



Federal Highway Administration (FHWA)  
SHRP2 Renewal - Round 5 Implementation Assistance Program

## Specific Frequently Asked Questions

### 3D Utility Location Data Repository (R01A)

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#### What is Included in the Round 5 R01A Implementation Assistance Program (IAP)?

The 3D Utility Location Data Repository (R01A) was developed by the Contractor, GTI, as part of the SHRP2 research program. The products stemming from the R01A research are now being implemented by the American Association of State Highway and Transportation Officials (AASHTO) and Federal Highway Administration (FHWA) under Round 5 of the SHRP2 Implementation Assistance Program. TRB, AASHTO and FHWA are the SHRP2 Project Partners.

The R01A deliverables and products from the research were pilot tested on a Virginia Department of Transportation project using a suite of Bentley software. There is a need for further evaluation and refinement of the products prior to national deployment to other transportation agencies. There is also a desire to conduct testing using a variety of 3D design software platforms (e.g. ESRI, Autodesk, etc.) to ensure that the data model is compatible or can be made compatible with them.

AASHTO and FHWA are providing implementation assistance in the form of technical assistance explained later in these FAQs, as well as providing direct financial assistance to awardees.

3D data mapping enables easy identification, tracking, storage and retrieval of utility information. The goal of the Proof of Concept pilots are for an agency to use 3D technology and integrate the collection, storage, retrieval and use of 3D utility data into their organization's business processes in order to avoid, minimize or mitigate utility conflicts.

Some of the activities that agencies may consider in preparing their application include, but are not limited to:

1. Attend a kick off meeting with SHRP2 partners (project support from FHWA consultants)
2. Using the R01A database, develop a system to store data in a 3D utility data repository so that it can be used on one current design project, and then stored so that it can be retrieved for future design projects. (technical utility-expert support will be provided by FHWA consultants)
3. Develop guidelines and specifications to pilot and integrate the product in existing utility/design business processes. (technical utility-expert support will be provided by FHWA consultants)
4. Attend periodic teleconferences with the leadership of ASCE's two committees working on utility standards that are currently in development. The purpose of this activity is to ensure the standards being developed are in alignment with these proof of concept initiatives. (project support from FHWA consultants)
5. Assist the SHRP2 partners perform outreach to agencies highlighting benefits of the R01A product. (project support from FHWA consultants)
6. Provide input to the SHRP2 partners and FHWA consultants, so that they can develop a design guide addendum (and/or a case study) and generic specifications for future users of the project. (project support from FHWA consultants)
7. Share lessons learned/peer to peer exchange using support from the SHRP2 team. (project support from FHWA consultants)
8. Provide updates on the agency's status of the scope, schedule and budget monthly. (project support from FHWA consultants)

## Things to Consider Prior to Completing an Application

- Please keep applications concise and succinct – estimate roughly 2,500 words. Please don't copy and paste portions of reports.
- Utility companies are a major stakeholder in locating and managing utility conflicts. Therefore, the applicants should consider reaching out to utility companies to develop a partnership in the implementation of the R01A project. Please include any coordination efforts with utility companies and working with SUE contractors in the application.
- All agencies have different needs and levels of utility management programs, so the applicant should explain what type of assistance would be needed by the agency.
- While the SHRP2 Project Partners are looking at a small number of Proof of Concept Awards, the R01A products are available for download today (see contact info at the end of these FAQs). If the agency only needs some technical assistance and not financial assistance, please let us know.
- The following types of agencies are encouraged to apply: state departments of transportation (DOTs), state tollway and thruway authorities, local agencies and tribal agencies.
- Local agencies and toll agencies will ultimately receive funding through FHWA division office allocations to State

Departments of Transportation. Therefore, applicants must coordinate with their State DOTs when submitting an application.

- If an agency is submitting multiple SHRP2 applications, then the endorsement letter should rank the priority of the potential awards for their agency.

## **What type of funding and technical assistance support from the FHWA consultants would be provided through R01A IAP?**

Technical Assistance from independent consultants working for FHWA will help agencies with utility-related questions, IT questions and support, and help with the other items bulleted below. (Awardees would not be required to cover these costs using their allocations.) Direct funding to support time for staff and/or contractors to implement the products (test, evaluate, and based upon result, adopt) would also be provided based upon the need outlined in the scope of the application. The following bullets outline the technical assistance support agencies may request:

- Subject Matter Expert (SME) support for preparing guidelines and specifications.
- SME support for IT assistance, as needed—when questions arise.
- Project support for status meeting facilitation, note taking, lessons learned/peer to peer exchanges, meetings with ASCE committees, etc.

