



भारतीय राष्ट्रीय राजमार्ग प्राधिकरण

(सड़क परिवहन और राजमार्ग मंत्रालय, भारत सरकार)

NATIONAL HIGHWAYS AUTHORITY OF INDIA

(Ministry of Road Transport and Highways, Govt. of India)

क्षेत्रीय कार्यालय/REGIONAL OFFICE

ई-2/167, अरेरा कॉलोनी, रानी कमलापती रेल्वे स्टेशन के पास, भोपाल-462 016 (म.प्र.)

E-2/167, Arera Colony, Near Rani Kamlapati Railway Station, Bhopal-462 016 (M.P.)

दूरभाष/Phone: 0755-2426638, फ़ैक्स/Fax: 0755-2426698, ई-मेल/E-mail: robhopal@nhai.org

NHAI/RO-MP/GWL/NH-46 (Rajghat)/MPJNM/2022/47096



सत्यमेव जयते



भारतमाला
प्रगति के पथ पर अग्रसर
BHARATMALA
ROAD TO PROSPERITY

Date: 28.06.2022

Invitation of Public Comments

Sub: Proposal for laying pipeline along and across the NH-46 for Rajghat Multi Village Scheme (Guna and Ashoknagar)- **Invitation of the Public Comment as per Ministry Guideline dated 22.11.2016- Reg.**

Ref: Project Director, PIU Gwalior letter no. 6571 dated 13.05.2022.

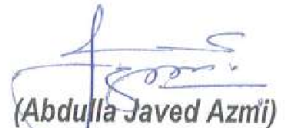
Vide above reference proposal for permission of crossing for laying of subjected matter.

2. As per Ministry vide OM No. RW/NH-33044/29/2015/S&R (R) dated 22.11.2016, the Highways Administrator will make available the proposal seeking permission for utility laying for public comments for 30 days on ground of public interest.

3. In view of the above the comments of public are invited on captioned proposal and the same should reach to below mentioned address till 27.07.2022 beyond which no comments will be considered.

The Highway Administrator
O/o Regional Officer,
National Highways Authority of India
E-2/167, Arera Colony,
Near Habibganj Railway Station,
Bhopal (MP)-462016
E-mail ID:robhopal@nhai.org

This issues with the approval of Regional Officer cum Highway Administration.


(Abdulla Javed Azmi)
Dy. General Manager (T)

Copy to:

- Web Admin, NHAI-HQ-with request for uploading on the NHAI website.
- The Senior Technical Director, NIC, Transport Bhawan, New Delhi-110001 for uploading on Ministry's Website.
- The Project Director, NHAI, PIU-Gwalior (M.P.) for information.
- Madhya Pradesh Jal Nigam Maryadit, PIU Guna (email: gmguna.mpjalnigam.mp.gov.in)

CHECK - LIST

Guideline for Project Direction for processing the proposal for laying of water pipe line in the land along National Highway vested with NHAI.

- Relevant Circulars of Ministry of Road Transport and Highways
- 1) Circular No. NH-III/P/66/76 dated 18/11.1976.
- 2) Circular No. RW/NH-III/P/66/76 dated 11.05.1982.
- 3) Circular No. RW/NH-11037/1/86-DOI (ii) dated 28.07.1993.
- 4) Circular No. RW/NH-11037/1/86/DOI dated 19.01.1995.
- 5) Circular No. RW/NH- 34066/2/95/S&R dated 25.10.1999.
- 6) Circular No. RW/NH-34066/7/2003 S&R (B) dated 17.09.2003.

Check list for getting approval for lying of Water Pipe line on NH land (To be filed by the PIU).

The permission for laying for water Pipe Line shall considered for approval / rejection based on the Ministry Circulars mentioned as above.

(a) Carrying of sewage/ water Pipe line on Highway Bridge shall not be permitted as Fumes/gas/water pipes can accelerate the process of corrosion or may cause explosions, thus, being much more injurious than leakage of water.

