भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सड़क परिवहन और राजमार्ग मंत्रालय)
National Highways Authority of India
(Ministry of Road Transport & Highways)
कार्यालय क्षेत्रीय अधिकारी, आंध्र प्रदेश क्षेत्र
Office of the Regional Officer, Andhra Pradesh Region
प्लॉट.क्र.२१, टीचर्स कॉलोनी, गुरुनानक नगर मार्ग, विजयवाड़ा-५२० ००८.आंध्र प्रदेश
Plot No.21, Teacher's Colony, Gurunanak Nagar Road, Vijayawada-520 008. A.P.
टेली / Tele : 0866-2483910
ई-मेल / E-mail : rovijayawada@nhai.org
nhairovja@gmail.com

भारतमाला
प्रगति के पथ पर अग्रसर
BHARATMALA
ROAD TO PROSPERITY

Lr.No NHAI/RO-VJA/11045/NOC/2020-21/ 927 Dt.28.04.2021

INVITATION OF PUBLIC COMMENTS

Sub: **RO - Vijayawada** - Grant of permission for laying of 18" dia Natural Gas Pipeline by M/s. GAIL (India) Limited along with 6" dia OFC by standard HDD method using bundle for carrier pipe and OFC across NH-16 at Km.537.89 for a length of 63.890mt - **Public comments** - Reg.

The Project Director, PIU - Visakhapatnam submitted a proposal of GAIL (India) Ltd. for laying of 18" dia Natural Gas Pipeline along with 6" dia OFC by standard HDD method across NH-16 at Km.537.89 in Turkalakota Village, Srikakulam District for a length of 63.890mt.

As per MORTH guidelines vide letter No. RW/NH-33044/29/2015/S&R® dated 22nd November 2016, the Highway Administration will put out the application in the Ministry's website for 30 days seeking claims and objections (on grounds of public inconvenience, safety and general public interest).

In view of the above, the comments of public, if any, on the above mentioned proposal is invited on below mentioned address.

Regional Officer - Vijayawada,
National Highways Authority of India,
Plot No.21, Teachers' Colony, Gurunanak Nagar Road,
Vijayawada, Andhra Pradesh. Pin: 520 008.
Email: rovijayawada@nhai.org

(R.K. Singh),
Regional Officer
RO - Vijayawada

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
National Highways Authority of India
(सड़क परिवहन और राजमार्ग मंत्रालय)
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS)
परियोजना कार्यान्वयन इकाई (जि क्यू), भा.रा.रा.पा. एन्क्लेव, कि.मी.2/8 रा.रा.5.,
Project Implementation Unit (GQ), NHAI Enclave, KM 2/8 NH-16
हनुमन्तवाका, विशाखपट्टणम - 530 040, ए.पि., भारत
Hanumanthavaka, Visakhapatnam - 530 040, A.P., India

भारतमाला
प्रगति के पथ पर अग्रसर
BHARATMALA
ROAD TO PROSPERITY
दूरभाष / Phone : 0891-2707600
2714119
फाक्स / Fax No. : 0891-2714118
ई-मेइल / E-mail : vis@nhai.org

NHAI/PIU-VSP/GAIL/2020-21/ 7433 Date:26.03.2021

To

The Regional Officer,
National Highways Authority of India,
Regional Office, Gurunanak Nagar,
Teachers Colony,
VIJAYAWADA.

RECEIVED 01 APR 2021 2405

Sub: NHAI - PIU, Visakhapatnam - Srikakulam - Angul Natural Gas Pipeline Project: - Request for granting permission to lay 18" dia Natural Gas pipeline along with OFC by Standard HDD method and OFC across National Highway-16 at 537.89 km in Village - Turkalakota, District- Srikakulam,State-AndhraPradesh-Approval request-Reg.

Ref: 1. M/s. GAIL Lr No. SAPL/KSPL/NH/NHAI2020/5034 dated 07.01.2021
2. Lr. No. NHAI/PIU - VSP/TOT-Access Permission/2019/6907, Dated: 16.01.2021
3. Lr. No. LION/IE-0819/NHAI-SC-NIP/591 Dt.18.02.2021 received

Sir,

Vide letter 01st cited, M/s GAIL(India)Limited, has applied for permission to lay 18" dia Natural Gas pipeline along with OFC by Standard HDD method and OFC across National Highway-16 at 537.89 km in Village - Turkalakota, District- Srikakulam,State-AndhraPradesh

The proposal has been inspected and verified by M/s The Lion Engineering Consultants and submitted their recommendations vide their letter under 1st reference (copy enclosed) as per the guidelines.

The following documents are submitted by the Agency duly complying provision for access permission for laying of utility services across the National Highways as per circular No.RW/NH-33044/29/2015/S&R(R) dt 22.11.2016

(a) Proposal letter.
(b) Check List.
(c) Licence fee estimate.
(d) Specification report.
(e) Licensed lease agreement.
(f) UndertakingCertificate.
(g) Certificate.
(h) Standard Technical Specifications for pipeline crossings using HDD (Horizontal Directional Drilling Method).
(i) Location plan.
(j) Typical profile for NH-16 crossing by HDD Method.
(k) Cadastral Map

In view of the recommendations of the Consultants, the proposal submitted by M/s GAIL(India)Limited, for permission for crossing of Kakinada to Srikakulam Natural Gas Pipeline along with OFC duct across NH-16 at Km.537.890 is herewith recommended for communicating the approval of Competent Authority.

Yours truly,

Encl: Proposal in two sets
(01 Original + 01 Duplicate)

(P.Siva Sankar)
GM(T) & Project Director 26/3/21

CERTIFICATE

1 It is certified that the proposal for "M/s GAIL(India)Limited, has applied for permission to lay 18" dia Natural Gas pipeline along with OFC by Standard HDD method and OFC across National Highway-16 at 537.89 km in Village - Turkalakota, District- Srikakulam,State-AndhraPradesh" is confirming of all the standard conditions / guidelines issued vide Ministry circular No. RW/NH-33023/19/99-DO-III dt.24.07.2013 and No. RW/NH-33044/29/2015/S&R(R) dt. 22.11.2016.

2 It is certified that any other location of the Gas pipeline would be extremely difficult and unreasonable costly and the installed of gas pipeline within ROW will jnot adversely affect the design, stability & Traffic safety of the Highway nor the likely future improvement such as widening of the carriageway, easing of curve,

3 It is certified that there will be no hindrance to the six-laning based on the feasibility at the said location, if six-laning project is taken up, as the agency has given an undertaking that the shifting of the gas pipeline shall be done by M/s GAIL at their own cost on request of NHAI.

