

GOVERNMENT OF INDIA
MINISTRY OF ROAD TRANSPORT AND HIGHWAYS
RAJYA SABHA
UNSTARRED QUESTION NO - 436
ANSWERED ON – 22/07/2026

NATIONAL TUNNEL SAFETY SYSTEM

436. DR. AJEET MADHAVRAO GOPCHADE:

Will the Minister of ROAD TRANSPORT AND HIGHWAYS be pleased to state:

- (a) whether Government is considering to implement a real-time structural health monitoring and early warning systems to strengthen the safety of road tunnels;
- (b) whether Government is considering to formulate standards for lighting and visibility related safety in road and rail tunnels;
- (c) the steps taken so far to implement uniform national tunnel safety standards for tunnels belonging to Indian Railways and State Governments; and
- (d) whether specific standards have been prescribed regarding real-time monitoring, water ingress control, lighting and fire safety for tunnels under construction beneath rivers or the sea?

ANSWER

THE MINISTER OF ROAD TRANSPORT AND HIGHWAYS

(SHRI NITIN JAIRAM GADKARI)

(a) and (b) The Government in the Ministry of Road Transport & Highways is primarily responsible for the development and maintenance of National Highways (NHs), including tunnels therein. Tunnels on NHs are constructed in accordance with guidelines stipulated in the Indian Roads Congress code (IRC: SP:91-2019 - Guidelines for Road Tunnels) which also stipulates requirement relating to lighting, visibility, ventilation, fire safety, and other operational measures. Safety measures, as per IRC guidelines, are adopted to safeguard workers and road users. Provisions relating to structural health monitoring, and real-time monitoring systems such as Supervisory Control and Data Acquisition (SCADA) are incorporated wherever required, based on project-specific technical assessments and site

conditions. Detailed guidelines have also been issued on Tunnel Alignment Studies, Prevention and Mitigation of Tunnel Collapses, and Standard Operating Procedure for passage of vehicles carrying hazardous material through tunnels on 02.09.2025, 05.12.2025, and 27.01.2026 respectively. These guidelines provide for continuous monitoring, periodic risk reviews, and mitigation measures, thereby ensuring early detection of deficiencies and timely interventions to maintain long-term stability and user safety. Collectively, these measures establish a structured and comprehensive framework for ensuring road tunnel safety in the country.

Similarly, to ensure uniform tunnel safety standards across Indian Railways, the Research Designs and Standards Organisation (RDSO), under the Ministry of Railways, has issued guidelines covering civil engineering inspection, maintenance and safety in existing tunnels (RDSO/2007/GE:G-0015), safety during tunnel construction (RDSO/2007/GE:G-0016), and design and construction of tunnels (RDSO/2007/GE:G-0017).

(c) The National Disaster Management Authority (NDMA), under the Ministry of Home Affairs, has initiated a collaborative effort with the Indian Institute of Technology (IIT) Delhi to develop comprehensive National Guidelines for Tunnel Safety. These guidelines are intended to cover all categories of tunnels undertaken by the Central and State Governments, thereby establishing a uniform safety framework. To support this initiative, officials and experts from various organizations are contributing to the deliberations of the Technical Expert Committee (TEC).

(d) For tunnels involving special geological or hydrological conditions, including those beneath rivers or the sea, project-specific safety measures are adopted based on detailed design and applicable IRC codes and specifications. Provisions relating to real-time monitoring, water ingress management, lighting, ventilation, and fire safety are incorporated according to site-specific requirements.
