

F. No. NH-14013/9/2020-P&M
Government of India
Ministry of Road Transport & Highways
(P&M Section)
Transport Bhawan, 1, Parliament Street New Delhi-110001

Dated: November, 2025

To,

1. The Principal Secretaries/ Secretaries of all States/UTs Public Works Department dealing with National Highways, other centrally sponsored schemes.
2. The Chairman, National Highways Authority of India, G-586, Sector-10, Dwarka, New Delhi-110075.
3. The Managing Director, NHIDCL.
4. All Engineers-in-Chief and Chief Engineers of Public Works Departments of States/ UTs dealing with National Highways and other centrally sponsored schemes.
5. The Director General (Border Roads), Seema Sadak Bhawan, Ring Road, New Delhi- 110010.

Subject: Use of National Database for Emergency Management (NDEM) Portal in Planning and DPR Preparation of Highway Projects - Reg.

Sir/ Madam,

The *National Database for Emergency Management (NDEM)* has been developed and maintained by the **National Remote Sensing Centre (NRSC)**, **Indian Space Research Organization (ISRO)** under the guidance of the **National Disaster Management Authority (NDMA)**. The portal serves as a comprehensive geospatial platform for disaster management, risk assessment, and infrastructure planning. It hosts multi-temporal satellite data, thematic layers, and decision support tools for monitoring natural hazards such as floods, landslides, droughts, and cyclones.

2. NDEM provides high-resolution datasets and analytical layers that can support infrastructure planning by enabling evidence-based decision-making and minimizing potential risks associated with natural disasters.

3. The NDEM portal contains several geospatial layers of direct relevance to highway project planning and alignment studies. Key layers useful for planning include following:

- **Digital Elevation Models (DEM) and slope maps** (for route alignment and cut-fill optimization)
- **Land Use Land Cover (LULC) maps** (for vegetation covers, environmental and urban impact assessment)
- **Seismic & Landslide risk mapping** (for alignment selection)
- **Hydrological, Drainage, & river basin networks** (for cross-drainage structure design and hydraulic analysis)
- **Flood plain and inundation zones** (for identifying flood-prone areas)

- **Soil and geotechnical layers** (for geotechnical feasibility and pavement design considerations)

These datasets will substantially enhance the planning, feasibility, and Detailed Project Report (DPR) preparation of highway projects by improving data accuracy and reducing field uncertainties.

4. Accordingly it has been decided that all *Detailed Project Reports (DPRs) for highway projects shall mandatorily include a dedicated analysis based on NDEM datasets*, including the following aspects:

- **Route Alignment Optimization:** Use floodplain, DEM, and land use layers to identify optimal alignment minimizing exposure to natural hazards.
- **Floodplain and Drainage Planning:** Integrate flood extent and river basin layers to plan adequate cross-drainage structures and prevent future inundation issues.
- **Risk and Vulnerability Assessment:** Incorporate flood risk and geomorphological layers to evaluate terrain stability and hazard exposure.
- **Environmental and Social Screening:** Use **Land Use Land Cover (LULC)** and settlement layers to anticipate resettlement and environmental clearance challenges.
- **Landside risk mapping in case of hill roads**

5. All alignment approval proposals to be placed before the different committees shall invariably indicate if the analysis on NDEM has been carried out and to place the results of the analysis for consideration of the committee.

6. DPR consultants should also document the use of NDEM datasets, tools, and maps in their reports, indicating how they influenced project design and mitigation planning.

7. NDEM website can be used with following link

- NDEM Portal: <https://ndem.nrsc.gov.in/#/>
- NDEM User Guide: https://ndem.nrsc.gov.in/documents/downloads/v4/user_manual_v4.pdf

8. This issues with the approval of Competent Authority.

9. It is requested that the contents of this letter may be brought into the notice of all concerned for needful compliance.

(Shoba Basil)
Under Secretary to Govt of India
planningmorth@gmail.com

Copy to:

1. All CEs in the Ministry of Road Transport & Highways
2. All ROs of the Ministry of Road Transport & Highways:- **with a request to spread the same to all consultants**
3. The Secretary General, Indian Roads Congress

4. SE S&R Section:- with a request to upload on the compendium of circulars in MoRTH Website
5. NIC- with a request to upload on Ministry's website under "What's new"

Copy for information and necessary action to:

1. PS to Hon'ble Minister (RT&H)
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