

Project Name: Improvement and Up-gradation of Moradabad - Kashipur section of NH-734 including Moradabad bypass under NHDP phase-VII in the state of Uttar Pradesh. Package-II: Moradabad - Kashipur Road (Length= 39.750 km) Start from Ch. 0+00 (Existing Km. 389+000) at Bijna and ends at Ch. 39+750 at UP/UK Border near Dhandi River.

UNDERTAKING TO ADHERE TASK FORCE RECOMMENDATIONS

It is to certify that the recommendations of "Task Force" constituted by Planning Commission as detailed below and whatsoever applicable in above said project road are fully acceptable to this office P.U., Bareilly.

1. Layout of the road to be followed as far as possible.
2. Heavy cutting/filling to be avoided as far as possible. The technology of cut and fill is to be adopted. Steep hill slopes also avoided.
3. Unstable slide-prone areas to be avoided. For identifying such areas advice of geotechnical engineers and geologists to be taken during the survey of the alignment.
4. Comparison of different possible alignment with reference to erosion potential to be made and the alignment involving minimum risk to be performed.

As part from the stage of planning the road alignment, effective steps are also required to be taken by ground engineer during the process of road construction to minimize ecological disturbance to the hill road. Measures to be taken have been identified as;

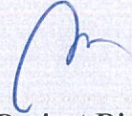
- a. Cut and Fill method to be adopted while excavating for road formation and heavy earth cutting is to be avoided. Box cutting is to be avoided to the extent possible.
- b. Blasting by explosives is to be restricted to the minimum. Layout of holes to be drilled for blasting is to be planned to keep in the view of the line of blast resistance and the existence of joints. Controlled blasting should be repeated using low charge and care to be taken to avoid activating slide zones or widening fissures and cracks in the rock. Use of delay detonators in large scale blasting work is to be made for an inline dispersion of shock waves so that minimum disturbance is caused to the rock stratum as a result of blasting process.
- c. All cutslopes, unsuitable hillside and slide prone erosion prone areas to be provided with suitable correction measures by using one or the other of the techniques.
- d. Developed by C.R.R.I. Several techniques have been sponsored by C.R.R.I like simple vegetative lining, bitumen mulch treatment and slide treatment by jet netting or inter netting of these simple vegetative lining seems to be the most appropriate preventive measures in many situations. This should be established in the denuded slopes immediately after the excavation is made.
- e. Adequate drainage measures and protective structures like intercepting catchwater drains, longitudinal drains/culverts, breast walls, retaining walls are provided for the purposes of establishing the slope. Growth vegetative cover is stimulated in the disturbed hill slopes above road level by planting suitable fast-growing shrubs and plants. In certain selected unstable areas terraced has also been plasticized as a stabilizing measure with good results.

Annexure-XXIII

- f. Over the past few years, the road wing of the Ministry of Shipping and Transport has issued instructions laying down broad guidelines and check list of preparation of road construction projects which provide an inbuilt mechanism of tackling landslides & erosion control for the guidance and follow up action by engineers of state "P W D" order Road Organization and other engaged in construction of hill roads, these should be observed.

Date:

Place:



**Project Director
NHAI, PIU, Bareilly**

परियोजना निदेशक
भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
परियोजना कार्यान्वयन इकाई, बरेली