

D.O. LETTER NO. NHIII/P/31/77 DATED THE 12TH AUGUST 1985 FROM DG (RD) & ADDL SECY. TO THE GOVT. OF INDIA ADDRESSED TO SECRETARIES/CEs., PWDs. & COPY WITH ENCLS TO ALL TECH. OFFICERS IN ROADS WING AND ROs/ELOs.

Subject : Formulation of detailed projects for road and bridge works on National Highways and under other Centrally Financed Schemes — detailed guidelines for the association of ROs. and ELOs. with the officers of the State PWDs

With a view to improving the quality of project preparation, we have been issuing detailed instructions/guidelines from time to time and we have been requesting our ROs and ELOs simultaneously that they should render maximum possible assistance to the officers of the State PWDs. in all stages of preparation of detailed project estimates. This matter has also been discussed at various forums of State Chief Engineers but you will agree with me that even now a large number of detailed estimates for road and bridge works are being projected to the Ministry without ensuring the supply of all the requisite technical inputs as clearly outlined in our oft-repeated guidelines.

2. It is felt that an indepth association (right from the stage of inception of a project) of our ROs/ELOs would be beneficial for improving the quality of project preparation and reducing the time taken by the Ministry for the scrutiny of technical details and the estimates for road and bridge projects. With this end in view, we are issuing detailed guidelines (Appendix 'A') for the association of ROs and ELOs with the State PWDs in the stages of planning, detailed site investigations, surveys, subsoil explorations, collection of soil and hydraulic data and other inputs necessary for the preparation of technically sound and economically viable road and bridge projects. It goes without saying that the above mentioned association of our ROs and ELOs can achieve its desired objective only with the wholehearted cooperation at all levels of State PWDs. Accordingly, I shall be grateful if you kindly issue necessary instructions to all your field formations to extend full cooperation to our ROs and ELOs so as to enable them to associate themselves with the officers of the State PWDs as outlined in the above-mentioned enclosure.

Encl : Appendix 'A'

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APPENDIX 'A'

Enclosure to D.O. letter No. NHIII/P/31/77 dated 12.8.85

DETAILED GUIDELINES FOR THE ASSOCIATION OF ROs & ELOs WITH THE STATE PWDs IN THE STAGES OF PLANNING, DETAILED SITE INVESTIGATIONS, SURVEYS, SUB-SOIL EXPLORATIONS, COLLECTION OF SOIL AND HYDRAULIC DATA AND OTHER INPUTS NECESSARY FOR THE PREPARATION OF TECHNICALLY SOUND AND ECONOMICALLY VIABLE ROAD AND BRIDGE PROJECTS ON NATIONAL HIGHWAYS AND UNDER OTHER CENTRALLY FINANCED SCHEMES

1. INTRODUCTION

"National Highways" is a Union subject under the Constitution and their development and maintenance are the sole responsibility of the Government of India under the N.H. Act, 1956. As is well known, this responsibility is not discharged directly by us but through the State Governments on an Agency basis. Notwithstanding that, since we are the Funding Authority and are answerable to the Parliament for all matters relating the NHs, all possible efforts are required to be made by us to see that various types of facilities are created on our NHs within the least possible cost and time. In the past, incomplete and inadequate investigations prior to the preparation and sanction of the projects had lead to cost and time over-runs.

Under the above mentioned circumstances, aspecial responsibility devolves on our Regional Officers and it could be/said confidently that their most important role lies in assisting the State PWDs for the preparation of well-planned, thoroughly investigated and adequately designed road and bridge projects. With this end in view, the following broad guidelines (which are only illustrative and not exhaustive) are being brought to the notice of our ROs/ELOs so that necessary fillip could be given to improving the quality of preparation of projects to the maximum extent possible.

2. BROAD GUIDELINES

The most appropriate stage at which the ROs and ELOs can start their effective association with detailed project preparation is the formulation of Five Year Plans and Annual Programmes so that priorities for original/improvement works (keeping in view the existing conditions of various sectors of NHs and the appurtenances thereon) could be determined as correctly as possible keeping in view the constraint of funds. In other words, it needs to be ensured that no urgent work is lost sight of and no unimportant work gets included in the Annual Programme. As soon as the schemes are selected by the Ministry under the five year or annual programmes, the Regional Officer of the Ministry should draw up in consultation with State PWD a programme, in order of priority, for finalising various aspects leading to preparation of projects based on systematic study and sound engineering practice.

2.1. Investigations and project preparation for Road Works :

2.1.1. The Regional Officer should associate with the State Engineers at all crucial stages of investigation and fixing of alignments. He is required to inspect jointly with the PWD officials the proposals for re-alignments, bypasses, diversions, raising of roads etc., keeping in view the geometric standards, drainage aspects, feasibility of acquisition of right of way and other salient aspects such as floodability/submergence etc. In the case of road schemes near the towns, co-ordination with respect to land-use plan of the area needs to be considered. Timely association of officials of the Regional Office of this Ministry with the State PWD is essential in all the above activities so that the proposals framed by the State PWD are properly investigated considering various alternatives and the best proposal recommended to the Ministry.