4 It is certified that the details of the proposed permission shall be entered in the Register of Records of the Permission maintained by PIU.

25/3/21.

Prashant Kumar Mishra
Dy Manager(Tech)

(P.Siva Sankar)
GM (T) &Project Director
NHAI, PIU, Visakhapatnam

Calculation of License Fees & Performance Bank Guarantee Amount

Request for granting permission to lay 18" dia Natural Gas pipeline along with OFC by Standard HDD method using bundle for carrier pipe and OFC across NH- 16 at 537.89 Km at Village - Turukalavalasa, Taluka – Nadigam, District – Srikakulam in the state of Andhra Pradesh.

Sl. No.	Name of Village	Chainage from km	Chainage to km	Length route Mtrs.	Width Mtrs. Utilised land	Utilized NH Land Area Sq. Mtrs.	Prevailing Circle rate of Land in Rs./Sq.meters (As per Revenue Records)	Amount Rs.	Remarks
1	Turukalavalasa, Nadigam Mandal, Srikakulam district.	Km. 537.890		63.89	1.010	65	790	50,978	For natural gas Main pipe line
				64					
Total Amount								**50,978**	
License Fees (Rs./month) =						**50,978**	**/10x12**	**425**	
Total License Fees for 5 years =						**425**	**x12x5**	**21,300**	
Total License Fees payable by GAIL India ltd Laying of natural gas pipeline srikakulam angul pipeline project								**21,300**	
The Licence fee for public utilities shall be 33% of the fee prescribed for Industrial utilities as per point 5 of MoRTH guidelines vide Lr.No. RW/NH/33044/29/2015/S&R(R) dt. 22.11.2016								**7,029**	

Performance Bank Guarantee Amount calculation

Amount of Performance Bank Guarantee to be submitted = Total No. of route meters x Rs. 500/- per route meter (> 1000 mm dia/width)
I.e. 63.89 x Rs. 500/- = 31945/-

Performance Bank Guarantee Amount = 31,945/-

DyM(T)

GM(T) & Project Director
PIU-Visakhapatnam

गेल (इंडिया) लिमिटेड
(भारत सरकार का उपक्रम - महारत्न कम्पनी)
GAIL (India) Limited
(A Govt. of India Undertaking - A Maharatna Company)

जुबली टावर,
बी–35-36, सेक्टर–1,
नौएडा–201301, इंडिया

JUBILEE TOWER,
B-35-36, SECTOR-1,
NOIDA-201301, INDIA

फोन/PHONE : +91 120 2446400, 4862400
फैक्स/FAX : +91 11 2618 5941

No. GAIL/SAPL/NH/NHAI/2020/ 5034

Date: 07.01.2021

To,
P.Siva Sankar,
GM(T) & Project Director,
NHAI, PIU(GQ), NHAI Enclave
Hanumanthavaka, Visakhapatnam,
Andhra Pradesh-530040

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12 JAN 2021
34
NHAI, PIU, VISAKHAPATNAM

SUBJECT: Request for granting permission to lay 18" dia Natural Gas pipeline along with OFC by standard HDD method using bundle for carrier pipe and OFC across NH-16 at Km 537.89

Ref no.: Our Application No. GAIL/SAPL/NH/NHAI/2020/05 dated 23.09.2020
Your letter No. NHAI/PIU-VSP/TOT-GAIL-Km 537.89/2020/6614

Dear Sir,

With reference above and as per joint visit with your representative, we would like to submit herewith the amended application for granting permission to lay Natural Gas pipeline along with OFC **by Standard HDD method using bundle for carrier pipe and OFC** across NH-16 at Km 537.89 in Village - Turkalakota, Taluka – Nandigam & Distict - Srikakulam, Andhra Pradesh.

The amendment of proposal prepared with revision of crossing location incorporated in drawings and other relevant documents as per guideline issued by MoRTH vide circular dated 22/11/2016 for your further necessary action.

GAIL (INDIA) LIMITED, shall take all necessary safety precautions as per PNGRB Guidelines, safety standards and relevant Government norms during and after laying of the pipeline.

We are willing to fulfil all requisite formalities including submission of applications as per your prescribed format, payment of fee, execution of agreement, if any, etc. to get your expeditious approval to lay the pipeline.

We solicit your kind cooperation and help for an appropriate early action for processing our request.

पंजीकृत कार्यालय :
गेल भवन, 16, भीकाएजी कामा प्लेस,
नई दिल्ली-110 066 इंडिया

REGD. OFFICE :
GAIL BHAWAN, 16, BHIKAJI CAMA PLACE,
NEW DELHI-110 066, INDIA

सीआईएन/CIN
L40200DL1984GO1018976

Website : www.gailonline.com

This pipeline project is of National importance and is being implemented in a time bound manner. This ambitious project is being monitored closely by the highest levels in the Govt. of India. Natural Gas Pipeline infrastructure development will also contribute to national prosperity for Socio–economic needs. Therefore, most expeditious actions are requested.

Thanking You,

Yours Sincerely,
For GAIL (INDIA) LIMITED,

R.K.Verma
DGM (S&LR)

CHECK – LIST

Guidelines for Project Directors for processing the proposal for laying of Gas Pipeline in the land along National Highways vested with NHAI.

· **Relevant circulars of Ministry of Road Transport and Highways**

1) Circular No. RW/NH-33044/29/2015/S&R (R) dated 22.11.2016

Check list for getting approval for laying of Gas pipeline on NH land (To be filled by the PIU).

The permission for laying of Gas pipe Line shall be considered for approval / rejection based on the Ministry Circulars mentioned as above.

(a) Carrying of sewage /gas pipelines on highway Bridges shall not be permitted as Furmes/gases pipes can accelerate the process of corrosion or may cause explosions, thus, being much more injurious than leakage of

(b) Services are not being allowed indiscriminately on the parapet/any part of the bridges, Safety of the bridges has to be kept in view while permitting various services along bridge.

