

Dated: February 26, 2018

To

1. The Chief Secretaries of all the State Governments/ UTs
2. The Principal Secretaries/ Secretaries of all States/ UTs Public Works Department dealing with National Highways, other centrally sponsored schemes.
3. All Engineers-in-Chief and Chief Engineers of Public Works Department of States/ UTs dealing with National Highways, other centrally sponsored schemes.
4. The Chairman, National Highways Authority of India, G-5 & 6, Sector-10, Dwarka, New Delhi-110 075.
5. The Managing Director, NHIDCL, PTI Building, New Delhi-110001
6. All CE-ROs, ROs and ELOs of the Ministry
7. The Director General (Border Roads), Seema Sadak Bhawan, Ring Road, New Delhi-110 010.

Subject: Determination of alignment/ route for widening of National Highways - approach reg.

The Ministry of Road Transport & Highways has been undertaking development of National Highways across the country through its various project executing agencies, namely, the NHAI, NHIDCL, the State PWDs and the BRO. The programme for construction and development of National Highways acquired a new dimension with the construction of Golden Quadrilateral (GQ) and the North-South and East-West Corridors in the country. Though the National Highways account for only about 2% of the total road network of the country, it is primarily because of construction of national corridors that the NHs today carry and support movement of more than 40% of the road traffic.

2. With the exception of GQ and the North-South and East-west corridors and a few more prominent green-field Highways/ Expressways, the Central Government has been generally taking up development of NH Projects through up-gradation of the existing State Highways, major district roads and other roads, which, in other words, are known as the brown-field projects. The configuration of National Highways varies from - Two-lane with paved shoulders (largely covering the NHs connecting interiors, backward & tribal areas, tourist destinations, and the roads constructed in the hill states of North-west and North-east), to up-gradation from the existing 2-lane roads to four-lane/ six-lane and eight-lane, depending upon the traffic volumes between the origin, intervening and destination points.

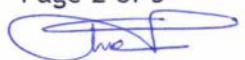
3. Approval of the **Bharatmala Pariyojana** by the CCEA in October 2017, marks a major shift in approach, with focus on corridor approach, wherein it is planned to optimise the efficiency of existing National Corridors, develop Economic Corridors and



new Expressways, take up roads for inter-connectivity, apart from construction of ring roads/ bypasses around 28 major towns to remove the congestion and choke points. The ultimate intended objective is to construct major road corridors with improved geometry, which reduce travel time and costs, and help in faster movement of people and goods with attendant road safety parameters.

4. The lower categories of existing roads contain several inherent deficiencies especially in conformance to design standards, alignment/ geometry, land width etc. which at times also become road safety hazards and which are not addressed before declaration of these roads as National Highways. Up-gradation of the existing road arteries to National Highways has been found to be sub-optimal in many cases due to the following factors:

- (i) Existing roads have been developed with greater focus on connecting the enroute towns and places, which is often seen to be compromising on the road geometry and leading to longer distance between the major origin-destination points. A majority of these roads follow serpentine alignments as compared to crow-flight alignments;
- (ii) Expansion of an existing road necessarily involves: (a) acquisition of additional land for the required Right of Way (RoW), (b) shifting of utilities, and (c) felling of trees along the existing alignment. Further, as road arteries are considered to create huge value to the land abutting the road and the adjoining areas, the land situated along/ abutting any existing road artery (including a rural road) costs at least twice as much as the land under a greenfield alignment would do;
- (iii) Serious constraints have been faced in acquisition of land for widening of an existing road especially in areas where habitations/ commercial activities have come up over time, which necessitate demolition of existing structures in such inhabited areas, which often leads to compromise on the required uniform RoW and entail associated costs & time;
- (iv) Removal/ demolition of existing built-up structures along the required RoW makes it not only difficult but also far more expensive in terms of the associated costs. It becomes all the more challenging when it comes to removal of religious structures (e.g. temples, mosques churches etc. which are again found to be in existence in large numbers along the existing roads);
- (v) Widening of existing roads further necessarily requires shifting of the utilities (electrical, water supply and other utilities) laid along the existing RoW, entailing considerable costs and time;

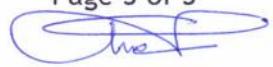


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- (vi) Further, in the same vein, widening of the existing roads require felling of trees, requiring forest related approvals and associated costs in terms of payment of NPV and felling charges apart from damage to the existing green cover and the time taken in completion of these processes.

