

TRANSPORTATION RESOURCES



**Best Practices for Literature Searching in
Transportation Research for Civil Engineers &
Planners**

Overview

This session aims to compile best practices for literature searching in transportation research, and to promote more efficient and effective conduct of research. It also:

- ▣ Provides an overview of the sources for either a comprehensive search or for specific items for a transportation project.
- ▣ Identifies resources to use for emerging and innovative solutions for transportation projects, and enables engineers and transportation planners to share practices throughout the transportation industry to create best solutions for a particular project.
- ▣ Encourages comprehensive searching to avoid duplication of effort in research and the implementation of specific projects, and promotes faster progress in meeting challenges.
- ▣ Facilitates discovery and use of applicable information by practitioners.

Transportation Research Organizations and the Structure of Transportation Information

- ▣ [National Academy of Sciences](#) (NAS) – Private, non-profit society of scholars chartered by Congress in 1863.
 - [National Research Council](#) (NRC) – Organized by NAS in 1916, has become the principle operating agency of the NAS, National Academy of Engineering, and the Institute of Medicine (collectively known as the “National Academies”).
 - ▣ [Transportation Research Board](#) (TRB) – One of six major divisions of the NRC, facilitates transportation research with support of state transportation departments, federal agencies, and other organizations and individuals involved in transportation research.

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Transportation Research Organizations and the Structure of Transportation Information (*cont.*)

- ▣ [U.S. Department of Transportation](#) (USDOT) – Established by an act of Congress on October 15, 1966, the Department’s first official day of operation was April 1, 1967.
- ▣ Some major administrations and offices within USDOT include:
 - [Federal Highway Administration](#) (FHWA)
 - [Federal Railroad Administration](#) (FRA)
 - [Federal Transit Administration](#) (FTA)
 - [Federal Aviation Administration](#) (FAA)
 - [Maritime Administration](#) (MARAD)
 - [Federal Motor Carrier Safety Administration](#) (FMCSA)
 - [National Highway Traffic Safety Administration](#) (NHTSA)
 - [Research & Innovative Technology Administration](#) (RITA)

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Transportation Research Organizations and the Structure of Transportation Information (*cont.*)

- ▣ **Professional organizations** such as: [American Association of State Highway & Transportation Officials](#) (AASHTO), [American Society of Civil Engineers](#) (ASCE), [Institute of Transportation Engineers](#) (ITE), [American Public Transportation Association](#) (APTA), [National Asphalt Pavement Association](#) (NAPA), [Portland Cement Association](#) (PCA), and [Association of American Railroads](#) (AAR).
- ▣ **International research centers** such as [World Road Association](#) (PIARC) and [Australian Road Research Board](#) (ARRB).
- ▣ **Academic research centers** such as the [Texas Transportation Institute](#) (TTI), [University of California-Berkeley Institute of Transportation Studies](#) (ITS), [University of North Carolina Highway Safety Research Center](#) (UNC HSRC), and [UMass Transportation Center](#) at Amherst.

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Transportation Research Organizations and the Structure of Transportation Information (*cont.*)

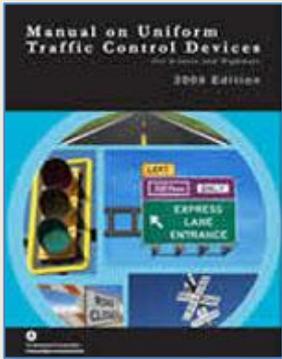
And the **collaborations** between these organizations, e.g., the [Cooperative Research Programs Division of TRB](#):

[National Cooperative Highway Research Program](#) (NCHRP) - Initiated in 1962 by AASHTO with full support of FHWA and administered by TRB.

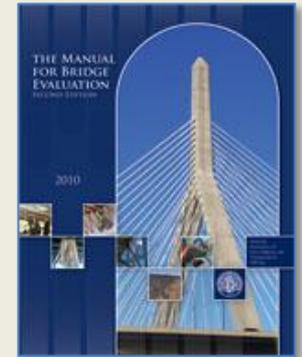
[Transit Cooperative Research Program](#) (TCRP) - Established in July 1992 with FTA sponsorship and authorized as part of Intermodal Transportation Efficiency Act of 1991 (ISTEA).

[Airport Cooperative Research Program](#) (ACRP) - Authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act.

Others more recently formed include the [Hazardous Materials Cooperative Research Program](#) (HMCRP); the [National Cooperative Freight Research Program](#) (NCFRP); and [National Cooperative Rail Research Program](#) (NCRRP).