S.N0	Item	Information/Status	Remarks
1	General Information		
1.1	Name and Address of the Applicant/Agency	GAIL(INDIA) Limited, Jubilee Tower B-35 & 36, Sector – 1 Noida (U.P.) – 201301	
1.2	National Highway Number	NH-16	
1.3	State	Andhra Pradesh	
1.4	Location	At Village - Turkalakota, Taluka - Nandigam, District - Shrikakulam.	
1.5	(Chainage in km)	537.89 Km	
1.6	Length in Meters	63.89 m	Crossing
1.7	Width of available ROW		
	(a) Left side from center line towards increasing chainage/km direction	30.19 m	Crossing
	(b) Right side from center line towards increasing chainage/ km direction	33.70 m	Crossing
1.8	Proposal to lay underground electrical cable/OFC		
	(a) Left side from center line towards increasing chainage/km direction.	NA	
	(b) Right side from center line towards increasing chainage/km direction.	NA	
1.9	Proposal to acquire land		
	(a) Left side from center line.	NA	
	(b) Right side from center line.	NA	
1.10	Whether proposal is in the same side where land is not to be acquired	NA	
	If not then where to lay the cable.	NA	
1.11	Details of already laid services, If any, along the proposed route	NA	
1.12	Number of existing lanes (2/4/6/8 lanes)	4 lanes	
1.13	Proposed Number of lanes (2 lanes with paved shoulders/4/6/8 lanes)	NA	
1.14	Service road existing or not	Not exist	
	If yes then which side		
	(a) Left side from centre line		
	(b) Right side from centre line		
1.15	Proposed service road	Not exist	
	(a) Left side from center line		
	(b) Right side from center line		
1.16	Whether proposal to lay Gas pipeline is after the service road or between the service road and main carriageway	NA	

प्रमोद कुमार तिवारी

Project Director
National Highways Authority of India
P.I.U. VISAKHAPATNAM

आर. के. वर्मा / R. K. VERMA
उप महाप्रबंधक (सर्व एवं भू.अ.) / Dy General Manager
गेल (इंडिया) लिमिटेड / GAIL (India) Limited
8वां तल, गेल जुबिली टॉवर बी-35-36, सेक्टर-1, नोएडा
8th Floor, GAIL Jubilee Tower B-35-36, Sec.-1, Noida

S.N0	Item	Information/Status	Remarks
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.	NO	
1.18	If crossing of the road involved	Crossing will be done by Standard HDD Method using bundle for carrier pipe and OFC	
	if yes, it shall be either encased in pipes or through structure or conduits specially built for that purpose at the expenses of the agency owning the line		
	(a) Whether existing drainage structures are allowed to carry sewage / Gas pipeline	NA	
	(b) Is it on a line normal to NH	~~NA~~ YES	
	(c) What is the distance of crossing the sewage/ Gas pipelines from the existing structures. Crossings shall not be too near the existing structures on the National Highway, the minimum distance being 15 meter.	More than 15 m	
	(d) The casing pipe (or conduit pipe in the case of electric / OFC cable) carrying the utility line shall be of steel, cast iron, or reinforced cement concrete and have adequate strength and be large enough to permit ready withdrawal of the carrier pipe/cable. Mention type of casing.	Steel	
	(e) Ends of the 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 should be at least 1.2meter below the surface of the road subject to being at least 0.3 m below the drain inverts. Mention the proposed details.	2.0 Mtr below the lowest ground level.	
	(h) Mention the methodology proposed for crossing of road for the proposed sewage / pipeline. Crossing shall be by boring method (HDD) [Trench-less Technology] especially where the existing road pavement is of cement concrete or dense bituminous concrete type.	Crossing will be done by Standard HDD Method using bundle for carrier pipe and OFC	
	(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 a waterway along it.	Yes	
2	Document / Drawings to be enclosed with the proposal.		
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) (i) Should not be greater than 60 cm wider than the outer diameter of the pipe. (ii) Located as close to the extreme edge of the right-of-way as possible but not less than 15 meter from the centre-lines of the nearest carriageway. (iii) Shall not be permitted to run along the National Highways when the road formation is situated in double cutting. Nor shall these be laid over the existing culverts and bridges. (iv) These should be so laid that their top is at least 0.6 meter below the ground level so as not to obstruct drainage of the road land.	NA	

आर. के. वर्मा / R. K. VERMA
उप महाप्रबंधक (सर्वे एवं भूमि)/Dy. General Manager (S&LR)
गेल (इंडिया) लिमिटेड/GAIL (India) Limited
8वां तल, गेल जुबली टॉवर बी-35-36, सेक्टर-1, नोएडा (यू.पी.)
8th Floor, GAIL Jubilee Tower B-35-36, Sec.-1, Noida (U.P.)

Project Director
National Highways Authority of India
P.I.U. VISAKHAPATNAM

S.N0	Item	Information/Status	Remarks
2.2	Cross section showing the size of pit and location of cable for HDD method.	Yes	
2.3	Strip plan / Route Plan showing Gas pipe line, Chainage, width of ROW, distance of proposed Gas pipeline with OFC from the edge of ROW, important mile stone, intersections, cross drainage works etc.	Incorporated in the Drawing	
2.4	Methodology for laying of Gas pipe line.		
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.	Crossing will be done by Standard HDD Method using bundle for carrier pipe and OFC	
	(a) The trench width should be at least 30 cm, but not more than 60 cm wider than the outer diameter of the pipe.	NA	
	(b) For filling of the trench, Bedding shall be to a depth of 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 edged should be excavated and replaced by selected material.	NA	
	(c) The backfill shall be completed in two stages (i) side fill to the level of the top to the pipe and (ii) overfill to the bottom of the road crust.	NA	
	(d) The side fill shall consist of granular material laid in 15cm layers each consolidated by mechanical tampering and controlled addition of moisture to 95% of the Proctor's Density. Over fill shall be compacted to the same density as the material that had been removed. Consolidation by saturation or pending will not be permitted.	NA	
	(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.	NA	
	(f) The excavation shall be protected by flagman, signs and barricades, and red lights during night hours.	NA	
	(g) If required, a diversion shall be constructed at the expenses of agency owning the utility line	NA	
2.4.2	Horizontal Directional Drilling (HDD) Method	Yes	
2.4.3	Methodology for laying of Gas pipe Line through CD works and method of laying. In cases where the carrying of Gas pipeline on the bridge becomes inescapable.	NA	
3	Draft License Agreement signed by two witnesses	Yes, Enclosed	
4	Performance Bank Guarantee in favour of NHAI has to be obtained @ Rs 100/- per running meter (parallel to NH) and Rs1,00,000/-per crossing of NH, for a period of one year initially (extendable if required till satisfactory completion of work)as a security for ensuring/making good the excavated trench for laying the Gas pipeline with OFC /ducts by proper filling and compaction, clearing Debris/loose earth produced due to execution of trenching at least 50m away from the edge of the right of way. No payment shall be payable by the NHAI to the licensee for clearing debris /loose earth. Performance BG as per above is to be obtained.	Undertaking has been attached.	
4.1	Confirmation of BG has been obtained or not as per NHAI guidelines	Yes	Shall be obtained after getting approval.

