



RAILWAY AND METRO SAFETY AUDIT PROGRAMME

Independent Assessment • Risk-Based Assurance • Continuous Safety Improvement

A Professional Safety, Risk and Compliance Initiative of AIRSC

IDENTIFY RISKS EARLY • ASSESS CONTROLS OBJECTIVELY •
CORRECT GAPS RESPONSIBLY • IMPROVE SAFETY CONTINUOUSLY



INDEPENDENCE



EVIDENCE



RISK ASSURANCE



CONTINUOUS
IMPROVEMENT



AUDIT FOR PREVENTION • ASSURANCE FOR PROTECTION

ALL INDIA RAIL SAFETY COUNCIL

Railways—The Lifeline of Our Nation

Safety First • Safety Always

WWW.RAILSAFETY.CO.IN



RAILWAY
VISION 2047



ATMANIRBHAR
BHARAT



VIKSIT
BHARAT 2047



DIGITAL
INDIA



MAKE IN
INDIA



SKILL
INDIA



SUSTAINABLE &
GREEN MOBILITY



INFRASTRUCTURE INTEGRITY & ROLLING-STOCK ASSURANCE

Inspect Systematically • Maintain Proactively • Correct Defects Promptly



TRACKS & JUNCTIONS



BRIDGES & VIADUCTS



TUNNELS & SLOPES



DRAINAGE & FLOOD-PRONE ASSETS



STATIONS & PLATFORMS



DEPOTS & WORKSHOPS

ROLLING-STOCK CONTROLS

• MAINTENANCE SCHEDULES • DEFECT MANAGEMENT • QUALITY CHECKS • CALIBRATION • TOOL CONTROL • SPARE-PART TRACEABILITY • RETURN-TO-SERVICE



Maintenance Schedules



Defect Management



Quality Checks



Calibration



Tool Control



Spare-part Traceability



Return-to-Service

**PREDICTIVE MONITORING SUPPORTS—
NOT REPLACES—QUALIFIED
ENGINEERING JUDGEMENT**



RELIABLE ASSETS ARE THE FOUNDATION OF SAFE OPERATIONS

ALL INDIA RAIL SAFETY COUNCIL

WWW.RAILSAFETY.CO.IN



RAILWAY
VISION 2047



ATMANIRBHAR
BHARAT



VIKSIT BHARAT
2047



DIGITAL
INDIA



MAKE IN
INDIA



SKILL
INDIA



SUSTAINABLE &
GREEN MOBILITY



SIGNALLING, TRAIN PROTECTION & OPERATIONAL SAFETY ASSURANCE

Governance • Testing • Competency • Configuration Control • Failure Readiness



INTERLOCKING



Safe routing, conflict prevention and reliable control

AUTOMATIC TRAIN PROTECTION



Enforce speed, monitor compliance, prevent overrun

KAVACH



Indigenous ATP for enhanced safety assurance

CBTC



Moving block, high capacity, continuous safety

ETCS



Interoperable protection and standard compliance

OPERATIONAL COMMUNICATION



Clear, timely and structured information flow



AUDIT CONTROLS

MAINTENANCE ARRANGEMENTS • TEST PROCEDURES • REDUNDANCY • SYSTEM AVAILABILITY • ALARM MANAGEMENT • HUMAN-MACHINE INTERFACES • FAILURE RESPONSE



OPERATIONAL REVIEW

CONTROL ROOM • TRAIN MOVEMENT • STATION DUTIES • SHIFT HANDOVER • ABNORMAL OPERATIONS • SERVICE DISRUPTION



BOUNDARY NOTE

SUPPLEMENTARY COMMUNICATION MUST REMAIN DISTINCT FROM APPROVED SAFETY-CRITICAL SIGNALLING AND TRAIN-PROTECTION FUNCTIONS

CLEAR RULES • ACCURATE COMMUNICATION • DISCIPLINED EXECUTION

ALL INDIA RAIL SAFETY COUNCIL

WWW.RAILSAFETY.CO.IN



RAILWAY
VISION 2047



ATMANIRBHAR
BHARAT



VIKSIT
BHARAT 2047



DIGITAL
INDIA



MAKE IN
INDIA



SKILL
INDIA



SUSTAINABLE &
GREEN MOBILITY



STATION & PASSENGER SAFETY AUDIT

Accessible Facilities • Orderly Movement • Clear Information • Dignified Travel

1 STATION ACCESS



- Approach & Entry
- Universal Access
- Parking & Drop-off
- Last-Mile Connectivity

