



भारतीय राष्ट्रीय राजमार्ग प्राधिकरण  
(सड़क परिवहन एवं राजमार्ग मंत्रालय)

**National Highway Authority of India**

(Ministry of Road Transport and Highway)

परियोजना कार्यान्वयन इकाई-छपरा

**Project Implementation Unit - Chhapra**

मकान- श्रीमती गायत्री देवी, ए१, प्रभुनाथ नगर, पोस्ट-तरी, बाना-मुफसिल, जिला-सारन (छपरा), बिहार, पिन - 841301  
H/o- Smt. Gayatri Devi, A1, Prabhunath Nagar, PO-Tari, PS-Mufsil, District-Saran (Chhapra), Bihar, Pin - 841301



**BHARATMALA**

ROAD TO PROSPERITY

Ph: 06152-248058 & 248052

Email: [nhai@nhai.org](mailto:nhai@nhai.org)

[nhaichhapra@gmail.com](mailto:nhaichhapra@gmail.com)

No.:NHAI/PIU/Chhapra/NH-77/IOCL/PP/2021/637

Date: 02.08.2021

**Invitation of Public Comments**

**Sub: Proposal for permission for laying of Indian Oil Corporation Limited (IOCL)'s proposed Muzaffarpur-Motihari LPG Pipeline (MMPL) along under construction Muzaffarpur Bypass on NH-77 in Muzaffarpur District of Bihar between NH-Bypass (U/C) approx. Ch.0.000 to 10.89 km (10.89 km).**

The Construction Manager, M/S Indian Oil Corporation Limited, Motihari has submitted the aforesaid proposal for laying of Indian Oil Corporation Limited (IOCL)'s proposed Muzaffarpur-Motihari LPG Pipeline (MMPL) along under construction Muzaffarpur Bypass on NH-77 in Muzaffarpur District of Bihar between NH-Bypass (U/C) approx. Ch.0.000 to 10.89 km (10.89 km).

2. From the submitted proposal, it is seen that the main carrier pipe to be laid along NH shall be 12.75"ODx0.375" WTxAPI 5L-X60 grade and OFC cable along with carrier pipe shall be encased in 89 mm OD SCH-80 MS pipe. Method of crossing will be HDD (Horizontal Direction Drilling). The Pipeline along with OFC cable will be laid along the NH-77 near extreme edge of NH ROW through open cut method and crossing shall be carried out by trenchless technology (HDD method) so as to ensure safe and smooth execution. The proposed gas pipeline shall be laid as per the standards/procedures recommended by Petroleum & Natural Gas Regulatory Board (PNGRB) without causing any traffic disruption & inconvenience to public. Parallel pipeline shall be laid at depth of minimum 1.5 m along the road side. During the execution of work, proper safety measures will be ensured. However, if the proposal found in order, permission will be given only HDD method for executing the work, so that surface can be damaged minimum and work can be executed rapidly.

3. As per the guidelines issued by the Ministry vide OM No.RW/NH-33044/29/2015/S&R(R) dated 22.11.2016, the application shall be put out in the public domain for 30 days for seeking claims and objections (on grounds of public inconvenience, safety and general public interest).

In view of the above, comments of the public on the above application is invited to the below mentioned address, which should reach by this office within 30 days from the date of publication beyond which no comments shall be entertained.

**Project Director**

National Highways Authority of India,

PIU-Chhapra


H/o- Gayatri Devi, Plot No:-A1

Parbhunath Nagar, P.o- Tari,

P.s- Muffasil, Dist: Saran, Pin:-841301

E-mail: [nhaichhapra@gmail.com](mailto:nhaichhapra@gmail.com)

**Encl: As above.**

  
(Priyohiti Bhushan Kumar)  
Project Director

**Copy to:**

1. Web Admin, NHAI, HQ-with a request for uploading on the NHAI website.
2. The Technical Director, NIC, Transport Bhawan, New Delhi-with a request for uploading on Ministry's website.
3. RO, NHAI, Patna.
4. Sh. H. K. Suman, Construction Manager, IOCL, Motihari.





एक कदम स्वच्छता की ओर

पाइपलाइन्स प्रभाग  
Pipelines Division

## इंडियन ऑयल कॉर्पोरेशन लिमिटेड

निर्माण कार्यालय, मोतिहारी  
ग्राम+पो.-छपरा बहास, अंचल+थाना-सुगौली  
मोतिहारी, पूर्वी चम्पारण -845435  
दूरभास-06252-231011



IndianOil

## Indian Oil Corporation Limited

Construction Office, Motihari  
Village+Post- Chhapra Bahas, Block+Thana-Sugauli  
Motihari, East Champaran - 845435  
Tel.- 06252-231011

Ref.: IOC/MMPL/NH/2020/03A

Date: 29.12.2020

To,  
The Project Director  
National Highways Authority of India  
Project Implementation Unit-Chhapra  
Saran

Sub. : Permission for laying of Indian Oil Corporation Limited (IOCL)'s proposed Muzaffarpur-Motihari LPG Pipeline (MMPL) along Under Construction Muzaffarpur Bypass Road in Muzaffarpur District between NH-Bypass(U/C) approx. Ch. 0.000 to 10.89 Km [ Bypass Ch. 0.000 considered Ch. 46.300 km of NH 77 Four Lane] (10.890 km)

Dear Sir,

Indian Oil Corporation Ltd. (IOCL), a Government of India Undertaking is engaged in petroleum Refining, Marketing, Transportation of crude oil and petroleum products through underground cross-country pipelines. Indian Oil Corporation Limited operates a network of about 14864 km pipelines of crude oil, petroleum products and gas pipelines. Cross country pipelines are globally recognized as the safest, cost-effective, energy efficient and environment friendly mode of transportation.

Here we would like to mention that Indian Oil Corporation Limited (IOCL) has decided to lay Muzaffarpur to Motihari LPG Pipeline to cater LPG demands of Champaran Region as well as to meet future LPG requirement of Nepal.

This proposed Muzaffarpur-Motihari LPG Pipeline shall be laid underground as per latest Oil Industry Safety Directorate (OISD) & American Petroleum Institute (API) standards. It is planned to originate from IOCL's Muzaffarpur terminal and terminate at IOCL's Motihari terminal after covering approx. 107 km in Bihar state.

The Pipeline along with OFC cable will be laid along the NH- Muzaffarpur-Bypass Road near extreme edge of NH ROW through open cut method and crossing shall be carried out by trenchless technology (HDD method) so as to ensure safe and smooth execution. The proposed gas pipeline shall be laid as per the standards/procedures recommended by Petroleum & Natural Gas Regulatory Board (PNGRB) without causing any traffic disruption & inconvenience to public.

### Details of Pipe are as follows:

Carrier Pipe: 12.75"OD x 0.375" WT x API 5L -X60 grade

OFC cable along with carrier pipe: OFC cable encased in 89 mm OD SCH-80 MS Pipe

29/12/2020

The said pipeline will be laid along the NH- Muzaffarpur-Bypass Road in Muzaffarpur District. Details are mentioned below:

Sr. No	Along/Across NH-	NH- Chainage (Approx.)	Proposed Pipeline Chainage	Description
1	Along NH-MFP bypass Road (LHS towards East west Corridor)	Km 0.000 to Km 10.890 (10.890 km)	Km 5.924 to Km 16.810 (10.890 km)	From NH 77 to Bathnaram village before Muzaffarpur - Deoria Road crossing..

IOCL propose to cross and lay LPG pipeline along the aforesaid road as per the following details: -

1. The main carrier pipe to be laid along NH shall be 12.75"OD x 0.375" WT x API 5L -X60 grade and OFC cable along with carrier pipe shall be encased in 89 mm OD SCH-80 MS Pipe
2. Method of crossing will be HDD (Horizontal Directional Drilling).
3. Depth of the pipeline below the center line of NH will be 3.0 m minimum for road crossing.
4. Parallel pipeline shall be laid at depth of minimum 1.5 m along the road side.
5. Once the pipeline is laid underground, the road will be restored to its original conditions.
6. During the execution of work, proper safety measures will be ensured.
7. All works will be carried out as per the approved drawings.
8. Cost of crossing/laying along road will be borne by IOCL.

In view of above, we therefore request you to kindly grant necessary permission to lay pipeline across National Highway.

Since, it is a time bound project, contributing prosperity yours most expenditures action is requested to grant the permission for the above said crossings. IOCL is ready to pay the necessary fee/ charges as per the norms as and when intimated by your good office.

Thanking you,

Encl.: A/a

Yours Sincerely,  
For Indian Oil Corporation Limited

*H.K.*  
*28/12/2020*  
(H. K. Suman)  
Const. Manager  
IOCL, Motihari







एक सफल व्यवसाय की नींव

पाइपलाइन्स प्रभाग  
Pipelines Division

## इंडियन ऑयल कॉर्पोरेशन लिमिटेड

निर्माण कार्यालय, मोतिहारी  
ग्राम+पो.-छपरा बहास, अंचल+थाना-सुगौली  
मोतिहारी, पूर्वी चम्पारण -845435  
दूरभाष-06252-231011



## Indian Oil Corporation Limited

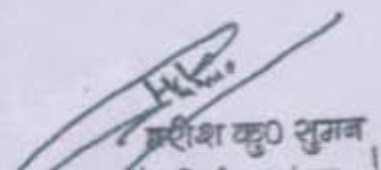
Construction Office, Motihari  
Village+Post- Chhapra Bahas, Block+Thana-Sugauli  
Motihari, East Champaran - 845435  
Tel.- 06252-231011

### UNDERTAKING-I

Indian Oil Corporation Ltd., is hereby undertake that we are ready to deposit Bank Guarantee/ Security Deposit of required amount, as and when intimated by NHAI against laying pipeline across NH- at as per below:

Sr. No	Along/Across NH-	NH- Chainage (Approx.)	Proposed Pipeline Chainage	Description
1	Along NH-MFP bypass Road (LHS towards East west Corridor)	Km 0.000 to Km 10.890 (10.890 km)	Km 5.924 to Km 16.810 (10.890 km)	From NH 77 to Bathnaram village before Muzaffarpur - Deoria Road crossing.

We also undertake that if the construction activity will not be completed within the validity of Bank Guarantee to the satisfaction of NHAI, Bank Guarantee / Security Deposit shall be renewed till completion of construction activity to the satisfaction of NHAI.