Project Director
National Highways Authority of India
P.I.U. VISAKHAPATNAM

आर. के. वर्मा / R. K. VERMA
उप महाप्रबंधक (सर्व ए[illegible]) / Dy. General Manager (S&LP)
गेल (इंडिया) लिमिटेड/GAIL (India) Limited
8वां तल, गेल जुबली टॉवर बी-35-36, सेक्टर-1, नोएडा (उ.प्र.)
8th Floor, GAIL Jubilee Tower B-35-36, Sec.-1, Noida (U.P.)

S.N0	Item	Information/Status	Remarks
5	Affidavit / Undertaking from the Applicant for the following is to be furnished.		
5.1	Not to Damage to other utility, if damaged then pay the losses either to NHAI or to the concerned agency	Yes, Enclosed	
5.2	For Renewal of Bank Guarantee	Yes, Enclosed	
5.3	For Confirming all standard condition of Ministry Circulars and NHAI's guideline	Yes, Enclosed	
5.4	For Shifting of Gas pipe line as and when required by NHAI at their own cost	Yes, Enclosed	
5.5	For Shifting of Gas pipeline due to 6 lanning / widening of NH	Yes, Enclosed	
5.6	For Indemnity against all damages and claims	Yes, Enclosed	
5.7	For Traffic movement during laying of Gas pipe line to be managed by the applicant.	Yes, Enclosed	
5.8	If any claim is raised by the Concessionaire then the same has to be paid by the applicant.	Yes, Enclosed	
5.9	Prior approval of the NHAI shall be obtained before undertaking any work if installation, shifting or repairs, or alterations to the Gas pipe line/any other utility located in the National Highway right-of-ways.	Yes, Enclosed	
5.10	Expenditure, if any, incurred by NHAI for repairing any damage caused to the National Highway by the laying, maintenance or shifting of the Gas pipe line will be borne by the applicant agency owning the line.	Yes, Enclosed	
5.11	If the NHAI considers 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 the agency owning the utility line within a reasonable time (not exceeding 60 days) of the intimation given.	Yes, Enclosed	
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.	Yes, Enclosed	
	(ii) "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-lanning or any other development."	Yes, Enclosed	
6	Who will sign the agreement on behalf of Gas pipe line agency?	Deputy General Manager on behalf of Gail (India) Limited	
	Power of Attorney to sign the agreement is available or not	Yes, Enclosed	
7	The Project Director, will submit the following Certificates.		
7.1	Certificate for proposal for confirming of all standard condition issued vide Ministry of Road Transport and Highways Circular No. NH-III /P /66 /76 dated 18/19.11.1976, RW/NH-III/P/66/76 dated 11.5.1982, RW/NH-11037/1/86/DOI (ii) dated 28.7.1993, RW/NH-11037/1/86/DOI dated 19.1.1995, RW/NH-34066/2/95/S&R dated 25.10.1999, Circular No. RW/NH-34066/7/2003 S&R (B) dated 17.9.2003, RW/NH-33044/27/2000-S&R (R) dated 21.03.2006 and RW/NH-33044/29/2015/S&R (R) dated 22.11.2016		
7.2	Certificate from PD in the following format (i) " It is certified that any other location of the Gas pipeline would be extremely difficult and unreasonable costly and the installation of Gas pipeline within ROW will not adversely affect the design, stability & traffic safety of the highway nor the likely future improvement such as widening of the carriageway, easing of curve etc".		

आर. के. वर्मा / R. K. VERMA
उप महाप्रबंधक (एस एंड आर) / Dy. General Manager (S&R)
गेल (इंडिया) लिमिटेड / GAIL (India) Limited
8वां तल, गेल जुबली टॉवर बी-35-36, सेक्टर-1, नोएडा (उ.प्र.)
8th Floor, GAIL Jubilee Tower B-35-36, Sec.-1, Noida (U.P.)

Project Director
National Highways Authority of India
P.I.U. VISAKHAPATNAM

Dy.M(T)

S.N0	Item	Information/Status	Remarks
	(ii) for 6-laning (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 structure at the said location". (b) In case feasibility report is not available "I do certify that sufficient ROW is available at site for accommodating proposed six-laning".		
8	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 Licensee has been granted the right to lay Gas pipeline with OFC/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.-------------------- on Build, Operate and Transfer basis] and therefore, the licensee shall honour the same."	NA.	
9	Who will supervise the work of laying of Gas pipe line		
	(a) On behalf of the Applicant	Officer of Gail (India) Limited	
	(b) On behalf of NHAI	IE/Concessionaire on behalf of NHAI	
10	Who will ensure that the defects in road portion after laying of Gas pipe line are corrected and if not corrected then what action will be taken		
	(a) On behalf of the Applicant	Officer of Gail (India) Limited	
	(b) On behalf of NHAI	IE/Concessionaire on behalf of NHAI	
11	Who will pay the claims for damages done/disruption in working of Concessionaire if asked by the Concessionaire?		
	On behalf of the Applicant	Gail (India) Limited	
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	
13	If any previous approval is accorded for laying of underground Gas pipeline then Photocopy of register of records of permissions accorded as maintained by PD then copy be enclosed	Not accorded any pervious approval	

प्रशान्त कुमार सिंह
DyM(T)

Project Director
National Highways Authority of India
P.I.U. VISAKHAPATNAM

आर. के. वर्मा / R. K. VERMA
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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.
(e) The significant factors are no additional expense, high installation execution, minimal reclamation costs, higher speed on operation and etc. The HDD potentially make many utilities which don't operate by trench method. It is able to install underground pipes with minimum impact on society and the environment.

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Disadvantages

There are several advantages and disadvantages to use HDD at the field activities.

(a) It also has disadvantages to operate such as taking time, provided solid control and need to estimate of mud flow that can decrease by making an acceptable guide book. The guide book is a kind of manual to predict and decline of operation problems.

(b) One of the disadvantages of horizontal directional drilling is that large amounts of slurry are produced and have to be tankered away from the drilling site to landfill sites incurring significant costs for transport and landfill tax.

(c) The directional drilling process is a surface-launched method; therefore, it usually does not require access pits or exit pits. If utility installation is being undertaken, pits may be required to make connection with the existing utility. The rig working area should be reasonable level, firm, and suitable for movement of rig.

