

No. NHIII/P/66/76

Dated the 19th Nov., 1976

To

All State Govts. and Union Territories,
(Deptt., dealing with National Highways)

Subject : Accommodation of underground utility services like electric cables and
pipe lines for water/gas/petroleum products along and across National Highways

In supersession of instructions contained in the previous letters on this subject noted below, I am directed to convey the instructions given in paras 2 and 3 regarding accommodation of underground utility service like electric cables and pipe-lines for water/gas/petroleum etc., along and across the National Highways, for future guidance.

No. WI-43 (16)/64, dated the 7th August, 1964

No. WI-43 (22)/64, dated the 6th October, 1964

No. WI-43 (23)/64, dated the 7th November, 1964

No. WI-43 (22)/64, dated the 22nd March, 1966.

2. Utility services like electric cables and pipe-lines for water etc., should normally not be located longitudinally within the National Highway right-of-way. However, exception to this rule may be made where it is demonstrated to the satisfaction of the State Chief Engineer that any other utility location would be extremely difficult and unreasonably costly, and that the installation within the right-of-way will not adversely affect the design, stability and traffic safety of the highway nor the likely future improvements such as widening of the carriageway, easing of curves etc. For such cases, the State Chief Engineers may themselves accord permission for the laying of utility services provided in the conditions set out in the Annexure, are satisfied. If it is considered necessary to relax any condition, prior approval of this Ministry should be obtained.
3. Whenever any permission is accorded in accordance with the conditions in Annexure, a copy of the approval letter along with a certified copy of an index plan showing the utility line should be forwarded to this Ministry for information and accord.
4. It is requested that the contents of this circular may be brought to the notice of all officers in your Department engaged on National Highway works.

ANNEXURE

CONDITIONS TO BE SATISFIED FOR ACCORDING PERMISSION TO LAY UNDERGROUND UTILITY LINES LIKE ELECTRIC CABLES AND PIPELINES FOR WATER/GAS/PETROLEUM ALONG AND ACROSS THE NATIONAL HIGHWAY

1. Laying of Utility Lines Along the National Highways :

- 1.1. The utility lines shall be located as close to the extreme edge of the right-of-way as possible but not less than 15 metre from the centre-line of the nearest carriageway.
- 1.2. The utility lines 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 bridges without the prior approval of Government of India.
- 1.3. The lines shall be so placed that at no time there is interference with the maintenance of the National Highways.
- 1.4. These should be so laid that their top is at least 0.6 metre below the ground level or as otherwise directed by the Highway Authority so as not to obstruct drainage of the road land.
- 1.5. For all major bridges of 60 M or more in length to be constructed in future on National Highways, the requirements of the concerned Departments should be ascertained in advance, and suitable provision in the form of ducts etc. made in the Project estimates. Any proposal to lay an electric cable carrying high tension lines should be covered by a certificate that it will not have any deleterious effects on any of the bridge components and roadway safety for traffic.

2. Laying of the Utility Lines Across National Highways

2.1. Location

- 2.1.1. The lines shall cross the National Highway preferably on a line normal to it or as nearly so as practicable.
- 2.1.2. Crossings shall not be too near the existing structures on the National Highway, the minimum distance being 15 metre or as specified by the Highway Authority.

2.2. Method of Crossing

The utility lines shall be permitted to cross the National Highway either encased in pipes or through structure or conduits specially built for that purpose at the expense of the agency owning the line. Existing drainage structures shall not be allowed to carry the lines across unless specially permitted by the Government of India.

2.3. Casing (Conduit) Pipe :

The casing pipe (or conduit pipe in the case of electric 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. Ends of the casing/conduit pipe shall be sealed from the outside, so that it does not act as a drainage path.

2.4. *Length of the Casing/Conduit Pipe :*

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.

2.5. *Depth of Embedment of the Casing/Conduit Pipe :*

The top of the casing/conduit pipe shall be at least 1.2 metre below the surface of the road subject to being at least 0.3 m below the drain inverts.

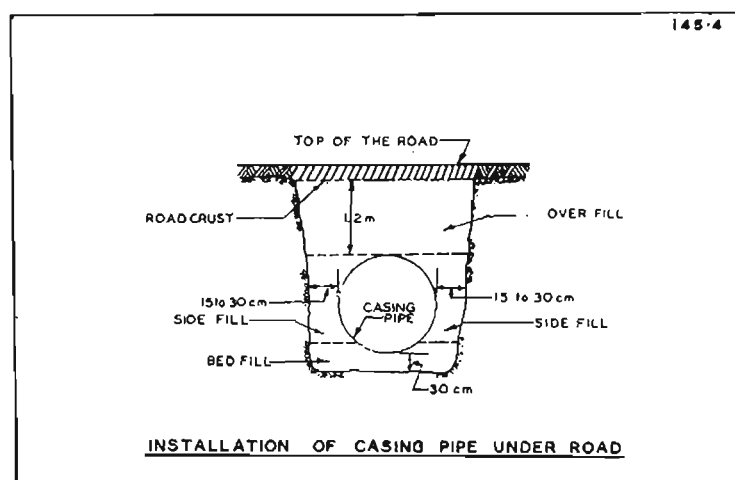
2.6. *Method of Installation of the Casing/Conduit Pipe :*

2.6.1. The casing/conduit pipe may be installed under the road embankment either by boring or digging a trench. Installation by boring method shall be preferred specially where the existing road pavement is of cement concrete or dense bituminous concrete type.

2.6.2. 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.

2.7. *Installation by Trenching Method :*

2.7.1. 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 cms. wider than the outer diameter of the pipe (see sketch attached).



2.7.2. Filling of the trench shall conform to the specifications contained here-in-below or as supplied by the Highway Authority.

2.7.3. 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.

2.7.4. 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.

2.7.5. The sidefill shall consist 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.

2.7.6. 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. Care shall be taken to avoid the formation of a dip at the trench.

2.8. *Precautions When Constructing by Trench Method :*

2.8.1. The excavation shall be protected by flagmen, signs and barricades, and red lights during night hours.

2.8.2. One lane of road shall be kept open to traffic at all times. In case of single lane roads, a diversion shall be constructed at the expense of agency owning the utility line.

3. *General*

- 3.1. Prior approval of the Highway Authority shall be obtained before undertaking any work of installation, shifting or repairs, or alterations, to the utility lines located in the National Highway right-of-ways.
- 3.2. Expenditure, if any, incurred by the Highway Authority for repairing any damage caused to the National Highway by the laying, maintenance or shifting of the utility line will be borne by the agency owning the line.
- 3.3. If the Highway Authority 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 Highway Authority at the cost of the agency owning the utility line within a reasonable time (not exceeding 60 days) of the intimation given.