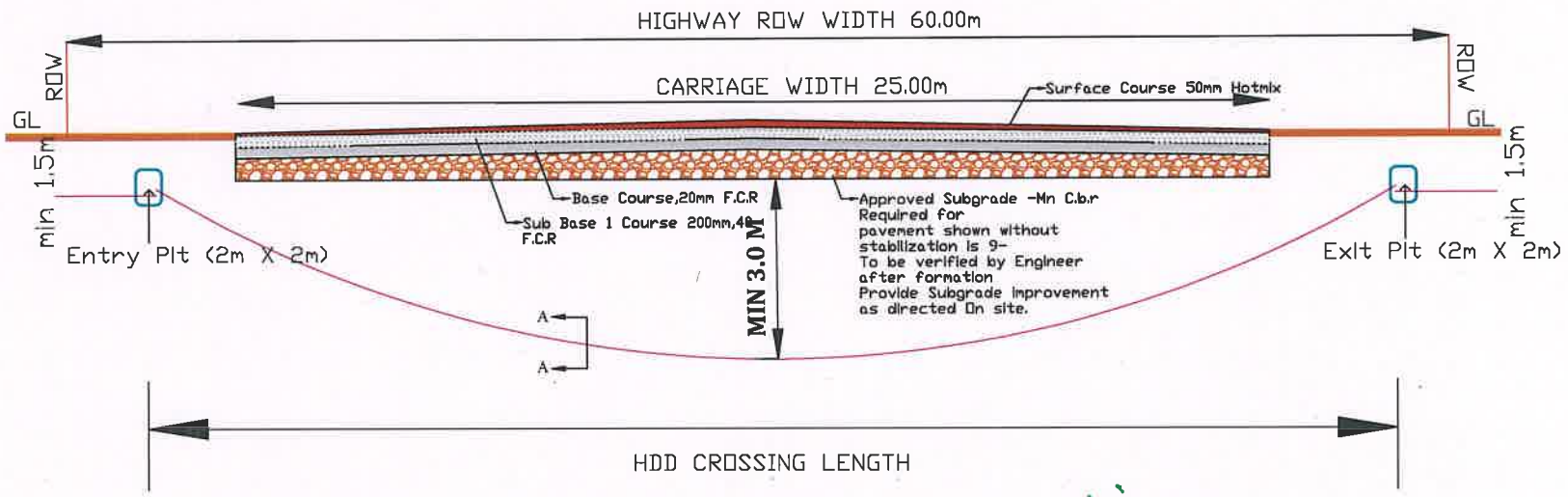
TITLE: Proposed Steel Gas Pipeline
CROSS SECTION DRAWING OF NH-44 ROAD CROSSING AT KM 159/422 BY HDD METHOD

CLIENT: IndianOil

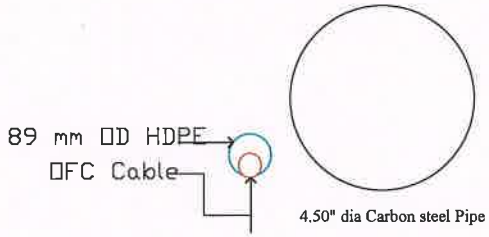
INDIAN OIL CORPORATION LIMITED
CITY GAS DISTRIBUTION PROJECT,
THOOTHUKUDI GA
Phone No. 91-120-2448844,2448888.

SHEET NO.
81 OF 90

CROSS SECTION DRAWING OF ROAD CROSSING AT KM 157/341 BY HDD METHOD



PROJECT DIRECTOR
NHAI, PIU, Nagercoil



4.50" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

SECTION A-A

INDIAN OIL CORPORATION LIMITED
SRPL TUTICORIN

Legends :

- Proposed Steel Gas P/L
- NH ROW
- Ground Profile

AUTHORITE SIGNATORY
FOR INDIAN OIL CORPORATION LIMITED

NOTES:

1. ALL DIMENSIONS ARE IN METER
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING
3. DRAWING NOT TO SCALE

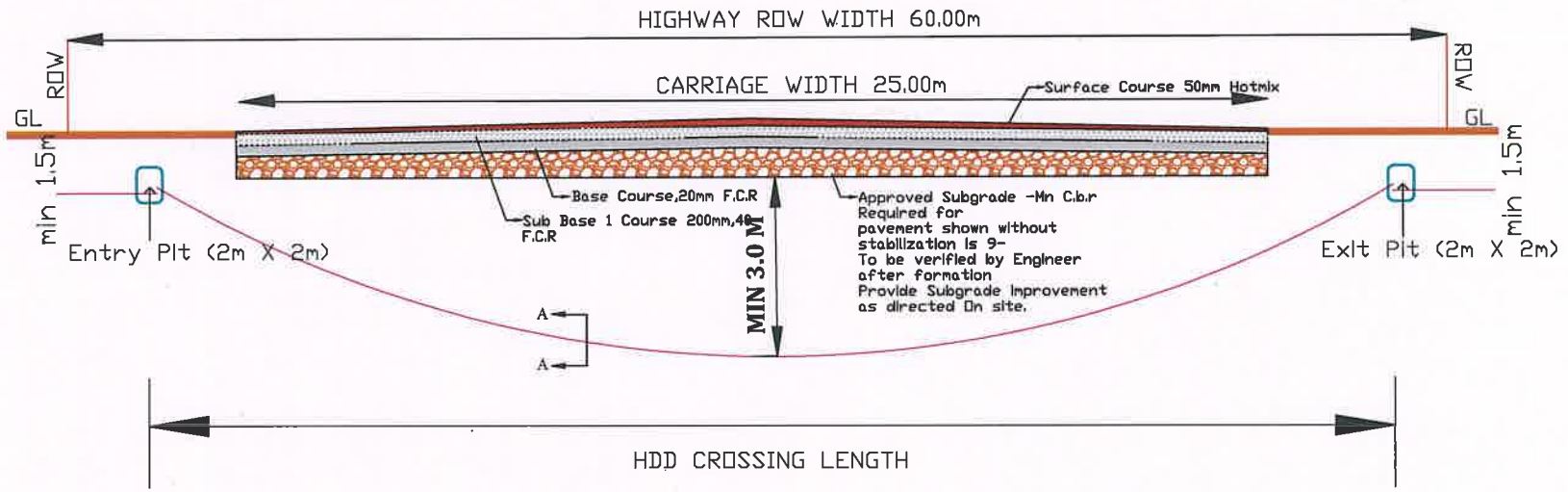
TITLE: Proposed Steel Gas Pipeline
CROSS SECTION DRAWING OF NH-44 ROAD CROSSING AT KM 157/341 BY HDD METHOD

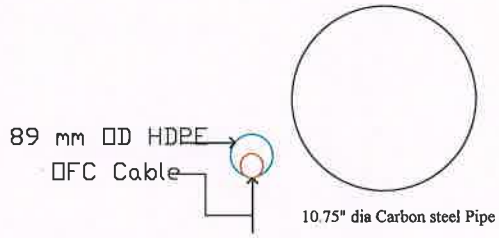
CLIENT: IndianOil

INDIAN OIL CORPORATION LIMITED
CITY GAS DISTRIBUTION PROJECT,
THOOTHUKUDI GA
Phone No. 91-120-2448844,2448866.

SHEET NO.
82 OF 90

CROSS SECTION DRAWING OF ROAD CROSSING AT KM 148/038 BY HDD METHOD





10.75" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

SECTION A-A

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

INDIAN OIL CORPORATION LIMITED
SRPL
TUTICORIN

Legends :

- Proposed Steel Gas P/L
- NH ROW
- Ground Profile

AUTHORITE SIGNATORY
FOR INDIAN OIL CORPORATION LIMITED

NOTES:

1. ALL DIMENSIONS ARE IN METER
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING
3. DRAWING NOT TO SCALE

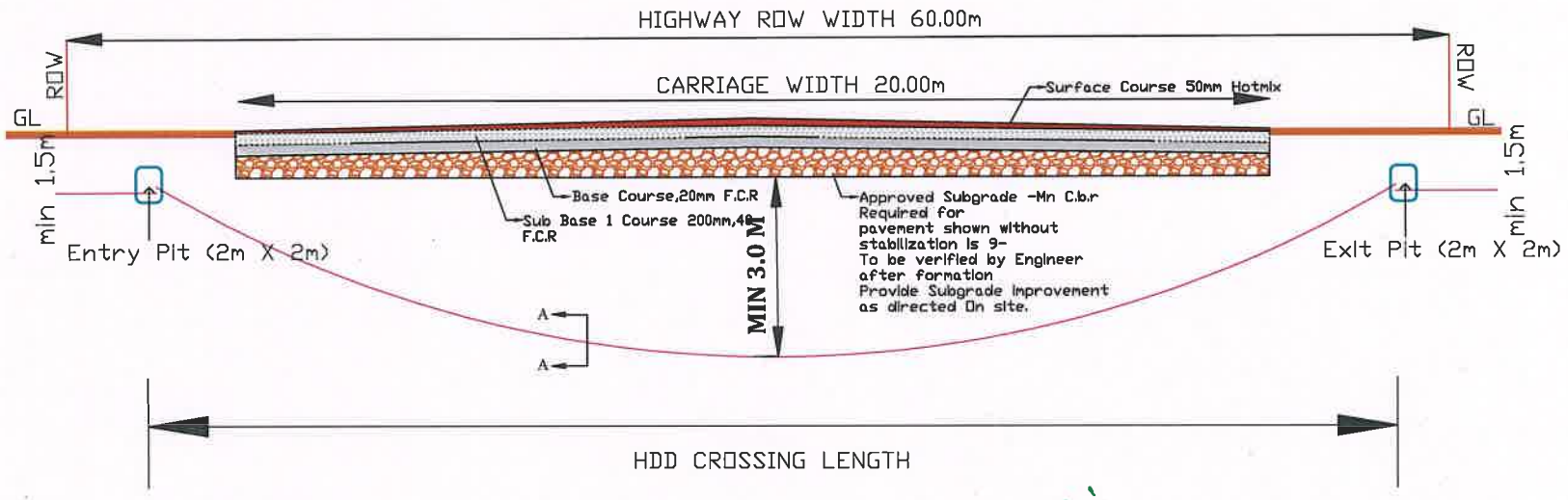
TITLE: Proposed Steel Gas Pipeline
CROSS SECTION DRAWING OF NH-44 ROAD CROSSING AT KM 150/005 BY HDD METHOD