(d) Clay is considered ideal for HDD methods. Cohesion less fine sand and silt generally behave in afluid manner and stay suspended in the drill fluid for sufficient amount of time; therefore, they are also suitable for HDD Generally, mechanical drilling systems can be applied in a wide range of soil conditions. A pilot hole can be can be drilled through soil particles ranging from sand and clay to gravel, and even in continuous rock information, by using suitable drill bits.

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 pilot hole operations are not unlike those involved in drilling a directional oil well. Drill pipe and down hole 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.

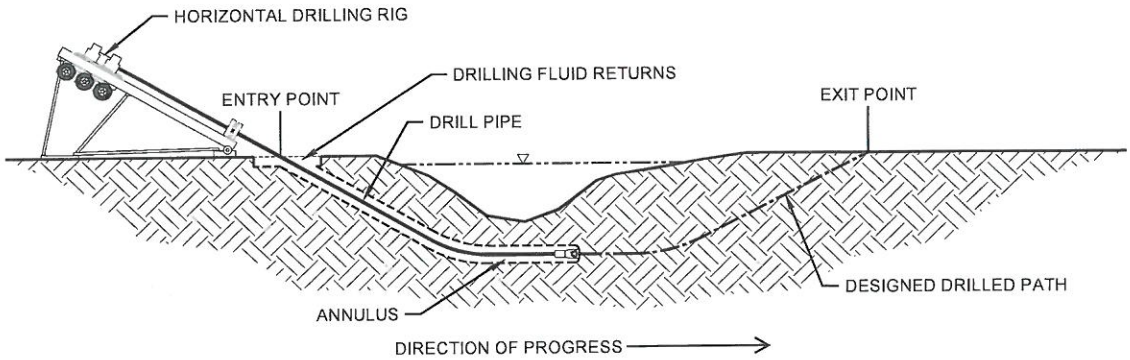
Pre-reaming

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.

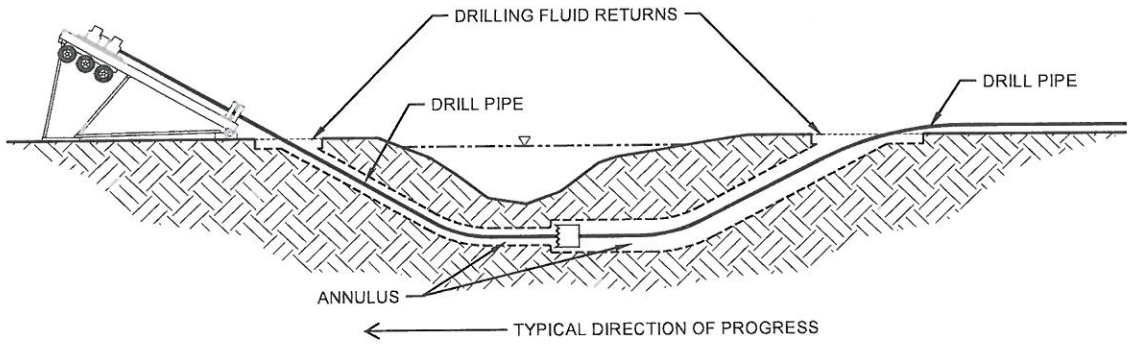
Pullback

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.

PILOT HOLE



PREREAMING



PULLBACK

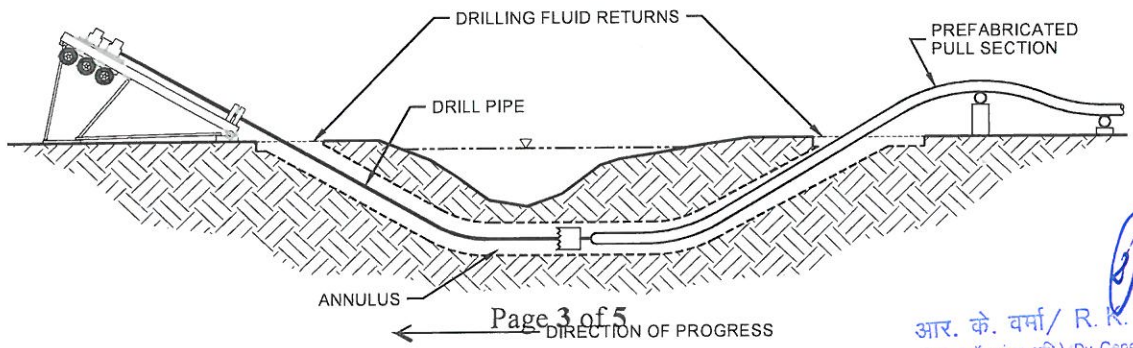


Figure 1

DISCUSSION

HDD has shown as a new method technology for installing sewer and water pipes, electronic cables gas pipe line, telecommunication and other utility lines under waterways, highways and ancient places tominimize environmental impacts. HDD increases in usage as a less environmentally-damaging alternative to traditional open-trench excavations. It should focus on the applications, limitations and potential environmental implications of HDD, along with construction and environmental.

For improving this method, need to plan a guide book focus on situations. The guide book is intended to minimize environmental impacts from installation within rights-of-way. It has been prepared in a menu format with an emphasis on the ability for the user. In this menu, there are details such as field inspectors (operation zone), environmental situations and soil conditions. Considerably, the guide can have positive effects to decrease of problems of HDD operation.

MUD RECYCLING

One of the disadvantages of horizontal directional drilling is that large amounts of slurry are produced and have to be tankered away from the drilling site to landfill sites incurring significant costs for transport and landfill tax.

To solve this problem, we invested in a mud recycling unit which works alongside the drilling rig throughout the drilling process. The MCM-2000 Drill Fluid Cleaning System recycles mud by separating solids from drilling fluids.

- Solids can be reused onsite or taken to conventional landfill sites for disposal
- Drill fluids are cleaned and can be reused again and again throughout the drilling process

The benefits of mud recycling are:

- Reduced disposal costs
- Lower landfill costs
- Lower transportation costs
- Reduced environmental impact
- Less pollution from reduced vehicle journeys
- Less material to landfill
- Solids not classified as hazardous waste

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CONCLUSIONS

HDD has been utilized primarily for the installation of services pipes, and more recently for utility activities such as telecommunication and electronic industry. The main features on selection of HDD equipment are factors such as the diameter rang depth of installation, drive length, type of casing, required working space, soil conditions, producing, etc. There are several advantages and disadvantages to use HDD at the field activities. The significant factors are no additional expense, high installation execution, minimal reclamation costs, higher speed on operation and etc. The HDD potentially make many utilities which don't operate by trench method. It is able to install underground pipes with minimum impact on society and the environment. It also has disadvantages to operate such as taking time, provided solid control and need to estimate of mud flow that can decrease by making an acceptable guide book. The guide book is a kind of manual to predict and decline of operation problems.