  
एस.के.नन्दी सुमन  
निर्माण प्रबंधक  
मोतिहारी (पूर्वी चम्पारण)

एस.के.नन्दी/S.K NANDY

मुख्य प्रबंधक (निर्माण)/Chief General Manager (Const.)

पंजीकृत कार्यालय : जी- 9, अली यावर जंग मार्ग, बान्द्रा (पूर्व), मुंबई - 400 081 भारत  
Regd. Office : G-9, Ali Yavar Jung Marg, Bandra (East), Mumbai - 400 081 India

निर्माण कार्यालय : मोतिहारी, पूर्वी चम्पारण  
Construction Office, Motihari, East Champaran

#### UNDERTAKING-4

Sr. No	Along/Across NH-	NH- Chainage (Approx.)	Proposed Pipeline Chainage	Description
1	Along NH-MFP bypass Road (LHS towards East west Corridor)	Km 0.000 to Km 10.890 (10.890 km)	Km 5.924 to Km 16.810 (10.890 km)	From NH 77 to Bathnaram village before Muzaffarpur - Deoria Road crossing..

Indian Oil Corporation Limited, is hereby undertake that pipeline shall be laid across NH- at NHAI as per below table, through HDD method during laying of various Petroleum Products pipeline along with OFC.

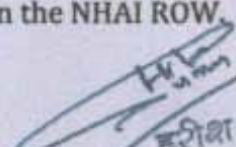
#### UNDERTAKING-5

Indian Oil Corporation Limited, is hereby undertake that if any claim raised by Concessionaire for laying of various Petroleum Products pipeline along with OFC, across NH- at as per below table, then the same shall be paid by Indian Oil Corporation Limited.

Sr. No	Along/Across NH-	NH- Chainage (Approx.)	Proposed Pipeline Chainage	Description
1	Along NH-MFP bypass Road (LHS towards East west Corridor)	Km 0.000 to Km 10.890 (10.890 km)	Km 5.924 to Km 16.810 (10.890 km)	From NH 77 to Bathnaram village before Muzaffarpur - Deoria Road crossing..

#### UNDERTAKING-6

Indian Oil Corporation Limited, is hereby undertake that prior approval shall be taken with NHAI before U N D E R T A K I N G any work of installation, shifting or repairs or any alterations of various Petroleum Products pipeline along with OFC, any other utility located in the NHAI ROW.

  
हरीश कुंठु सुमन  
निर्माण प्रबंधक  
मोतिहारी (पूर्वी चम्पारण)

  
एस.के.नन्दी/S.K NANDY  
मुख्य महानिर्माणक (निर्माण)/Chief General Manager (Const.)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
प्रोजेक्ट निर्माण कार्यालय, पटना/Project Construction Office, Patna  
डीरा निकेतन, कालिकाट नगर, बैल्व रोड, पटना-801503  
Hira Niketan Kalkat Nagar, Bailly Road, Patna-801503



## Calculations for License Fee & Performance bank guarantee

The following calculations are based on MORTH circular (F No. RW/NH-33044/29/2015/PA(R) dated: 22.11.2016)

### Methodology:

- 1) Utilized NH land area = length of pipeline to be laid X dia of pipe. (1 Sq m = 0.024715768604 Decimals).
- 2) Industrial License Fee (Rs/month) for industrial utility = (Utilized NH land area X Prevailing circle rate of land per unit area)/(10X12)
- 3) Performance Bank Guarantee = running length of pipeline X rate per Meter (Rs 100/- per meter as the pipe dia is <=300mm & Rs. 250/-per meter as the pipe dia is >300mm )
- 4) The license fee for public utilities shall be 33% of the fee prescribed for industrial utilities.
- 5) Prevailing circle rate is attached.


### License Fee

Particulars: Utilized NH land area of NH (12.75" MS Pipe + 40 mm OFC Duct ) Along the NH total 10.890 km

S.No	Village	Ch. Start	Ch. End	Length (Km)	Area of Pipeline (Decimals)	Area of OFC (Decimals)	Total Area (Decimals)	Prevailing circle rate / Decimil	Total cost (Total area X Circle rate)
1	Madhaul	0.000	1.260	1.260	10.09	1.25	11.34	180000	1815193.77
2	Madapur Rayati	1.260	1.866	0.606	4.85	0.60	5.45	125000	605999.11
3	Khatra urf Kiratpur gurudas	1.866	1.879	0.013	0.10	0.01	0.12	600000	62461.69
4	Barnatpur	1.879	2.251	0.372	2.98	0.37	3.35	190000	565999.01
5	Duman urf Damodarpur Shahjahan	2.251	3.795	1.544	12.36	1.53	13.89	500000	6182105.78
6	Patahlik-3	3.795	4.698	0.903	7.23	0.89	8.12	500000	3615570.93
7	Madhubani	4.698	5.929	1.231	9.86	1.22	11.07	350000	3450207.61
8	Madapur chaube	5.929	7.155	1.226	9.82	1.21	11.03	350000	3436193.77
9	Basitpur Kodariya	7.155	7.616	0.461	3.69	0.46	4.15	150000	553746.91
10	Pokahi Khat	7.616	8.905	1.289	10.32	1.27	11.60	325000	3354713.30
11	Madhubani	8.905	9.524	0.619	4.96	0.61	5.57	150000	743534.35
12	Bathnaram	9.524	10.412	0.888	7.11	0.88	7.99	60000	426661.39
13	Madhopur Machhiz	10.412	10.890	0.478	3.83	0.47	4.30	120000	459333.66
Total				10.890	87.21	10.77	97.9723		16299137.90
Rent per Month (total cost/(10*12))									135826.15
License fee for 5 years for NH- area utilization = Rent per month X 60 X (33/100) (considering LPG pipeline as public utility) (A)									2689357.75
Total license fee for 05 years (Along the by pass road)									2,689,357.75

### Performance Bank guarantee

S.NO	Description	Total utilized Length(m)	Dia of utility(mm)	Rate per meter as per dia	Total BG amount
1	12.75" OD MS Pipe along NH -by pass road for 10.890 km	10890	324 mm	250	2722500
2	40 mm OFC Duct along NH -by pass road for 10.890 km	10890	40 mm	100	1089000
Total amount					3,811,500.00

  
**हरीश्व क० सुमन**  
 निर्माण प्रबंधक  
 मोतिहारी (पूर्वी चम्पारण)





बिहार BIHAR

22-12-2020 ई इंडियन ऑयल कॉर्पोरेशन

W 087148

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

Agreement to lay 12..75" dia Carrier LPG Pipeline with OFC along & across National Highway No .....(U/C Muzaffarpur Bypass Road) from km 0.000 to km 10.890 of land between NH 77 to Bathram village before Muzaffarpur-Deoria road crossing at Muzaffarpur in the State of Bihar.

This Agreement made this day 22 (month) of 12/2020 (year) between Project Director acting in his executive capacity through the President of National Highways Authority of India (hereinafter referred to as the Authority" which expression shall unless excluded by or repugnant to the context, include his successors in office and assigns) on the one part, and INDIAN OIL CORPORATION LIMITED, PIPELINES DIVISION, CONSTRUCTION OFFICE, PATNA (hereinafter called the "Licensee") which expression shall unless excluded by 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 Proposed Chainage between km 0.000 to 10.890 of Muzaffarpur U/C Bypass Road NH No. .... ROW.

Whereas the Licensee proposes to lay gas pipeline referred to as utility services in subsequent paras.

Whereas the Licensee has applied to the Authority for permission to lay the underground LPG pipeline with OFC along .....(U/C Muzaffarpur Bypass Road) from km 0.000 to km 10.890 of land between NH 77 to Bathram village before Muzaffarpur-Deoria road crossing at Muzaffarpur in the State of Bihar at Muzaffarpur town Tehsil-kudhini/Mushahri/Marwan/Kanti, District-Muzaffarpur in the State of Bihar.

And whereas the Authority has agreed to grant such permission for way leave on the NH Ro'W as per terms and conditions hereinafter mentioned.

हरीश कुंठ सुजन  
निर्माण प्रबंधक  
(पूरी संभारण)

एस.के. नन्दा S. K. NANDY  
मुख्य सहायक निदेशक/General Manager (Const.)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
प्रोजेक्ट निर्माण कार्यालय, पटना/Project Construction Office, Patna  
बीर नरसिंह, कालिदास नगर, बेरी रोड, पटना-801503  
Hira Narsimhan Kalidasa Nagar, Bailey Road, Patna-801503



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

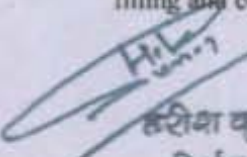
1. RoW permissions are only enabling in nature. The purpose of extending the way leave facility on the National Highway RoW is not for enhancing the scope of activity of a utility service provider, either by content or by intent. Further, enforceability of the permission so granted shall be restricted only to the extent of provisions/scope of activities defined in the license agreement & for the purpose for which it is granted.
2. No Licensee shall claim exclusive right on the RoW and any subsequent user will be permitted to use the RoW, either above or below, or by the side of the utilities laid by the first user, subject to technical requirements being fulfilled. Decision of the Authority in relation to fulfilment of technical requirements shall be final and binding on all concerned parties. In case any disruption/damage is caused to any existing user by the subsequent user, the Authority shall not be held accountable or liable in any manner.
3. The Licensee shall be responsible for undertaking all activities including, but not limited to site identification, survey, design, engineering, arranging finance, project management, obtaining regulatory approvals & necessary clearances, supply of equipment, material, construction, erection, testing and commissioning, maintenance and operation and all other activities essential or required for efficient functioning of their own utility/ industrial infrastructure facilities.
4. The Licensee shall pay license fees @Rs. .... /sq m/month to the Authority. The License fee shall become payable from the date of handing over of RoW land to the Licensee, for laying of utilities/cables/conduits/pipelines for infrastructure/ service provider. As regards Tariff and Terms and conditions for providing common utility ducts along National Highways, there shall be a separate agreement regime.
5. Fee shall have to be paid in advance for the period for which permission is granted for entering into a license agreement. In case of renewal, rate prevailing at the time of renewal shall be charged. Delay in deposition of fee shall attract interest @ 15% per annum compounded annually.
6. Present policy of the MoRT&H is to provide a 2.00 m wide utility corridor on either side of the extreme edge of RoW. In cases where utility ducts with sufficient space are already available along 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 carriageway, central verge, shoulders, slopes of embankment, drains, other road side furniture etc.; the utility services shall be laid beyond the toe line of the embankments and clear of the drain.
8. The Licensee shall make his own arrangement for crossing of cross drainage structure, rivers, etc. below the bed. In case, this is not feasible, the utility services may be carried outside the railings/parapets and the bridge superstructure. The fixing and supporting arrangement with all details shall be required to be approved in advance from the concerned Highway Administration. Additional cost on account of fixing and supporting arrangement as assessed by the Authority shall be payable by the Licensee.

