



# TxDOT Survey, Construction, & Mapping Support – 2024

-Overview of Support, Training, & Solutions

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**(Survey, Construction, & Mapping Support)**

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- SCMS —ITD Team that provides TxDOT with in-house support, training, consulting, and solutions for Geomatic and Geospatial data collection.
  - Geomatics - the branch of science that deals with collecting, analyzing, and interpreting data relating to the earth's surface.
  - Geospatial - relating to or denoting data associated with a particular location.
- Field measurement technology
  - GPS, Optical, and Remote Sensing hardware/software used to collect precise positions with feature and attribute information and/or provide accurate feature navigation.
  - Precisions can be achieved +/- 3mm depending on the solution and methodology.



- Common applications
  - Project survey control
  - ROW property boundary surveying
  - Verifying construction standards for accuracy and quantity are met and maintained throughout a project. (QA/QC)
  - 3D Model field confirmation. The model is in the right spot in the ROW.
  - Asset management (mapping for GIS), collecting features and attributes
  - Measuring quantities of materials
  - As-built (pre and post-construction) survey

# Current Status – In-House Tools 2024 Field Measurement Technology



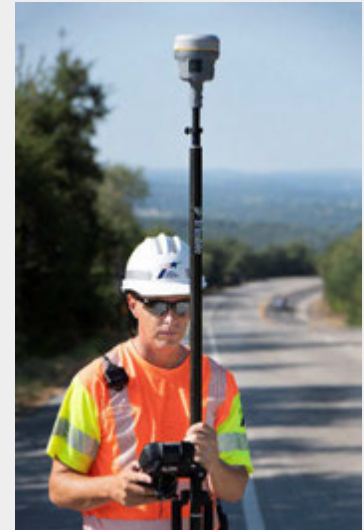
Optical/Robotic  
Total Stations  
(mm)



Digital Levels  
(mm)



LIDAR Scanners  
(mm)



GPS Rover  
(.1 usft)

