

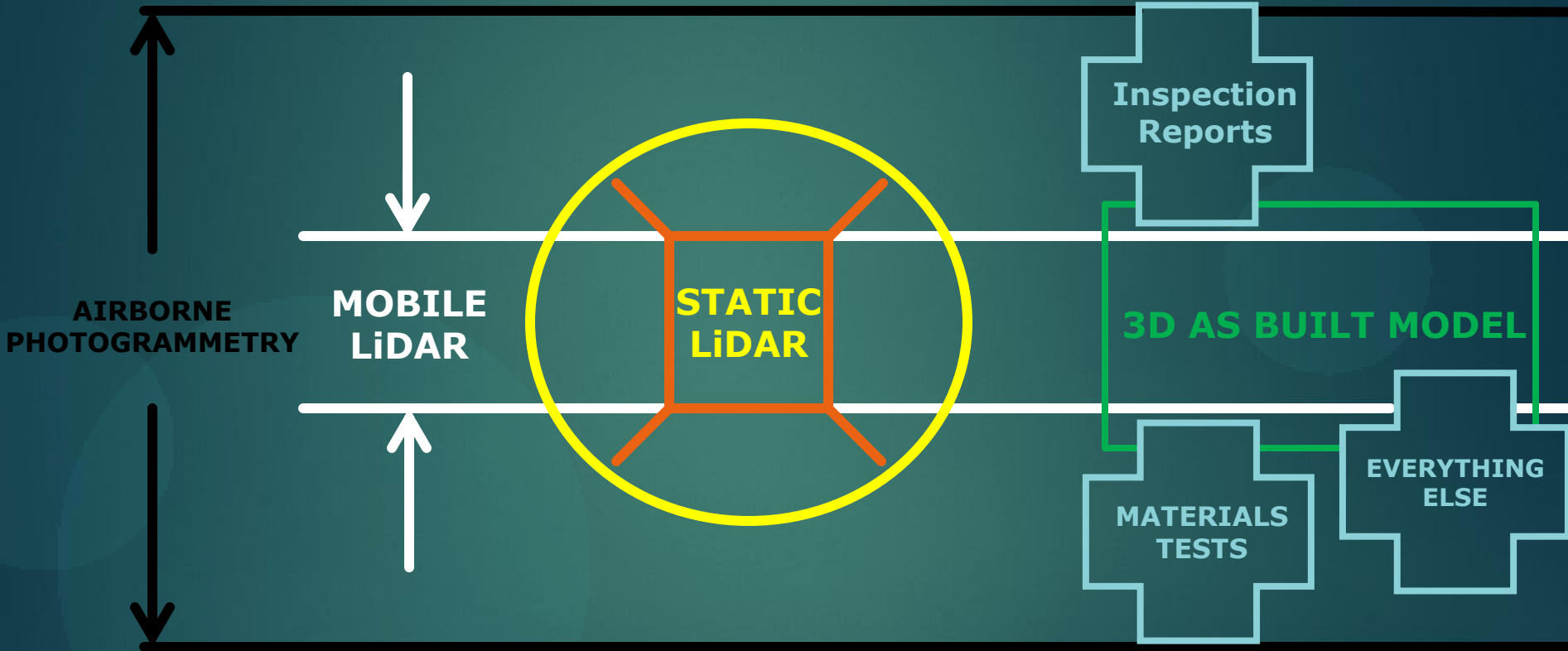
# OREGON DOT's VIRTUAL CORRIDOR

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Construction Automation Engineer**