2 PLATFORM CONDITIONS



- Platform Surface
- Edge Protection
- Shelters & Seating
- Cleanliness & Hygiene

3 FOOT OVERBRIDGES & SUBWAYS



- Capacity & Design
- Non-Slip & Drainage
- CCTV Coverage
- Crowd Management

4 LIFTS & ESCALATORS



- Availability & Reliability
- Safety Features
- Cleanliness & Space
- Access for All

5 LIGHTING & SIGNAGE



- Adequate Lighting
- Wayfinding Signage
- Visibility & Contrast
- Multilingual Information

6 PUBLIC ANNOUNCEMENTS



- Clarity & Timeliness
- Multilingual PAs
- Information Consistency
- Emergency Updates

7 BOARDING & ALIGHTING



- Door Management
- Platform Gap Control
- Queue Management
- Passenger Discipline

8 EMERGENCY ROUTES



- Clearly Marked Routes
- Unobstructed Paths
- Assembly Areas
- Emergency Equipment



CROWD-RISK SCENARIOS

PEAK HOURS • FESTIVALS • SPECIAL EVENTS • SERVICE DISRUPTIONS



INCLUSION FOR ALL

CHILDREN • WOMEN • SENIOR CITIZENS • PERSONS WITH DISABILITIES • PATIENTS • PASSENGERS REQUIRING ASSISTANCE



ARE PASSENGER FLOWS SAFE, ACCESSIBLE, UNDERSTANDABLE AND RESILIENT?

SAFE STATIONS BUILD PUBLIC CONFIDENCE

ALL INDIA RAIL SAFETY COUNCIL

WWW.RAILSAFETY.CO.IN



RAILWAY
VISION 2047



ATMANIRBHAR
BHARAT



VIKSIT
BHARAT 2047



DIGITAL
INDIA



MAKE IN
INDIA



SKILL
INDIA



SUSTAINABLE &
GREEN MOBILITY



WORKFORCE SAFETY & HUMAN-FACTORS EXCELLENCE

Healthy People • Competent Teams • Reliable Operations



MOVING TRAINS



ELECTRICAL SYSTEMS



HEAVY EQUIPMENT



HAZARDOUS SUBSTANCES



CONFINED SPACES



WORK AT HEIGHT



RISK ASSESSMENT • SAFE-WORK PROCEDURES • PERMIT SYSTEMS • PPE • SUPERVISION • EMERGENCY ARRANGEMENTS



FATIGUE



WORKLOAD



SITUATIONAL
AWARENESS



COMMUNICATION



TEAMWORK



DECISION-MAKING

CULTURE INDICATORS: VISIBLE LEADERSHIP • FAIR ACCOUNTABILITY • OPEN REPORTING • NEAR-MISS LEARNING • CONTINUOUS IMPROVEMENT

DO NOT BLAME THE PERSON—UNDERSTAND AND IMPROVE THE SYSTEM



ALL INDIA RAIL SAFETY COUNCIL

WWW.RAILSAFETY.CO.IN



RAILWAY
VISION 2047



ATMANIRBHAR
BHARAT



VIKSIT
BHARAT 2047



DIGITAL
INDIA



MAKE IN
INDIA



SKILL
INDIA



SUSTAINABLE &
GREEN MOBILITY



EMERGENCY, CONSTRUCTION & CONTRACTOR SAFETY ASSURANCE

Preparedness • Safe Projects • Competent Partners • Resilient Operations



DISASTER DRILL

CONSTRUCTION
SAFETY

CONTRACTOR
INDUCTION

SUPPLY-CHAIN
INSPECTION

COORDINATED
RESPONSE



EMERGENCY READINESS

- DERAILMENT & COLLISION READINESS
- FIRE & MEDICAL EMERGENCIES
- NATURAL DISASTERS
- SECURITY & CYBER DISRUPTIONS
- EVACUATION & INTER-AGENCY COORDINATION



CONSTRUCTION CONTROLS

- DESIGN SAFETY
- LIFTING
- EXCAVATION
- WORK AT HEIGHT
- TEMPORARY ELECTRICAL
- CONFINED SPACES
- TRAFFIC MANAGEMENT
- TESTING & COMMISSIONING



CONTRACTOR ASSURANCE

- SELECTION
- COMPETENCY
- INDUCTION
- SUPERVISION
- PERMIT SYSTEMS
- PERFORMANCE MONITORING
- INCIDENT REPORTING



SUPPLY-CHAIN CHECKS

- QUALITY
- TRACEABILITY
- STORAGE
- COUNTERFEIT-PART RISK
- CHANGE CONTROL



COORDINATED RESPONSE

- INCIDENT COMMAND SYSTEM
- REAL-TIME COMMUNICATION
- RESOURCE MOBILISATION
- MULTI-AGENCY COLLABORATION
- POST-EVENT REVIEW & IMPROVEMENT