Manuals and Handbooks



Manuals are essential to any field for research. By searching organizations and databases, engineers can ascertain if there are major manuals for a particular area of expertise.

Examples of manuals include: *A Policy on Geometric Design of Highways and Streets*, aka. the Green Book (AASHTO), *Standard Specifications for Highway Bridges* (AASHTO), *Roadside Design Guide* (AASHTO), *Steel Construction Manual* (AISC), *Manual of Uniform Traffic Control Devices* (US DOT) and *Trip Generation* (ITE).

AASHTO publications are vital for civil engineers. AASHTO is an international leader in setting standards for all systems of highway development. Its bookstore can be accessed at <https://bookstore.transportation.org/>

Standards, Methods, Codes and Specifications

For each transportation or research project, it is essential to identify major **organizations**, **government groups**, and **societies** that have established **standards** throughout the industry. These practices are accepted and well-known, and may incorporate legal requirements.

Organizations include: [AASHTO](#), [American Concrete Institute](#) (ACI), [American National Standards Institute](#) (ANSI), [American Society for Testing and Materials](#) (ASTM), [International Code Council](#) (ICC), and [International Organization for Standardization](#) (ISO).

Suggested **Government** groups to check are:
[Federal Highway Administration](#) (FHWA),
[Occupational Safety and Health Administration](#) (OSHA),
And [National Institute of Standards and Technology](#) (NIST).

Keep in mind that **state level materials** are often based on other resources, but may be different.

Societies that may offer guidance include:
[American Society of Civil Engineers](#) (ASCE), [Institute of Electrical and Electronics Engineers](#) (IEEE), and [Society of Automotive Engineers](#) (SAE International).

Tools for Searching



- ▣ **TRID**: A database that locates research from around the world with over one million records of transportation research. Free access at TRB's Website at <http://trid.trb.org>. TRID is a joint database of Transportation Research Information Services (TRIS) & International Transport Research Documentation (ITRD).
- ▣ TRID is user friendly – can limit literature search to full-text articles, dates, or language (English, French, German, Spanish).
- ▣ TRID includes **Research in Progress (RiP)** database and **Practice-Ready Papers (PRP)** database. Practice Ready Papers provide solutions to current issues and are ready for immediate implementation.
- ▣ Can limit search to TRIS (Transportation Research Information Services), ITRD (International Transportation Research Documentation), TRB (Transportation Research Board), RiP (Research in Progress), PRP (Practice Ready Papers), or UTC (University Transportation Centers).

Tools for Searching:

Your Local Transportation Library Catalog



- ▣ <http://www.worldcat.org>
- ▣ Electronic catalog via OCLC (Online Computer Library Center, Inc.) - world's largest network of library contents.
- ▣ Catalog enables the user to search multiple library catalogs online at one centralized source.
- ▣ Includes materials in transportation libraries as well as other resources held in government, university and public libraries.
- ▣ Provides some full-text access to documents that are in the public domain.
- ▣ Check if your library has interlibrary borrowing privileges.

Tools for Searching : National Transportation Library



- ▣ **National Transportation Library** (NTL) sponsored by USDOT Research and Innovative Technology Administration (RITA).
- ▣ Full-text digital repository, serving as a permanent archive for statistical, technical, research and policy documents.
- ▣ NTL Integrated Search System: searches NTL Digital Repository and other transportation resources, including University Transportation Centers' research at <http://ntlsearch.bts.gov/repository/index.do>
- ▣ Other databases in this Integrated Search System include TRID, TRB Research in Progress (RiP) Database, Science.gov and the National Technical Information Service (NTIS) databases.

Interdisciplinary & Allied Field Databases

- ▣ **Google Scholar** at <http://scholar.google.com>: Indexes hundreds of open access and subscription journals, books from the WorldCat database, conference papers and proceedings, white papers and academic materials posted on Web, and patent information.
- ▣ **DoE Information Bridge** at <http://www.osti.gov/bridge>: Department of Energy's research report site. Contains documents and citations in physics, chemistry, materials, biology, environmental sciences, energy technologies, engineering, and computer and information science.
- ▣ **Science.gov** <http://www.science.gov>: A gateway to government science information and research results, with its scientific databases and websites. Can limit search to Applied Science and Technologies and then Transportation.
- ▣ **Thomas** site at <http://thomas.loc.gov>: Source for legal information including *Code of Federal Regulations* and options for finding bills and public laws.