CLIENT: IndianOil

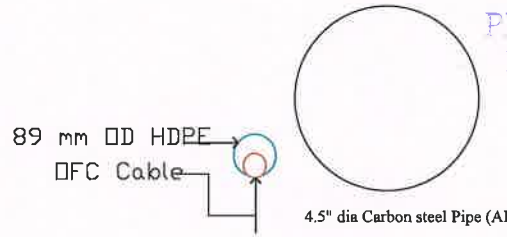
INDIAN OIL CORPORATION LIMITED
CITY GAS DISTRIBUTION PROJECT,
THOOTHUKUDI GA
Phone No. 91-120-2448844,2448866.

SHEET NO.
83 OF 90

CROSS SECTION DRAWING OF ROAD CROSSING AT KM 138/478 BY HDD METHOD



PROJECT DIRECTOR
NHAI, PIU, Nagercoil



4.5" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

SECTION A-A

INDIAN OIL CORPORATION LIMITED SRPL TUTICORIN

Legends :

- Proposed Steel Gas P/L
- NH ROW
- Ground Profile

AUTHORITE SIGNATORY
FOR INDIAN OIL CORPORATION LIMITED

NOTES:

1. ALL DIMENSIONS ARE IN METER
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING
3. DRAWING NOT TO SCALE

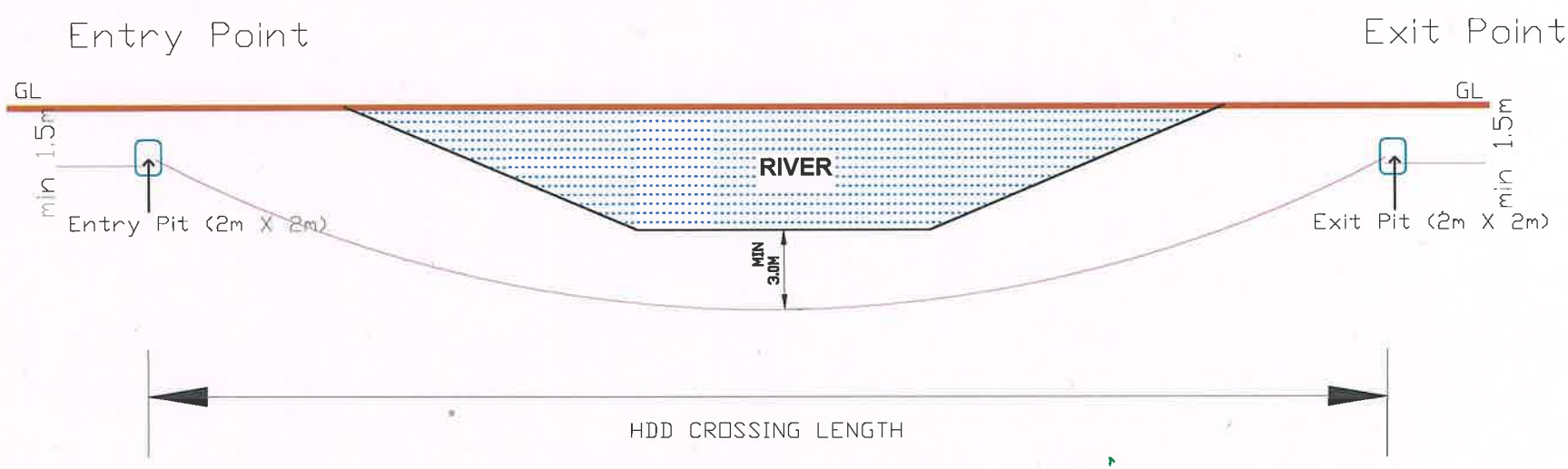
TITLE: Proposed Steel Gas Pipeline
CROSS SECTION DRAWING OF NH-44 ROAD CROSSING AT KM 144/338 BY HDD METHOD