The End of HDD Process.

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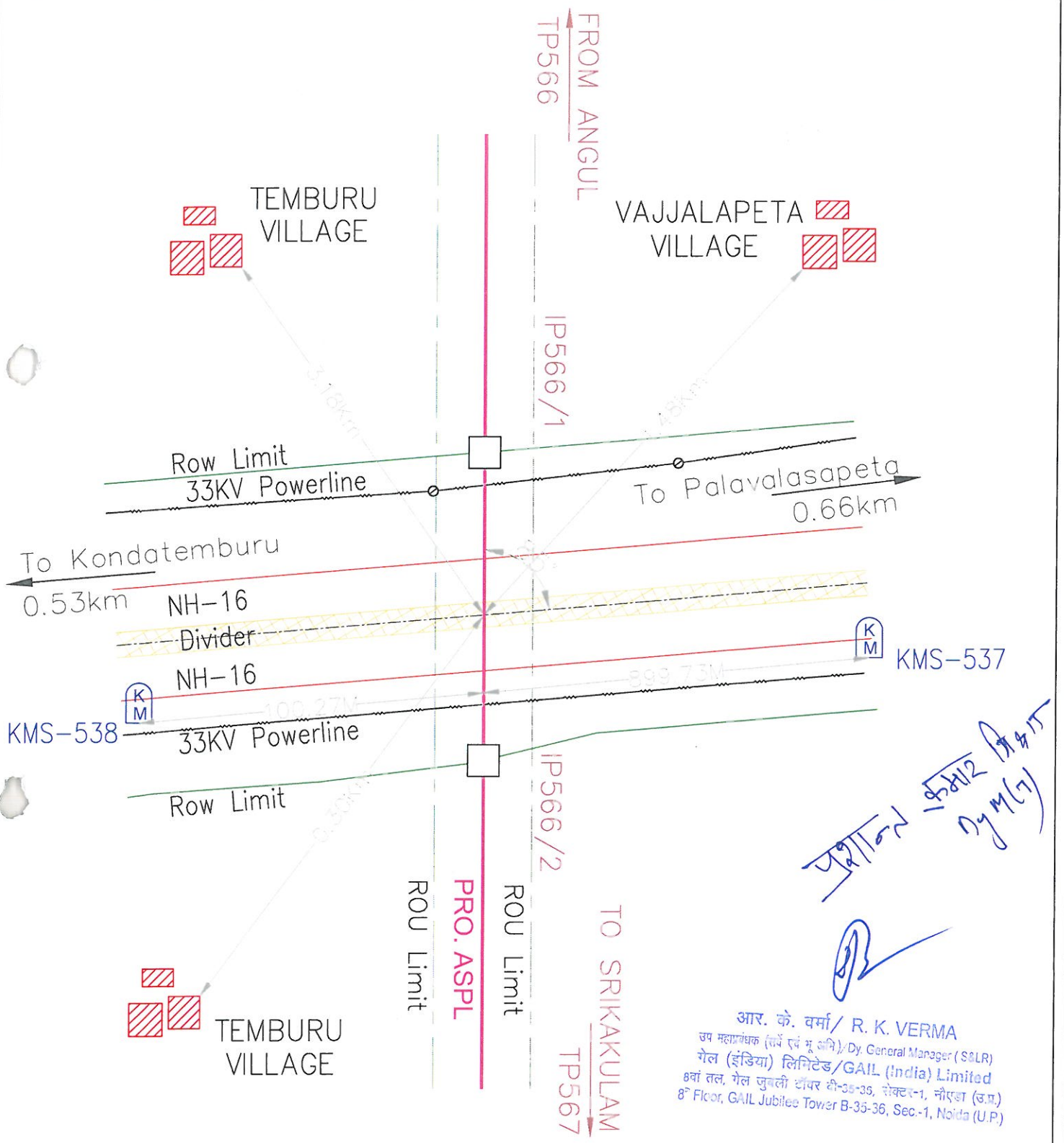
8th Floor, GAIL Jubilee Tower B-35-36, Sec.-1, Noida (U.P.)

KEY PLAN

(NOT TO SCALE)

