Communications & Signals
- The impact of new technologies on Railroads, highlighting concerns to be shared with other industries
- The importance of scales (impacts of inaccurate weight)
- Education on the considerations and assumptions made in Onboard Braking Curves.
- A railroad or vendor project that solves a challenge.
- On-board Movement Authority with Virtual Block
- Alternatives for Crossing Monitoring Systems
- Future of Overloaded Car Protection
- Surge Protection for Signal Equipment
- Controlled & Automated Vehicle (CAV) Standard Development and Design Considerations for Grade Crossing
- CTC over Interoperable Train Control Messaging (ITCM) development and implementation

Engineering Services
- Sustainability / resiliency
- How to keep a railroad running under pandemic conditions
- Security response planning
- Precision Scheduled Railroad (PSRU Influences on Engineering: Yard and Facility Consolidations and Operating Expense Reduction – What can you stop doing?
- Terminal Capacity
- Leveraging the economic benefits of Positive Train Control (PTC)
- Use of Unmanned Aerial (UA) data for railroad applications
- Big data analytics
- Terminal capacity and its integration with line capacity
- Short lines and Federal Railroad Administration (FRA) 243 Title 49 Part 243 of the code of Federal Regulations (CFR)
- Environmental regulatory permitting trends

Maintenance-of-Way
- Autonomous technology for maintenance of way equipment
- Next generation turnout and frog design
- Autonomous testing technology
- Data driven maintenance planning
- Drainage System Designs/Sub-Grade Stability Repair
- OSHA vs. FRA safety considerations
- Autonomous Inspection – Drone-based, vision-based etc.
- 213 Track Inspection changes – RSAC, FRA etc. changes to sub-part F
- Training Track Inspectors – Latest technology, best practices - virtual training
- Machine/Equipment automation – Testing and what the future looks like from a Class I perspective
- Vegetation Control – New Technologies
• Tamping equipment guidelines and new technologies
• ATGMS/Hy-Rail based geometry systems
• Ground Penetrating Radar
• Gauge Repeatability and Reproducibility studies on Track Geometry data

Passenger & Transit
• Infrastructure Bills or Investments
• Transit and Project Funding
• Program Delivery
• Planning and environmental (NEPA) considerations for both New Start or Line Extension Projects
• Electrification issues such as On and Off-Wire Technology; conversions from AC/DC systems to other technologies; New Vehicle technologies using batteries.
• Asset Management or Condition Assessments and how technology is being applied by Field forces
• Stray Current issues and solutions
• Station Snow Removal – Maintenance issues and solutions [Heated platform technology (Radiant, geothermal, electrical)]
• Agency FTA audit preparation
• Shared Use Corridors
• Use of LiDAR in Transit Corridors and Underground systems
• Screen-shared virtual conferences for BIM walkthroughs and project collaboration.
• Use of Dashboards to track/monitor projects and share information with stakeholders and the public
• Communication Based Train Control (CBTC) ...
• Operations and Maintenance Facilities
• Intermodal or Multi-modal rail projects
• Grant Funding to leverage Federal dollars
• How Technology and Software can manage large programs for the railroads

Structures
• Scour
• Sustainability
• Effects of hydraulic events and techniques for mitigation
• Process for moving High Wide Heavy loads
• Unmanned Aerial Vehicles for inspection, construction monitoring, post event analysis - focus on sensor capabilities
• Materials technology and innovation
• Bridge strike detection prevention/protection and response
• Post event foundation analysis
• Remote operation of moveable bridges
• Corrosion on steel bridges
• New coating technologies
• Training for delivering consistent inspections
• Training for making repairs that solve the root cause
• Onboard detection for bridge assessment
• Hard core lessons learned
• Improving the performance of track systems and components to enhance track safety and reduce life-cycle costs
• Addressing the design, construction and maintenance challenges of special trackwork
• Presenting research results, designs and methodologies to improve rail integrity (Topics could include research related to rolling contact fatigue (RCF), rail grinding, rail corrosion, or rail material and manufacturing improvements)
• Effective methods to improve track support in track transition areas and areas of weak subgrades
• Track designs that mitigate noise and vibration in urban environments
• Focused reports of Track Functional Group committee activities (e.g. important changes to the MRE, student involvement and outreach, etc.)
• Research updates from TTCI and universities on specific track related research projects
• Experiences from Class 1 freight, passenger and transit systems on the construction and maintenance of track, such as innovative work methodologies, the successful application of new technologies or the use of new materials
• Track related innovations from the international railway community with potential for use in North American railways
• Updates on Modern Tools to Assess Track Health & Inspection
  o Improve Reliability
  o Autonomy
  o Measure Everything
• New tie technology (extending service life of wood or concrete, new work on composites?)
• Continuous or non-contact rail testing, efficiencies in testing