## TDOT PROJECT RES2016-23: ENHANCED GIS DATABASE FOR TDOT LEGACY DATA

#### **Project Purpose**

A considerable amount of spatial information characterizing transportation infrastructure and operations in Tennessee is becoming available through the improved capabilities of geographic information system (GIS) technologies. However, much of this information resides in disparate locations, has yet to be fully catalogued and incorporated into a centralized access platform, and/or is being managed by different organizations or divisions within TDOT.

The purpose of this project is to research and assemble enhanced GIS databases for use by certain TDOT divisions, develop the information to support system functionality, and utilize emerging technologies to expand and enhance the quality of data available to support TDOT's activities. The project is being performed as a collaborative effort involving researchers from Vanderbilt University and Middle Tennessee State University.

# Scope and Significance

The overarching databases provided to TDOT will consist of two distinct data sets: 1) multimodal transportation assets, and 2) legacy data curated by the Historic Preservation and Archaeology sections within TDOT's Environmental Division. Additionally, a portion of the latter phase of the project will examine opportunities to employ mobile data collection technologies to further enhance TDOT's ability to obtain, update, and maintain a near real-time data set of transportation assets. By structuring a comprehensive approach to collecting, organizing and delivering this information, TDOT will be able to enhance its capabilities to serve the needs of the agency, as well as those of its government, business and community stakeholders. The end result will be the delivery of a more efficient, safe, secure and environmentally-sensitive transportation system throughout the State.

#### **Expected Outcomes**

This project addresses a number of TDOT policy recommendations, operational goals and strategic initiatives. These include improvements in: 1) freight logistics and planning, 2) mobility, 3) travel trends and system performance, and 4) infrastructure asset protection. Moreover, the technologies utilized in this research and corresponding results offer an opportunity for TDOT to change the paradigm for delivery of transportation products and services to improve the efficiency and effectiveness of Tennessee's transportation network.

## **Project Schedule and Status**

The project is being performed over a two-year period, according to the following schedule:

Month																								
Task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Phase 1																								

Meet With TDOT IT Architects and Stakeholders	X	X	X																					
2. Implement Pilot Study			X	X	X	X	X	X	X	X	X													
3. Prepare Interim Report											X	X												
Phase 2																								
1. Develop GIS-Enabled Databases for Entire State													X	X	X	X	X	X	X	X				
2. Database Integration with TDOT Systems																			X	X	X			
3. Identify Best Practices and Make Recommendations for TDOT Mobile Data Collection																		X	X	X	X			
4. Perform Training of TDOT Staff																					X	X	X	
5. Prepare Final Report																						X	X	X

To date, the following has been accomplished:

- Held kickoff meeting with TDOT technical liaisons representing Environmental, Long Range Planning and Information Technology divisions to discuss project objectives and work plan.
- Initiated development of methodology for populating historic preservation and archaeological data records.
- Obtained GIS multimodal transportation data from National Transportation Atlas
  Databases (NTAD), Homeland Security Information Portal (HSIP), U.S. Census, and
  other sources.
- Selecting sample set of archaeological sites for testing methodology.
- Quality controlling GIS multimodal transportation data and identifying relevant attributes for supporting agency needs.

No problems have been identified to date, and the project is on schedule and budget.

## **Contact Information**

For multimodal transportation asset database development: Mark Abkowitz Vanderbilt University mark.abkowitz@vanderbilt.edu

For legacy data curated by the Historic Preservation and Archaeology sections: Zada Law
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