**CGSIC Meeting  
September 25-26, 2017  
Portland, OR**



# VIRTUAL CORRIDOR

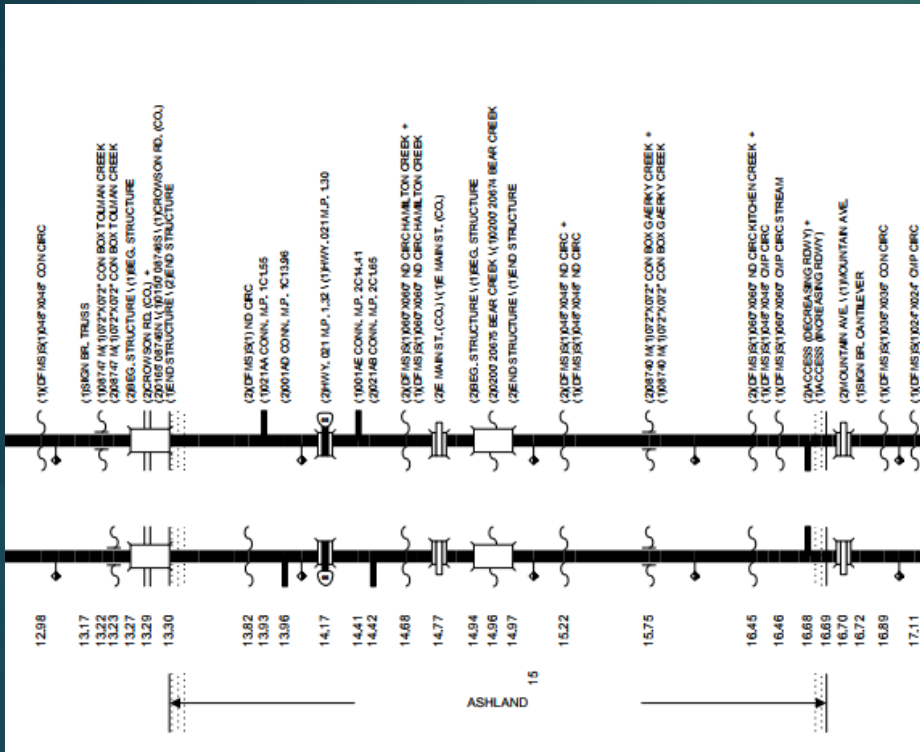


## Overlay/Link to Design & Construction Data

# The long and windy road to success



# Linear Reference System

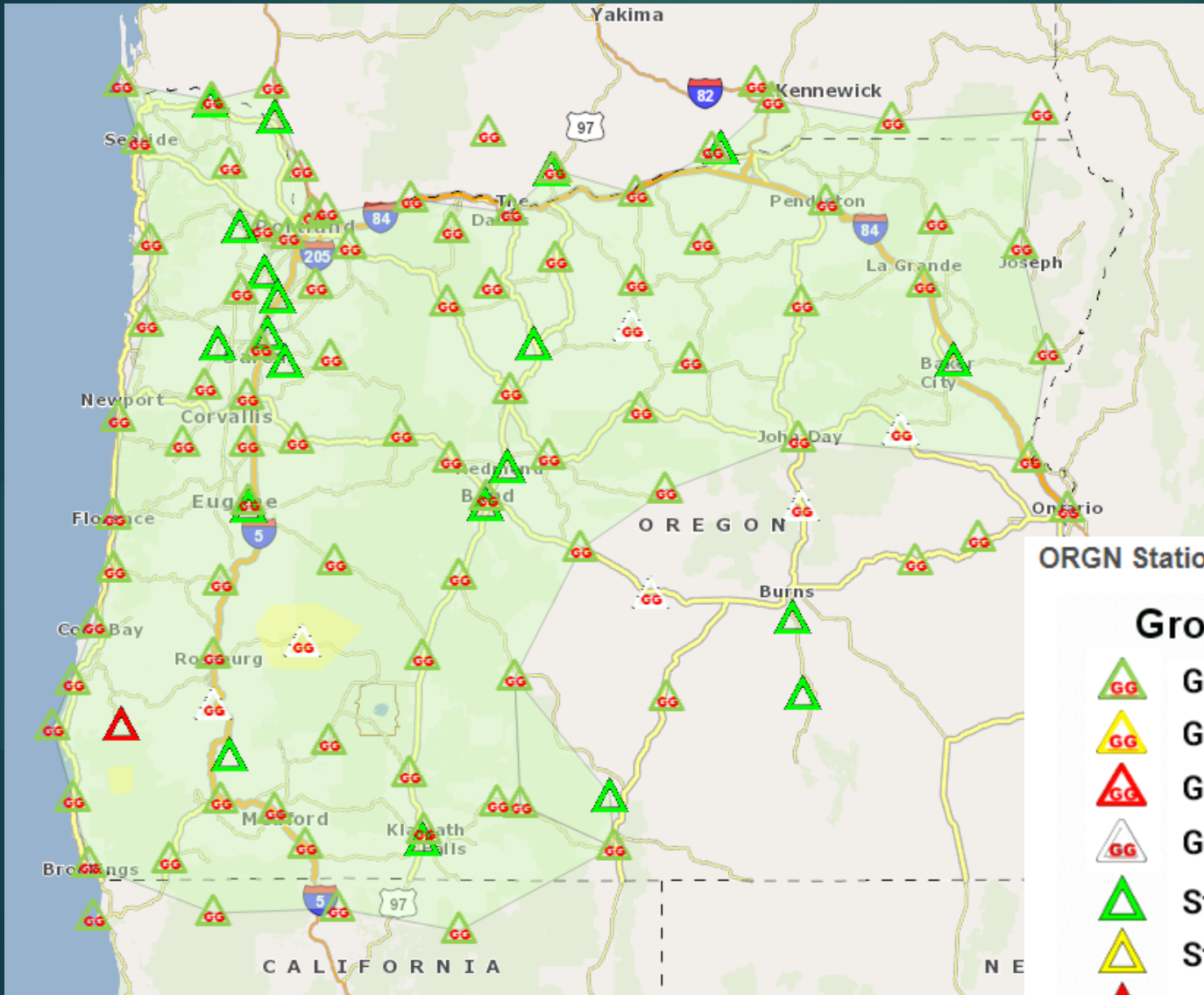