PREPARE BEFORE THE EMERGENCY • CONTROL RISK BEFORE WORK BEGINS

ALL INDIA RAIL SAFETY COUNCIL

WWW.RAILSAFETY.CO.IN



RAILWAY
VISION 2047



ATMANIRBHAR
BHARAT



VIKSIT BHARAT
2047



DIGITAL
INDIA



MAKE IN
INDIA



SKILL
INDIA



SUSTAINABLE &
GREEN MOBILITY



CYBERSECURE • CLIMATE-RESILIENT • FUTURE-READY RAILWAYS

Protect Digital Systems • Strengthen Infrastructure • Sustain Safe Mobility

CYBER RESILIENCE

Secure Systems. Trusted Operations.
Continuous Monitoring. Rapid Response.

RAIL CYBER OPERATIONS CENTRE

CYBER AUDIT ZONES



OPERATIONAL TECHNOLOGY



COMMUNICATIONS



TICKETING



SURVEILLANCE



PASSENGER INFORMATION



DATABASES &
INTELLIGENT INFRASTRUCTURE

CYBER CONTROLS



SECURITY-
BY-DESIGN



ACCESS
CONTROL



NETWORK
MONITORING



BACKUPS



THIRD-PARTY
RISK



INCIDENT
RESPONSE



DATA
PROTECTION



EMPLOYEE
AWARENESS



NO INTRUSIVE TESTING OF OPERATIONAL
OR SAFETY-CRITICAL SYSTEMS WITHOUT
EXPLICIT WRITTEN AUTHORISATION

CLIMATE RESILIENCE

Anticipate Risks. Build Resilience.
Protect People. Preserve Planet.

CLIMATE RISKS



FLOOD



EXTREME
HEAT



HEAVY
RAIN



LANDSLIDE



CYCLONE

RESILIENCE CONTROLS



DRAINAGE



SLOPE
PROTECTION



HEAT
MANAGEMENT



VULNERABLE-
ASSET
MONITORING



EMERGENCY
RESTORATION

ENVIRONMENTAL CONTROLS



ENERGY



WATER



WASTE



HAZARDOUS
MATERIALS



POLLUTION

DIGITAL TRUST AND CLIMATE RESILIENCE PROTECT OPERATIONAL CONTINUITY



ALL INDIA RAIL SAFETY COUNCIL

WWW.RAILSAFETY.CO.IN



RAILWAY
VISION
2047



ATMANIRBHAR
BHARAT



VIKSIT
BHARAT
2047



DIGITAL
INDIA



MAKE IN
INDIA



SKILL
INDIA



SUSTAINABLE
& GREEN
MOBILITY



FROM AUDIT EVIDENCE TO CONTINUOUS SAFETY IMPROVEMENT

Independent Assessment • Professional Integrity • Safer Railway Systems

AUDIT METHODOLOGY PATHWAY



AUDIT METHODS & TOOLS



CHECKLISTS



RISK
MATRICES



ROOT-CAUSE
ANALYSIS



BOW-TIE



HAZID



HAZOP



JOB SAFETY
ANALYSIS

FINDING CLASSIFICATION

- HIGH PRIORITY—IMMEDIATE CONTROL**
- MEDIUM PRIORITY—PLANNED ACTION**
- LOWER PRIORITY—CONTINUOUS IMPROVEMENT**
- POSITIVE PRACTICE—PRESERVE & REPLICATE**

CORRECTIVE-ACTION CONTROLS

- OWNER**
- PRIORITY**
- RESOURCES**
- COMPLETION DATE**
- EVIDENCE OF CLOSURE**
- EFFECTIVENESS REVIEW**



INDEPENDENCE & INTEGRITY

- IMPARTIALITY**
- COMPETENCE**
- CONFIDENTIALITY**
- CONFLICT DISCLOSURE**
- EVIDENCE-BASED CONCLUSIONS**



AIRSC AUDITS ARE PROFESSIONAL AND ADVISORY UNLESS SPECIFICALLY AUTHORISED BY A COMPETENT STATUTORY AUTHORITY

RISKS REDUCED • CONTROLS STRENGTHENED • ACTIONS COMPLETED • PEOPLE PROTECTED

ALL INDIA RAIL SAFETY COUNCIL

Railways—The Lifeline of Our Nation

Safety First • Safety Always

WWW.RAILSAFETY.CO.IN