CLIENT: IndianOil

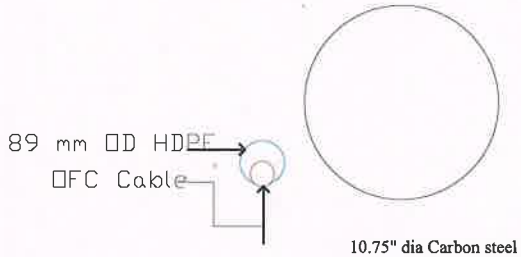
INDIAN OIL CORPORATION LIMITED
CITY GAS DISTRIBUTION PROJECT,
THOOTHUKUDI GA
Phone No. 91-120-2448844,2448888.

SHEET NO.
84 OF 90

CROSS SECTION DRAWING OF NALA CROSSING AT NH-44 CH 157/555 BY HDD METHOD



T.Vidhaf
PROJECT DIRECTOR
NHAI, PIU, Nagercoil



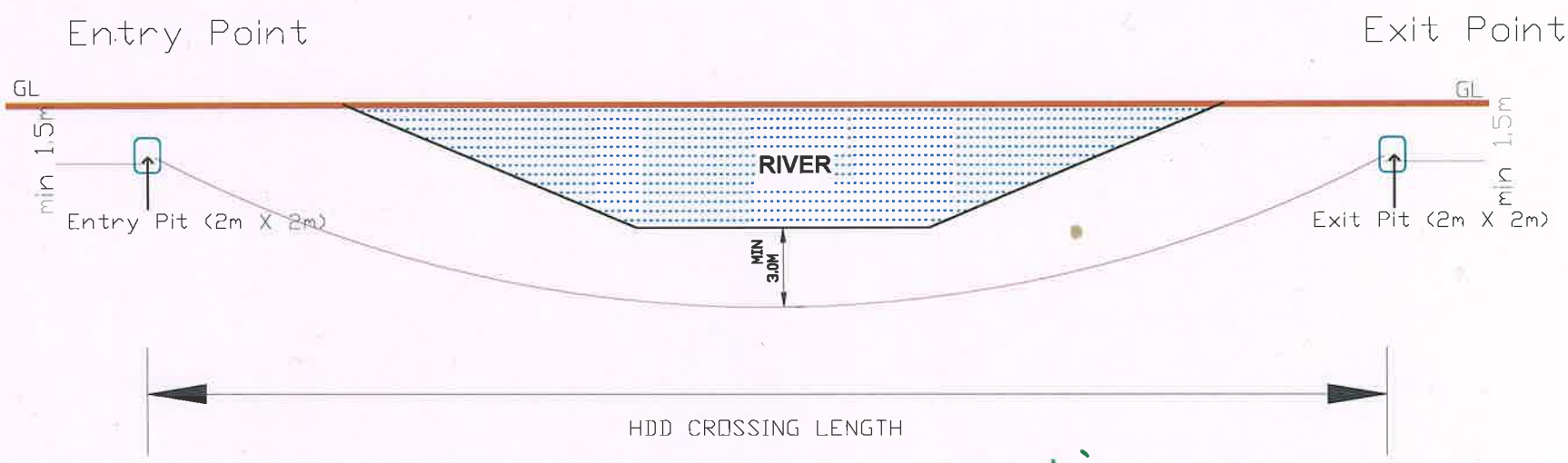
10.75" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

D.RPC

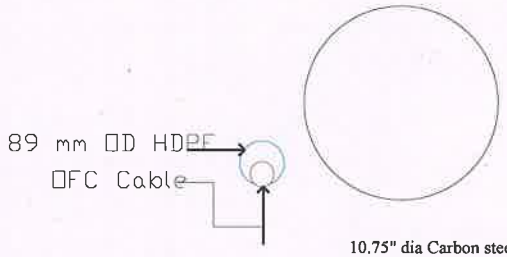
RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

Legends : Proposed Steel Gas P/L NH Ground Profile	AUTHORITE SIGNATORY FOR INDIAN OIL CORPORATION LIMITED	**NOTES:** 1. ALL DIMENSIONS ARE IN METER 2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING 3. DRAWING NOT TO SCALE	TITLE: Proposed Steel Gas Pipeline CROSS SECTION DRAWING OF NALA CROSSING AT NH 44 CH 157/555 BY HDD METHOD CLIENT: IndianOil INDIAN OIL CORPORATION LIMITED PIPELINE DIVISION: A-1, UDYOG MARG, SECTOR-1,NOIDA-201 301 (U.P.) Phone No. 91-120-2448844,2448888.	SHEET NO. 85 OF 90

