

# TR NEWS

November–December 2021 NUMBER 336

## Collaboration and Innovation at MnROAD Research Facility

PLUS

Transit Network Strategies  
for New Mobility Options

Airport Ancillary Facilities  
Design Guidance

Prototype Hazmat Risk  
Assessment Tool

The National Academies of  
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TRANSPORTATION RESEARCH BOARD

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The **Transportation Research Board** is one of seven major programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to provide leadership in transportation improvements and innovation through trusted, timely, impartial, and evidence-based information exchange, research, and advice regarding all modes of transportation. The Board's varied activities annually engage about 8,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state departments of transportation, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

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\* Membership as of November 2021.

### 3 MnROAD Research Facility: Three Decades of Collaboration, Studies, Innovation, and Deployments

*Glenn Engstrom, Bernard I. Izevbekhai, Benjamin Worel, Jeff Brunner, and Lauren Dao*

This article examines the history of the MnROAD research facility near Saint Paul, Minnesota, as well as its technical achievements and collaboration with TRB, state transportation agencies, pooled fund studies, and more. Offered is a broad overview of the many studies conducted at MnROAD over its 30-year history—from concrete overlays to subsurface design and drainage to environmental factors in design and preservation.

### 10 TCRP RESEARCH REPORT 221 Redesigning Transit for the New Mobility Future

*Lora B. Byala*

For some time, transit agencies have realized that their decades-old networks are not serving the needs of today's communities. Now, many agencies are redesigning their transit networks to meet current challenges and innovations presented by changes in demographics, land use, economics, technology, and the increase in new mobility options in major U.S. cities.

### 16 ACRP RESEARCH REPORT 226 Planning and Design of Airport Terminal Restrooms and Ancillary Spaces

*Jens Vange and Alan Howell*

Authors present research findings on planning and design of airport restrooms and ancillary spaces—from required spaces such as lactation rooms and animal relief areas, to waiting amenities like worship and ablution spaces, to sleeping spaces and other layover amenities—in an update to the 2015 ACRP Report 130: *Guidebook for Airport Terminal Restroom Planning and Design*.

### 20 Airport Restrooms and COVID-19

*Jens Vange and Alan Howell*



### 22 RAIL SAFETY IDEA PROJECT 34 Understanding Systemic Risks of Railroad Hazmat Transport: Development of a Prototype System

*Ravi Palakodeti*

The need for railroads to have insights into the systemic risks associated with transporting hazardous materials prompted the research team at FACTOR, a risk assessment company in Nashville, Tennessee, to develop an innovative prototype. The application also would allow users to perform hypothetical analyses to evaluate risk impacts on hazmat traffic changes, as well as to compare the effectiveness of risk mitigation options.

### 26 NCHRP PROJECT 08-120 Systems Engineering for Rural Connected Vehicle Corridors: Customizable Model Documents

*Barbara Staples, Peiwei Wang, and Kathy Thompson*

To overcome the challenge of deploying connected vehicles (CVs) in rural roadway systems, an NCHRP project identified CV applications most relevant to rural corridors, scalable ways to integrate CVs into traffic operations and management plans, resource needs, and more. The research team developed model concepts of operation and systems requirements documents for adaptation by transportation agencies.



**COVER** Research conducted on the three test tracks of the MnROAD research facility—a two-lane, 3.5-mile stretch of I-94; an Old Westbound route used for periodic testing; and a two-lane, 2.5-mile low-volume road test track—have led to many pavement-related innovations. The history of MnROAD and its partnership with TRB are explored in this issue of *TR News*. (Photo: Minnesota DOT)

## Coming Next Issue

Among the topics examined in the January–February 2022 issue of *TR News* are a strategic approach to preservation, maintenance, and renewal; a guide for pedestrian and bicyclist safety at alternative intersections and interchanges; and green bonds and the transit industry.

*Alternative intersections and interchanges—such as this green-T, or seagull, formation—help enhance motorist safety. But do they also enhance safety for those on foot or on bicycles? An NCHRP report offers guidance for transportation practitioners to improve pedestrian and bicycle safety at these types of intersections.*



Photo: Hans Haase, Wikimedia Commons

### 32 NCHRP RESEARCH REPORT 980 Talent for Today and Tomorrow: New Research on the Transportation Planning Workforce

*Ann Hartell*

The technological and societal trends that affect transportation are evolving rapidly, raising new challenges and reshaping the dimensions of long-standing transportation issues and practices. The author looks at how the transportation workforce also is evolving, as reflected in the recent *NCHRP Research Report 980: Attracting, Retaining, and Developing the Transportation Workforce—Transportation Planners*.

### 33 A Futurist Perspective

*Ann Hartell*

### Also in This Issue

#### 34 Profiles

*Robert C. Hazlett, Act 11 Consulting, and  
Soheil Nazarian, The University of Texas at El Paso*

#### 36 Transportation Influencer

*Greg Macfarlane, Brigham Young University*

### TRB COVID-19 Resources

Agencies and organizations can use TRB publications and online resources for useful and timely information to help address issues related to the novel coronavirus pandemic. To read about TRB's current research and activities, and for a list of relevant publications, visit [www.nationalacademies.org/trb/blog/transportation-in-the-face-of-communicable-disease](http://www.nationalacademies.org/trb/blog/transportation-in-the-face-of-communicable-disease).

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*Ann Hartell*

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## TR NEWS

features articles on innovative and timely research and development activities in all modes of transportation. Brief news items of interest to the transportation community are also included, along with profiles of transportation professionals, meeting announcements, summaries of new publications, and news of Transportation Research Board activities.

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