# Geospatial Position





# Oregon Real-Time GNSS Network

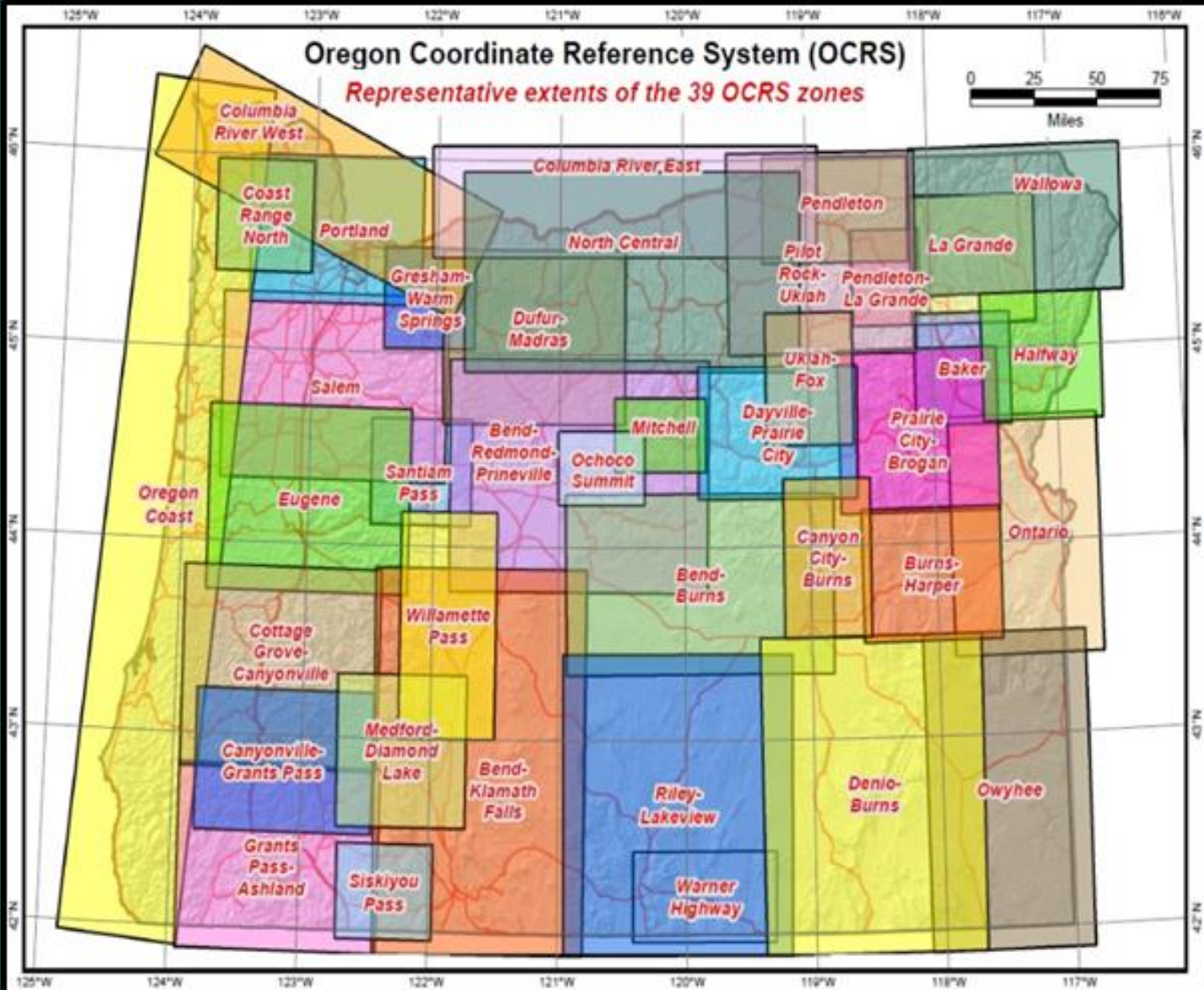


## ORGN Stations Legend

### Ground Station Status

-  GLONASS Station Active
-  GLONASS Station Alert
-  GLONASS Station Inactive
-  GLONASS Station Planned
-  Station Active
-  Station Alert
-  Station Inactive
-  Station Planned

