



*Jim Copeland
Land Survey Coordinator*



*Tony Morgan
GIS Specialist*



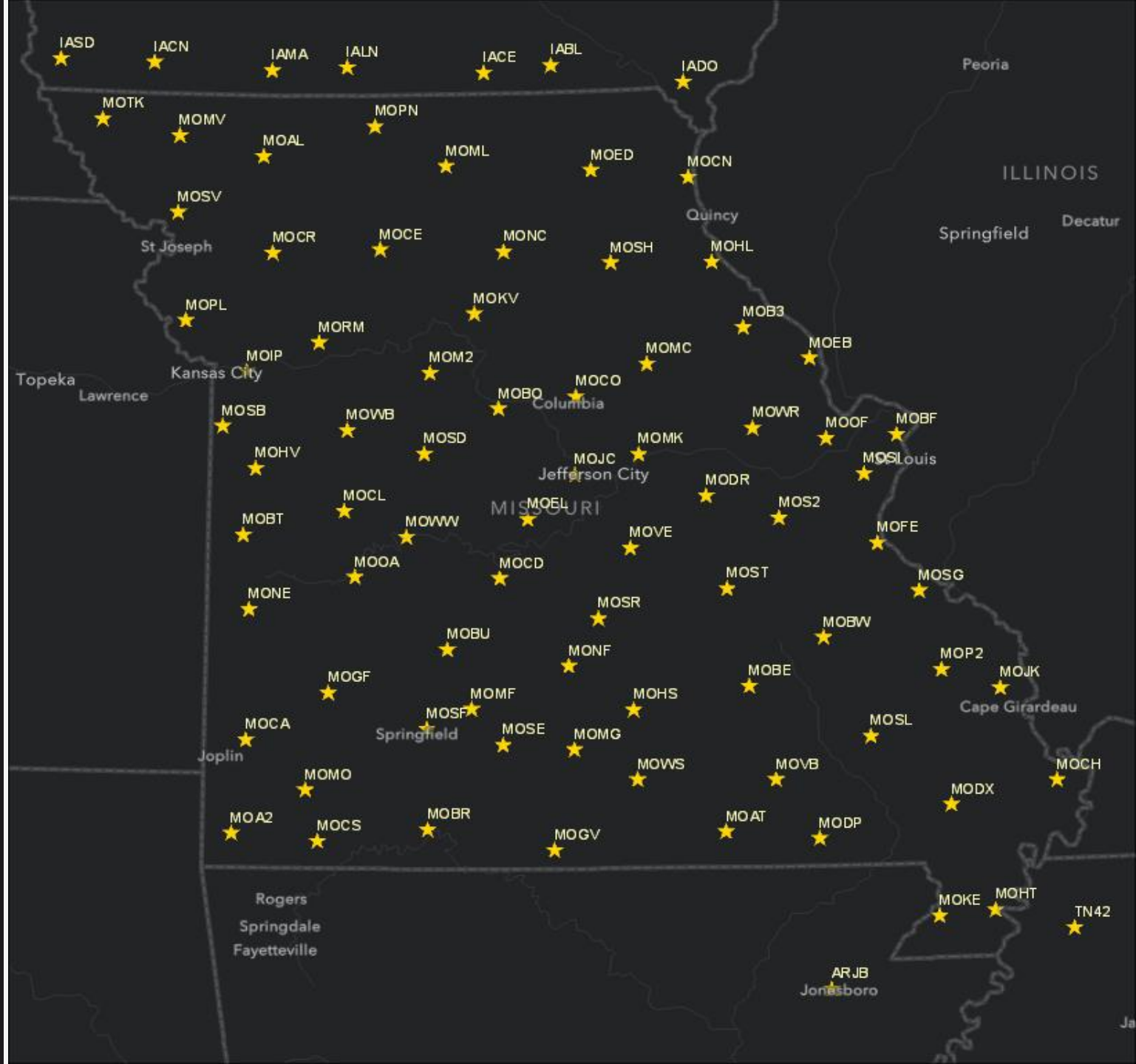
*George Kipp
GIS Specialist*



