

MINNESOTA DEPARTMENT OF TRANSPORTATION OFFICE OF RESEARCH SERVICES WEB SITE UPGRADES

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CTRE's mission is to develop and implement innovative methods, materials, and technologies for improving transportation efficiency, safety, and reliability while improving the learning environment of students, faculty, and staff in transportation-related fields.

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WEB SITE UPGRADES

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ABSTRACT

Providing a useful, user-friendly web site was the overall goal of the Minnesota Department of Transportation's Office of Research Services (ORS). That meant not only publishing its research reports and related documents online, but also providing simple ways to search the publications.

ORS asked the Center for Transportation Research and Education to redesign ORS's existing site and develop interactive features. The primary feature of the new ORS web site is a searchable database of completed research projects. The database includes publication titles, authors, dates of publication, brief descriptions, abstracts, and links to online reports. A rotating news feature, using a simple database, has also been added to the new ORS home page.

INTRODUCTION

The Minnesota Department of Transportation's (Mn/DOT) Office of Research Services (ORS) oversees the Local Road Research Board (LRRB) and its web site. While the LRRB was undergoing a significant redesign, ORS staff thought it was also time to redesign the ORS web site. This coordinated development capitalizes on a database of completed research projects maintained by ORS and provides a less expensive and simpler means of online report publishing versus traditional print publishing.

ORS asked the Center for Transportation Research and Education (CTRE) to develop the new ORS web site.

REDESIGN PROCESS

When redesigning a web site, it's important to determine what content and design elements to keep as is and what to create for the new site. ORS wanted to keep much of its content, but design a new look for it. ORS also wanted to add specific new features, namely a searchable project database and a rotating news feature.

New look and feel

Redesigning the existing ORS web site meant creating a new look and feel while staying within Mn/DOT's web design guidelines. For example, a left-hand navigation bar is required. According to the Mn/DOT style, the navigation bar is visually separated from the main body of the page using a specific color scheme provided by Mn/DOT (ORS used blue). Another part of that style is that text links in the navigation bar are not underlined. See the old ORS home page in Figure 1.

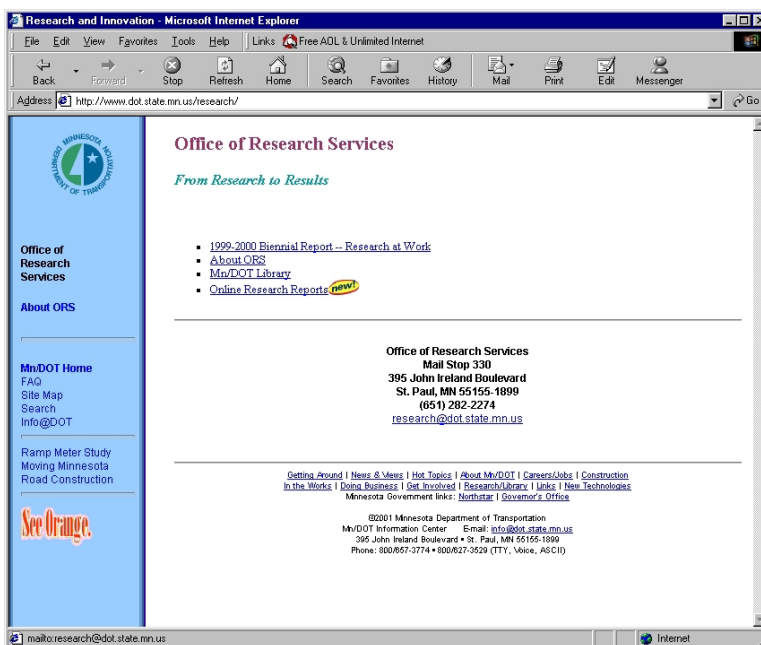


Figure 1. Old ORS Home Page

ORS wanted a new design that was eye catching but also functional. A photo of a rural highway serves as the background for an ORS nameplate. Immediately beneath it is a colorful button/navigation bar that simultaneously highlights the main sections of the ORS web site and subtly indicates which page a user is viewing. The large text down the right side counterbalances the left-hand navigation bar and also tells users where they are within the site. See the new home page in Figure 2.