# Oregon Coordinate Reference System

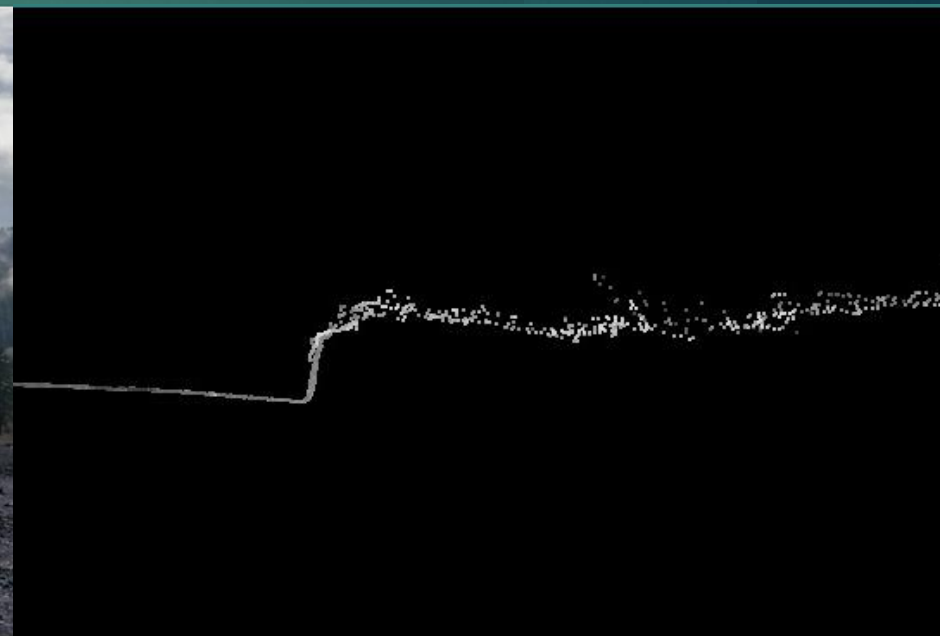




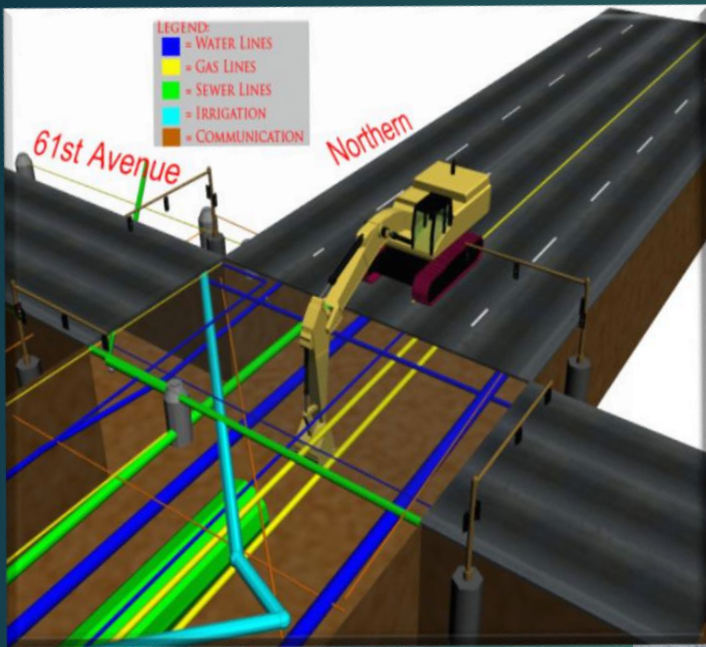
# Topcon IP-S2



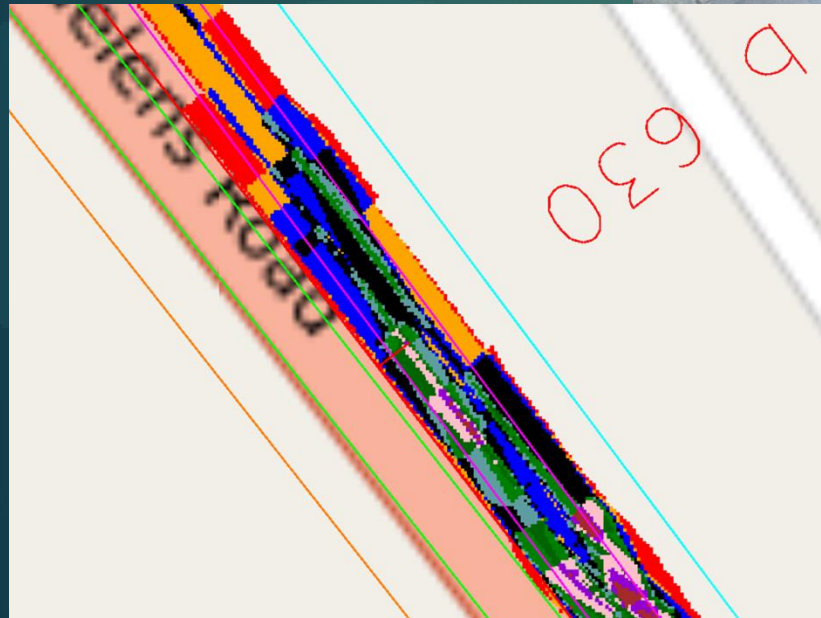
# Leica Pegasus:Two



# 3D Design & SUE



## eConstruction

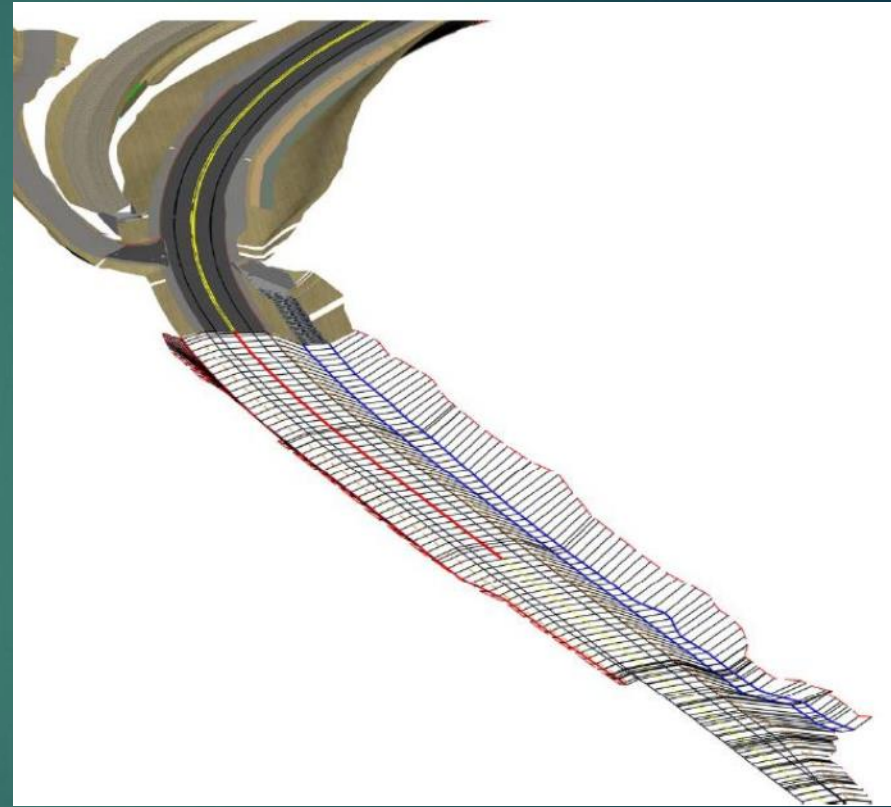




# Point Cloud



# 3D Design



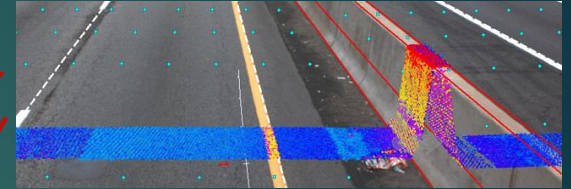
360° Images + Survey Grade 3D Point Cloud



Central Server



DTM & Asset Extraction in CAD



Highway Assets



Asset Databases



360° DVL + Accurate Measurement Tools

Virtual Highway





# Proof of Concept

The screenshot displays the Road Analyzer web application. At the top, a browser window shows the URL <https://trial.tsstools.com/tds/apps/ra/#/oregon/014400100S00/0,000/7,520>. The application header includes the 'Road Analyzer' logo and navigation options like 'Route', 'Integrations', 'Styling', 'Draw', and 'More'. A user login area is visible on the right with fields for 'User Name', 'Password', and a 'SIGN IN' button.