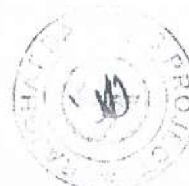
(b) Service are not being allowed cruminate on the parapet / any part of the bridge, safety of the bridges has to be kept in view while permitting various service along bridge.

Sr. No.	ITEM	INFORMATION STATUS	REMARKS
1	General Information	Apply for Permission of laying water pipeline parallel and crossing the NH	
1.1	Name and Address of the Application/ Company	Madhya Pradesh Jal Nigam Maryadi , Gwalior	
1.2	National Highway Number	NH 46	
1.3	State	Madhya Pradesh	
1.4	Location	Myana to Kumbhraj road	
1.5	Chainage in KM	62.496 to 76.270 78.731 to 80.835 96.155 to 99.715 111.911 to 116.13 119.543 to 134.908	As per Annexure - A
1.6	Length of Meter(length in km)	49.692 KM - 70.725 KM	(121.417 KM)
1.7	Width of Available ROW (a) Left Side from Center line towards increasing Chainage/KM direction (b) Right Side from Center line towards increasing Chainage/KM direction	As per attached drawing	
1.8	Proposal to lay underground electrical Cable	NA	
1.9	Proposal acquire land	NA	
	(a) Left Side From Center Line (b) Right Side from Center Line	As per attached cross section	

Sensitivity: LNT Construction Internal Use

Arampy
Team Leader
SQC- Guna
Wapcos Ltd.

Arampy



Arampy
General Manager
M.P. Jal Nigam Maryadi
PIU-GUNA

1.10	Whether Proposal is in the same side where land is not to be acquire	NA	
	If not then where to lay the cable		
1.11	Details of already laid service, if any, along the proposed route	NIL	
1.12	Number of Existing lanes (2/4/6/8 lanes).	4	
1.13	Proposed Number of lanes(2 lane with Paved shout/4/6/8 lanes)	No proposal till date	
1.14	Service road existing or not	NA	
	If yes when which side	-	
	(a) Left side from center side	-	
	(b) Right side from center side	-	
1.15	Proposed Service Road	NA	
	(a) Left side from center side	-	
	(b) Right side from center side	-	
1.16	Whether Proposal of lay Water Pipe line is after the service road or between the service road or between the service road and main carriageway	NA	
1.17	Whether Carrying of Sewage /Lay Water Pipeline has between the closed on highway Bridges, If yes than mention the methodology proposed for	NA	
1.18	Whether carrying of sewage/lay water pipeline has been proposed on parapet/any part of bridges. If yes, then mention the methodology proposed for the same.	NA	
	If crossing of the road involved If yes, It shall be either encased in pipe or through structure or conduits specially built for that purpose at the expense of the agency owning the line.	As Per Annexure A	
	(a) Whether existing drainage structure are allowed to carry sewage/ water pipeline	No	
	(b) Is it on a line normal to NH	Yes	
	(c) What is the distance of crossing the sewage /water pipeline from the existing structure. Crossing shall not be too near the existing structures on the NH, the maximum distance being 15 m.	No	
	(d) The crossing pipe (or conduit pipe in the case of electric cable) carrying the utility line shall be of steel, cast iron or reinforcement cement concrete and have adequate strength and be large enough to permit ready withdrawal of the carrier pipe/cable.	Yes	
	(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 in cuts and toe of slope.	Yes	
	(G) The top of the Casing/conduit pipe should be at least 1.2 meter below the surface of the road subject to being at least 0.3 m below the drain inverts, Mention the proposed details.	1.5 m	

Sensitivity: LNT Construction Internal Use

Shafiq
Team Leader
SQC- Guna
Wapcos Ltd.



