

No. NHIII/P/31/77

Dated the 31st May, 1978

To

All the Chief Engineers/Addl. Chief Engineers of States/U.Ts. dealing with Roads

Subject : Need for proper and thorough survey, investigation and preparation of bridge projects

The importance of proper and thorough survey, site investigation, surface and sub-surface explorations, collection of hydraulic data and other inputs leading to the preparation of economical and well planned bridge projects have time and again been impressed upon the State Chief Engineers through numerous circular letters in the past.

2. In order to facilitate the field engineers in preparing and presenting, adequately investigated road and bridge projects, this Office has prepared a consolidated list of IRC Codes/Special Publications/Ministry's Circulars and Guidelines issued so far on bridge project preparation etc. and the same is enclosed. It is suggested that the preparation of Central and Centrally sponsored bridge projects be suitably based on these Codes/Circulars/Guidelines. The consolidated list of references may be brought to the notice of all the engineers in your Department engaged in the work of survey, investigation and preparation of bridge projects.

GROUP I

SURVEY AND INVESTIGATIONS

1. I.R.C. Bridge Code Section I, I.R.C. 5—General Features of Design.
2. Ministry of Shipping & Transport (Roads Wing) Circular letters :
 - i) NHV-11 (6)/73 dated 19.11.74—Ensuring Safety of bridge structures—Guidelines for Engineers
 - ii) NHIII/P/15/78 dated 26.4.1978—Guidelines for subsurface Investigations for Bridge Foundations
 - iii) NHII/Misc/12/75 dated 2.7.1975—Level Surveying for National Highway Road and Bridge Projects—Reference to G.T.S. Bench Marks
 - iv) NHI-40 (3)/71 dated 29.1.71—Siting of bridges and fixation of alignment of approaches thereto on National Highways and other Centrally financed road projects
3. I.R.C. Special Publication 9. "Report on rating of bridges"

GROUP II

PROJECT PREPARATION

1. Ministry of Shipping & Transport (Roads Wing) Circular letters—
 - i) No. PL-2 (1)/70 dt. 18.1.1971, "Standardisation of the Procedure and data for preparation of Bridge Projects relating to National Highways and other Centrally aided schemes"
 - ii) No. NHIII/P/30/77 dated 19.10.1977, "Need for coordination between the construction of bridge and their approaches for the completion of both the components simultaneously"
 - iii) NHIII/Misc/51/73 dated 19.10.1973, "Proper location of culverts and bridges, and selection of appropriate design of parapet/ hand rails for these, so that the structures fit in well with the roadside"
 - iv) No. 8/GR/128-W-NHVI dated 8.10.1975 "Construction of guidebunds for training of rivers—Provision of extra height as compensation for anticipated settlement of embankment of guidebunds"
 - v) NHIII/P/75/76 dt. 9.12.1976, "Construction of new bridges on national highways at the sites of existing bridges—Guidelines to be followed in case of"
 - vi) NHIII/P/1/75 dated 24.11.75, "Electrification of bridges on National Highways"
 - vii) PL-67 (35)/76 dated 14.1.1977, "Construction of bridges across irrigation canals and distributories on National Highways and other centrally financed roads"
 - viii) PL-67 (4)/76 dated 21.3.1977, "Criteria for fixing the top level of Guide Bunds, Approaches behind Guide Bunds in the Khadir width Plain of river which are constructed by road embankments"
 - ix) NHIV-50 (20)/77 dated 27.9.1977, "Fixation of the deck level of high level bridges and culverts across cross drainage for National Highways"
 - x) NHIII/P/30/77 dated 25.2.1978, "Requirement for integrated project planning for construction of bridges on adjacent streams with overlapping catchment and approaches to the same" portion of rivers should be proposed);

- xi) PL-30 (20)/77 dated 21.2.1978, "Gradients for approaches to Railway Over bridges on National Highways"
- xii) NHI-37 (2)/70 dated 2.4.1970, "Plan for the Development of National Highways during 1970-71"
- xiii) LR-16 (150)/66 dated 21.12.1971, "Provision of wearing coat on bridges and culverts being constructed on National Highways and other Centrally financed roads"
- xiv) RM-16 (1)/71 dated 23.10.1974, "Report of the Committee on Economy in consumption of steel."