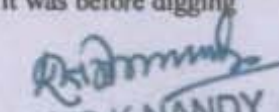
हरीश कुंठु सुमन  
निर्माण  
मोहिदारी (ए)

एस.के. नन्दी S.K. NANDY  
मुख्य कार्यकारी अधिकारी (निर्माण)/Chief General Manager (Const.)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
प्रोजेक्ट निर्माण कार्यालय, एनएच/Project Construction Office, PNH  
डीएच निवेशक, कालिदास नगर, बाली रोड, पटना-801503  
Mrs. Mohan Kallidhar Nagar, Bally Road, Patna-801503



9. In exceptional cases, where RoW is restricted the utility services can be allowed beneath the carriageway of service road, if available, subject to the condition that the utility services be laid in concrete ducts, which will be designed to carry traffic on top. The width of the duct shall not be less than one lane. In such cases, it also needs to ensure that maintenance of the utility services shall not interfere with the safe and smooth flow of traffic. The cost of operation and maintenance will have to be borne by the Licensee.
10. It is to be ensured that at no time there is interference with the drainage of the road land and maintenance of the National Highways. Towards this, the top of the utility services shall be at least 0.6 metre below the ground level. However, any structure above ground shall be aesthetically provided for / landscaped with required safety measures as directed by the concerned Authority.
11. The utility services shall be permitted to cross the National Highway either through structure or conduits specially built for that purpose. The casing / conduit pipe should, as minimum, extend from drain to drain in cuts and toe of slope to toe of slope in the fills and shall be designed in accordance with the provision of IRC and executed following the Specifications of the Ministry.
12. Existing drainage structures shall not be allowed to carry the lines across.
13. The top of the casing/conduit pipe containing the utility services to cross the road shall be at least 1.2m below the top of the sub grade or the existing ground level whichever is lower, subject to being at least 0.3m below the drain inverts. A typical sketch showing the clearances is given in Attachment-I.
14. The utility services shall cross the National Highway preferable on a line normal to it or as nearly so as practicable.
15. The casing/conduit pipe for crossing the road may be installed under the road embankment either by boring or digging a trench. Installation by boring method shall be preferred.
16. In case of trenching, the sides of the trench should be done as nearly vertical as possible. The trench width should be at least 30 cm. but not more than 60 cm wider than the outer diameter of the pipe. Filling of the trench shall conform to the specifications contained here-in-below or as supplied by the Highway Authority.
  - a. Bedding shall be to a depth not less than 30 cm. It shall consist of granular material, free of lumps, clods and cobbles, and graded to yield a firm surface without sudden change in the bearing value. Unsuitable soil and rock edges should be excavated and replaced by selected material.
  - b. The backfill shall be completed in two stages (i) Side-fill to the level of the top of the pipe (ii) Overfill to the bottom of the road crust.
  - c. The side fill shall consist of granular material laid in 15 cm. Layers each consolidated by mechanical tamping and controlled addition of moisture to 95% of the Proctor's Density. Overfill shall be compacted to the same density as the material that had been removed. Consolidation by saturation or ponding will not be permitted.
  - d. The road crust shall be built to the same strength as the existing crust on either side of the trench or to thickness and specifications stipulated by the Highway Authority.
17. The Licensee shall ensure making good the excavated trench for laying utility services by proper filling and compaction, so as to restore the land in to the same condition as it was before digging

  
 H.L. सुमन  
 निर्माण प्रबंधक  
 मोतिशरी (पूर्वी चम्पारण)

  
 एस.के.नन्दा / S.K. NANDY  
 मुख्य महाप्रबंधक (निर्माण) / Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड / Indian Oil Corp. Ltd.  
 क्षेत्रीय निर्माण कार्यालय, परामर्श / Regional Construction Office, Patna  
 क्षेत्र निर्माण, कॉलेज रोड, बैरी रोड, पटना-801503  
 Hira Niketan Kallhat Nagar, Bailey Road, Patna-801503



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 11 months from the date of issue of the Bank Guarantee, the Licensee shall either furnish a fresh guarantee or extend the guarantee for a further period of one year. Notwithstanding this, the Licensee shall be liable to pay full compensation to the aggrieved Authority/ its designated agency for any damage sustained by them by reason of the exercise of the RoW facility.

21. The Licensee shall shift the utility services within 90 days (or as specified by the respective Authority) from the date of issue of the notice by the concerned Authority to shift/relocate the utility services, in case it is so required for the purpose of improvement/widening of the road/route/highway or construction of flyover/bridge and restore the road/land to its original condition at his own cost and risk.

22. The Licensee shall be responsible to ascertain from the respective agency in co-ordination with Authority, regarding the location of other utilities /underground installations/ facilities etc. The Licensee shall ensure the safety and security of already existing underground installations/utilities/facilities etc. before commencement of the excavation/using the existing cable ducts. The Licensee shall procure insurance from a reputed insurance company against damages to already existing underground installations/utilities/facilities etc.

23. The Licensee shall be solely responsible/ liable for full compensation/indemnification of concerned agency / aggrieved Authority for any direct, indirect or consequential damage caused to them/claims or replacements sought for, at the cost and risk of the Licensee. The concerned agency in co-ordination with Authority shall also have a right make good such damages/ recover the claims by forfeiture of Bank Guarantee.

24. If the Licensee fails to comply with any condition to the satisfaction of the Authority, the same shall be executed by the Authority at the cost and risk of the Licensee.

हरीश कुंठ सुमन

1

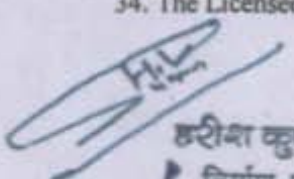
मौलाना

एस.के.नन्दी/S.K NANDY

मुख्य महाप्रबंधक (निर्माण)/Chief General Manager (Const.)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
प्रोजेक्ट निर्माण कार्यालय, बाग/Project Construction Office, Palna  
हिरा मिस्तान, कालिन्दा नगर, बेसी रोड, पटना-801503  
Hira Mistan Kallinda Nagar, Bailey Road, Patna-801503



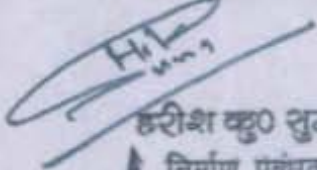
25. Grant of License is subject to the Licensee satisfying (a) minimum disruption of traffic and (b) no damage to the highways. As far as possible, the Licensee should avoid cutting of the road for crossing highway, and other roads and try to carry out the work by trenchless technology. In case any damage 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 excavated trench/other restoration work, the Authority shall have a right to make good the damages caused by excavation, at the cost of the Licensee and recover the amount by forfeiture of the Bank Guarantee.
26. The Licensee shall inform/give a notice to the concerned agency designated by the Authority at least 15 day 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 concerned agency in co-ordination with Authority, against all damages and claims, if any due to the digging of trenches for laying cables/ducts.
29. The permission for laying utility services is granted maximum for 5 years at a time, which can thereafter be considered for renewal. On payment of additional fee at the time of renewal, the permission shall automatically be renewed, unless defaults exist. In case of renewal, rate prevailing at the time of renewal shall be charged. Delay in deposition of fee shall attract interest @ 15% per annum compounded annually.
30. The permission shall be valid only for the period it is issued and fee deposited. However, the Authority also has 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 purpose 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.

  
 श्रीमान कु० सुमन  
 निर्माण प्रबंधक  
 मोतिहारी (पूर्व खण्ड)

  
 एस.के.नन्दी/S.K. NANDY  
 मुख्य मास्टरबक (निर्माण)/Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 क्षेत्रीय निर्माण कार्यालय, राज्य/Project Construction Office, Patna  
 बीएस निवेशक, कालिदास नगर, बेबी रोड, पटना-801503  
 B.S. Investor, Kalidasa Nagar, Baby Road, Patna-801503



35. Three copies of 'as laid drawings' of utilities (hard and soft copies) with geo-tagged photographs and geo-tagged video recordings of laying of cables in the trench (with respect to the 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 free access to the Site at all times to the authorised representatives of Authority to inspect the Project Facilities and to investigate any matter within their Authority, and upon reasonable notice, shall provide reasonable assistance necessary to carry out their respective duties and functions.
37. The utility services shall not be made operational by the Licensee unless a completion certificate to the effect that the utility services has been laid in accordance with the approved specifications and drawings and the trenches have been filled up to the satisfaction of the concerned agency in co-ordination with the Authority has been obtained. Notwithstanding anything contained herein, this Agreement may be cancelled at any time by Authority for breach of any condition of the same and the Licensee shall neither be entitled to any compensation for any loss caused to it by such cancellation nor shall it be absolved from any liability already incurred.
38. The Licensee shall ensure adherence to relevant Indian standards and follow best industry practices, methods and standards for the purpose of ensuring the safe, efficient and economic design, construction, commissioning, operation, repair and maintenance of any part of the utility lines/industrial infrastructure facilities and which practices, methods and standards shall be adjusted as necessary, to take account of
  - a. operation, repair and maintenance guidelines given by the 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.
40. While laying utility services, at least one lane of road shall be kept open to traffic at all times. In case of single lane roads, a diversion shall be constructed. If any traffic diversion works are found necessary during the working period such diversion shall be provided at the cost of Licensee.
41. After the termination/expiry of the agreement, the Licensee shall remove the utility services within 90 days and the site shall be brought back to the original condition failing which the Licensee will lose the right to remove the utility services. However before taking up the work of removal of utility services the Licensee shall furnish a Bank Guarantee to the Authority for a period of one year for an amount assessed by the Authority as a security for making good the excavated trench by proper filling and compaction, clearing debris, loose earth produced due to excavation of trenching at least 50m away from the edge of the RoW.
42. Any disputes in interpretation of the terms and conditions of this Agreement or their implementation shall be referred to the redress mechanism prevailing in the Ministry and the decision of the redress mechanism shall be final and binding on all.
43. For PPP Projects, in case of any financial loss incurred by the respective project concessionaires due to such laying/shifting of utility services by the Licensee, compensation for the same shall be required to be borne by the Licensee in mutual agreement with the respective project

  
 हरीश कुमार  
 निर्माण प्रबंधक  
 मोतिहारी (पूर्वी चम्पारण)

  
 एस.के.एन. एस.के. नंदी  
 मुख्य महाप्रबंधक (निर्माण)/Chief General Manager (Const.)  
 सड़ियन ऑयल कॉरपोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 क्षेत्रीय निर्माण कार्यालय, बाईपास/Regional Construction Office, Patna  
 बाईपास निवेशक, कालिदास नगर, बेबी रोड, पटना-801503  
 Mrs Nilatan Kalidasa Nagar, Baby Road, Patna-801503



concessionaires. 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, each on a Stamp Paper, Each party to this Agreement has retained one stamped copy each.

