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No. NHIII/P/1/76 *Dated the 30th January, 1982*

To

1. The Chief Engineers of all State PWDs and Union Territories dealing with National Highways
2. The Director General, Border Roads, New Delhi
3. The Engineer-in-Chief, CPWD, New Delhi

Subject : Choice, handling and laying of reinforced cement concrete pipes for culverts on National Highways

Reinforced cement concrete pipes form a convenient manufactured material for use in highway culverts. Becuase of their hydraulically efficient shape, amenability for quick and easy constrcution, and the resulting economy in cost and in quantities of scarce materials like cement and steel, R.C.C. pipes should be used for highway culverts to the maximum extent feasible. Due care, however, is necessary in checking the pipes for conformity with the specification requirements, in handling/rehandling without damage, and in actual laying. In this context, the Ministry had issued instructions to all State PWDs etc, vide Nos. PL-16 (28)/71 dated 28.9.74, and NHIII/P/1/76 dated 17.1.1976 and 21.4.1977. Detailed specifications on the construction of pipe culverts are also contained in clause 2300 of this Ministry's Specification for Road and Bridge Works."

2. In view of the expected large use of R.C.C. pipes for culverts, the following reiterating instructions are issued for adoption by State PWDs etc on all National Highway works :

(i) As far as possible, R.C.C. pipe culverts should be adopted for culverts instead of an abutment and slab type construction, except in cases where the use of pipes would appreciably disturb the profile.

(ii) The R.C.C. pipes used should be of NP 3 type conforming to IS : 458.

(iii) In general, ISI marked pipes should be preferred as this would be a guarantee for quality in terms of the relevant Indian Standard. However, where pipe manufactures in a State have not got the ISI marking facility or where such pipes cannot be procured within economic leads, pipes without the ISI marking might be permitted. For such cases, the pipes should be checked for conformity with the specification requirements before acceptance this can be accomplished by insisting on the manufacturer to provide facilities for testing the pipes in the presence of the Engineer-in-Charge or his authorised representative to check on conformity with the prescribed specifications, and for free replacement if any pipe is found to be of sub-standard quality.

(iv) It is also desirable that during concrete pipe line production runs in factory against any specific order for supply, the Engineer-in-Charge inspects, the production line to ensure that adequate and satisfactory quality control measures are adopted by the manufacturer. Also, the finished pipes should be inspected by the Departmental Officers for any breakage or defect before permitting despatch to the site. Proper arrangements for careful handling/rehandling of the pipes in the factory or during transit from factory to work site should also be ensured. A copy of the detailed instructions issued by the Ministry in this regard is enclosed for ready reference.

(v) Laying of the pipe line should be in accordance with clause 2300 of this Ministry's Specification. In particular due attention should be paid to ensure firm and uniform bedding for the pipe and leak-proof sealing of the joints. Also, backfilling upto 0.3 m above the top of the pipe should be carefully done, and the soil thoroughly rammed, tamped or vibrated in 150 mm thick layers. No traffic should be permitted to cross the pipe line unless the fill above the latter is at least 0.6 m.

3. It is requested that the contents of this circular be brought to the notice of all Officers in your Department dealing with National Highway works.