NATIONAL HIGHWAY–16

AT CH.537+899.73KM PIPELINE CH.352+668.28KM



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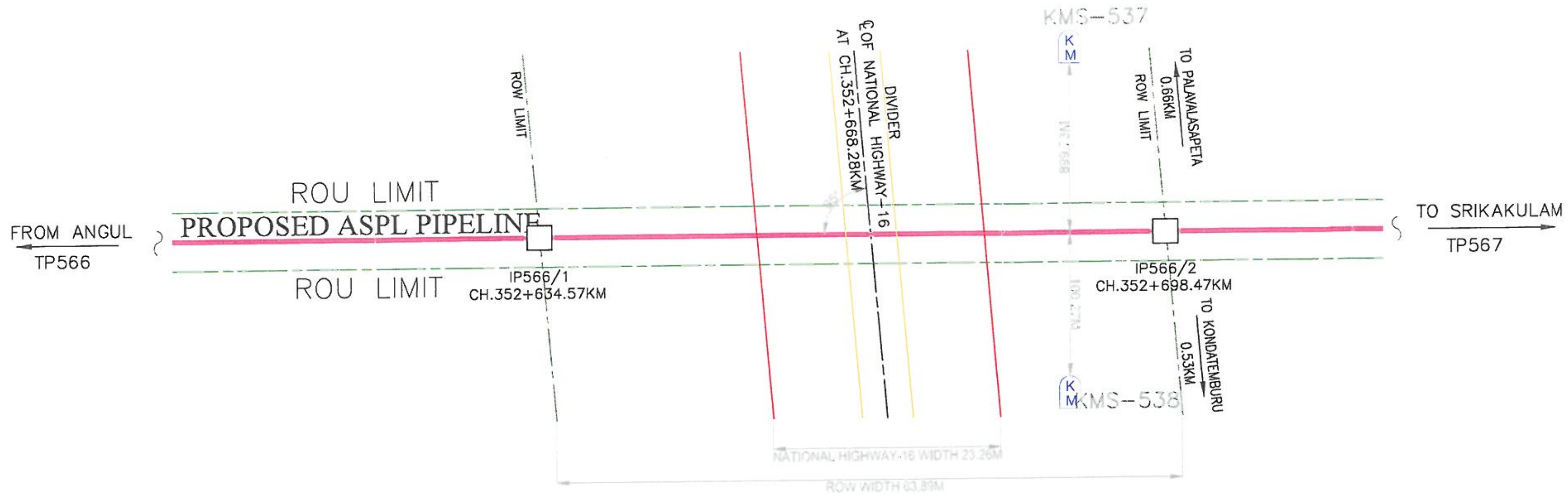
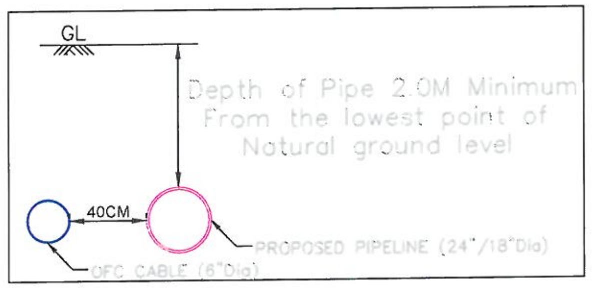
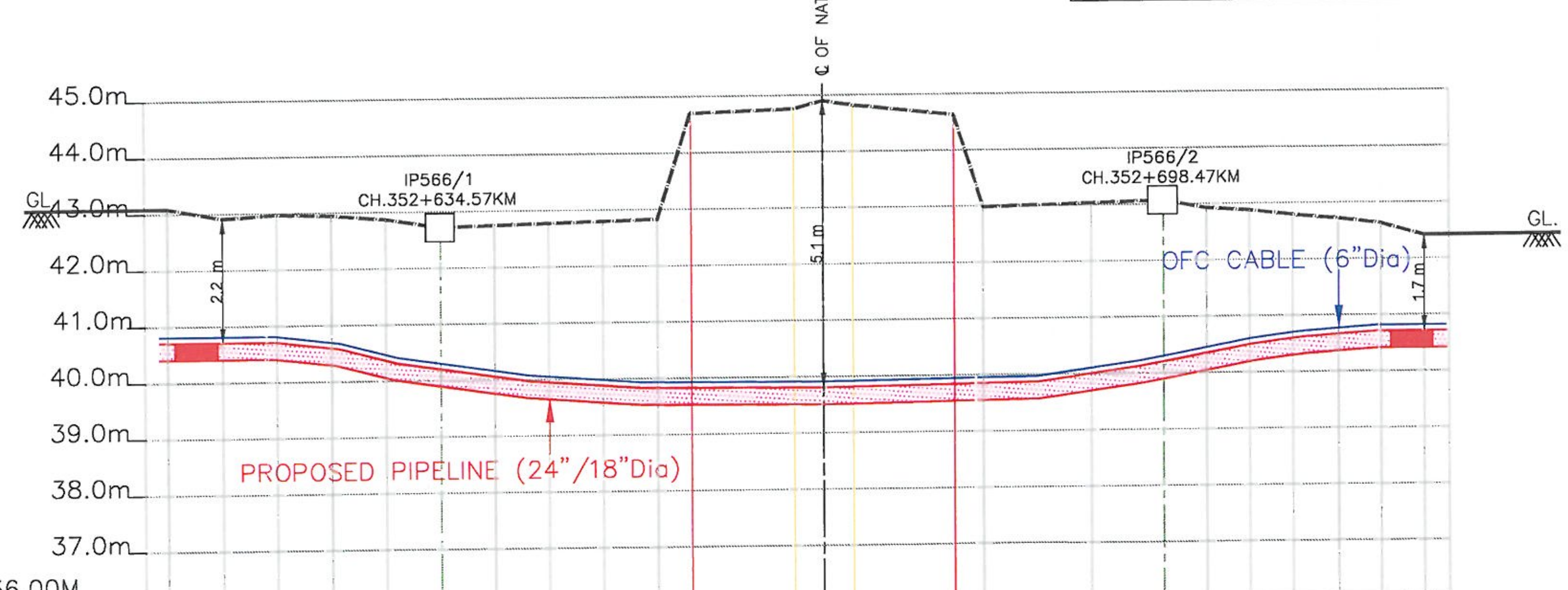
SECTION	ANGUL TO SRIKAKULAM PIPELINE
OWNER	GAIL (INDIA) LIMITED (A Govt. of India Undertaking) NOIDA







GROUND LEVEL IN METRES	43.09	42.91	42.97	42.95	42.87	42.72	42.75	42.77	42.80	42.83	44.70	44.76	44.90	44.82	44.63	42.98	43.04	43.07	42.93	42.88	42.79	42.72	42.63	42.41
DISTANCE BETWEEN LEVEL POINTS IN METRES	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	2.87	9.03	2.60	2.60	9.03	2.66	9.60	6.30	3.84	3.84	3.84	3.84	3.84	3.84	
HORIZONTAL DISTANCE IN METRES	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	05.0	0.0	05.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0			

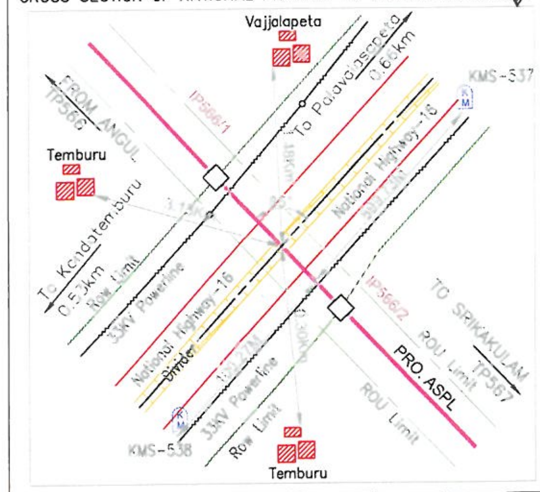
NAME OF ROAD : NATIONAL HIGHWAY-16
CLASSIFICATION : NATIONAL HIGHWAY
JURISDICTION : PROJECT DIRECTOR, NHAI, PIU , VISAKHAPATNAM

प्रशान्त कुमार तिवारी
Dym(G)

NAME OF CROSSING	VILLAGE	TEHSIL	DISTRICT	STATE	CROSSING CHAINAGE IN METRES
NATIONAL HIGHWAY-16	TURKALAKOTA	NANDIGAM	SHRIKAKULAM	ANDHRA PRADESH	AT CH.352668.28KM