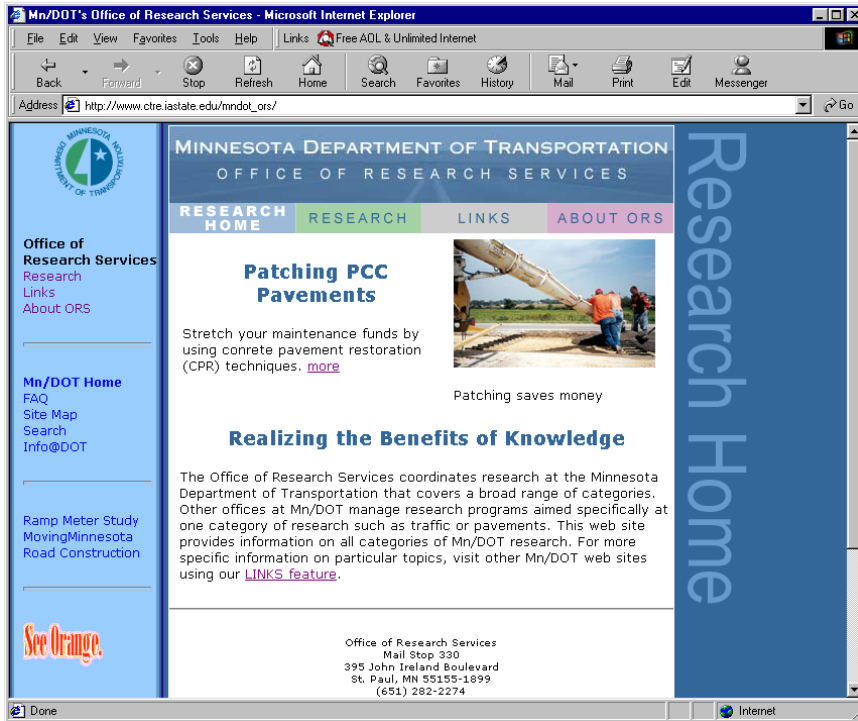


Figure 2. New ORS Home Page with News Teaser and Photo

In addition to redesigning the look and feel, CTRE staff rewrote the code for the existing site using Cold Fusion, a coding language similar to hypertext markup language (HTML). Cold Fusion was the language of choice because it can interact with databases and generate dynamic web pages, i.e., pages that change based on new queries/results from a database. The search function and the news function both require database queries to work, and Cold Fusion is a popular and standard language for creating those functions. Also, the LRRB web site was already based on Cold Fusion, so it made sense to use it for the new ORS web site too. Cold Fusion also came in handy for creating a password-protected login page for ORS staff to maintain the news function.

New features

Two major new features were added to the ORS web site: a searchable project database and rotating news stories.

Searchable project database

The most significant change to the web site is the addition of a search function, which searches a database of completed Mn/DOT research projects. The database is updated regularly and is the same one used by the LRRB web site. The database includes project titles, authors, publication dates, links to online versions where available, and abstracts. Web users may search by keyword, phrase, and author. Users may also browse projects by year. See Figure 3.