5. As such, the determination of proper alignment of a NH project has become very critical. While selecting the route/ alignment of the National Highways, various factors are to be considered such as the cost of land, cost of building/ establishment, cost of shifting of utilities, construction cost of the road, cost of the safety features, transportation cost/ road user cost, maintenance cost etc. In such a situation, there is every likelihood of achieving a better alternative in the form of a green-field alignment, a few km away, to the left/ right or north/south of the existing alignment. A few test cases have shown that most of these challenges are effectively met if we take up construction of green-field NH arteries, especially where the traffic volumes justify up-gradation of a two-lane road to higher configurations, which offer the following advantages:

- (i) Typically, the available RoW in an existing 2-lane road varies between 12 mtrs to 24 mtrs maximum. As per the NH norms for a 4/6/8 lane Highway, we require a minimum RoW of 60 mtrs. (the norm for an Expressway is 90 mtrs.). It has been found that it is eminently feasible to acquire a RoW of 60 to 70 mtrs for the green-field in the same cost as involved in expansion of an existing road, especially when we take into account the associated costs and time taken in utility shifting, tree-felling, additional compensation for demolition of structures coming in the expanded RoW;
- (ii) A green-field Highway with a RoW of 60 to 70 mtrs. would cater to the traffic-flows and up-gradation of such Highway up to 8-lanes, along with service roads, wherever required (say, it gives a long term perspective of about next 30 to 40 years);
- (iii) Offers the choice of a near-perfect (crow-flight) road geometry, with reduced distance and savings on travel-time and fuel costs. The towns situated in close vicinity to such alignments can always be connected to the Highway with spurs;
- (iv) The land acquisition is faster, with minimal resistance and cost-effective;
- (v) It opens up the potential for development of new areas and wealth creation for the less developed areas.



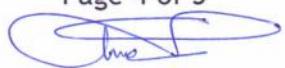
6. It has also been observed that in case National Highways are developed along the existing roads alignments, the problems of traffic hazards are not substantially resolved especially in the city/ town area, which may lead to delays and congestion costs also. In case of green-field alignment, it becomes feasible to avoid such delays and congestions. As such, in carrying out the cost-benefit analysis of both the options, factors such as environmental and social impact may also be considered besides carrying out cost comparison towards delays and congestion removal.

7. Accordingly, the Consultants involved in preparation of DPRs for development of National Highways, especially where it is proposed to upgrade an existing two-lane Highway to a higher configuration of 4/6/8 lane, and where Notification under Section 3D of the NH Act, 1956 has not yet been issued, shall necessarily carry out a comparative cost-benefit analysis while recommending the route/ alignment of highway development along the existing alignment, with the alternate option of a green-field alignment, which is a few kms away from the existing alignment. While carrying out the cost benefit analysis of both the options, the following factors shall be considered:

- (i) Extant of land acquisition and the associated costs;
- (ii) Number of structures required to be acquired along their extant and costs.
- (iii) The quantum of utilities and costs required for their shifting.
- (iv) The extent of tree-felling and the associated cost & time for obtaining the requisite permissions.

8. Keeping the aforesaid in view, agencies executing the NH projects on behalf on MoRTH, are hereby advised to:

- (i) Require their DPR consultants for each project (especially wherein it is envisaged to be upgraded to 4-lane and above configurations and in respect of which Notification under Section 3D has not been issued), to examine the feasibility of development of a green-field NH in each case;
- (ii) While examining the feasibility of a green-field alignment between the origin and destination points, it should, as far as possible, follow a crow-flight route alignment with a little distance from the existing habitations/ towns and identify the towns that need to be connected through spurs.
- (iii) Clearly bring out in its report the advantages in terms of reduction in length/ distance, geometric improvements and other advantages along with the cost-benefit analysis so as to enable the competent authority to take considered decisions in this behalf.



9. Approach to development of NH along a Green-field alignment:

In case the green-field alignment option works out to be a preferred option, then -

- (i) The entire ROW (60m-70m) may be acquired for a maximum capacity of 8 lane main carriage-way with provision for service roads. In case of Expressways, 90m ROW shall be acquired.
- (ii) Initially 4-lane carriage-way with 4-lane structures shall be developed with additional land left in the median for future expansion.
- (iii) The highway shall have provision for service roads, preferably of 10 mtrs width, with maximum access-control for the main carriage-way.
- (iv) Access to the towns/ cities/ establishments located on the existing National Highway, may be provided through spurs from the green-field route.

10. It has, therefore, been decided with the approval of competent authority that such analysis is to be made an integral part of the DPR preparation. Accordingly, the contents of this circular may be incorporated in the TOR of the DPR consultancy. All the executive agencies are requested to adhere to these guidelines.



(Sudip Chaudhury)
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2. The Secretary General, Indian Roads Congress
3. Technical circular file of S&R (R) Section
4. NIC-for uploading on Ministry's website under "What's new"

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