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

SIGNED SEALED AND DELIVERED FOR AND ON BEHALF OF AUTHORITY.

BY SHRI.....

(Signature, name & address with stamp)

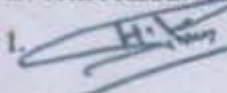
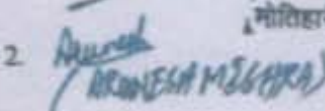
SIGNED ON BEHALF OF M/S Indian Oil Corporation Limited (LICENSEE)

  
एस.के.नन्दी/S.K NANDY  
मुख्य महाप्रबंधक (निर्माण)/Chief General Manager (Const.)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
जोड़कर निर्माण कार्यालय, राजस्थान/Construction Office, Panna  
BY S.K. NANDY, राजस्थान, पंजीकृत, पता-801503  
Hira Mishra Kallat Nagar, Panna Road, Panna-801503  
(Signature, name & address with stamp)

HOLDER OF GENERAL POWER OF ATTORNEY DATED.....

EXECUTED IN ACCORDANCE WITH THE RESOLUTION NO. .... DATED .....  
PASSED BY HTE BOARD OF DIRECTORS IN THE MEETING HELD ON .....

IN THE PRESENCE OF (WITNESSES):

1.  हरीश चंद्र सुगल  
निर्माण प्रबंधक  
मोतिहारी (पूर्व चम्पारण)
2.  (ARUNESH MISHRA)



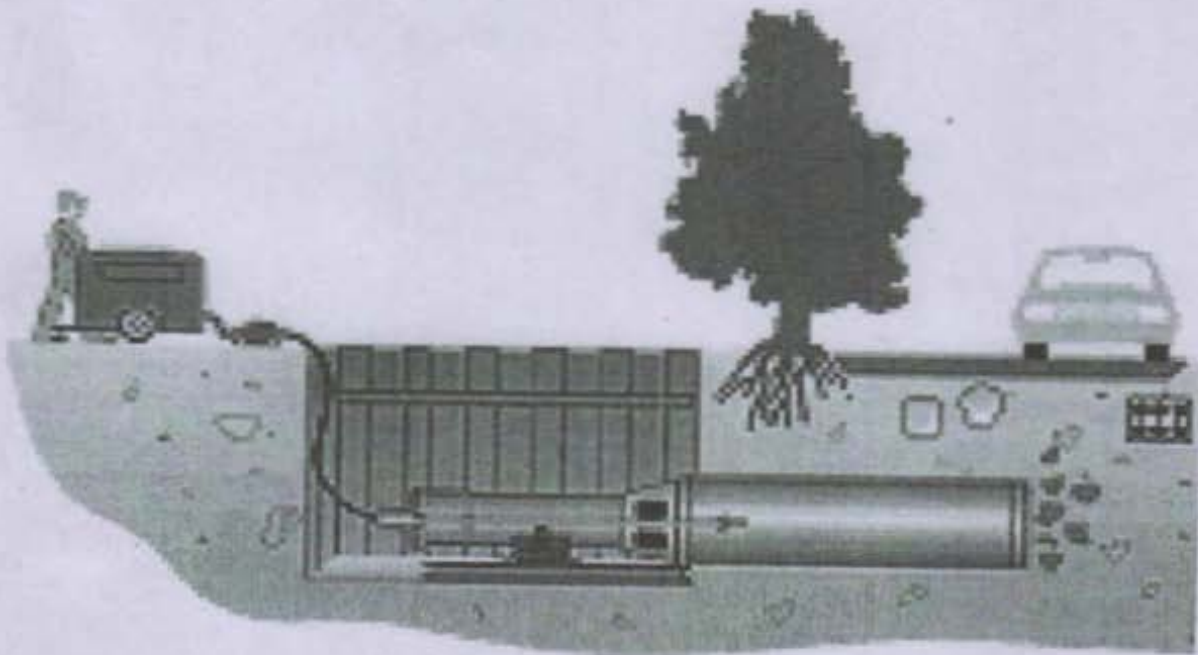


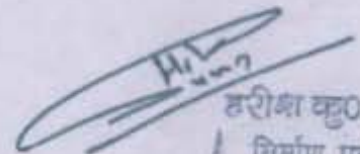
IndianOil

Indian Oil Corporation Limited

CONSTRUCTION METHODOLOGY

For laying underground pipeline  
Crossing National highways by  
Horizontal Boring Method





हरीश कृ० सुनल  
निर्माण प्रबंधक  
मोतिहारी (पूर्वी चम्पारण)



## HORIZONTAL DIRECTIONAL DRILLING

### GENERAL

Horizontal Directional Drilling or HDD, is a steerable trenchless method of installing underground pipes, conduits and cables in a shallow arc along a prescribed bore path by using a surface launched drilling rig, with minimal impact on the surrounding area. HDD is used when trenching or open excavation is not possible/practical. Directional boring minimizes environmental disruption. It is suitable for a variety of soil conditions and jobs including road, landscape and river crossings. Pipes can be made of materials such as Steel, PVC, etc. if the pipes can be pulled through the drilled hole.

### Technique

Directional boring is used for installing infrastructure such as telecommunications and power cable conduits, water lines, sewer lines, gas lines, oil lines, product pipelines and environmental remediation casings. It is used for crossing waterways, roadways, shore approaches, congested areas, environmentally sensitive areas, and areas where other methods are costlier. It is used instead of other techniques to provide less traffic disruption, lower cost, deeper and/or longer installation, no access pit, shorter completion times, directional capabilities, and environmental safety. The technique has extensive use in urban areas for developing subsurface utilities as it helps in avoiding extensive open cut trenches.

The method comprises a three stage process wherein first stage drills a pilot hole on the designed path and the second stage enlarges the hole by passing a larger cutting tool known as the back reamer. The third stage places the product or casing pipe in the enlarged hole. The directional control capabilities assist the rig operator in making necessary changes in the directions of the drilling head.

Horizontal directional drilling is done with the help of a viscous fluid known as drilling fluid. It is a mixture of water and, usually, bentonite or polymer continuously pumped to the cutting head or drill bit to facilitate the removal of cuttings, stabilize the bore hole, cool the cutting head, and lubricate the passage of the product pipe.

Location and guidance of the drilling is a very important part of the drilling operation, as the drilling head is under the ground while drilling and, in most cases, not visible from the ground surface.

### Advantages

HDD offers several advantages when compared to other trenchless construction methods:

- (a) Complicated crossings can be quickly and economically accomplished with a great degree of accuracy since it is possible to monitor and control the drilling operation.
- (b) Sufficient depth can be accomplished to avoid other utilities.
- (c) In river crossing applications, danger of river bed erosion and possible damage from river traffic is eliminated.
- (d) Requires only a small construction footprint.

### The Horizontal Directional Drilling Process

The tools and techniques used in the horizontal directional drilling (HDD) process are an outgrowth of the oil well drilling industry. The components of a horizontal drilling rig used for pipeline construction are similar to those of an oil well drilling rig with the major exception being that a horizontal drilling rig is equipped with an inclined ramp as opposed to a vertical mast. HDD

  
निर्माता कृ० सुमन  
निर्माण प्रशासक  
मोतिहारी (पु०)



pilot hole operations are not unlike those involved in drilling a directional oil well. Drill pipe and downhole tools are generally interchangeable and drilling fluid is used throughout the operation to transport drilled spoil, reduce friction, stabilize the hole, etc. Because of these similarities, the process is generally referred to as drilling as opposed to boring.

Installation of a pipeline by HDD is generally accomplished in three stages as illustrated in Figure 1. The first stage consists of directionally drilling a small diameter pilot hole along a designed directional path. The second stage involves enlarging this pilot hole to a diameter suitable for installation of the pipeline. The third stage consists of pulling the pipeline back into the enlarged hole.

### Pilot Hole Directional Drilling

Pilot hole directional control is achieved by using a non-rotating drill string with an asymmetrical leading edge.

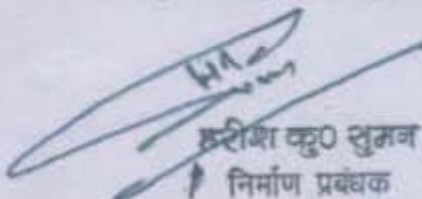
It is common in soft soils to achieve drilling progress by hydraulic cutting with a jet nozzle. In this case, the direction of flow from the nozzle can be offset from the central axis of the drill string thereby creating a steering bias. This may be accomplished by blocking selected nozzles on a standard roller cone bit or by custom fabricating a jet deflection bit. If hard spots are encountered, the drill string may be rotated to drill without directional control until the hard spot has been penetrated.

### Pre-reaming

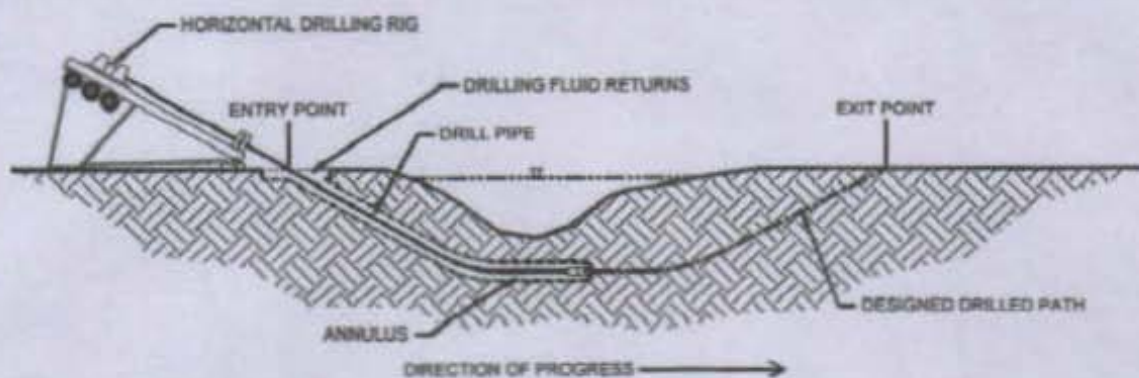
For a pre-reaming pass, reamers attached to the drill string at the exit point are rotated and drawn to the drilling rig thus enlarging the pilot hole. Drill pipe is added behind the reamers as they progress toward the drill rig. This insures that a string of pipe is always maintained in the drilled hole.