AP
General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

	(H) Mention the methodology proposed for crossing of road for the proposed sewage/pipe line crossing shall be by boring method(HDD) (Trench –less Technology),Specially ,where the existing road pavement is of cement concrete or dense bituminous concrete type.	Horizontal Auger Boring Method Pulling or pushing methods Dense Bituminous/BC at the location of crossing	
	(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 /Drawing to be enclosed with the proposal	Yes	
2.1	Cross section showing the size of trench for open trenching method Is it normal size of 1.2m deep x 0.3 wide (i) Should not be greater than 60cm wider than the outer diameter of the pipe. (ii) Located as close to the extreme edge of the right of way as possible of the nearest carriageway. (iii) Shall not be permitted to run along the national highway when the road formation is situated in double cutting .Nor shall these be laid over the existing culverts and bridge. (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.	Enclosed	
2.2	Cross section showing the size of pit and location of cable for HDD method.	Enclosed (As per Drawing)	
2.3	Strip plan, Route Plan showing Water Pipe line , Chainage, width of ROW, distance of proposed water pipe line from the edge of ROW, important mile stone, intersections , cross drainage works etc.	Enclosed	
2.4	Methodology for laying of Water Pipe line	Enclosed	
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 than the outer diameter of the pipe?	NA	
	(a) The width should be at least 30 cm, but not more than 60 cm wider than outer diameter of the pipe.	Yes	
	(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 value. Unsuitable soil and rock edged should be excavated and replaced be selected materials	yes	
	(c) The backfill shall be completed in two stages (i) side – fill to the level of the top of the pipe and (ii) overfill to the bottom of the road crust.	yes	

Sensitivity: LNT Construction Internal Use

Arank
Team Leader
SQC- Guna
Wapcos Ltd.

CP



R
General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

	(d) The side-fill shall of granular material laid in 15 cm layers each consolidated by mechanical tampering 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.	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	
	(g) If required, a division shall be constructed at the expenses of agency owning the utility line.	-	
2.4.2	Horizontal Direction Drilling (HDD) Method	Yes	Horizontal Auger Boring Method
2.4.3	Methodology for laying of Water Pipe Line through CD works and method of Laying. In cases where the carrying of Water pipeline on the bridge becomes inescapable.	Yes	Channeling of CD work at the depth of 1.5 mtr
3	Draft License Agreement signed by two witnesses.	Enclosed	
4	Performance Bank Guarantee in favor of NHAI has to be obtained @ Rs. 50/- per running meter (Parallel to NH) and Rs100000/- 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 Water pipeline/ 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 way. No payment shall be payable by the NHAI to the license for clearing debris/ loose earth. Performance BG as per above is to be obtained.	Whether obtained or not	BG will be submitted in due course. (Pipeline alignment along NH-46 of 49.692 km and twelve NH-46 Crossing.)
4.1	Confirmation of BG has been obtained or not as per NHAI guidelines.	BG shall be submitted as per NHAI as per demand note	BG will be submitted in due course.
5	Affidavit/ Undertaking from the applicant for the following is to be furnished	Yes	
5.1	Not to damage to other utility, if damaged then to pay the losses either to NHAI or to the concerned agency.	Yes	
5.2	For Renewal of Bank Guarantee.	Yes	
5.3	For Confirming all standard condition of Ministry circulars and NHAI's guideline.	Yes	
5.4	For Shifting of Water pipeline as and when required by NHAI at their Own cost.	Yes	
5.5	For Shifting of water pipeline due to 6 lanning/widening of NH	Yes	

Sensitivity: LNT Construction Internal Use

Signature
Team Leader
SQC- Guna
Wapcos Ltd.