GROUP III

GENERAL GUIDELINES ON DESIGN OF HIGHWAY BRIDGES

1. I.R.C. Bridge Codes
 - i) Section I—General Features of Design
 - ii) Section II—Loads and Stresses
 - iii) Section III—Cement Concrete (Plain and Reinforced)
 - iv) Section IV—Brick, Stone and Block Masonary
 - v) Section V—Steel Road Bridges
 - vi) Section VI—Composite Construction for Road Culverts and Medium Span Bridges
2. IRC : 18—Design Criteria for Prestressed Concrete Road Bridges (Post-tensioned Concrete)
3. IRC : 45—Recommendations for estimating the Resistance of soil below the maximum scour level in the design of well foundation for bridges
4. IRC Special Publication 13 : "Guidelines for the design of small bridges and culverts."
5. IRC Special Publication 9 : Report on rating of Bridges"
6. Ministry of Shipping & Transport (Roads Wing) : "Specification for Road and Bridge Works"
7. Ministry of Shipping & Transport (Roads Wing) Circulars—
 - i) NHII/P/75/76 dated 9.12.1976—"Guidelines for construction of bridges in place of existing bridges"
 - ii) PL-86 (4)/74 dated 8.2.1976, "Maximum allowable diameter of High Yield strength deformed bars"
 - iii) PL-87 (16)/75 dated 26.3.1975, "Design Procedure for shear in Prestressed concrete Beams of Road Bridges for all bridge works on National Highways and other Centrally Aided schemes—Provisional modifications to clause 141 of IRC : 18—1965 (Design Criteria for Prestressed concrete Road Bridges)—Reg. also corrigendum on above vide letter of even number dated 2.7.1975.
 - iv) SP-67 (6)/61 dated 7.5.64, Notice inviting tenders for construction of bridges financed in full or in part from the Central Funds—Wells founded on Rock
 - v) Transport—Communication Monthly Review Sept. 1952 Note issued by M.O.T. "Bridges in Spill Zones of Big streams or rivers"
 - vi) PL-67 (17)/68-SP dated 7.6.1968, "Loading conditions of bridges with T-Head or Hammer head piers during erection"
 - vii) SP-67 (1)/65 dated 28.7.1956, "Designing of footways on road bridges for a 4-Ton wheel—Uniform procedure for
8. Ministry of Shipping & Transport (Roads Wing) : Standard Designs—
 - i) Standard Plans for Highway Bridges. Vol. I comprising (Note for mild steel reinforcement)
 - (A) R.C.C. simply supported slab bridges
 - a) without foot paths—spans 3, 4, 5, 6 & 8 m.
 - b) with foot paths—spans 4, 6 & 8 m
 - (B) R.C.C. simply supported skew slab bridge without foot paths—skew angle 15° to 60° spans 5, 6 & 8 m
 - (C) R.C.C. T-Beam Bridges—with and also without foot paths spans 10, 12, 15, 20 and 25 m
 - (D) Composite construction Bridge—without foot paths—span 12 m
 - (E) R.C.C. Box cell Bridges without foot paths cells of 3 m clear span—height 1.5, 2 & 2.5 m
 - (F) R.C.C. Railings for Bridges with and also without foot paths—Types I, II & III
 - (G) Wearing coat, expansion joints and Drainage spouts
 - ii) Standard Plans for Highway Bridges—Vol. II comprising (Note: for High yield strength deformed bars)
 - (A) R.C.C. slab type right bridges with and without foot paths—spans 3.37 to 10.37 m with 1 m interval
 - (B) R.C.C. piers for bridges in (A) above
 - (C) R.C.C. slab type skew bridges—skew angle 15°-60°
 - (a) with foot path—spans 4.37 to 8.37 m
 - (b) without footpath—spans 5.37 to 8.37 m
 - iii) Standard drawings for R.C.C. T-Beam superstructure using high yield strength deformed bars.
 - (a) without footpaths—spans—10.5 to 21.75 m
 - (b) with footpaths—spans—10.5 to 16.5 m