## **Why do applicants need to prepare a scope of work and estimated cost?**

- The evaluation of an application will be easier if it contains complete information for how the agency will implement the R01A product into existing business processes.
- The cost estimate is necessary to help us determine the level of funding we can provide each applicant. Funding will vary for each applicant, based upon their needs, and based on available funding.
- Please note the following:
  1. For the general cost estimate of how the awarded funding would be used by the agency, please consider aligning the tasks and deliverables of the scope with their associated cost, and anticipated start date (assuming an estimated award date of March 2, 2015). Please consider attaching a simple table or Gantt chart with your application, if that is less burdensome on your agency.
  2. Technical Assistance from independent consultants working for FHWA will help agencies with utility-related questions, IT questions and support, and assistance with setting up meetings, taking notes, developing case studies and marketing materials, etc. (Awardees would not be required to cover these costs using their allocations.)

**Please note that note the full implementation of the product should be done within a 3 year time period from the start of the funding allocation date.**

## **What are Subsurface Utility Engineering (SUE) Quality Levels?**

- ASCE 38-02 standards for Subsurface Utility Engineering (SUE) quality levels may be thought of as degrees of

risk, or how much information is really needed to adequately design and construct a highway project. Highway plans typically contain disclaimers as to the accuracy of the utility information. The use of quality levels allows project owners to decide what quality level of information they want to apply to their risk management challenge and to certify on project plans that a certain level of accuracy and comprehensiveness has been provided.

- There are four recognized quality levels described as follows:
  - Quality Level A. QL-A, also known as "locating", is the highest level of accuracy presently available and involves the full use of the subsurface utility engineering services. It provides information for the precise plan and profile mapping of underground utilities through the nondestructive exposure of underground utilities, and also provides the type, size, condition, material and other characteristics of underground features.
  - Quality Level B. QL-B involves the application of appropriate surface geophysical methods to determine the existence and horizontal position of virtually all utilities within the project limits. This activity is called "designating". The information obtained in this manner is surveyed to project control. It addresses problems caused by inaccurate utility records, abandoned or unrecorded facilities, and lost references. The proper selection and application of surface geophysical techniques for achieving QL-B data is critical. Information provided by QL-B can enable the accomplishment of preliminary engineering goals. Decisions regarding location of storm drainage systems, footers, foundations and other design features can be made to successfully avoid conflicts with existing utilities. Slight adjustments in design can produce substantial cost savings by eliminating utility relocations.
  - Quality Level C. QL-C is probably the most commonly used level of information. It involves surveying visible utility facilities (e.g., manholes, valve boxes, etc.) and correlating this information with existing utility records (QL-D information). When using this information, it is not unusual to find that many underground utilities have been either omitted or erroneously plotted. Its usefulness, therefore, is primarily on rural projects where utilities are not prevalent, or are not too expensive to repair or relocate.
  - Quality Level D. QL-D is the most basic level of information for utility locations. It comes solely from existing utility records or verbal recollections, both typically unreliable sources. It may provide an overall "feel" for the congestion of utilities, but is often highly limited in terms of comprehensiveness and accuracy. QL-D is useful primarily for project planning and route selection activities.

Note: For more information about SUE please visit: <http://www.fhwa.dot.gov/programadmin/sueindex.cfm>

## **What is a Risk-based Approach to Subsurface Utility Engineering (SUE)?**

There are two approaches towards risk based SUE implementation, location risk based approach and project risk based approach.

- Due to the cost of SUE Quality Level A (QL-A) utility locations, agencies may choose to limit its use to high profile or high cost projects. Agencies can use a risk based approach to SUE QL-A where high risk areas of a project can be identified and only conduct SUE QL-A in those areas, thus, balancing project risks and project costs to



maximize efficiency and effectiveness. So the difference is that an agency doesn't always have to implement SUE QL-A across the entire project limits. Rather they strategically implement it at specific high risk locations within a project.

- Some agencies are using a risk based approach, where high risk projects are identified, and then implementing SUE QL-A for the entire project. The ultimate solution may be an integration of both approaches.

## **Where can I download the R01A database and other SHRP2 utility-related materials?**

Please use the following link to access the database, a video demonstration of the product and other relevant information.

<http://shrp2.transportation.org/pages/Renewal.aspx>



U.S. Department of Transportation  
Federal Highway Administration

