Literature Search for Transportation Research Problem Statements and Proposals

The New England Transportation Consortium (NETC) is a research cooperative between the state Departments of Transportation (DOTs) of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont. The NETC provides a regional approach to developing solutions, through research, to high priority transportation issues common to the New England States. VTrans is currently the state lead, and the University of Vermont Transportation Research Center provides coordination of services for the NETC.

Literature Search

The NETC issues Requests for Research Problem Statements (RPSs) and Requests for Proposals (RFPs) to each of the six New England State Land Grant Universities. Proposals submitted must include a literature search for completed and active research that addresses the problem statement.

A literature search is an organized search for completed and active research or publications on a specific topic. Proposals submitted to the NETC are required to include a literature search in order to:

- Identify previously conducted work
- Demonstrate your familiarity with the topic
- Show how your work contributes to existing research, or differs from it.

Steps in the Literature Review Process

1. Identify research topic. Clarify the research problem. Know what the agency is interested in sponsoring, and ensure that your research interest matches the interest of the sponsor.

2. Identify key words, phrases, and terms for your research topic.
For example: Winter maintenance AKA snow and ice; Anti-icing vs deicing; Lidar aka light detection and ranging

3. Determine other search parameters. How far back in time is relevant and useful? Current information or a retrospective search back 5, 10, 15 or more years? Geographically speaking, are you interested in international research, or research from the United States?

4. Develop a search strategy by using appropriate preliminary sources and primary research journals, and checking the references at the end for relevant research publications. The most frequently used preliminary sources for transportation research are the TRID and RIP databases. Most TRID documents are available electronically, in print, or on microfiche in libraries. Many non-journal materials are available at no charge, as PDF documents or via links to publisher web sites.
Additional primary research articles can be identified by examining the reference lists found at the end of relevant journal articles or books. You can also go directly to journals that you know publish articles related to your topic.

Resources for Transportation Research

Databases
The first source for a literature search for transportation research should be the Transportation Research International Documentation database (TRID).

- TRID   http://trid.trb.org
- RIP   http://rip.trb.org

TRID is the world's largest and most comprehensive resource on published and on-going transportation research. The Transportation Research Board (TRB) at the National Academy of Sciences maintains TRID. The database contains references to reports, journal articles, books, dissertations, conference proceedings and project records. The job of TRID is to accurately and comprehensively list the bibliographic details for published transportation research.

RIP is the Research in Progress database. When you search the TRID database, you are also searching the Research in Progress (RIP) database.

Your search on TRID will sometimes provide a full text link, and for some resources will need to be

Other databases that contain bibliographic citations and abstracts from engineering journals and conference proceedings:

- Web of Science www.isiknowledge.com
- Compendex and Engineering Index http://www.engineeringvillage2.org/

- Practice Ready Papers
- Google Scholar

5. Conduct the search and select specific articles to review. The TRID and RIP databases give you many choices for searching, such as title, author, abstract, subject and keyword. Subject words are those that were used by the people who work for the database to categorize that item.

6. Organize the information. Obtain full text references.
Scan the abstracts, highlight items of interest, make notes in the margins
Categorize the articles into groups, definitely relates, somewhat relates, doesn't relate. Look for pertinent information & patterns.

7. Keep track of where the information came from (references list)
Read articles and prepare bibliographic information and notes on each article. When you find references in TRID, you can mark them, save, and import into a reference management or citation management software, such as Zotero, RefWorks, or Endnote.
Reference management tools can help you to locate, import, store, and otherwise "leverage"citations found in TRID and similar databases quickly, efficiently and accurately.
- Speeds up the process of "reference gathering"
- Collect/organize references in one safe place.
- Remove (close or exact) duplicate references quickly and easily.
- Create bibliographies in thousands of styles without keying required, or even knowledge of those styles.

There is a webinar available on the TRID website that provides a step-by-step process for importing citations from TRID to citation management software programs.
http://onlinepubs.trb.org/onlinepubs/webinars/archivedrecordings/2013-10-08_TRIDLeveragingSearchResultswithReferenceManagementTools.wmv

8. Evaluate the research reports.   Read the articles.   Create a list of questions to focus, analyze and evaluate the articles.

9. Synthesize and summarize your findings in the existing research section of the RFP

- What did you find?
- How is it relevant?
- How is it not relevant?
- Convey strengths, weaknesses, and applicability of the findings to the problem statement.

10. Use the literature review to gain a conceptual framework and to formulate research questions, hypotheses, or both.