Examples of Subject-Specific Databases

- ▣ **SafetyLit** at <http://www.safetylit.org/>: SafetyLit provides abstracts of reports from researchers who work in the more than 30 professional disciplines relevant to preventing unintentional injuries, violence, and self-harm.
- ▣ **International Concrete Research & Information Portal** at <http://www.concrete.org/Publications/InternationalConcreteAbstractsPortal.aspx> : Search abstracts archive of American Concrete Institute and partner organizations.

Subscription Fee-Based Services

- ▣ **IHS:** Full coverage of the AASHTO and ASTM specifications, AASHTO documents, security and intelligence information and economic outlooks <http://www.ihs.com>
- ▣ **Knovel:** Searchable database of handbooks, datasets and reference sets; includes full text AASHTO standards and manuals <http://why.knovel.com>
- ▣ **ASCE Library:** Journals, conferences, and publications of the American Society of Civil Engineers <http://ascelibrary.org>
- ▣ **Compendex:** Comprehensive engineering databases with full-text links. Includes other databases such as EiPatent, GeoRef, and NTIS <http://www.ei.org/compendex>
- ▣ **Dialog:** Over 450 databases including scientific and technical data, patents, trademarks and other intellectual property data; per search charge database <http://www.dialog.com/products/dialogweb>
- ▣ **IEEE Xplore Digital Library** by Institute of Electrical & Electronic Engineers: Electrical engineering, computer science. Bibliographic descriptions free; full text available for fees <http://ieeexplore.ieee.org/Xplore/guesthome.jsp>
- ▣ **EngineeringCore™** and **ITCore™** (EBSCO Publishing): Two e-book subscription collections designed to support the learning and reference needs of engineering and technology professionals. <http://www.ebscohost.com/>
- ▣ **Inspec** by IET (Institution of Engineering and Technology): Includes electronic books and journals from EBSCO, Wiley, Engineering and IT Reference Library, Knovel , and others. <http://theiet.org/resources/inspect>

TranStats

- ▣ Data Finder: Statistical information by RITA at <http://www.transtats.bts.gov>
- ▣ Search by Mode: Aviation, Maritime, Highway, Transit, Rail, Pipeline, Bike and Pedestrian.
- ▣ Search by Subject: Safety, Freight, Transport, Passenger, Travel Infrastructure, Economic, Financial, Social/Demographic, Energy, and National Security.
- ▣ State Transportation Facts & Figures: Statistics and data for each state, allowing comparisons and rankings along with the ability to download each State's transportation information.

US DOT Research Hub

- U.S. Department of Transportation's Research and Innovative Technology Administration (RITA): *U.S. DOT Research Hub* website at www.rita.dot.gov/researchhub
- ▣ Central location for information on projects funded by 10 U.S. DOT operating administrations, providing access to the Department's research portfolio at the project level.
- ▣ Provides links to research reports.



Transportation Research Collaboration

- ▣ Collaboration and professional networking website by USDOT's RITA at <https://www.transportationresearch.gov/Sitepages/Home.aspx>.
- ▣ Research clusters include Data-Driven Decision Making Livability, Risk Based Safety Analysis Economics, Modeling and Simulation, System Resilience and Global Logistics, Energy Sustainability, Multimodal ITS, Aging and Special Needs Populations, Policy Analysis, Travel Behavior, Infrastructure and Materials, Position, Navigation and Timing.
- ▣ [Research Program and Project Management](#) (RPPM): Allows the transportation research community to share information and collaborate on common issues; over time, the site will become a repository of documents for best practices.

Transportation Library Collaboration

- ▣ The [National Transportation Knowledge Network](#) promotes a strong information infrastructure for maximizing value from R&D investment and for supporting peer-to-peer sharing of information. Works to improve access to transportation information, data and research.
- ▣ Membership includes libraries representing state DOTs, academic institutions, transit agencies, metropolitan planning organizations (MPOs) and private industry.
- ▣ Regional TKNs:
[ETKN](#) (East) -- [MTKN](#) (Midwest) -- [WTKN](#) (Western)



LIBGUIDE

Created by the ETKN and sponsored by the University of Arkansas University Libraries, a member of ETKN, this guide is a one-stop transportation information portal.

This listing of transportation resources for the practitioner is designed primarily for engineers working with State DOTs. This guide has tabs featuring search tools, statistical resources, subscription resources and transportation news feeds and blogs. A link is available on every page for users to submit comments, fostering an exchange between users and librarians.

Eastern Transportation Knowledge Network:
Recommended Resources for Engineers

<http://uark.libguides.com/etkn>