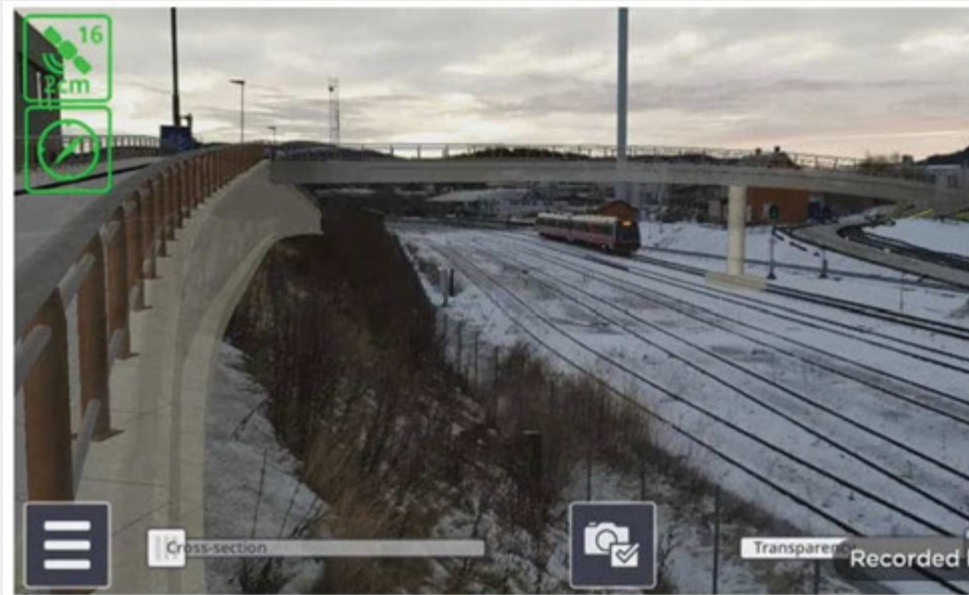


# Current Status – In-House Tools 2024 Field Measurement Technology (cont.)



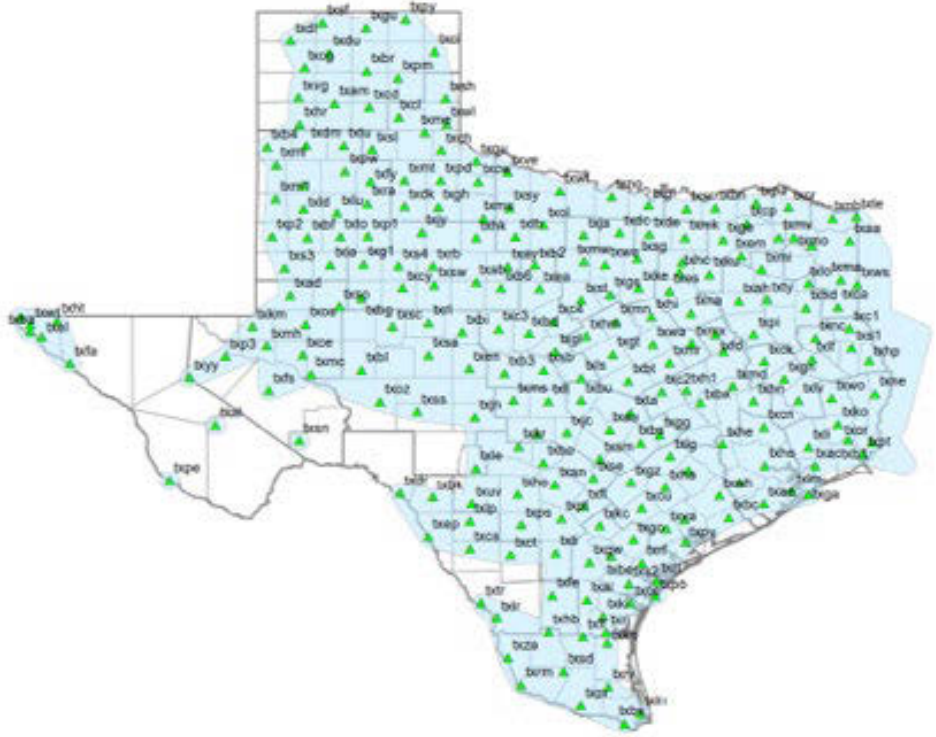
Mapping  
Design QA  
Systems  
(1 usft – 1 m)

3D Models viewed through  
Augmented Reality (SiteVision)



# Current Status – In-House Tools 2024 Field Measurement Technology (cont.)

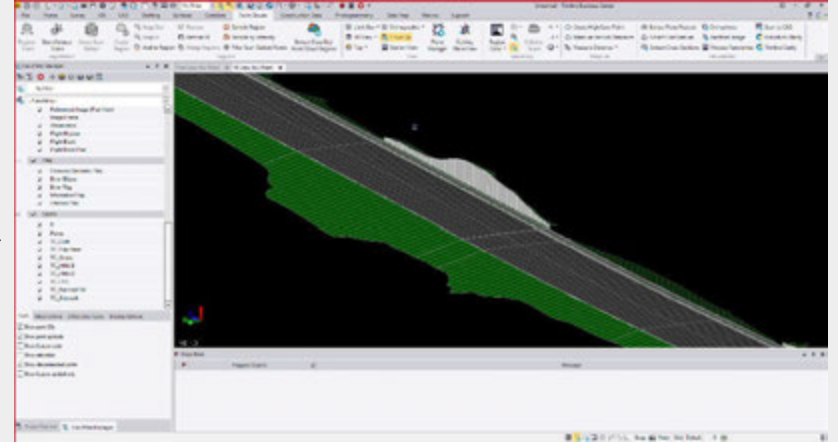
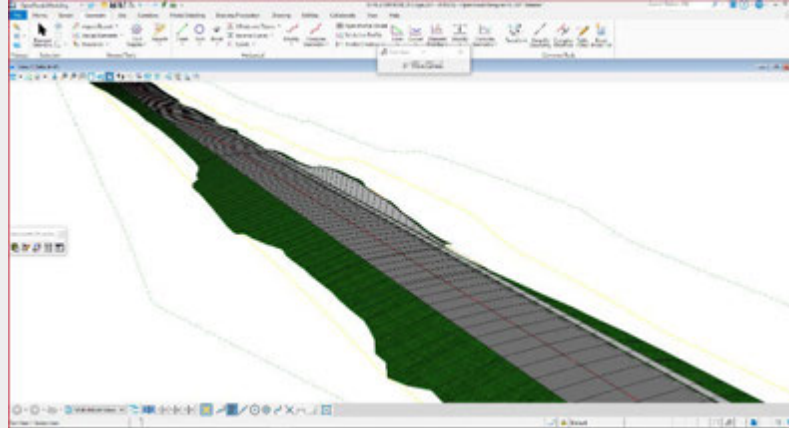
## TxDOT Regional Reference Point (RRP) System



240+ TxDOT GPS Reference Stations provide precision corrections allowing GPS Rovers to provide 0.1' accuracy anywhere in Texas.



# In-House and 3<sup>rd</sup> Party Software Training

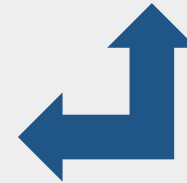


3D Model created in  
OpenRoads Designer  
(ORD)



Rugged Windows 10 Data Collector

Imported into Trimble Business  
Center (TBC)







## ITD Engineering Services Classes

- Geomatics (Field) - DES746 GPS Rover, DES749 Digital Level, DES748 Robotic Total Station, DES747 Terrestrial Scanner
- CADD (Office) - DES751 ORD for Survey Workflows



- Hardware as a Service (HaaS)
  - Hardware-as-a-service (HaaS) is a procurement model that is similar to leasing or licensing in which hardware that belongs to a managed service provider (MSP) is installed at a customer's site and a service level agreement (SLA) defines the responsibilities of both parties.
- What this means for TxDOT?
  - Gives TxDOT the ability to respond to end-user demands quickly for temporary needs without delays.
  - Specialty tools will be slowly introduced into the Department in new areas, such as Construction for QA/QC.



Engineering Accuracy  
Terrestrial Mobile LIDAR



# Questions





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