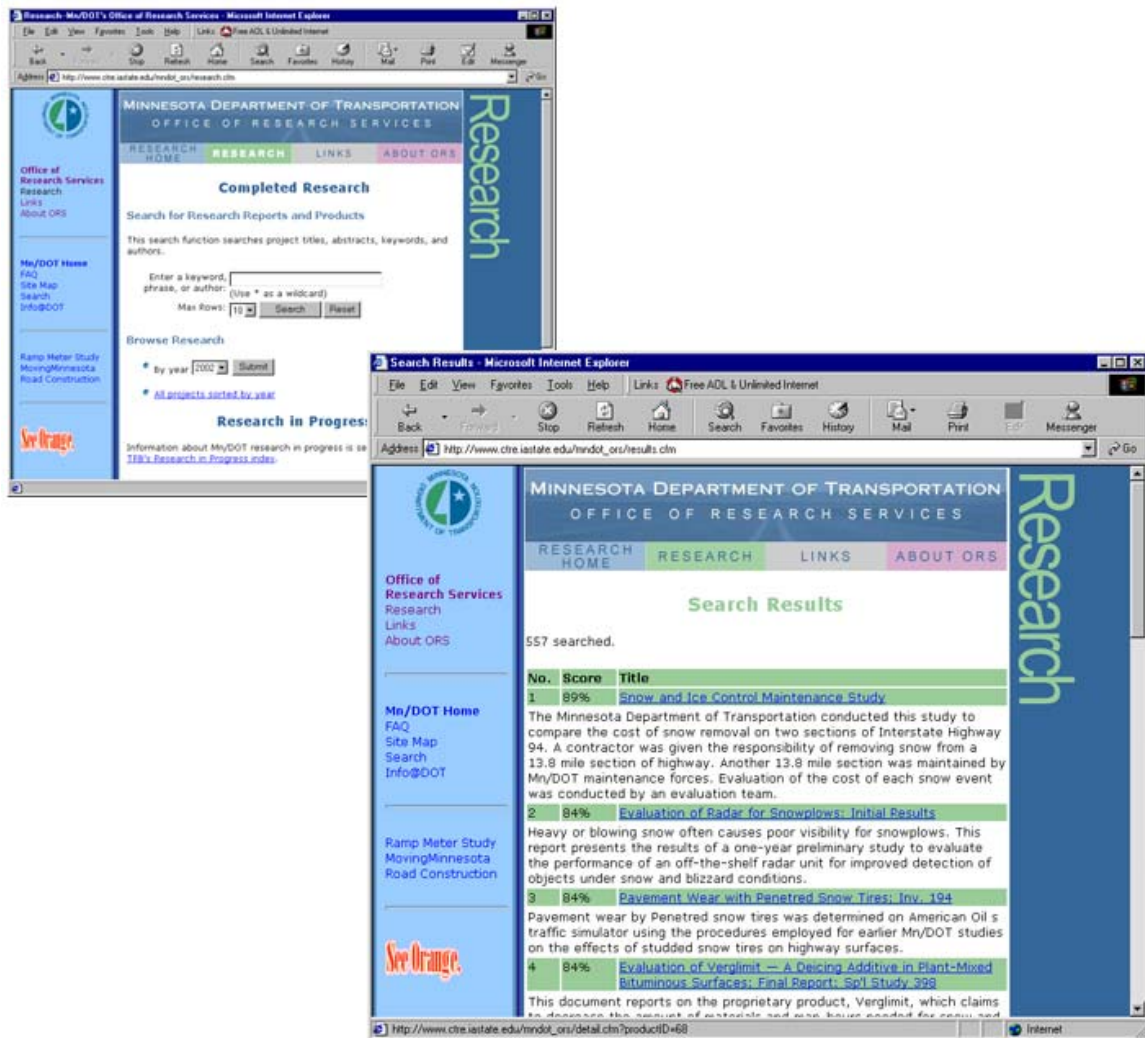


Figure 3. Search Page and Sample Results Page

Rotating news stories

ORS desired some way to encourage repeat visitors. A rotating news feature at the top of the ORS web site (see Figure 2) may help accomplish that. By using a password-protected login page, ORS staff can login and use an online form to add or edit brief news stories and upload small photos to the web site. See Figure 4.

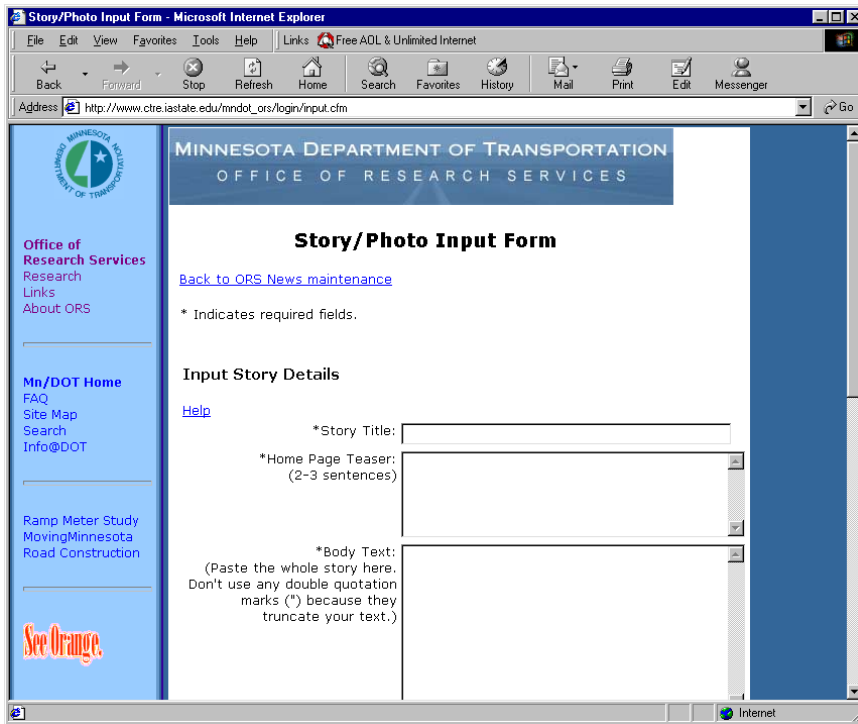


Figure 4. Story/Photo Input Page

Other content changes

The redesign process also meant rethinking the content and organization of the original “About ORS” page, a text-heavy page that explains the main functions of the office. A significant change was to add the names and contact information for all ORS staff. While this addition makes the page longer, it’s now easier to find who to contact.

