

# Managing Utilities in Michigan

## SHRP2 CASE STUDY

### Better Managing Utility Conflicts in Michigan through the SHRP2 Solution: *Identifying and Managing Utility Conflicts (R15B)*



Photos courtesy: Leif Skoogfors, FEMA, Gas Technology Institute, District DOT, FHWA

Few things can delay a major highway improvement project more than having to relocate utilities midway through a project. That's why the Michigan Department of Transportation (MDOT) uses their Utility Relocation Tracking System (URTS), a computer application that allows MDOT staff to identify locations where utilities could be present within the area of a project. After 20 years in use, however, it became clear that improvements to the software were needed to allow for better coordination with utility companies, leading MDOT to turn to the SHRP2 Solution, *Identifying and Managing Utility Conflicts (R15B)*.

MDOT is one of 13 state departments of transportation currently implementing *Identifying and Managing Utility Conflicts* through the Implementation Assistance Program, administered by the Federal Highway Administration (FHWA) and the American Association of State Highways and Transportation Officials (AASHTO). MDOT was awarded implementation assistance in 2014 in the Lead Adopter Incentive category, which helps offset costs associated with product implementation and risk mitigation.

Implementation assistance funding allowed MDOT to make several much-needed enhancements to its URTS system.

#### ***Using a Team Approach to Implement R15B***

To implement *Identifying and Managing Utility Conflicts* effectively, MDOT knew that input from the primary users of URTS was needed. The agency formed a team comprised of representatives from the MDOT Transportation Service Centers (TSC) located throughout the state, who are the most frequent users of URTS, as well as members from the Michigan Department of Technology, Management and Budget (DTMB) for information technology (IT) and project management resources.

The team worked together to integrate the Utility Conflict Matrix (UCM) into URTS. The UCM is a tool within the R15B product that provides concepts and procedures to identify and resolve utility conflicts. Imbedding the UCM into URTS greatly improved MDOT's utility coordination process, helping to reduce job delays and cost overruns due to utility conflicts.

#### **What is *Identifying and Managing Utility Conflicts (R15B)*?**

Developed through the second Strategic Highway Research Program (SHRP2), *Identifying and Managing Utility Conflicts (R15B)* helps public agencies, utility companies, and transportation professionals improve the overall process of minimizing utility relocations on highway improvement projects.

By using the tools and methodologies included in the product, agencies can identify, resolve, and manage utility conflicts, which will ultimately expedite the project development process.

Included in the product are:

- Utility Conflict Data Model and Database (UCM); and
- Utility Conflict Matrix (UCM) Training Course.

MDOT received a Lead Adopter Incentive award through the Implementation Assistance Program in 2014 to implement R15B.

"We wanted to make sure that we are doing everything we can to address utility conflicts during the design phase so we can alleviate construction conflicts. This tool seemed to be a good fit and presented the opportunity to enhance our

application,” explained Nick Lefke, Utility Coordination Specialist with MDOT. “The UCM module allows users to record the details of the project-specific utility conflicts and can easily be shared with project stakeholders informing them of the known utility status.”

The screenshot shows the Michigan Department of Transportation's Utility Relocation Tracking System (URTS) interface. The main window displays a conflict tracking module with fields for Job Number, Control Section, Location, and Route. A modal window titled 'Conflict Details for Conflict ID: 139' provides more detailed information about a specific utility conflict, including the utility company (CH2M - Ross Gray), date (03/03/2016), construction start (03/01/2016), and a description of the conflict: 'Utility sewer system runs the length of project in center of road'. It also includes fields for Drawing Number, Size & Material, Start Station, End Station, Start Offset, and End Offset. The 'Recommended Action' is listed as 'Needs further investigation', and the 'Resolution' is 'Utility is reviewing the facilities app, history of breaks to determine if they need to replace'. The status is 'In Review by Utility'. The bottom of the screen shows a navigation bar with links like 'Project Tracking', 'Programmed Jobs', 'Tracking Job 117357', 'Contacts', 'Email', 'Tracking', 'UCM', 'Documents', and 'Status Report'.

Screenshot of the URTS system.

Another important enhancement was allowing external users to access URTS. Prior to this project, only MDOT staff could work in the system. MDOT has now added two new user profiles so utility companies and design consultants can have a limited access to URTS data and project information.

Throughout the implementation process, working as a team proved useful. As a result of the discussions, MDOT added a new tracking module, which documents any engagements with utility companies. The module reports which utility companies were contacted, and when and who responded.

“While the UCM is geared towards listing detailed utility conflicts and resolutions, we developed an ‘in- between’ module, which we call the ‘Tracking’ module. It’s a quick look that tracks our initial communication and responses with utilities on projects,” Lefke noted.

### **Enabling More Effective Utility Coordination**

When it comes to managing utility conflicts on projects, communication and early coordination with utility companies is key. That’s exactly what these improvements are helping MDOT achieve.

Thanks to these enhancements, MDOT is able to proactively identify both utility conflicts and alternative design solutions to minimize costs and foster greater communication among the affected agencies and utility companies. This is allowing the agency to employ more cost-effective processes and improve public safety by reducing the risk of striking utilities during a construction project.

“Communication is key in effective utility coordination. The enhancements to our URTS application from SHRP2 funding, specifically the new Tracking and UCM modules, provide MDOT personnel with new useful tools that greatly assist with project utility coordination,” Lefke said.