CROSS SECTION DRAWING OF CANAL CROSSING AT NH-44 CH 156/358 BY HDD METHOD



PROJECT DIRECTOR
NHAI, PIU, Nagercoil

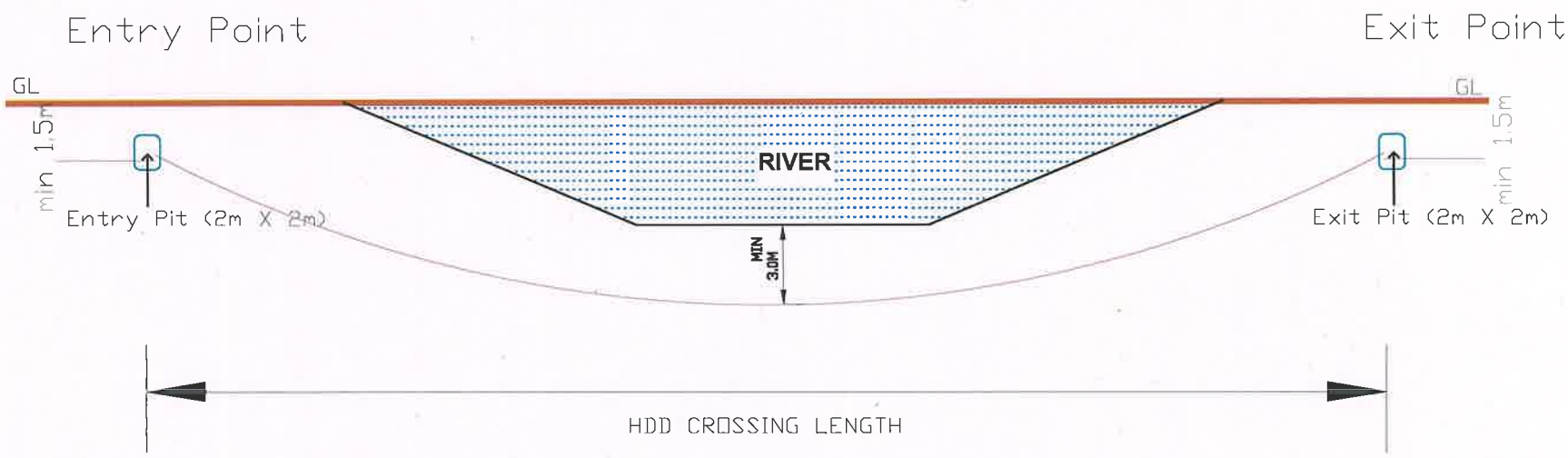


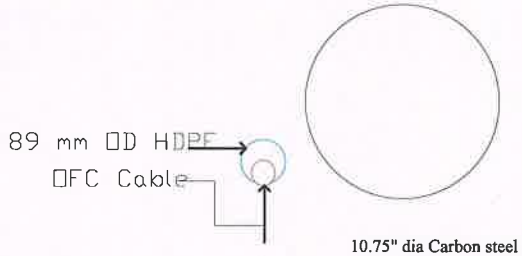
10.75" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

Legends :	AUTHORITE SIGNATORY FOR INDIAN OIL CORPORATION LIMITED	NOTES:	TITLE: Proposed Steel Gas Pipeline CROSS SECTION DRAWING OF CANAL CROSSING AT NH 44 CH 156/358 BY HDD METHOD	SHEET NO.
Proposed Steel Gas P/L NH Ground Profile		1. ALL DIMENSIONS ARE IN METER 2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING 3. DRAWING NOT TO SCALE	CLIENT: IndianOil INDIAN OIL CORPORATION LIMITED PIPELINE DIVISION: A-1, UDYOG MARG, SECTOR-1,NOIDA-201 301 (U.P.) Phone No. 91-120-2448844,2448888.	86 OF 90

CROSS SECTION DRAWING OF RIVER CROSSING AT NH-44 CH 153/701 BY HDD METHOD





10.75" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

Legends :

- Proposed Steel Gas P/L
- NH
- Ground Profile

AUTHORITE SIGNATORY
FOR INDIAN OIL CORPORATION LIMITED

NOTES:

1. ALL DIMENSIONS ARE IN METER
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING
3. DRAWING NOT TO SCALE

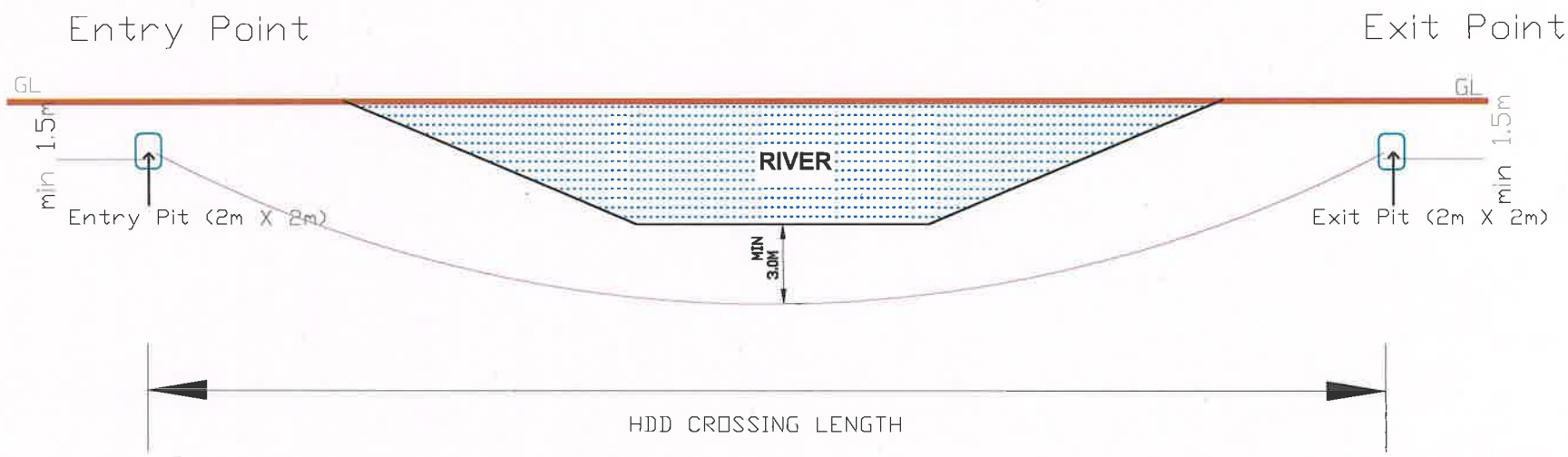
TITLE: Proposed Steel Gas Pipeline
CROSS SECTION DRAWING OF RIVER CROSSING AT NH 44 CH 153/701 BY HDD METHOD

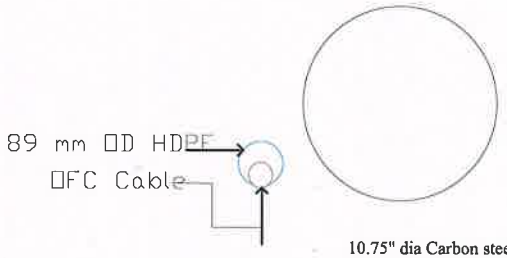
CLIENT: IndianOil

INDIAN OIL CORPORATION LIMITED
PIPELINE DIVISION: A-1, UDYOG MARG,
SECTOR-1,NOIDA-201 301 (U.P.)
Phone No. 91-120-2448844,2448888.

SHEET NO. 87 OF 90

CROSS SECTION DRAWING OF CANAL CROSSING AT NH-44 CH 140/322 BY HDD METHOD





10.75" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

Legends :

- Proposed Steel Gas P/L
- NH
- Ground Profile

AUTHORITE SIGNATORY
FOR INDIAN OIL CORPORATION LIMITED

NOTES:

1. ALL DIMENSIONS ARE IN METER
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING
3. DRAWING NOT TO SCALE

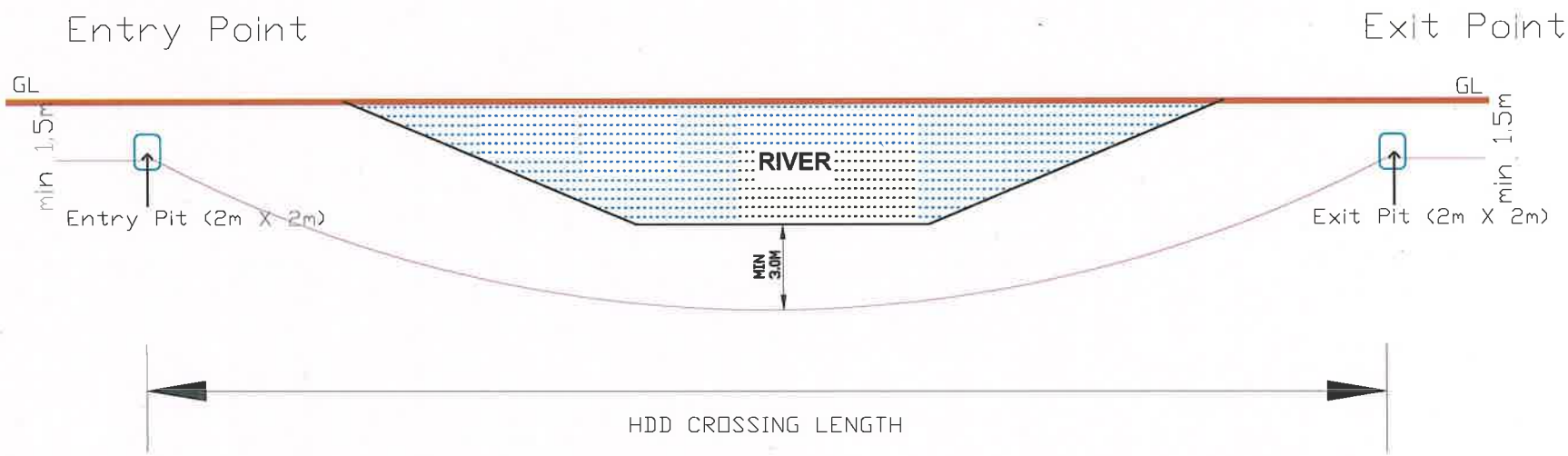
TITLE: Proposed Steel Gas Pipeline
CROSS SECTION DRAWING OF CANAL CROSSING AT NH 44 CH 140/322 BY HDD METHOD

