



AMERICAN RAILWAY ENGINEERING AND
MAINTENANCE-OF-WAY ASSOCIATION

2025 Call for Papers “Trending Topics”

Communications, Signals & Information Technology

- Use of LIDAR and similar technologies
- Abbreviated versions of symposium / conference presentations
- Changes in battery / power technologies – applications in the C&S arena
- Edge devices and computing
- Use of fiber optic technologies to replace traditional circuitry – necessary training and equipment for employees
- Remote diagnostics and analysis to streamline troubleshooting and repair

Engineering Services

- How to use Artificial Intelligence (AI)
- Sustainability / Environmental
- Joint corridor development
- Alternative fuels
- Diversity and Inclusion
- Sustaining our workforce - recruitment, K-12 awareness, development/retention etc.
- Technology – asset management

Maintenance-of-Way

- Autonomous technology for maintenance of way equipment
 - Detection of Roadway Workers
- Advancements Autonomous testing technology
- Data driven maintenance planning.
- Drainage System Designs/Sub-Grade Stability Repair
- OSHA vs. FRA safety considerations (changes with Crane Safety between agencies)
- Autonomous Inspection – Drone-based, vision-based etc.
 - Artificial Intelligence Advancements
- Training Track Inspectors – Latest technology, best practices - virtual training techniques
- Machine/Equipment automation – Testing and what the future looks like from a Class I perspective.
- Vegetation Detection and Control – New Technologies
- Tamping equipment guidelines and new technologies
- Autonomous Track Geometry Measurement System (ATGMS) Repeatability and Reproducibility studies on Track Geometry data
- Advancements in Battery tool technology
- Technology advancements in Roadway Worker Protection (RWP) and Roadway Maintenance Machine (RMM) operation
 - Collision Avoidance Technology

Passenger & Transit

- Electrification Systems
- Service Improvements and Enhancements in a Complex or Existing Railroad Environment
- Vehicle Technologies/Fleet Management

- Service Planning – Operational Modeling
- Developments in Asset Management/Maintenance Planning
- Project Dashboards – Scope, Schedule, Outages, Planning the Work
- Shared Corridor Collaboration
- Resiliency Planning for Passenger Systems
- Facility Considerations for Changing Passenger Operations
- Vehicle and Facility Passenger Accessibility
- Technology Advancement in Safety and Security
- Modernization of Aging Infrastructure
- Fire & Life Safety in Passenger Facilities

Structures

- Environmental and Climate Considerations for bridge design, construction, and rehabilitation
- Cyber Security for Movable Bridges
- Sustainability
 - Material
 - Life Span
- Materials technology and innovation
- Hard core lessons learned (tell us how you face planted and recovered to complete the project)
- Fire Protection for Structures
- Data Collection for Asset Management
 - Innovation in Capital Planning
 - Inspection Resources
 - Innovation in Monitoring
- Resiliency – what are we doing today to be relevant tomorrow?
- Innovations in Emergency event response
- AAR/MxV topics, current University research topics
- High performance concrete
- Modernization of timber and concrete materials
- Resiliency for infrastructure
- Long Train study
- Public funding & unique Public Private Partnerships (PPP)

Track

- Reduction of Track Occupancy for Testing & Maintenance
- Rolling contact fatigue (RCF)
- Current Installation practices & methods for utility crossings
- Sustainable tie technology
- Actual project/maintenance examples
- New roadway machine technology
- Lessons learned with leveraging public funding for railroad improvements (procurement & execution)
- Strategies to reduce or eliminate track and infrastructure caused derailments
- Practical sustainability strategies
- Grant funding opportunities – how to do?
- Shared use corridors (chat / panel discussion)
- Higher speed One-Way Low-Speed (OWLS) diamonds