### Pullback

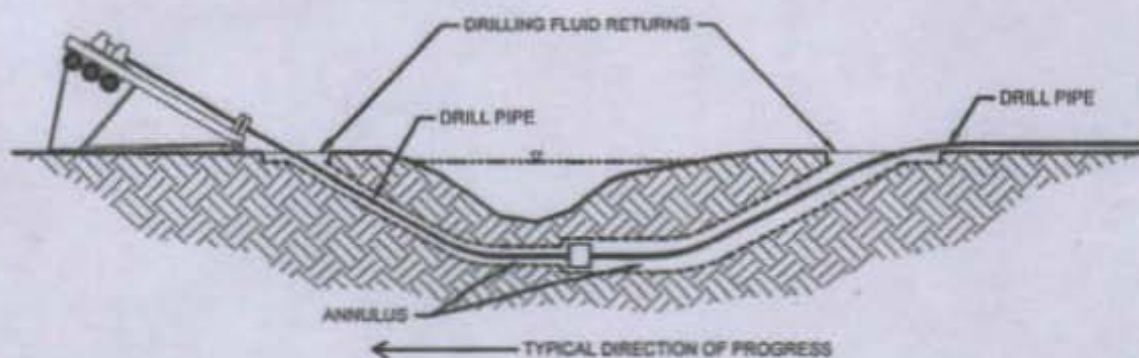
Pipe installation is accomplished by attaching the prefabricated pipeline pull section behind a reaming assembly at the exit point and pulling the reaming assembly and pull section back to the drilling rig. This is undertaken after completion of pre-reaming or, for smaller diameter lines in soft soils, directly after completion of the pilot hole. A swivel is utilized to connect the pull section to the leading reaming assembly to minimize torsion transmitted to the pipe.

  
हरिश्चंद्र सुमन,  
निर्माण प्रबंधक,  
भोतिहारी (पूर्वी चम्पारण)

### PILOT HOLE



### PREREAMING



### PULLBACK

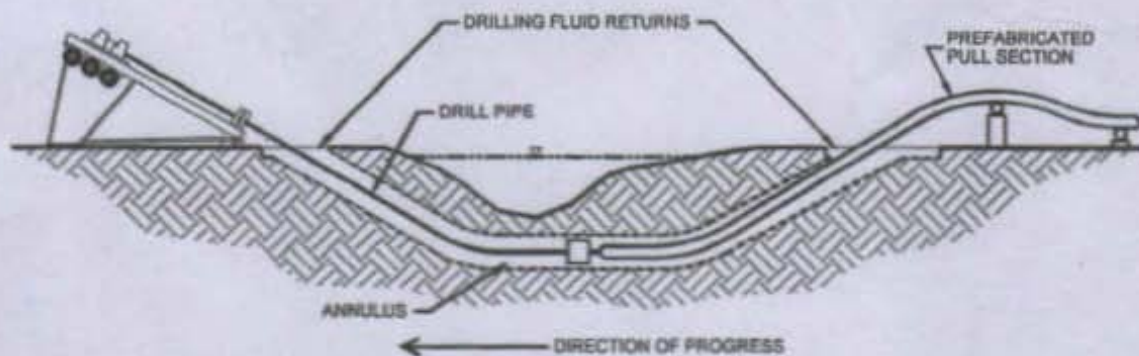


Figure 1  
The HDD Process

*[Signature]*  
हरेश कुमार सुमन  
निर्माण प्रबंधक  
मोतिहारी (पूर्वी) ए.ए.ए.



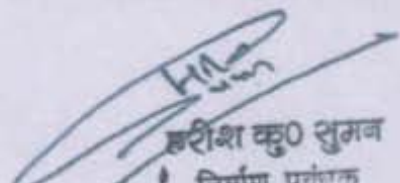
### Disadvantages of Cased Crossing:

Cased Crossings are being worldwide discouraged due to technical & operational issues/problems being faced by people involved in installing & maintaining pipelines. Some of the points going against cased crossings are as follows:

- For installing a pipeline by cased crossing method, large launching & receiving pits are required to be excavated on both sides of the crossing (highway/ railway etc.). In case of high water table conditions, it is very difficult to keep these pits in stable/ dry condition. De-watering and sheet piling / shoring methods may be required especially for higher depth crossings.
- Collapse of the pits may lead to severe accidents. Several such accidents, fatal in some cases, have been reported in the past due to collapse of deep pits excavated at cased crossing locations.
- Due to requirement of deep pits and water table, depths more than of 3-4m are practically difficult to be achieved by this technique and may be risky.
- The installation is done by horizontal auger boring machine placed in the launching pit. The boring process is un-guided and at times may deviate considerably from the intended straight path due to soft soil conditions and/or presence of rock/ hard strata beneath the road/ rail surface. Under such conditions the hole may have to be abandoned and a new boring at a separate location may be required. Filling the abandoned hole is very difficult and settlement of road/ ground surface may occur in future.
- Maximum length of boring which can be practically achieved depends on the soil conditions and size of boring. However any length beyond 50-60m is difficult, risky & time consuming. As highway crossings, especially NH & SH are of longer lengths, this method has got limitations of installation.
- Problems of short-circuiting between casing & carrier pipes is another problem prevalent in cased crossings. This leads to loss of cathodic protection current thereby reducing the secondary protection to the carrier pipe. Any damage to pipe coating at such locations may lead to development of corrosion spots and potential areas for leakage of petroleum products in future.
- In case widening of the highway is undertaken in future, the low depth of the pipe may become a hindrance. Extension of the casing to cover the new width of crossing is very cumbersome and time consuming.

### Advantages of HDD Technique:

- Horizontal Directional Drilling (HDD) technique is a trenchless technique used worldwide for crossing of obstacles like rivers, canals, drains, highways etc. by petroleum pipelines (liquid / gas), sewer lines etc.
- It is a environment friendly technique for pipeline crossings
- It is a much safer technique as compared to other techniques of pipeline crossings.
- Small excavation is required at both ends

  
हरीश कु० सुमन  
निर्माण प्रशासक  
मोतिहारी (पूर्वी चम्पारण)

- By the use of this technique the pipeline can be installed at a much greater depth from the obstacle as per requirement of client. In PRRPL project, the depth below highway has been kept more than 5m. Such depths may not be possible by cased crossing technique.
- In this technique, use of casing pipe is not required as the hole drilled for installation of the carrier pipe is kept stable due to presence of drilling fluid (bentonite) under pressure and the drill pipe / product pipe being always present in the hole.
- Much longer crossing lengths can be achieved by HDD technique. Thus highway widening activities can be carried out without any hindrance as the pipeline is laid at much higher depth and for longer length as compared to cased crossing. In PRRPL project HDD crossing length of more than 100m have been envisaged. Such lengths cannot be obtained by cased crossing method.
- Success rate of HDD technique is much higher than auger boring. Problems of abandonment of hole which have been mentioned above in cased crossings are almost nil in case of HDD crossings of small lengths for highways, small canals etc.

हरिश्चंद्र शुक्ल  
निर्माण प्रशासक  
मोतिहारी (पु.)

CGM(C)/ERPL Patna

*(Signature)*

एस.के.नन्दी NANDY

मुख्य महासंचालक (निर्माण)/Chief General Manager (Const.)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
प्रोजेक्ट निर्माण कार्यालय, Patna/Project Construction Office, Patna  
डीप निरीक्षक, बालीबंदी नगर, बेली रोड, पटना-801503  
Vice Divisional Engineer, Balibandi Nagar, Bally Road, Patna-801503



CHECK LIST	
Guidelines for processing the proposal for laying gas pipeline along with optical fiber cable in the land along / across National Highway vested with NHA	
Relevant circulars	
1.	Ministry circular No. NH-41(58)/68 dated 31-01-1969
2.	Ministry circular No. NH-III/P/66/76 dated 18-11-1976
3.	Ministry circular No. RW-NJ-III/P/66/76 dated 01-05-1982
4.	Ministry circular No. RW/NH-11037/1/86-DOI(II) dated 28-07-1993
5.	Ministry circular No. RW/NH-11037/1/86-DOI dated 19-01-1995
6.	Ministry Circular No. RW/NH-34066/2/95/S&R dated 25-10-1999
7.	Ministry Circular No. RW/NH-34066/7/2003 S&R (B) dated 17-09-2003
8.	Ministry Circular No. RW/NH-33044/29/2015/S&R(R) dated 22.11.2016

**Checklist for getting approval for laying of LPG pipeline on NH land**

S.No.	Item	Information/Status	Remarks
1	General Information	Permission for laying of Indian Oil Corporation Limited (IOCL)'s proposed Muzaffarpur-Motihari LPG Pipeline (MMPL) along Under Construction Muzaffarpur Bypass Road in Muzaffarpur District between NH-Bypass(U/C) approx. Ch. 0.000 to 10.89 Km (10.890 km)[ Bypass Ch. 0.000 considered Ch. 46.300 km of NH 77 Four Lane]	
1.1	Name and address of the Applicant/Agency	Indian oil corporation limited , Hira Nikethan, Kaliketh Nagar, Bailey Road, Patna.	
1.2	National Highway Number	NH -Bypass Road Muzaffarpur (U/C)	
1.3	State	Bihar	
1.4	Location	NH chainage: From NH 77 to Bathnaram village before Muzaffarpur -Deoria Road crossing.	
1.5	(Chainage in km)	Between NH approx. Km 0.000 to Km 10.890 (10.890 km)	
1.6	Length in Meters	Along the NH = 10890 m	
1.7	Width of available ROW		
	(a) Left side from center line towards decreasing chainage/km direction		
	(b) Right side from centre line towards decreasing		

MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari LPG Pipeline Project. Page 1 of 11  
 Location: Between Km 0.000 to Km 10.890 km (10.890 km) in Muzaffarpur District.