REFERENCE DRAWINGS	
DRAWING TITLE	DRAWING NO
ROUTE MAP	DWG.NO.SKP/GAIL/ASPL/RM-12
ALIGNMENT SHEET	DWG.NO.SKP/GAIL/ASPL/ALN-202

KEY PLAN
(NOT TO SCALE)
CROSS SECTION OF NATIONAL HIGHWAY-16 CH.352+668.28KM



SR. NO.	PARTICULARS	DETAILS
1	Origin-Destination	Palavalasapeta To Kondatemburu
2	NH Name As Per Authority	NATIONAL HIGHWAY-16
3	NH Chainage (km)	CH.537+899.73KM
4	Nearest TP or IP a) Before Crossing b) After Crossing	IP566/1 IP566/2
5	Crossing Angle	85°
6	ROW Width of Crossing in 'm'	63.89M
7	Crossing Control Point	E 218703.983 N 2069628.554

NOTES:-
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE MENTIONED.
2. ALL LEVELS ARE WITH RESPECT TO MEAN SEA LEVEL.

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उप महाप्रबंधक (सर्वे एवं भू अर्जन) / Dy. General Manager (S&LR)
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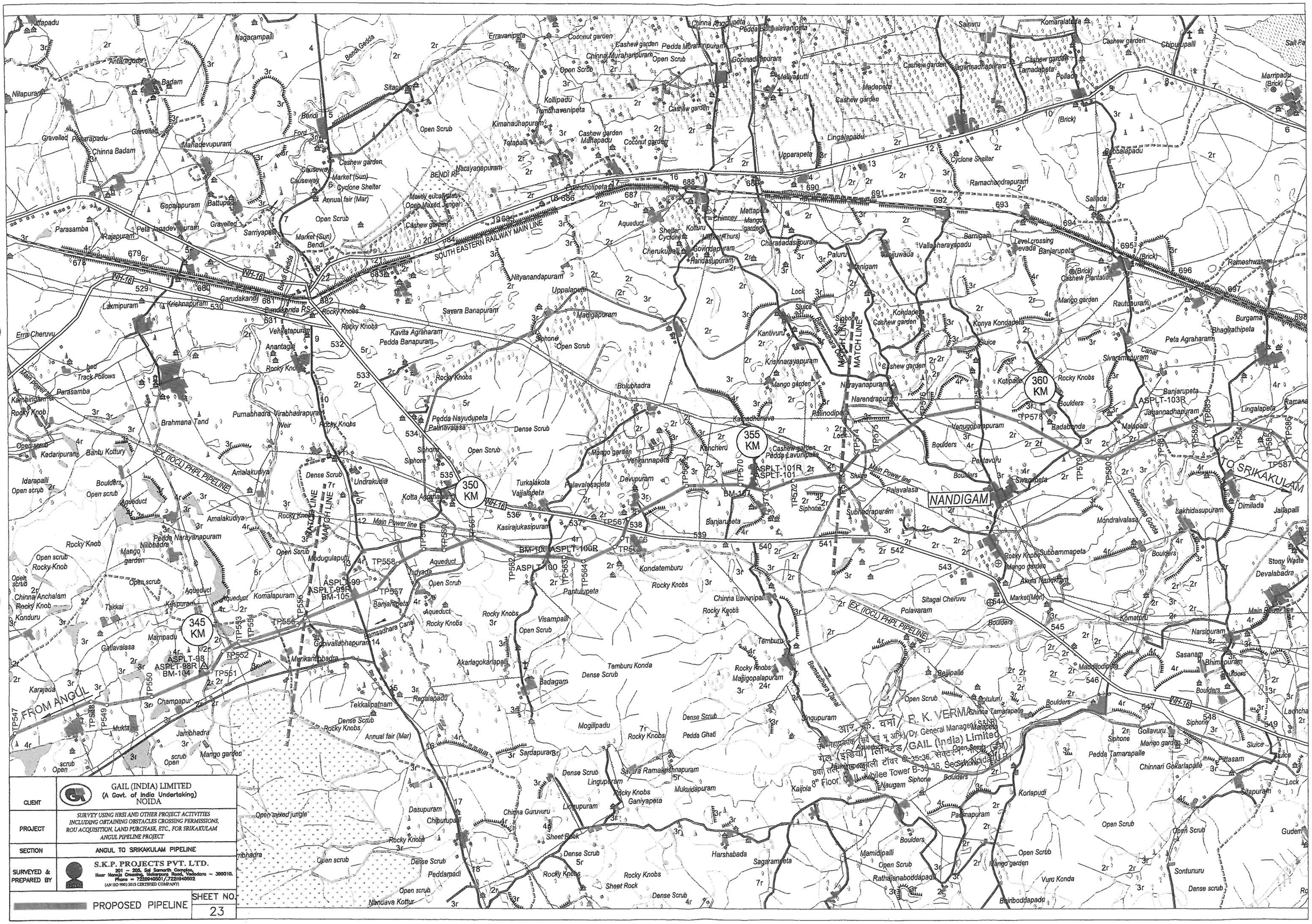
REV	DATE	DRAWN INITIAL	DRAWN SIGN	CHECKED INITIAL	CHECKED SIGN	APPROVED INITIAL	APPROVED SIGN	SUB OF REV
	14.08.20	Maulik						

CLIENT	GAIL (INDIA) LIMITED (A Govt. of India Undertaking) NOIDA
SURVEYED & PREPARED BY	S.K.P. PROJECTS PVT. LTD. 201 - 205, Sai Samarth Complex, Near Maneja Crossing, Makarpura Road, Vadodara -390010. Phone = 7228940501/502 (AN ISO 9001:2015 CERTIFIED COMPANY)
PROJECT	SURVEY USING HRSI AND OTHER PROJECT ACTIVITIES INCLUDING OBTAINING OBSTACLES CROSSING PERMISSIONS, ROU ACQUISITION, LAND PURCHASE, ETC., FOR SRIKAKULAM ANGUL PIPELINE PROJECT
JOB NO.	SHEET OF : 404 OF 524
DWG TITLE	CROSS SECTION
SECTION	ANGUL TO SRIKAKULAM PIPELINE
DETAILS OF	NATIONAL HIGHWAY-16 CROSSING AT CH.352+668.28KM
SCALE	DRAWING NO.
HOR 1:500 VER 1:100	DWG.NO.SKP/GAIL/ASPL/CS-404



CLIENT	GAIL (INDIA) LIMITED (A Govt. of India Undertaking) NOIDA
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PROPOSED PIPELINE — SHEET NO. 23