Lefke added that the changes will also help to promote transparent and collaborative relationships between MDOT and utility companies.

One of the other tools within the *Identifying and Managing Utility Conflicts* product is a one-day training course to help agencies incorporate the UCM into existing business practices so that utility conflicts are identified throughout the design process. MDOT organized and hosted the course in September 2014, two months after receiving implementation assistance through the SHRP2 program.

MDOT also strengthened its document storage and retrieval system by enabling URTS to interface with MDOT’s document management system, ProjectWise. This allowed the two systems to work seamlessly for better document management.

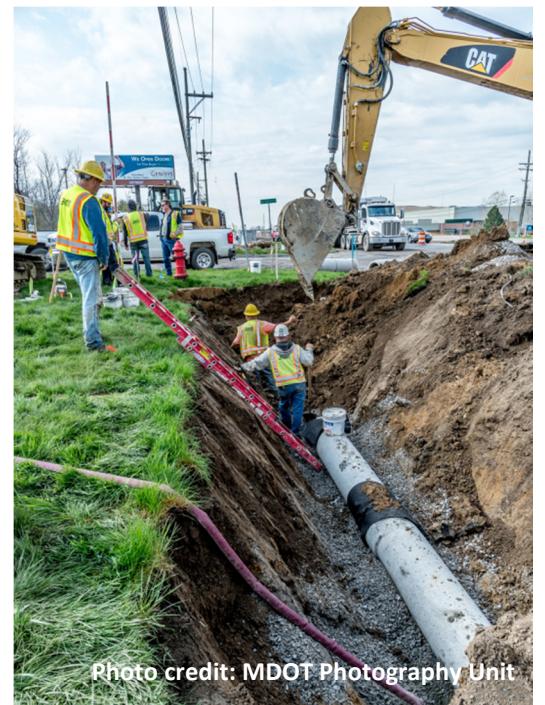


Photo credit: MDOT Photography Unit

## **Challenges Faced by MDOT**

During the URTS requirements sessions, TSC users wanted to have flexibility in the UCM's reporting option, allowing them to create customizable reports. The recommended IT solution proved to be more complex than originally estimated. "Looking back, we wish we would have done a little more research and possibly explored additional reporting options," Lefke noted.

Although the reporting task proved to be challenging, adding additional expense and extending project completion, the end product turned out well and the new reports will be a useful and effective tool in project coordination with utilities.

## **Lessons Learned**

In the end, it was input from the various URTS users that helped achieve successful implementation of the R15B product. The team approach proved invaluable, Lefke said.

"We learned that enhancing URTS could not be achieved through a top-down approach. Involving the primary users of URTS and the IT team throughout the process was extremely beneficial. The team approach helped ensure that we were making changes that met the needs of users and that were possible to make from an IT perspective," Lefke explained.

Other lessons learned were:

- Keep an open-mind throughout the process – The DTMB project manager and application developer were open to new ideas no matter how improbable it appeared. "They were always polite and positive, which fostered excellent brainstorming ideas and discussion," Lefke said.
- It's difficult to accommodate the needs of all offices, so finding solutions that help the majority of users – with 22 TSC offices in different parts of the state, MDOT found that it was hard to please everyone. "We have offices that are heavily rural and others which are more urban, and projects vary in complexity. That's a challenge when you have one common application. So, you have to compromise the wants and needs of all users and go with solutions that address the most common scenarios," Lefke noted.

## **Bringing Everyone On Board**

After the URTS enhancements were completed earlier this year, MDOT felt it was important to ensure that MDOT's utility coordinators throughout the state understood the benefits of the added features and how to use the new modules. In March 2016, the agency hosted a webinar to demonstrate the new modules. In addition, a statewide classroom training was held in April 2016 to provide a more in-depth overview of the URTS application.

The new URTS enhancements have been implemented into production and the UCM, tracking features and tools are available for use. MDOT's next step includes soliciting TSCs and projects to pilot the new URTS enhancements.

### **For more Information:**

To learn more about Michigan's Utility Relocation Tracking System (URTS) and the agency's use of *Identifying and Managing Utility Conflicts* (R15B), contact Nick Lefke at [LEFKEN@michigan.gov](mailto:LEFKEN@michigan.gov).

To learn more about SHRP2 and the *Identifying and Managing Utility Conflicts* product, contact Ken Leuderalbert, FHWA, at [Ken.Leuderalbert@dot.gov](mailto:Ken.Leuderalbert@dot.gov) or Keith Platte, AASHTO, at [kplatte@aashto.org](mailto:kplatte@aashto.org).

### **FHWA GoSHRP2 Website:**

[https://www.fhwa.dot.gov/goshrp2/Solutions/Renewal/R15B/Identifying\\_and\\_Managing\\_Utility\\_Conflicts](https://www.fhwa.dot.gov/goshrp2/Solutions/Renewal/R15B/Identifying_and_Managing_Utility_Conflicts)

### **AASHTO SHRP2 Website:** <http://shrp2.transportation.org/Pages/UtilityRelatedProducts.aspx>

AASHTO's product page offers case studies, training modules, presentations, factsheets, guidance documents, and a list of other states implementing the SHRP2 utility products.