MoDOT Real- Time Kinematic Network

Topics

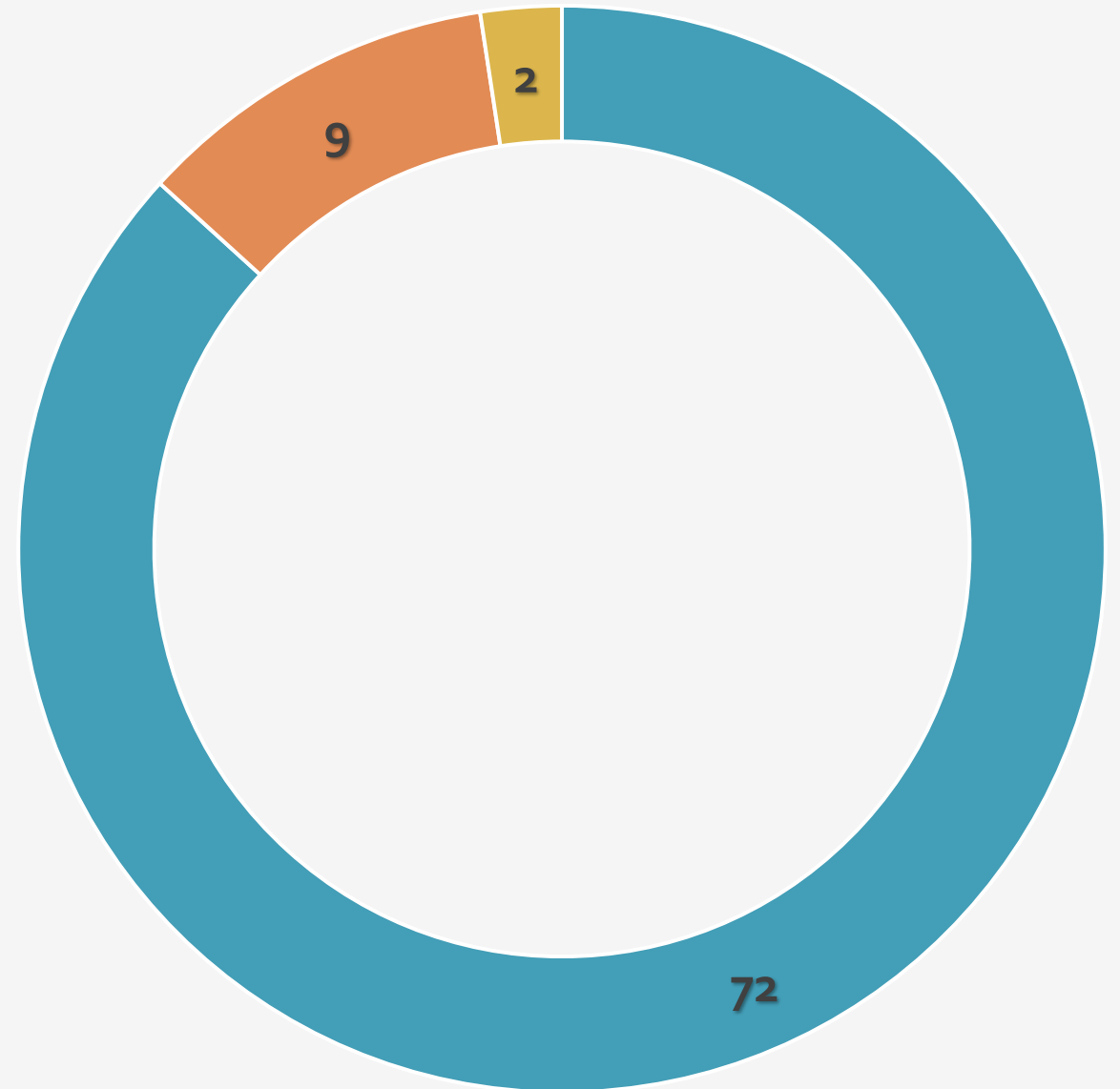
- General Information about the Network
- Surveying Applications
- LiDAR\Highway projects