Signature



General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

Signature

5.6	For Indemnity against all damages and claims	Yes	
5.7	For Traffic movement during laying of water Pipe Line to be managed by the applicant	Yes	
5.8	If any claim is raised by Concessionaire then the same has to be paid by the applicant.	Yes	
5.9	Prior approval of the NHAI shall be obtained before undertaking any work of installation, shifting or repairs, or alterations to the Water Pipe line any other utility located in the National Highway right of ways.	Yes	
5.10	Expenditure, if any, incurred by NHAI for repairing any damage cause to the national Highway by the laying, maintenance or shifting of the water pipeline will be borne by the applicant agency owing the line.	Yes	
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	
5.12	Certificate from the applicant in the following format (i) Laying of water 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.	Will submit with Agreement.	
6	Who will sign the agreement on behalf of water pipeline agency.	General Manager, MPJNM, Gwalior	
	Power of Attorney to sign the agreement is available or not	Yes	
7	The Project Director, will submit the following Certificates	Yes	
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 11.05.1982, RW/NH-11037/1/86-DOI(ii) dated 28.07.1993, RW/NH-11037/1/86/DOI dated 19.01.1995, RW/NH-34066/2/95/S&R dated 25.10.1999 and Circular No. RW/NH-34066/7/2003S&R (B) dated 17.09.2003	Enclosed / Not enclosed	
7.2	Certificate from PD in the following format (i) "It is certified that any other location of water Pipeline would be extremely difficult and unreasonable costly and installation of water	Enclosed / Not enclosed	<i>He</i>

Sensitivity: LNT Construction Internal Use

Team Leader
SQC- Guna
Wapcos Ltd.

Spaint



General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

	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."		
	(ii) For 6 – lanning		
7.3	(a) Where feasibility is available "I do certify that there will be no hindrance to proposed six-lanning based on the feasibility report considering proposed structures at the said location."	Enclosed / Not enclosed	
	(b) In case feasibility report is not available "I do certify that sufficient Row is available at site for accommodating proposed six-lanning."	Enclosed/ Not enclosed	
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 License has been granted the right to lay Water pipeline/duct has also been granted as a right of way to the concessionaire under the concession agreement for up-gradation of Jaipur Tonk Deoli section from 18.7 Km to 65.00 Km of NH No. 12 on Build, Operate and Transfer Basis] and therefore, the licensee shall honor the same."	NA	
9	Who will supervise the work of laying of water pipeline		
	(a) On behalf of the Applicant	General Manager ,MPJNM,Gwalior	
	(b) On behalf of NHAI	Manager	
10	Who will ensure that the defects in road portion after laying of water pipeline are corrected and if not corrected then what action will be taken.		
	(a) On behalf of the Applicant	General Manager	MPJNM, Gwalior
	(b) On behalf of NHAI	Project Director	
11	Who will pay the claim for damage done/ disruption in working of Concessionaire if asked by the Concessionaire		
	On behalf of the Applicant	General Manager	MPJNM, Gwalior
12	A Certificate from PD that he will enter the proposed permission in the register of records of the permission in the prescribed Performa (Copy enclosed).	Enclosed / Not enclosed	
13	If any previous approval is accorded for laying of underground water pipeline then Photocopy of register of records of permissions accorded as maintained by PD then copy be enclosed.	Enclosed / Not enclosed	

Team Leader
SQC- Guna
Wapcos Ltd.

VP

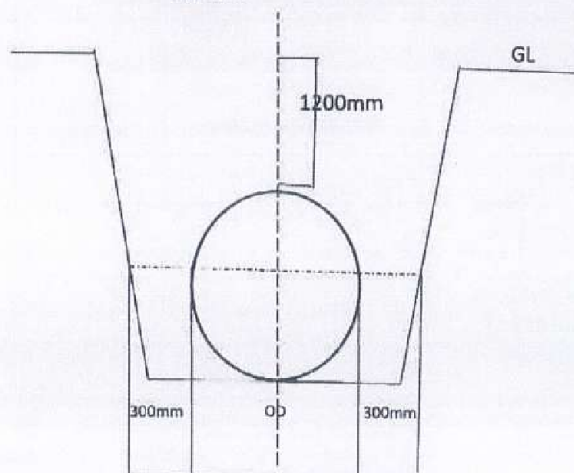


General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

CONSTRUCTION METHODOLOGY FOR PIPE LAYING ALONG THE NH

Methodology for excavation, Lowering, Laying of pipes:

1. The pipe line alignment is cleared of all bushes, shrubs, roots, grass, weeds and if required trees, coming in the alignment of pipe line in the trench width portion.
2. After the work site is cleared of above, pipe line alignment with required trench width is marked on the ground with apex points, curves etc, as shown on the drawing where the work is to be started.
3. Working survey of the pipeline alignment is carried out before start of the excavation work the gradient and alignment is such that minimum horizontal and vertical bends is required.
4. all excavation is carried out by mechanical equipment /machinery, the work involved and time schedule permit manual excavation.
5. All buried pipeline is minimum 1meter+/- 0.2 mtr below ground level to maintain proper cover& gradient .the trench width is constant throughout the trench depth& provided with a clearance of about 0.30 m on either side of the pipe line.
6. After satisfactory completion of trench bottom, the level shall be checked to get the required minimum cover over the pipe. If required, further dressing of the trench shall be done manually to get the desired cover over the pipe.
7. Care shall be taken during final dressing of the trench bottom so that the required depth and gradient as mentioned in approved L.S drawings are not exceeding. Wherever rock / hard soil is encountered, addition depth of 300mm shall be considered for bedding with granular soil as per tender drawing.
8. Each pipe is thoroughly checked for any damages before laying.
9. Before laying the pipe in Trench or above ground, Excavation, Bedding, Saddles /concrete pedestals, for laying and jointing, should be completed as per approved L- section.
10. The pipe is to be laid and joined by overlapping joint which is provide for fluid tightness for the intended services conditions.
11. Pipe embedment back filling is stone- free excavated material placed.
12. After Back filling completed then conduct the hydro test of DI pipe line each interval of 1.5 km.



Sensitivity: LNT Construction Internal Use

Aravind
Team Leader
SQC- Guna
Wapcos Ltd.



Neel
General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

Aravind

METHODOLOGY FOR LAYING OF PIPELINE BY TRENCHLESS TECHNIQUE AT NH
CROSSING(PULLING METHOD)

1. The pipe crossing done by HDD (horizontal direction drilling methods), dia of 60mm to up to 500mm.
2. Working area is selected according to the flow of water. It is placed at source side.
3. Working area is barricaded for safety measures.
4. Then pushing pit size 3.0m x 3.0m prepared according to depth was excavated by machinery in presence of representative from department/client etc.
5. At first the pilot hole is drilled from the entry point to the exit point following a previously designed profile and alignment.
6. The drilling tools and rig equipment selected for each job is largely determined based on the results of the Geotechnical investigation and the size of the crossing (length and diameter).
7. During the pilot hole drilling, a directional guidance system is used to navigate the pilot hole along its pre-designed profile.
8. The entry angle of the drill string is typically 8° to 16° degrees.
9. Once hole has been completed, the bore hole must be enlarged to a suitable diameter for the product pipe line.
10. This is accomplished in the second stage of the Horizontal Direction Drilling Process by "prereaming" the horizontal boring to successively larger diameter.
11. Generally the reamer is attached to the drill string on the opposite end of the bore hole from the drill and pulled back into the pilot hole.
12. Water is pumping into the directionally drilled bore hole to maintain the integrity of the hole and to flush out cuttings.
13. Once the directionally drilled hole is enlarged, the conduit can be pulled through it. The pipe line is prefabricated at the end of the bore opposite the drill rig. A reamer is attached to the drill string, and then connected to the product by a pulling head and swivel.

This is for your information only and might be change as per site condition.

A. Ranga
Team Leader
SQC- Guna
Wapcos Ltd.



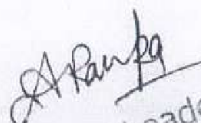
M. P. Jai Nigam
General Manager
M.P. Jai Nigam Maryadit
PIU-GUNA

CP

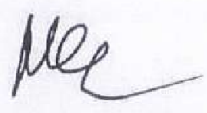
METHODOLOGY FOR LAYING OF PIPELINE BY TRENCHLESS TECHNIQUE AT NH
CROSSING(PUSHING METHOD)