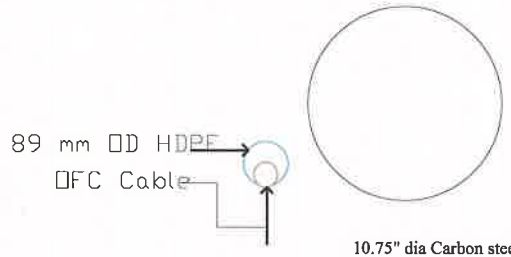
CLIENT : IndianOil

INDIAN OIL CORPORATION LIMITED
PIPELINE DIVISION: A-1, UDHYOG MARG,
SECTOR-1,NOIDA-201 301 (U.P.)
Phone No. 91-120-2448844,2449888.

SHEET NO. 88 OF 90

CROSS SECTION DRAWING OF NALA CROSSING AT NH-44 CH 139/391 BY HDD METHOD





10.75" dia Carbon steel Pipe (API 5L-X 52 grade) 6.4 mm wall thickness

T.Vetri

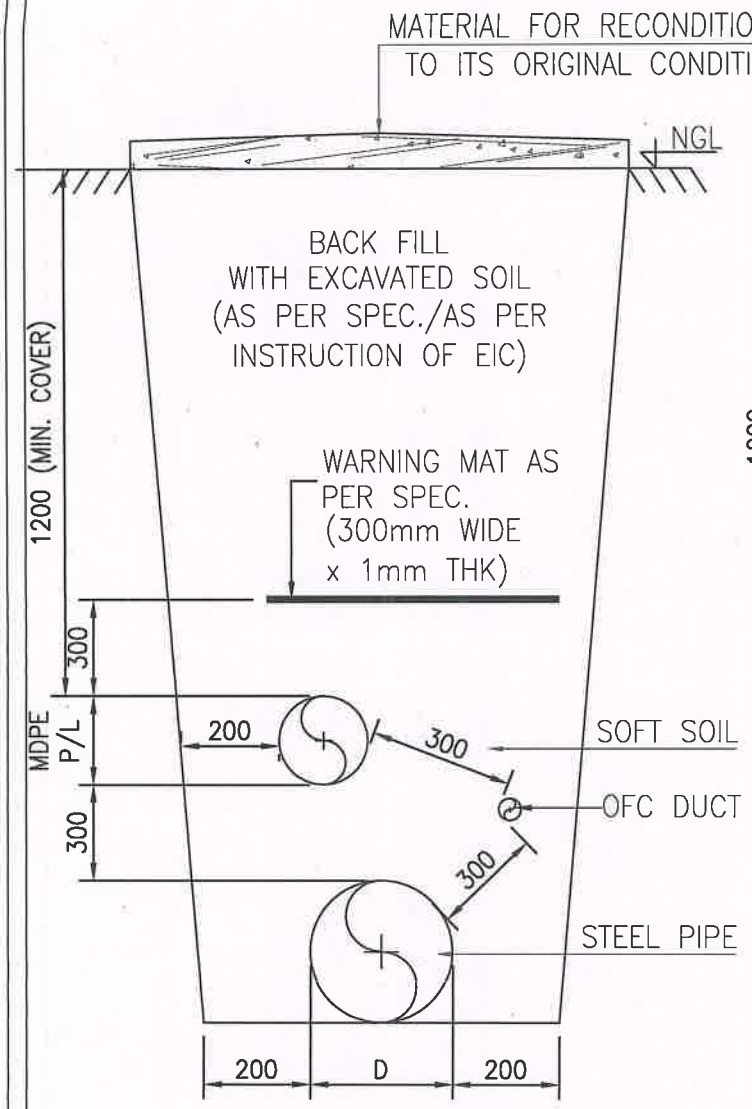
PROJECT DIRECTOR
NHAI, PIU, Nagercoil

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

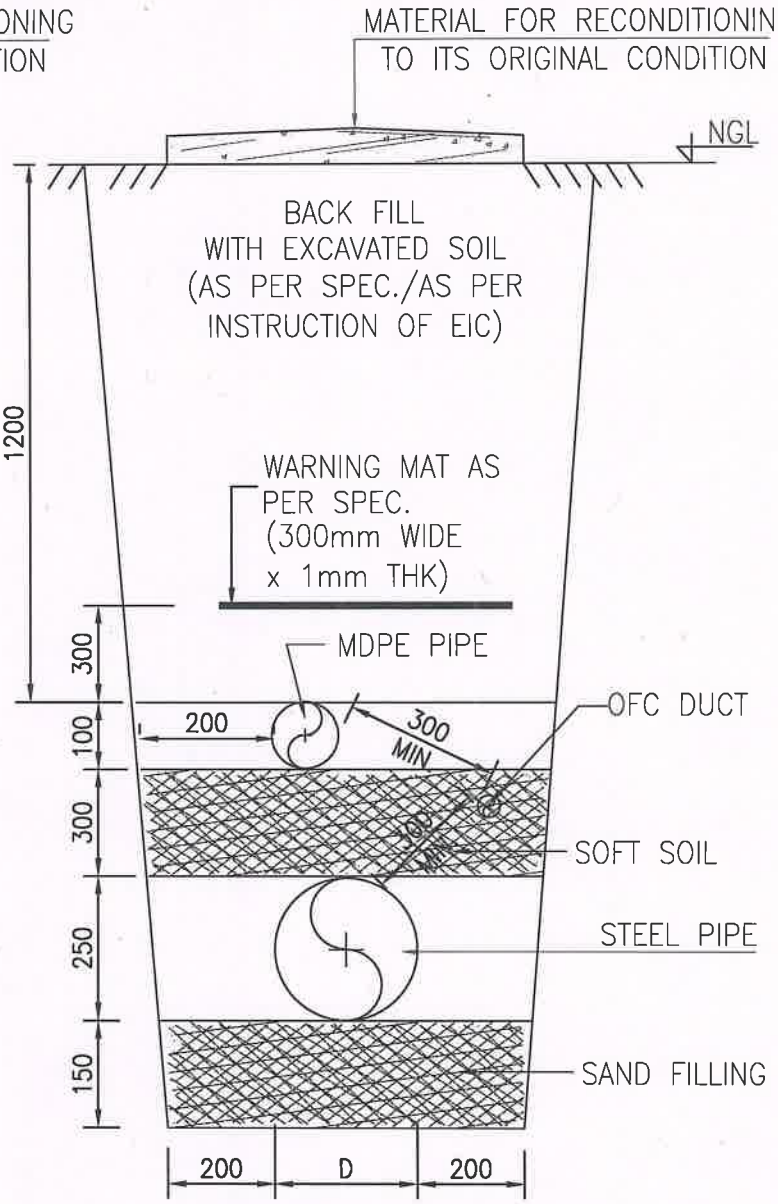
Legends : Proposed Steel Gas P/L NH Ground Profile	AUTHORITE SIGNATORY FOR INDIAN OIL CORPORATION LIMITED	**NOTES:** 1. ALL DIMENSIONS ARE IN METER 2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. DO NOT SCALE THE DRAWING 3. DRAWING NOT TO SCALE	TITLE: Proposed Steel Gas Pipeline CROSS SECTION DRAWING OF NALA CROSSING AT NH 44 CH 139/391 BY HDD METHOD CLIENT: IndianOil INDIAN OIL CORPORATION LIMITED PIPELINE DIVISION: A-1, UDHYOG MARG, SECTOR-1,NOIDA-201 301 (U.P.) Phone No. 91-120-2448844,2448888. SHEET NO. 89 OF 90

NOTES

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
2. FOLLOW WRITTEN DIMENSIONS ONLY. DO NOT SCALE.



FOR SOFT SOIL



FOR HARD SOIL/ ROCK

T-Vehaj

PROJECT DIRECTOR
NHAI, PIU, Nagercoil

RANJITH KUMAR N
Senior Manager (CGD)
SRPL, Tuticorin.

CUSTOMER	INDIAN OIL CORPORATION LIMITED
PROJECT	CITY GAS DISTRIBUTION PROJECT
SUBJECT	TYPICAL SKETCH FOR TRENCH CROSS SECTION WITH STEEL AND MDPE PIPELINE
TRACTEBEL ENGIE TRACTEBEL Engineering pvt. ltd.	SHEET NO. 90 OF 90