*(Signature)*  
 निर्माण प्रबंधक  
 सड़क विभाग, नई दिल्ली

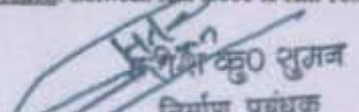
*(Signature)*  
**एस.के.नन्दी/S.K NANDY**  
 मुख्य सहायक (निर्माण)/Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 क्षेत्रीय निवेश कार्यालय, सड़क/Regional Construction Office, Patna  
 क्षेत्रीय निवेश, कालिका नगर, कैथी रोड, पटना-801503

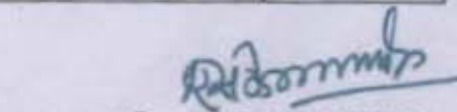




1.17	Whether carrying of sewage/gas pipeline has been proposed on highway Bridges. If yes, then mention the methodology proposed for the same.	NA	
1.18	Whether carrying of sewage/gas pipeline has been proposed on the parapet/ any part of the bridges. If Yes, then mention the methodology proposed for the same.	NA	
1.19	If crossings of the road involved If yes, it shall be either encased in pipes or through structure or conduits specially built for the purpose at the expenses of the agency owing the line	Yes	
	(a) Whether existing drainage structures are allowed to carry gas pipeline	NA	
	(b) It is on a line normal to NH	Yes	
	(c) What is the distance of crossing the gas pipelines from the existing structures. Crossings shall not be too near the existing structures on the National Highway, minimum distance being 15 meter.	As per site condition	
	(d) The casing pipe(or conduit pipe in the case of electric cable) carrying the gas line shall be of steel, cast iron, or reinforced cement concrete and have adequate strength and be large enough to permit	89 mm MS Pipe will be used for duct for crossing the NH & 40 mm OD HDPE duct will be used along the Road for OFC cable.	

MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari LPG Pipeline Project Page 5 of 21  
Location: Between Km 10.000 to Km 10.890 km (10.890 km) in Muzaffarpur District.

  
निर्माण प्रबंधक  
मोबा. 94031 82222

  
मुख्य सहायक (निर्माण)/Chief General Manager (Const.)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
प्रोजेक्ट निर्माण कार्यालय, पराम/Project Construction Office, Patna  
बीर निवेशन, कालिका नगर, बेली रोड, पटना-801503  
Hira Niketan Kalkat Nagar, Bailey Road, Patna-801503

	ready withdrawal of the carrier pipe/cable. Mention type of casing.		
	(e) Ends of casing /conduit pipe shall be sealed from the outside, so that it does not act as a drainage path.	Yes	
	(f) The casing/conduit pipe should, as minimum extend from drain to drain in cuts and toe of slope in the fills.	Yes	
	(g) The top of the casing/conduit pipe containing the utility services to cross the road shall be at least 1.2m below the top of the sub grade or the existing ground level whichever is lower, subject to being at least 0.3m below the drain inverts. Mention the proposed details.	Yes	
	(h) Mention the methodology proposed for crossings of road for the proposed Sewage/gas pipe line. Crossings shall be by boring method (HDD) (Trenchless Technology), specially, where the existing road pavement is of cement concrete or dense bituminous concrete type.	The pipeline will be laid by Horizontal Directional Drilling (HDD) Method which is trenchless method at crossing location and Open Cut will be used for along the road section.	
	(i) The casing/conduit pipe shall be installed	Yes	

MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari L & C Pipeline Project Page 4 of 23  
 Location: Between Km 0.000 to Km 10.890 km (10.890 km) in Muzaffarpur District

  
 हरीश कुंठु सुमन  
 निर्माण प्रबंधक  
 मोबाइल: 98551 88888

  
 S. K. NANDY  
 Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 प्रोजेक्ट निर्माण कार्यालय, Patna  
 क्षेत्र निवेश, कालिदास नगर, गैली रोड, पटना-801503  
 Hira Niketan Kallidat Nagar, Bailey Road, Patna-801503



	with an even bearing throughout its length and in such a manner as to prevent the formation of a waterway along it.		
2	Document/Drawings to be enclosed with the proposal	Yes	
2.1	Cross section showing the size of trench for open trenching method	Yes and drawing attached.	
2.2	Cross section showing the size of pit and location of cable for HDD method	Yes	
2.3	Strip plan/Route plan showing the petroleum/Gas pipe line, chainage, width of ROW, distance of proposed pipe line from the edge of ROW, important mile stone, intersections, cross drainage works etc.	Yes	
2.4	Methodology for laying of the gas pipe line.	The pipeline will be laid by Horizontal Directional Drilling (HDD) Method and Open Cut-detailed procedure and drawing attached.	
2.4.1	Open trenching method. (May be allowed in the petroleum corridor only where pavement is neither cement concrete nor dense bituminous concrete type. If yes, what is the methodology of refilling of trench.	Yes	
	(a) The trench width should be at least 60cm, but not more than 120 cm wider than the outer diameter of the pipe.	Yes	
	(b) For filling of the trench, bedding shall be at a depth of not less than 30cm. it shall consist of granular material, free of lumps, clods and cobbles and	Yes	

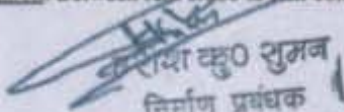
MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari  
 Location: Between Km 9.000 to Km 10.890 km (10.890 km) in Muzaffarpur District.

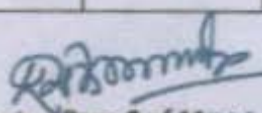
*(Signature)*  
 निर्माण प्रबंधक  
 कोलिका (पूर्वी समारण)

*(Signature)*  
 एस.के. नन्दा/S.K. NANDY  
 Project Engineer (Const.)  
 Indian Oil Corp. Ltd.  
 Project Construction Office, Patna  
 Hira Niketan Kalkat Nagar, Bailey Road, Patna-801503

	graded to yield a firm surface without a sudden change in the bearing value. Unsuitable soil and rock edged should be excavated and replaced by selected material.		
	(c) The backfill shall be completed in two stages (i) side fill to level of the top of the pipe and (ii) overfill to the bottom of the road crust.	Yes	
	(d) The side fill shall consist of granular material laid in 15cm layers each consolidated by mechanical tempering and controlled addition of moisture to 95% of the proctor's density. Overfill shall be compacted to the same density as the material that has been removed. Consolidation by saturation or ponding will not be permitted	Yes	
	(e) The road crust shall be built to the same strength as the existing crust on either side of the trench. Care shall be taken to avoid the formation of a dip at the trench.	Yes	
	(f) The excavation shall be protected by flagman, signs and barricades, and red lights during night hours.	Yes	

MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari LPG Piping Project, Page 6 of 11  
 Location: Between Km 8.900 to Km 10.890 km (10.890 km) in Muzaffarpur District.

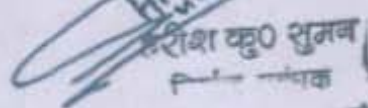
  
 निर्माण प्रबंधक  
 (S. R. Nandy)

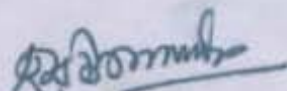
  
 एस.के.नन्दा/S.R. NANDY  
 मुख्य महाप्रबंधक (निर्माण)/Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 क्षेत्रीय निर्माण कार्यालय, परामर्श/Project Construction Office, Patna  
 हीरा निवेशक कॉलेज नगर, बैली रोड, पटना-801503  
 Hira Niveshak Kollat Nagar, Bailey Road, Patna-801503



	(g) If required, a diversion shall be constructed at the expense of agency owing the petroleum line.	Yes	
2.4.2	Horizontal directional drilling (HDD) method.	Yes	
2.4.3	Methodology for laying of pipe line through CD works and method of laying. In cases where the carrying of gas pipe line on the bridge becomes inescapable.	NA	
3	Draft license Agreement is signed by two witnesses	Yes	
3.1	The license fee estimate as per Ministry's guidelines issued vide circular no. RW/NH-33044/29/2015/S&R(R) dated 22.11.2016	Enclosed	
4	Whether performance Bank guarantee as per Ministry's circular no. RW/NH-33044/29/2015/S&R(R) dated 22.11.2016 is obtained	An undertaking for agreement is attached here with	
4.1	Confirmation of BG has been obtained or not as per MoRTH/NHAI guidelines	Yes	An undertaking for agreement is attached here with
5	Affidavit/ Undertaking from the Applicant for the following is to be furnished		
5.1	Undertaking for not to damage any other utility, if damaged then to pay the losses either to NHAI or to the concerned agency.	Yes	
5.2	Undertaking for Renewal of bank guarantee as and when asked by MoRTH/NHAI.	Yes	
5.3	Undertaking for confirming all standard condition of Ministry circulars and NHAI's guidelines.	Yes	

MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari LPG Pipeline Project. Page 7 of 11  
 Location: Between Km 9.000 to Km 10.890 km (10.890 km) in Muzaffarpur District.

  
 एस.के.नन्दा सुमन  
 प्रमुख महाप्रबंधक

  
 एस.के.नन्दा/S.K NANDY  
 प्रमुख महाप्रबंधक (निर्माण)/Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 क्षेत्रीय निर्माण कार्यालय, परियोजना/Regional Construction Office, Project  
 बीरा निवेश, बल्लिआवा नगर, बेटी रोड, पिन-801503

5.4	Undertaking for Indemnity against all damages and claims.	Yes	
5.5	Undertaking for management of traffic movement during laying of gas line without hampering the traffic	Yes	
5.6	Undertaking that if any claim is raised by the concessionaire/contractor then the same has to be paid by the applicant.	Yes	
5.7	Undertaking that prior approval of the NHAI shall be obtained before undertaking any work for installation, shifting or repairs, or alterations to the gas located in the National Highway right-of-ways.	Yes	
5.8	Undertaking that expenditure, if any, incurred by NHAI for repairing any damage caused to the National Highway by the laying, maintenance or shifting of the gas line will be borne by the applicant agency owing the line.	Yes	
5.9	Undertaking that text of the text of the license deed is as per verbatim of MoRTH format (issued vide Ministry's circular no. RW/NH-33044/29/2015/S&R(R) dated 22.11.2016	Yes	
5.10	Undertaking that the applicant has obtained various safety clearances from the representative authorities such as Directorate of Electricity, Chief controller of Explosives, Petroleum and Explosive safety Organization, Oil Industry safety Directorate,	Yes	

MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari LPG Pipeline Project Page 8 of 11  
 Location: Between Km 0.000 to Km 10.890 km (10.890 km) in Muzaffarpur District.

