



TTI SAN ANTONIO OFFICE

Diversified, Multidisciplinary Research

The Texas A&M Transportation Institute San Antonio Office represents an evolving 30-year commitment to cooperative research and technology transfer with transportation agencies in south Texas. Researchers provide core support in areas such as planning, operations, and safety as well as developing innovative and leading-edge research in utility engineering, traffic data analysis, energy development, and asset management.

TTI's two San Antonio offices are located at One Castle Hills (1100 NW Loop 410, Suite 605) and the TransGuide Traffic Management Center (3500 NW Loop 410, Suite 315).

EXPERTISE

The career experience of TTI's twenty San Antonio researchers and support staff provides the foundation for the office's research and technology transfer capabilities. Expertise includes:

Utility Engineering

- Utility coordination
- Standards-based utility investigations
- Utility conflict management (UCM) techniques and procedures
- Design of utility relocations and protect-in-place measures
- Utility installation and relocation inspections and as-builts
- Utility asset management
- EV charging infrastructure

- Wrong-way driving analysis and countermeasures
- Access management

Traffic Monitoring Data Analysis

- Estimation of traffic data and statistics
- Development of statistical and AI prediction and classification models
- Validation of probe and connected vehicle data
- Data imputation
- Quality control and data filtering

Project Delivery

- Process optimization and acceleration
- Right-of-way acquisition
- Business process and data modeling
- Development and use of AI models to analyze change order data
- Liquidated damages/road user costs
- Alternative assessment and evaluation

System Management and Operations

- System performance optimization
- Intelligent transportation systems
- Traffic simulation and visualization
- Safety improvement identification and evaluation
- Freeway and arterial operations



Infrastructure Assessments

- Geospatial data technologies
- Unmanned aircraft system (UAS) data collection and mapping
- Low-cost high-accuracy data collection technologies
- AI-based extraction of infrastructure features

*Science can amuse
and fascinate us all,
but it is engineering
that changes the world.*
(Isaac Asimov)

Cooperative Relationships/ Sponsors

The TTI San Antonio Office has developed strong relationships with many agencies in Texas, throughout the United States and abroad, as well as with other groups and agencies within the Texas A&M University System. Examples of local, regional, and national partnerships include the following:

- American Association of State Highway and Transportation Officials (AASHTO)
- American Society of Civil Engineers (ASCE)
- Federal Highway Administration (FHWA)
- American Public Works Association (APWA)
- Institute of Transportation Engineers (ITE)
- Texas Department of Transportation (TxDOT)
- Transportation Research Board (TRB)
- University of Texas at San Antonio (UTSA)
- VIA Metropolitan Transit

FEATURED PROJECTS

At any given time, TTI San Antonio Office researchers are involved in applied research and technology and knowledge transfer projects. Examples of recently completed or active projects include the following:

Utility Conflict Management

One of the projects funded by the Second Strategic Highway Research Program (SHRP2) dealt with the identification of utility conflicts and solutions during project delivery. Products developed by TTI researchers included a standardized template to analyze utility conflict resolution strategies, a utility conflict data model and database, and a hands-on UCM training course. TTI researchers have also assisted several state DOTs with their UCM implementations, producing tangible multi-million dollar economic and project delivery time savings. UCM is one of the six pillars of utility engineering, which are increasingly being adopted by the engineering community.



Roadway Data Extraction Technical Assistance Program

TTI supported the FHWA Roadway Data Extraction Technical Assistance Program (RDETAP). As part of FHWA's Roadway Safety Data Program, RDETAP provides technical assistance to state and local agencies to identify, extract, and maintain roadway data needed to conduct an effective safety program and to meet federal requirements for roadway data detailed in the Model Inventory of Roadway Elements (MIRE). As part of this process, TTI researchers assisted state and local agencies with the improvement and expansion of their roadway data inventories.

Interagency Cooperation Agreements with TxDOT Districts in South Texas

For 30 years, the TTI San Antonio Office has had interagency cooperation agreements with TxDOT districts in South Texas. Agreements currently in place include the Corpus Christi, Laredo, Pharr, and San Antonio Districts. As part of these agreements, TTI experts in San Antonio and other offices throughout the state provide TxDOT districts with critical support in areas related to technology and knowledge transfer, evaluations of innovative roadway improvements, strategic planning and operations analysis, safety analyses, and asset management technical support.



Traffic Monitoring Data Analysis

TTI researchers have successfully collaborated with TxDOT's Transportation Planning and Programming (TPP) Division, FHWA's Office of Highway Policy Information, the National Cooperative Highway Research Program (NCHRP), and other state DOTs on several traffic monitoring research efforts. These initiatives focus on improving and optimizing traffic monitoring processes, methods, practices, and programs, incorporating data from both traditional traffic monitoring equipment and emerging alternative sources such as probe devices and connected and autonomous vehicles (CAVs).

Characterization of Aboveground and Underground Infrastructure

TTI is leading the use of low-cost UASs, smartphones, and a suite of external global navigation satellite system (GNSS) antennas to support a wide range of data collection activities, including construction and utility inspections. These techniques are drastically changing the way DOTs are gathering information during all phases of the project delivery process. TTI is also conducting leading edge research on the use of advanced geophysical techniques to document underground utility facilities.



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