1. Working area is selected according to the flow of water. It is placed at source side.
2. First a trial pit was excavated manually to find whether any existing utilities like OFC ,any pipeline etc. is available at the working area.
3. Working area is barricaded for safety measures.
4. Then pushing pit size 4.0m x 4.0m prepared according to depth was excavated by machinery in presence of representative from department/client etc.
5. Then casing pipe was placed in the pushing pit and is aligned and sloped according to the drawing and satisfaction of the engineer.
6. Then worker will enter to the casing pipe and excavated inside soil by using any electrical breaker.
7. All safety material like air compressor and return air exhaust fans placed at working area.
8. Inside breaking soil removed to outside through trolley.
9. The casing ms pipe dia of 400mm to 1800mm used. The diameter of the excavation is 3 cm more than the outer diameter of the casing pipe. Length of the excavation is kept 0.5 m.
10. Then casing pipe pushed inside the hole by means of power pack hydraulic jack. After pushing pipe, again 0.5m of the length is excavated.
11. This process continues till the casing pipe bored throughout the working area.
12. After laying of casing pipe, carrier DI pipe is laid.

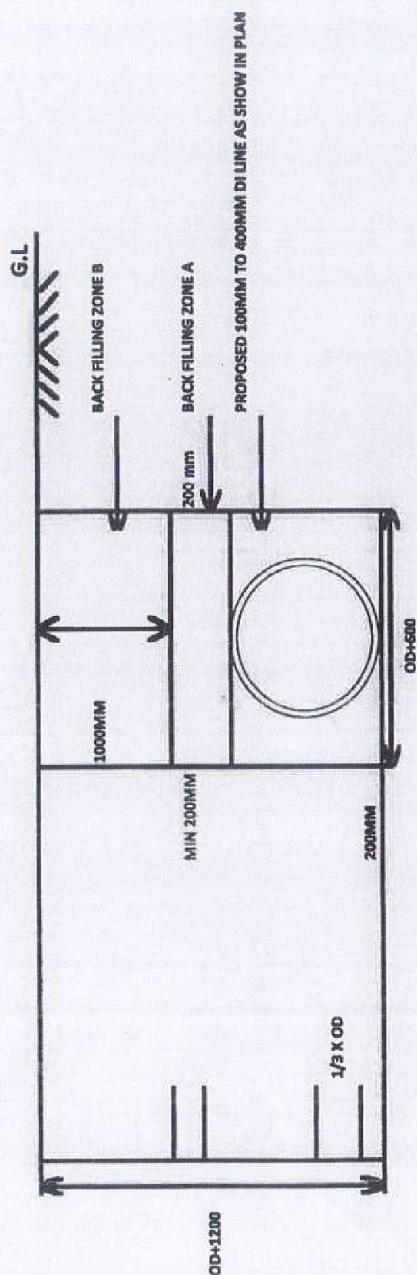
This is for your information only and might be change as per site condition.


Team Leader
SQC- Guna
Wapcos Ltd.




General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

TRENCH CROSS SECTION DRAWING FOR PIPELINE LAYING PARALLEL TO NATIONAL HIGHWAY



(A) TYPICAL TRENCH SECTION BEDDING AND BACKFILLING

BACKFILLING IN ZONE A

BACKFILLING BY APPROVED MATERIAL IN LAYER OF 150mm AND MECHANICALLY COMPACTED TO 95% MODIFIED PROCTOR DENSITY ALONG THE SIDES OF PIPE. BACKFILLING ABOVE THE CROWN OF THE PIPE THE PIPE SHALL BE COMPACTED BY HAND UPTO 90% MODIFIED PROCTOR DENSITY