सुमन  
 निर्माण प्रबंधक  
 मोतिहारी (पूर्वी चम्पारण)

एस.के.नन्दी/S.K NANDY  
 मुख्य महाप्रबन्धक (निर्माण)/Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 क्षेत्रीय निर्माण कार्यालय, पटना/Project Construction Office, Patna



	State/Central pollution control board and any other statutory clearances as applicable, before applying to Highway Administration		
5.11	If the MoRTH/NHAI consider it necessary in future to move the gas line for any work of improvement or repairs to the road, it will be carried out as desired by the MoRTH/NHAI at the cost of the agency owing the gas line within a reasonable time (not exceeding 60 days) of the intimation given.	Yes	
5.12	Certificate from the applicant in the following format (i) Laying of Gas pipe line will not have any deleterious effects on any of the bridge components and roadway safety for traffic. (ii) "We do undertake that I/we will relocate service road/approach road/utilities at my/our own cost notwithstanding the permission granted within such time as will be stipulated by NHAI" for future six-lanning or any other development."	Enclosed	
6	Who will sign the agreement on behalf of Gas pipe line agency.	Chief General Manager , Indian Oil Corporation Limited (Pipelines Division) ERPL Construction Office, Patna.	
	Power of Attorney to sign the agreement is available or not	Yes	
7	The project Director will submit the following Certificates		
7.1	Certificate that the proposal is confirming to all standard conditions issued vide Ministry's circular No: RW/NH-33044/29/2015/S&(R) dated 22.11.2016	Yes	

MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari LPG Pipeline Project, Page 9 of 11  
Location: Between Km 0.000 to Km 10.890 km (10.890 km) in Muzaffarpur District.

म.प्र.स. कु. सुमन  
निर्माण प्रबंधक  
मोतिहारी (पूर्वी चम्पारण)

  
एस.के. नंदी S. K. NADY  
मुख्य महाप्रबंधक (निर्माण)/Chief General Manager (Const.)  
इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
सेक्टर निर्माण कार्यालय, एरप्ल/Project Construction Office, Patna  
हिरा निवेशक कॉलेज नगर, बेली रोड, पटना-801503  
Hira Niveshak Kollat Nagar, Bailey Road, Patna-801503

7.2	<p>Certificate from PD in the following format</p> <p>(i) "It is certified that any other location of the Gas pipe line would be extremely difficult and unreasonable costly and the installation of Product pipe line within ROW will not adversely affect the design, stability &amp; traffic safety of the Highway nor the likely future improvement such as widening of the carriageway, easing of curve etc."</p> <p>(ii) for 6-lanning</p> <p>(a) Where feasibility is available "I do certify that there will be no hindrance to proposed six-laning based on the feasibility report considering proposed structures at the said location".</p> <p>(b) In case feasibility report is not available "I do certify that sufficient ROW is available at site for accommodating proposed six-lining".</p>	Yes	
8	<p>If NH section proposed to be taken up by NHAI on BOT basis - a clause is to be inserted in the agreement. "The permitted Highway on which License has been granted the right to lay gas Pipeline/duct has also been granted as a right of way to the concessionaire under the concession agreement for up-gradation of [-----] section from Km-----to km-----of NH no.-----</p>	Yes	

MFP Bypass NH U/C Road along the NH application of IOCL - Muzaffarpur-Motihari LPG Pipeline Project. Page 10 of 10  
 Location: Between Km 8.000 to Km 10.890 km (10.890 km) in Muzaffarpur District.

श्रीश कुं सुमन,  
 निर्माण प्रबंधक,  
 मोतिहारी (पु. न. बंगाल),

एस.के.नन्दा/S.K. NANDY  
 मुख्य प्रशासक (निर्माण)/Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड, Indian Oil Corp. Ltd.  
 क्षेत्रीय निर्माण कार्यालय, राज्य/Project Construction Office, Patna  
 क्षेत्र निवेश, बालिगंगा नगर, प्लॉट रोड, पटना-801503





The image displays four horizontal panels, labeled PART-01, PART-02, PART-03, and PART-04, showing a proposed LPG pipeline route. The route is highlighted in yellow and passes through various land parcels. Labels include 'Proposed LPG Pipeline', 'To Bhabhar area', and 'To Bhabhar area'. The panels are labeled PART-01, PART-02, PART-03, and PART-04.

हरीश कु० सुमा  
निर्माण प्रबंधक

A handwritten signature "Hil" in blue ink is written across the top right portion of the page, overlapping the header area and the top of the table. The signature is stylized and slanted.

मुख्य महाप्रबंधक (निर्माण) / Chief General Manager (Const.)  
 हिरेन नैकेतन कॉर्पोरेशन लिमिटेड / Hira Niketan Ind. Corp. Ltd.  
 प्रोजेक्ट निर्माण कार्यालय, पर्याप्त / Project Construction Office, Patna  
 हिरा निकेतन, कालिकेत नगर, बेली रोड, पटना-801503  
 Hira Niketan Kaliket Nagar, Bailey Road, Patna-801503