2.1.2. In the case of projects involving widening/strengthening of road, the points needing attention are removal of geometric deficiencies, fixation of horizontal and vertical profiles, evaluation of existing pavement, and provision of adequate drainage. Regional Officer could suggest, after inspection of the site, the optimum solutions for fixing road profiles and indicate drainage arrangement needed. He should also ensure that the necessary pavement survey including deflection tests etc. are carried out before formulation of pavement proposals.

2.1.3. While carrying out soil and material surveys, it is essential to determine the quality of various construction materials as well as their quantity as needed for the project. This involves careful investigation of borrow areas and quarries followed by testing for evolving various properties of the construction materials available in the vicinity. The involvement by the Regional Office in the activity of material survey would ensure realistic costing of the project based on materials obtaining in the area and would avoid unnecessary revision of the estimate at a later stage.

2.1.4. For cases involving high embankment in approaches to river bridges and railway over bridges, detailed sub surface exploration is necessary. Such areas should be identified at the earliest possible stage and Regional Officer should ensure timely investigation of these locations, so that detailed design of the embankment and realistic estimation of cost thereof could be made. This action would also avoid delay in execution of the project.

2.1.5. The Regional Officer would also suggest appropriate specification for pavement keeping in view the road making machinery available with the State Government and taking into account the improvement works carried out earlier on the road.

1.6. In the case of traffic surveys required in connection with the improvement of the road, viz. widening of pavement, bypasses, provision of traffic junctions etc. the Regional Officer could help the State PWD in suggesting to them the type of data to be collected and also in the judicious selection of traffic count locations.

2.1.7. The Regional Officer should also advise the State PWD at the project preparation stage about any special problem of road construction in the area and suggest solutions practicable under the circumstances.

2.2. Matters regarding bridge projects requiring active technical association with the State PWD authorities

2.2.1. Fixation of tentative site for the construction of a missing bridge or reconstruction of a new permanent bridge in lieu of the existing weak/substandard/damaged bridge :

Active association of the Regional Officer right from the very beginning is sure to prove of immense help to the State PWD authorities. The most important thing to be kept in view is that complete and adequate surveys and sub-soil investigations are the vital pre-requisites for the proper preparation of a bridge project and since we want that detailed sub-soil explorations should be carried out, as far as possible, at the exact location of piers and abutments, it would be necessary that a tentative decision about the site of the bridge and its span arrangement is made before the detailed estimate for geo-technical investigations can be prepared and sanctioned. The basic data required to arrive at the above-mentioned decision would consist of (a) an index plan, (b) a site plan (c) three cross-sections, one at the proposed site and other two at 300 m.u/s and 300 m d/s, (d) a longitudinal section of the river indicating the bed level and HFL etc. and (e) calculations regarding discharge worked-out by different methods (viz. empirical formula and area velocity method etc.). For minor bridges, the Regional Officers can themselves give the necessary guidance to the State PWD officers for fixing the tentative site, design discharge, design velocity and the tentative span arrangement so that a realistic estimate could be prepared for sub-soil investigations. For estimating the required depth of borings, the scour depth may be calculated roughly by assuming the silt factor as however, the exact scour depth will be calculated after the detailed sub-soil investigations have been carried out). However, for major bridges (total length greater than 60 m.) Regional Officers can render the necessary assistance to the State PWD officers for collecting all relevant data in the format prescribed by the Ministry and the help of the concerned Chief Engineer (Bridges) or ADG (B) whenever they happen to visit the area) could be taken for the fixation of tentative para-meters detailed above.

2.2.2 Preparation of detailed hydraulic particulars as stipulated in Annexures I and II of the Ministry's Circular letter No. PL-2 (1)/70 dated 18.1.71.

This is by far the most important information for correctly arriving at all the relevant technical parameters of a bridge project and hence and indepth association of our ROs/ELOs would be extremely beneficial for improving the quality of the project preparation and reducing the time taken by the Ministry for the scrutiny of the technical details and the estimates for bridge projects. It has to be ensured that the correct and complete information with regard to hydraulic particulars is furnished to the Ministry so that there does not arise any need to make a back reference to the State PWD for enabling the Ministry to fix the technical parameters (site, design, discharge, design velocity, type of bridge, total length, span arrangement, type and depth of foundations, SBC, soil parameters, vertical clearance, deck level, requirement of footpaths and special features such as fendering of piers etc.). Detailed sub-soil investigations report is also required to be sent alongwith the hydraulic particulars.

2.2.3 Carrying out an appreciation of the proposed bridge scheme from aesthetic considerations especially in hilly and coastal areas. This aspect needs careful consideration as there are a large number of locations which are of a sensitive nature, calling for careful planning of bridges from aesthetic considerations.

2.2.4 Examination of the requirement of protective works, if any.

It has to be carefully examined whether the scheme of protective works can be finalised with or without the help of model studies. RO's objective assessment in this regard can help a lot.

2.2.5 Position regarding availability of land for the approaches :