A new page, “Links,” includes links to Mn/DOT research programs, programs conducting Mn/DOT research, national research programs, and selected state and university research programs.

About the coding

Throughout this project, the web developer has used standard HTML markup, including comments inside the code to help site maintainers. A cascading style sheet (CSS) was also used to incorporate the Mn/DOT web design guidelines and the new ORS design. Using CSS also allows web pages to be leaner and easier to maintain because they don’t have to incorporate a lot of style and formatting code—that’s what the style sheet is for. CSS is the standard in the web development community. Although not all versions of all browsers equally comply with CSS, the Mn/DOT ORS cascading style sheet was designed to function well across the most common browsers, beginning with Netscape 4 and Internet Explorer 4.

SITE MAINTENANCE

The new ORS web site will be maintained by Castle Rock Consultants, who also maintain the LRRB site. (Transferring the ORS web site off of Mn/DOT's server is necessary because Mn/DOT does not currently support Cold Fusion.) Notes to the Castle Rock web administrator are included as Appendix A that explain some technical steps that must be taken when the new ORS web site is set up on Castle Rock's server. Once these initial steps are taken, the site should require minimal maintenance because the changing content will occur when the project database is regularly updated and when ORS staff adds new information to the news database.

MARKETING STRATEGY

Suggestions for marketing the new ORS web site include the following in no particular order:

- E-mail the webmasters of sites to which ORS has linked and request reciprocal links. This e-mail message should note the major changes to the ORS web site.
- Submit the new site to search engines using the free web site <http://selfpromotion.com/>. This site is easy to use and targets the major search engines. (Paying for search engine submissions is not recommended.)
- Write a brief news release about the new site and submit it to
 - *T² Exchange* newsletter (Minnesota LTAP newsletter)
 - other LTAP newsletters
 - Mn/DOT employee newsletter
 - other state DOTs
- Submit an announcement on any related listservs.
- Send an announcement to the AASHTO Research Advisory Committee.

CHANGES IN TASKS

ORS staff decided early in the project to have Castle Rock Consultants, the LRRB web site contractor, convert Word files to pdf files and publish them online. Consequently, two of CTRE's original tasks were cancelled. Instead, CTRE designed a report cover template using Microsoft Word for easier in-house creation by ORS staff. CTRE also provided training on creating pdf files from Word and Excel files for online publishing.

In addition CTRE created a separate search function for the MnRoad program, which will reside on the new ORS web site, but looks to users like it is part of the MnRoad site.

CONCLUDING REMARKS

The dynamic content of the new ORS web site will help keep it fresh and interesting to regular users and will help attract new users.

APPENDIX A: NOTES TO WEB ADMINISTRATOR

Following are steps that need to be taken when setting up the new MnDOT ORS web site:

1. In application.cfm set the “dbname” variable to the name of the ODBC database connection for the LRRB database.
2. Using the Cold Fusion Administrator, create four new Verity collections to support the search functions:
 - mndot (or whatever name you wish—use this name in the “SearchCollection” variable in application.cfm)
 - mnroad
 - pubmnroad
 - unpubmnroad
3. Populate these collections by opening the following pages in your browser:
 - dataindex/indexprojects.cfm
 - dataindex/indexmnroad.cfm
 - dataindex/indexPubmnroad.cfm
 - dataindex/indexUnpubmnroad.cfm

If nothing but a blank page comes up, you’ll know there’s been an error in creating the new collection. Run these pages every time the database content changes. This can be done manually, or it can be set up as a scheduled task in the Cold Fusion Administrator.
4. In results.cfm and mnroadresults.cfm, set the directory path for <CFSET SearchDirectory = ...> to the appropriate database pathway on your web server.
5. Using the Cold Fusion Administrator, set up an ODBC database connection for the ORS news database.
 - In the file login\inputaction.cfm, line 47, change the destination pathway in the CFFILE tag to the appropriate pathway on your web server.
 - In the file login\deleteaction.cfm, line 47, change the file pathway in the CFFILE tag to the appropriate pathway on your web server.