BACKFILLING IN ZONE B

BACKFILLING BY SELECTED EXCAVATED MATERIAL IN LAYER OF 150mm AND MECHANICALLY COMPACTED TO 90% MODIFIED PROCTOR DENSITY



A. K. Singh
Team Leader
SQC-Guna
Wapcos Ltd.

vee

General Manager
M.P. Jai Nigam Maryadit
PIU-GUNA

A. K. Singh

Crossings Under NH-46

Sl.No.	NH Name	location	Crossing length	Dia of pipe in MM	Pipe line route	Chainage
1	NH-3 (AH47)	Khaakya	Approx 70m.	100	Khatakya OHT	132.718 133.718
2	NH-3 (AH47)	Near Parvati river	Approx 70m.	450	For Pipaliya MBR	134.408 135.408
3	NH-3 (AH47)	Near Khusalpur	Approx 70m.	150	Barrya & Khusalpur	125.903 126.903
4	NH-3 (AH47)	Mohanpur	Approx 70m.	300	Bholapur Oht	120.933 121.933
5	NH-3 (AH47)	Dehri	Approx 70m.	100	Dehri OHT	106.345 107.345
6	NH-3 (AH47)	Gader	Approx 70m.	150	Gader OHT	99.215 100.215
7	NH-3 (AH47)	Bamori bujurj	Approx 70m.	100	Bamori bujurj OHT	96.455 97.455
8	NH-3 (AH47)	Patai	Approx 70m.	100	Patai OHT	78.23 79.23
9	NH-3 (AH47)	Lahar kota	Approx 70m.	150	Lahar kota OHT	70.03 71.03
10	NH-3 (AH47)	Minkhriya	Approx 70m.	100	Minkhriya OHT	66.63 67.63
11	NH-3 (AH47)	Sagoriya Road	Approx 70m.	100	Sagoriya OHT	66.93 67.93
12	NH-3 (AH47)	Myana	Approx 70m.	350	Takanera OHT	61.996 62.996

NOTE: APPLICANT HAS PROPOSED IN TENTATIVE MANNER. HOWEVER ANNEXURE-A LOCATION ARE ENCLOSED IN ANNEXURE-A



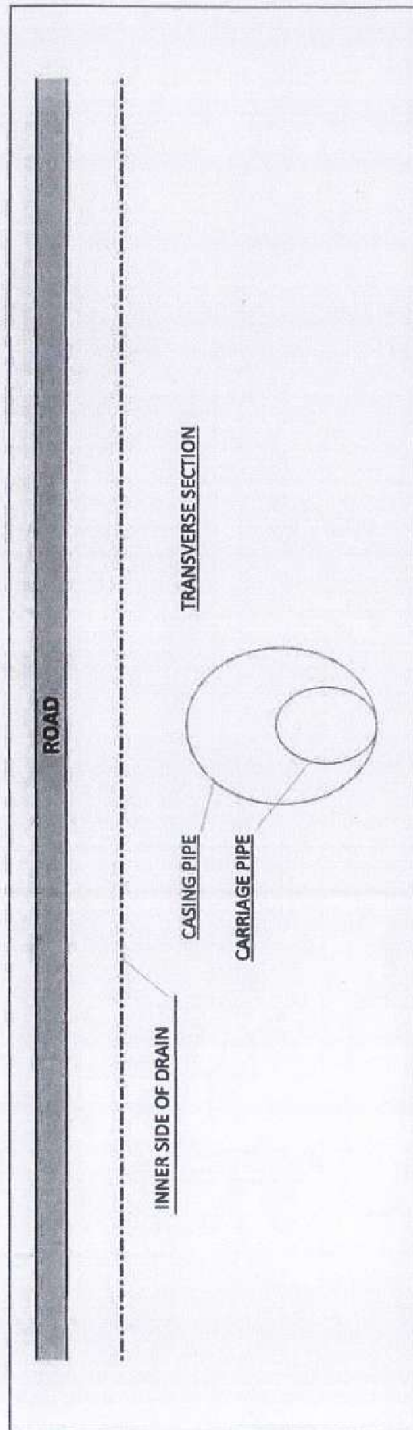
Sharma
Team Leader
SQC- Guna
Wapcos Ltd.