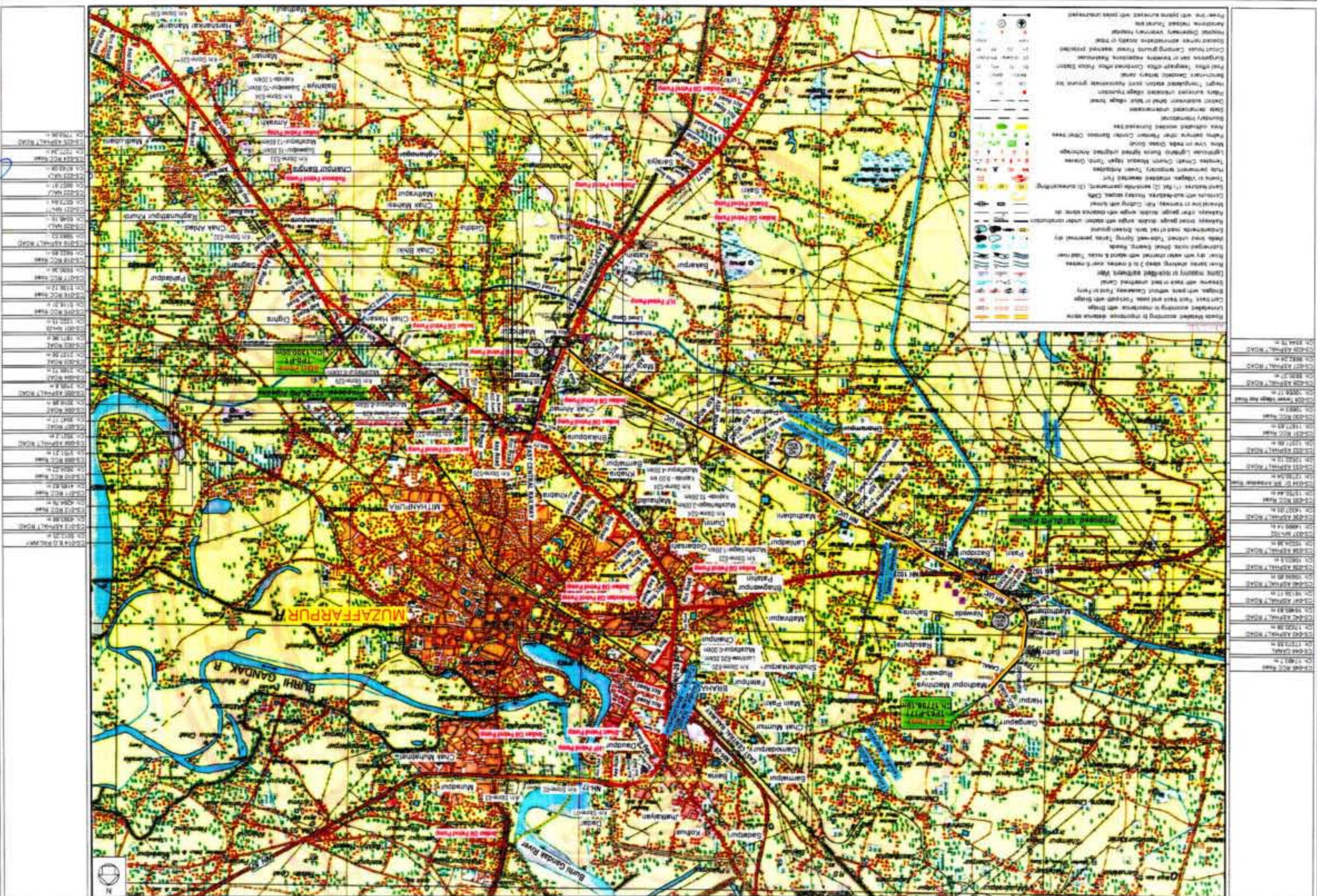
10/10/10

**ROUTE MAP**  
**FROM MUZAFFARPUR TO MOTHARI**

Scale: 0 100 200 300 400 500 600 700 800 900 1000

**TP TABLE**

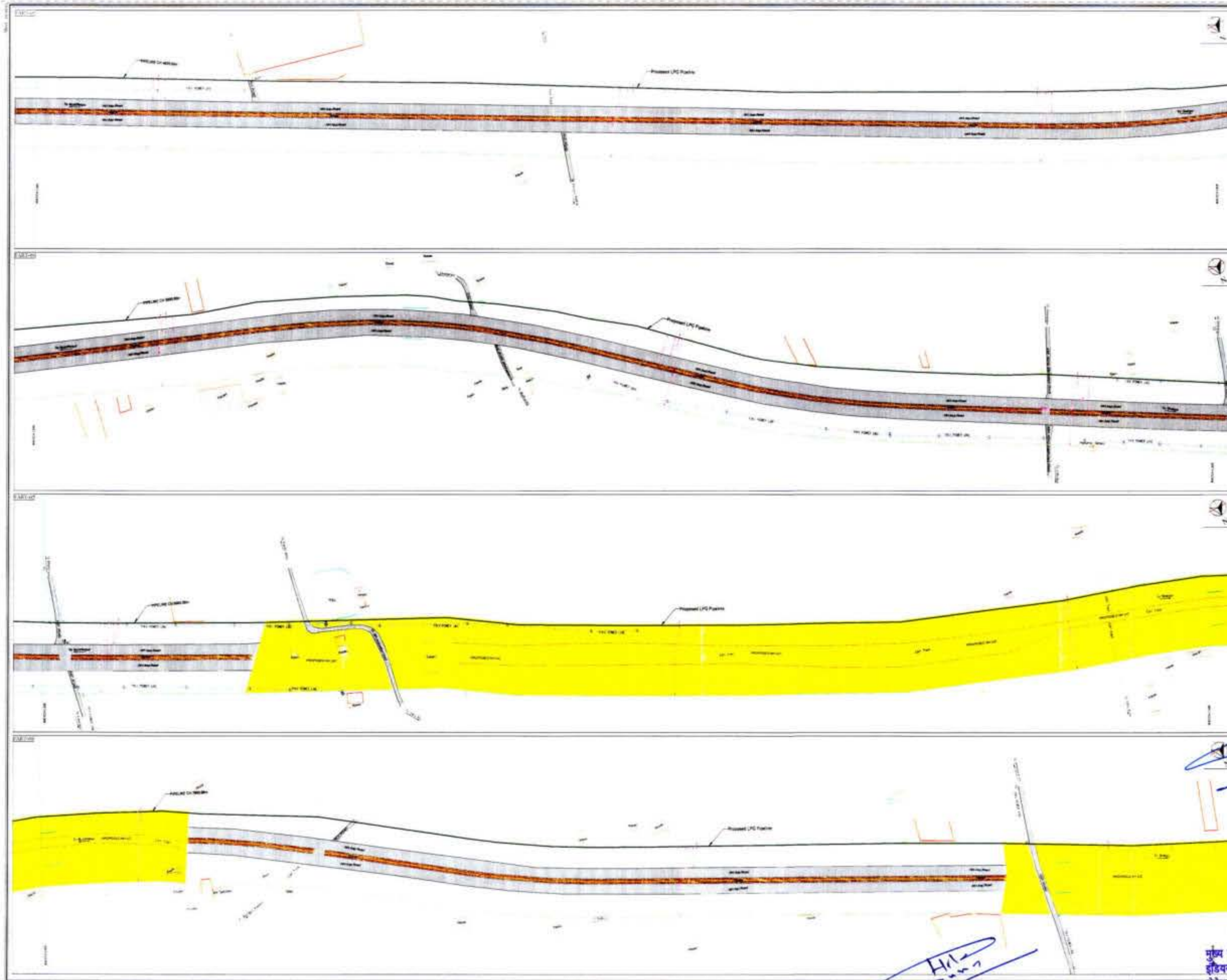
TPNO	CHARGE	LENGTH
TP01	1350.00	1350.00
TP02	1350.00	1350.00
TP03	1350.00	1350.00
TP04	1350.00	1350.00
TP05	1350.00	1350.00
TP06	1350.00	1350.00
TP07	1350.00	1350.00
TP08	1350.00	1350.00
TP09	1350.00	1350.00
TP10	1350.00	1350.00
TP11	1350.00	1350.00
TP12	1350.00	1350.00
TP13	1350.00	1350.00
TP14	1350.00	1350.00
TP15	1350.00	1350.00
TP16	1350.00	1350.00
TP17	1350.00	1350.00
TP18	1350.00	1350.00
TP19	1350.00	1350.00
TP20	1350.00	1350.00
TP21	1350.00	1350.00
TP22	1350.00	1350.00
TP23	1350.00	1350.00
TP24	1350.00	1350.00
TP25	1350.00	1350.00
TP26	1350.00	1350.00
TP27	1350.00	1350.00
TP28	1350.00	1350.00
TP29	1350.00	1350.00
TP30	1350.00	1350.00
TP31	1350.00	1350.00
TP32	1350.00	1350.00
TP33	1350.00	1350.00
TP34	1350.00	1350.00
TP35	1350.00	1350.00
TP36	1350.00	1350.00
TP37	1350.00	1350.00
TP38	1350.00	1350.00
TP39	1350.00	1350.00
TP40	1350.00	1350.00
TP41	1350.00	1350.00
TP42	1350.00	1350.00
TP43	1350.00	1350.00
TP44	1350.00	1350.00
TP45	1350.00	1350.00
TP46	1350.00	1350.00
TP47	1350.00	1350.00
TP48	1350.00	1350.00
TP49	1350.00	1350.00
TP50	1350.00	1350.00
TP51	1350.00	1350.00
TP52	1350.00	1350.00
TP53	1350.00	1350.00
TP54	1350.00	1350.00
TP55	1350.00	1350.00
TP56	1350.00	1350.00
TP57	1350.00	1350.00
TP58	1350.00	1350.00
TP59	1350.00	1350.00
TP60	1350.00	1350.00
TP61	1350.00	1350.00
TP62	1350.00	1350.00
TP63	1350.00	1350.00



REVIEWED AND REEVALUATED BY: DR. H. ANDRÉ PATIL CONSULTANTS, BHARUCHA.

Sheet: 01 of 03





CONTINUOUS ROUTE MAP

NO.	DESCRIPTION	DATE	BY
1	REVISION		
2			
3			
4			
5			
6			
7			
8			
9			
10			

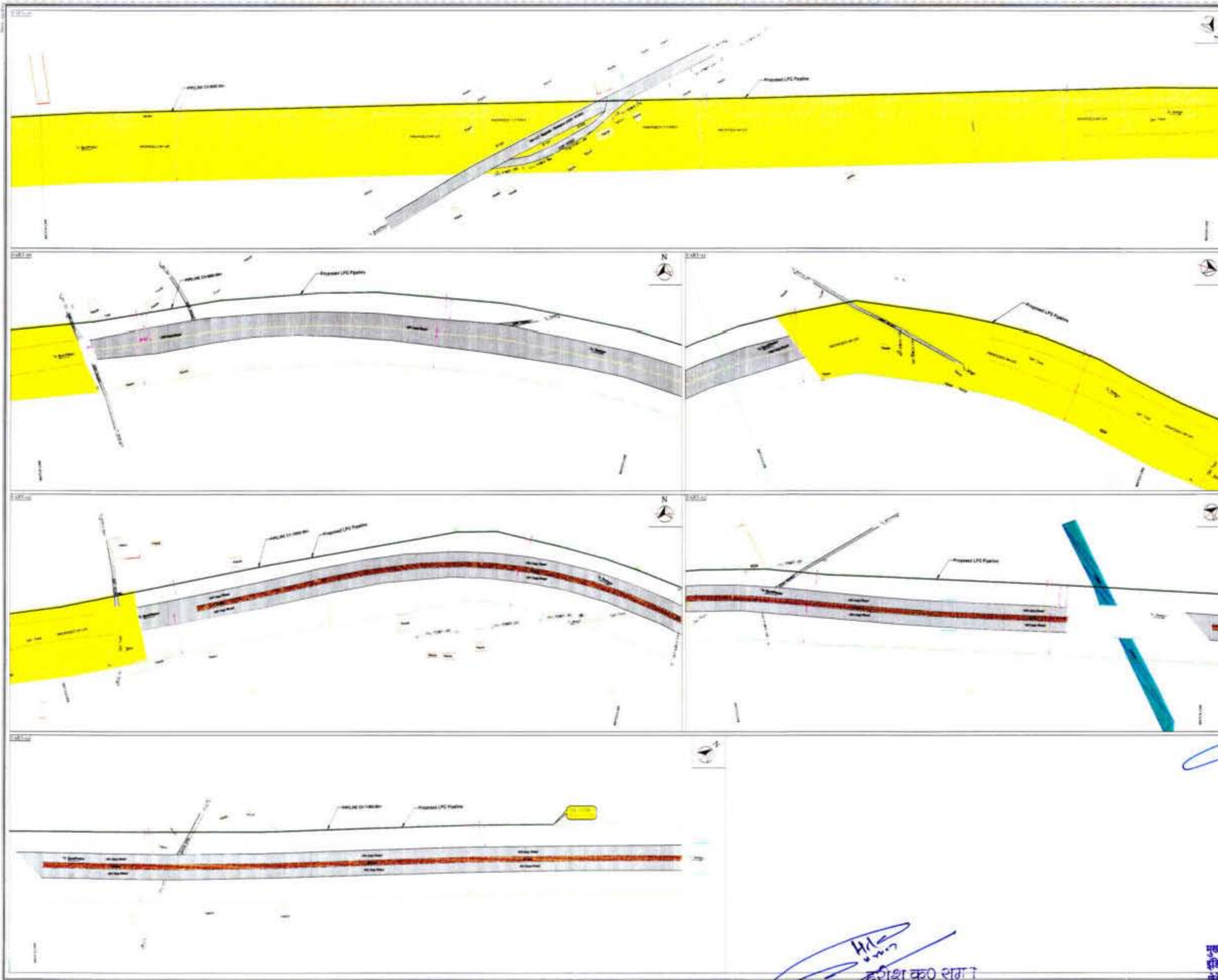
एस.के.नन्दी/S.K. NANDY

मुख्य महाप्रबंधक (निर्माण)/Chief General Manager (Const.)  
 इंडियन ऑइल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 प्रोजेक्ट निर्माण कार्यालय, पटना/Project Construction Office, Patna  
 हिरा निकेतन, कालिकेत नगर, बेली रोड, पटना-801503  
 Hira Niketan Kaliket Nagar, Bailey Road, Patna-801503

हरीश कुंठु सुमन

निर्माण विभाग  
 मोति (चौक)





CONTINUOUS ROUTE MAP

REVISION	DATE	BY	CHKD	APPD
1	10/01/2017	...	...	...
2	10/01/2017	...	...	...
3	10/01/2017	...	...	...
4	10/01/2017	...	...	...
5	10/01/2017	...	...	...
6	10/01/2017	...	...	...
7	10/01/2017	...	...	...
8	10/01/2017	...	...	...
9	10/01/2017	...	...	...
10	10/01/2017	...	...	...

एस.के.नन्दी/S.K. NANDY  
 मुख्य महाप्रबंधक (निर्माण)/Chief General Manager (Const.)  
 इंडियन ऑयल कॉर्पोरेशन लिमिटेड/Indian Oil Corp. Ltd.  
 प्रोजेक्ट निर्माण कार्यालय, पटना/Project Construction Office, Patna  
 हीरा निकेतन, कलिकेत नगर, बैली रोड, पटना-801503  
 Hira Niketan Kaliket Nagar, Bailey Road, Patna-801503

निर्माण प्रबंधक  
 मोतिहारी (पूर्वी)