

**भारत सरकार / GOVERNMENT OF INDIA
रेल मंत्रालय / MINISTRY OF RAILWAYS
रेलवे बोर्ड / RAILWAY BOARD**

No. 2023/S&T/Dev/Kavach Corres.

Dated: 21.07.25

**General Manager,
All Zonal Railways.**

MD/DFCCIL, Noida

DG/RDSO, Lucknow

Sub: Process of Initial Survey for Kavach System Design Inputs.

**Ref: (i) RB letter No. 2023/S&T/Dev/Kavach Corres. dated 01.11.2024.
(ii) Committee Report submitted vide CR letter No. N.659/WM/CC/Kavach dated 09.07.2025.**

With reference to the above, a Committee comprising representatives from Central Railway, CoE/IRISET, ECR, and Railway Board was constituted to examine and recommend suitable methodologies for conducting initial surveys required for Kavach system design inputs.

The recommendations have been examined and accepted by AM/Signal and are hereby communicated below for strict implementation across all Zonal Railways:

1. For high-precision distance measurement, LiDAR technology shall be used as the preferred technology.
2. To facilitate accuracy in LiDAR survey, Primary Ground Control Points (GCPs) should be referenced to CORS networks (e.g., Survey of India) or any equivalent system offering centimetre-level accuracy.
3. Drone or Vehicle-mounted LiDAR, supported by DGPS-based GCPs, shall be used to fast-track KAVACH surveys.

4. To digitally capture identifiers like OHE mast numbers and signal numbers, low-flying drones or railway vehicle-mounted high-resolution cameras shall be used.
5. As regards to validation of installed RFID tags, RFID tags shall be manually validated in station sections. However, in small yards (up to 4 lines) and for block sections, validation may be done using vehicle-mounted cameras/LiDAR for location correctness and Kavach fitted locomotives operating in Isolation Mode for tag programming & validation.
6. A custom cloud-based GIS solution should be used for storing and managing KAVACH data across zones for which RDSO is nominated as Nodal agency.

Zonal Railways are requested to ensure strict compliance of above.

This issues with the approval of AM/Signal.

Digitally signed by
V B MATHUR
Date: 21-07-2025
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(V.B. Mathur)
Executive Director/S&T(Dev.)-I
Railway Board