Muller

General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

Apur

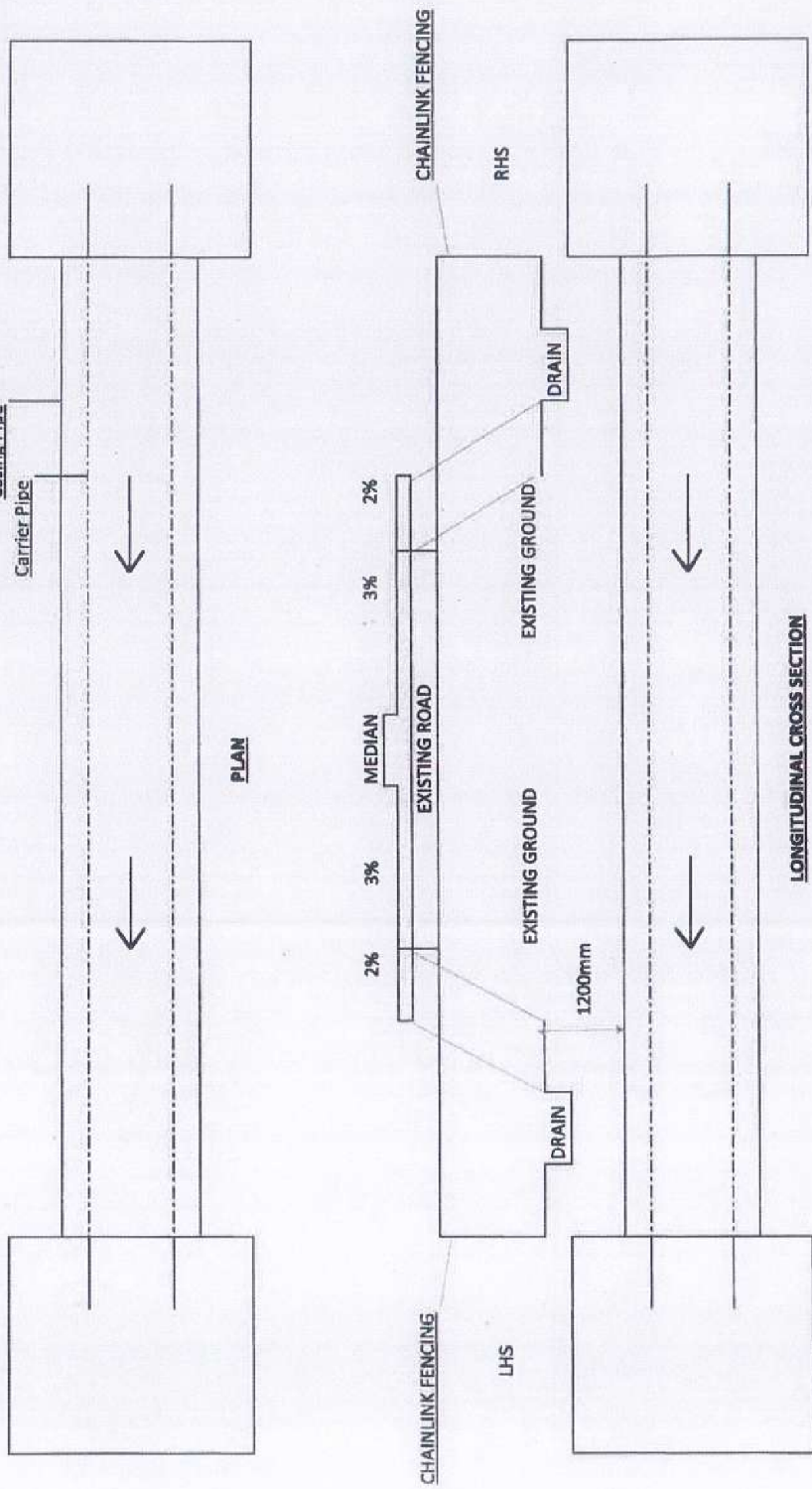
For Proposed Road Crossing by Trenchless Method



A. Shankar
Team Leader
SQC- Guna
Wapcos Ltd.

M. Nigam
General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA

TYPICAL PLAN & CROSS-SECTION FOR ROAD CROSSING (FOR SINGLE CARRIAGE PIPE)



See

MLA

Afarin
Team Leader
SOC- Guna
Wapcos Ltd.

General Manager
M.P. Jal Nigam Maryadit
PIU-GUNA