The main interface is divided into several sections:

- 3D View:** A top-down perspective of a road with a red dashed line indicating a route. A measurement of '11' 6" (11' 6") is shown above the road. Navigation controls (back, forward, home, search) are located below the road view.
- Plan View:** A horizontal strip below the 3D view showing a detailed cross-section of the road with various features labeled, such as 'EXITS ## A-B', 'E Name St', and 'RAIL'. A scale bar is visible at the bottom of this section.
- Data Layers:** A series of horizontal bars representing different data layers:
  - LRM: Cumulative Network Layer:** Shows route ID '014400100S00' and scale '0.1'. It includes 'From: 0', 'To: 7.52', and 'Guide: 3.377'.
  - AADT State 100% Coverage:** Shows a bar with a value of '75,001+'.
  - Guardrails (Extracted) 18% Coverage:** Shows a bar with a value of '18%' and sub-layers for 'Guardrail\_Bottom' and 'Guardrail\_Top'.
  - Traffic Barriers 100% Coverage:** Shows a bar with a value of '100%' and sub-layers for 'RAIL' and 'CONC'.
  - Posted Speed Limit 100% Coverage:** Shows a bar with a value of '55'.
  - Functional Class:** Shows a bar with a value of 'Urban Other Freeways and Expressways'.

Transcend: Road Analyzer  
Virtual Geomatics: Virtual Navigator

# AMG

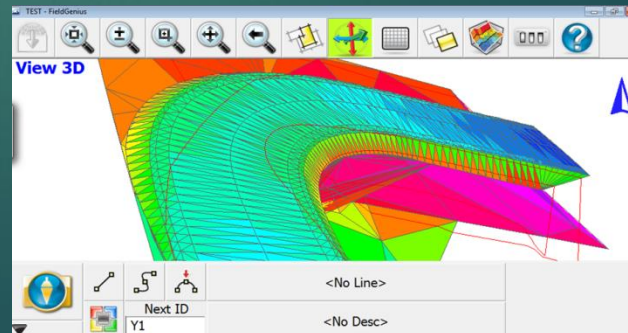
# Stakeless Inspection





# Inspector Positioning Tablet Hardware/Software Details

- ▶ DT Research DT391GS tablet
  - ▶ Hemisphere GNSS survey grade receiver
  - ▶ Windows 7 - Rugged
  - ▶ Internal cell modem - Camera
- ▶ MicroSurvey FieldGenius Software
  - ▶ Easy to use - Graphic interface
  - ▶ Connects to the Oregon Real Time Network
  - ▶ Import/Export options



# Inspector Positioning Tablet

- ▶ Rugged Tablet with built in GNSS antenna +/- 2cm accuracy
- ▶ Can be used “handheld” or with an external antenna and rod
  - Software to display and use XML files for alignment, surface and design files





# Contact Information

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<http://www.oregon.gov/ODOT/ETA>