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GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
LANSING

KIRK T. STEUDLE
DIRECTOR

July 20, 2017

Mr. Russell L. Jorgenson, P.E.
Division Administrator
Federal Highway Administration, Michigan Division
315 West Allegan Street, Room 201
Lansing, Michigan 48933

Dear Mr. Jorgenson:

Fiscal Year 2015 Michigan State Transportation Innovation Council Incentive
Geospatial Utility Infrastructure Data Exchange

The Michigan Department of Transportation (MDOT) has finalized its Geospatial Utility Infrastructure Data Exchange (GUIDE) Draft Procedural Manual. This manual details the processes for collecting and storing XYZ location information for permitted underground utility installations. Fiscal Year 2015 State Transportation Innovation Council (STIC) incentive funding was utilized, for professional consultant services, to assist in the manual's development. Two copies of the manual are enclosed. An electronic version can be obtained by accessing the following link: [GUIDE Draft Procedural Manual](#)

Project or Product Description

GUIDE Draft Procedural Manual

The GUIDE Draft Procedural Manual provides step-by-step instructions for accurately documenting the collection and storage of geospatial data for permitted underground utility installations. Lessons learned from the GUIDE pilot, combined with consultation with the Michigan Utility Coordination Committee in an advisory role, contributed to the manual's development. It is an invaluable resource in accurately documenting the collection and storage of geospatial data for permitted underground utility installations.

GUIDE Data Collection App

A GUIDE data collection app, available on any Android, iOS, or Windows10 device, was developed utilizing ESRI Collector for ArcGIS. This app, along with traditional survey equipment, will greatly assist surveyors in the field with collecting the required GUIDE attributes. In addition, it opens up data collection to all licensed professional surveyors rather than only those with experience in preparing suitably formatted GIS shapefiles. The app is free to download and user credentials will need to be approved by MDOT prior to use.

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How the Work Specifically Meets the Program Criteria

A successful utility coordination program ensures utility conflicts are identified, addressed, and resolved prior to construction. The ability to have accurate underground utility location information is unmeasurable in preventing project conflicts, claims, delays, service disruptions, and redesigns, as well as personnel injuries.

3D design automation is quickly becoming much more main stream. Successful 3D design automation is only as good as the data entered. Effective 3D modeling needs accurate underground utility data. Building the GUIDE data collection standards and a highly accessible repository are vital first steps to focus end-user customization activities such as 3D modeling. MDOT is proposing a long-term approach to 3D modeling with continuous collection and seamless dissemination of accurate underground utility data. This enterprise-level-down focused approach benefits all stakeholders for the life of the asset (utility data). This approach is more sustainable, filling the historic gap of unreliable as-built utility data storage with modern technology solutions.

Result of the Project

The MDOT GUIDE Draft Procedural Manual and GUIDE data collection app will be instrumental in advancing MDOT's progress in GUIDE principals and are essential elements in moving forward from pilot to proof of program. This project did not include significant field data collection. Therefore, this will be a primary objective for a future GUIDE proof of program phase.

Challenges

Developing and documenting a first of a kind geospatial data collection standard for underground utilities presented challenges. We are the first state department of transportation to develop and document a procedure for collecting XYZ data for permitted underground utility installations. This is also in advance of a future American Society of Civil Engineers standard "*As-Built Standard for Utility Infrastructure Data.*" As a result, the GUIDE standards and procedures have been developed from the ground up. There were no standards or precedents to reference during development.

Lessons Learned

Developing comprehensive data attribution to cover all possible circumstances for underground utility installations proved to be challenging and might not be feasibly possible. A lesson learned focuses on simplicity and what data truly needs to be collected for future downstream use. The GUIDE Draft Procedural Manual establishes standard attribution covering most encountered situations and includes a free form notes field to capture unique circumstances.

Another lesson learned centered on developing the custom collector app on a fixed budget. Focus had to stay aligned on minimum functional requirements rather than expanding app features and enhancements, which would have benefitted the final deliverables.

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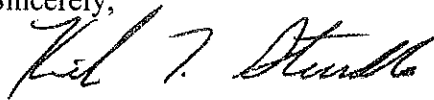
Expense Report

Job number 128158 was created for this project.

Funding Source	Programmed	Actual Costs	Percentage Split
FHWA STIC Funds	\$100,000	\$96,260	80%
MDOT Matching Funds	\$25,000	\$24,065	20%
Total	\$125,000	\$120,325	100%

If you have any questions or would like additional hard copies of the manual, please contact either me or Bradley C. Wierich, Bureau of Development Director, at 517-241-3998 or wierichb@michigan.gov.

Sincerely,



Kirk T. Steudle
Director

Enclosures

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