*Real-Time
Kinematic Network*

RTN Sites

- 83 Total Sites
 - 72 MoDOT
 - 9 Other DOT/Agency
 - 2 Seiler Instrument
 - 66 Active CORS Sites



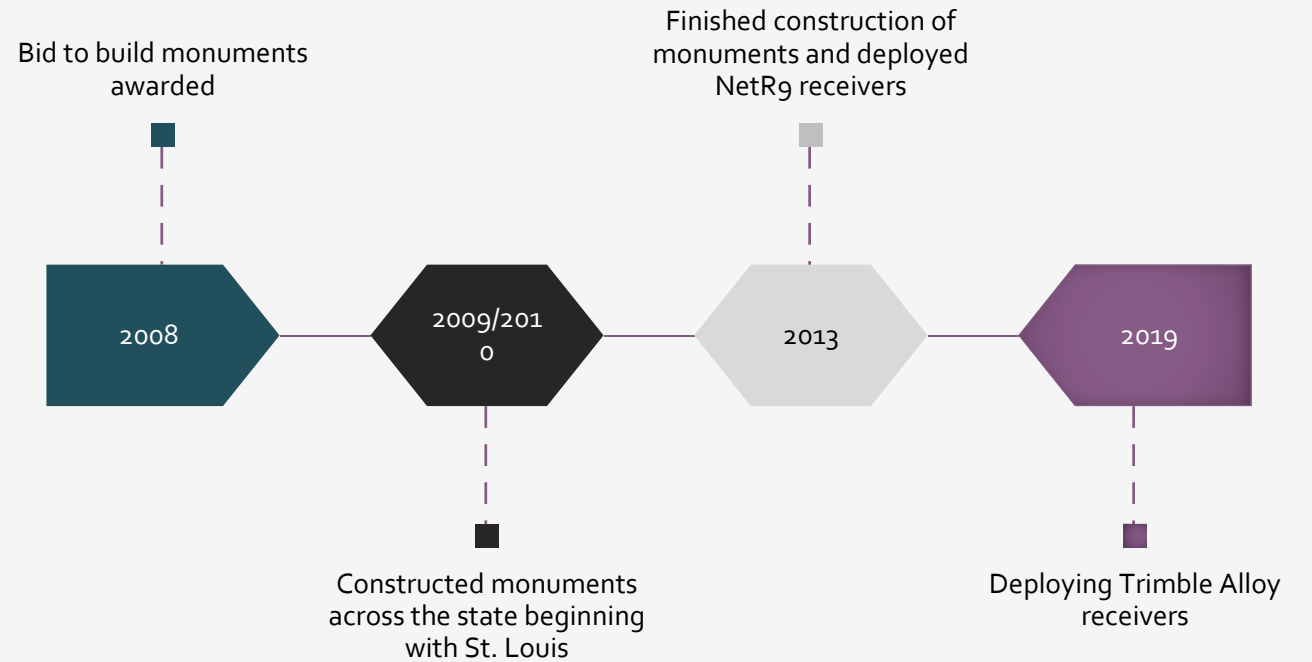
■ MoDOT ■ Other DOT ■ Seiler Instruments

Future Sites

- **Arkansas DOT**
- **Seiler Instruments**



RTN Timeline



Missouri RTN Phases

- Phase 1- St. Louis
- Phase 2- Kansas City
- Phase 3- I-70 Between STL and KC
- Phase 4- Springfield
- Phase 5- I-44 Between Springfield and STL
- Phase 6- Southeast Missouri
- Phase 7- Northern Missouri above I-70

GPS Receivers

- Trimble NetR5
 - Deployed 2009
 - GPS and GLONASS
 - Trimble NetR9
 - Deployed 2012
 - GPS and GLONASS
 - Trimble Alloy
 - Deployed 2019
 - GPS, GLONASS, and Galileo
-



Net R5



Net R9



Alloy

GPS Antennae

- Trimble Zephyr 2/3



GPS Monuments

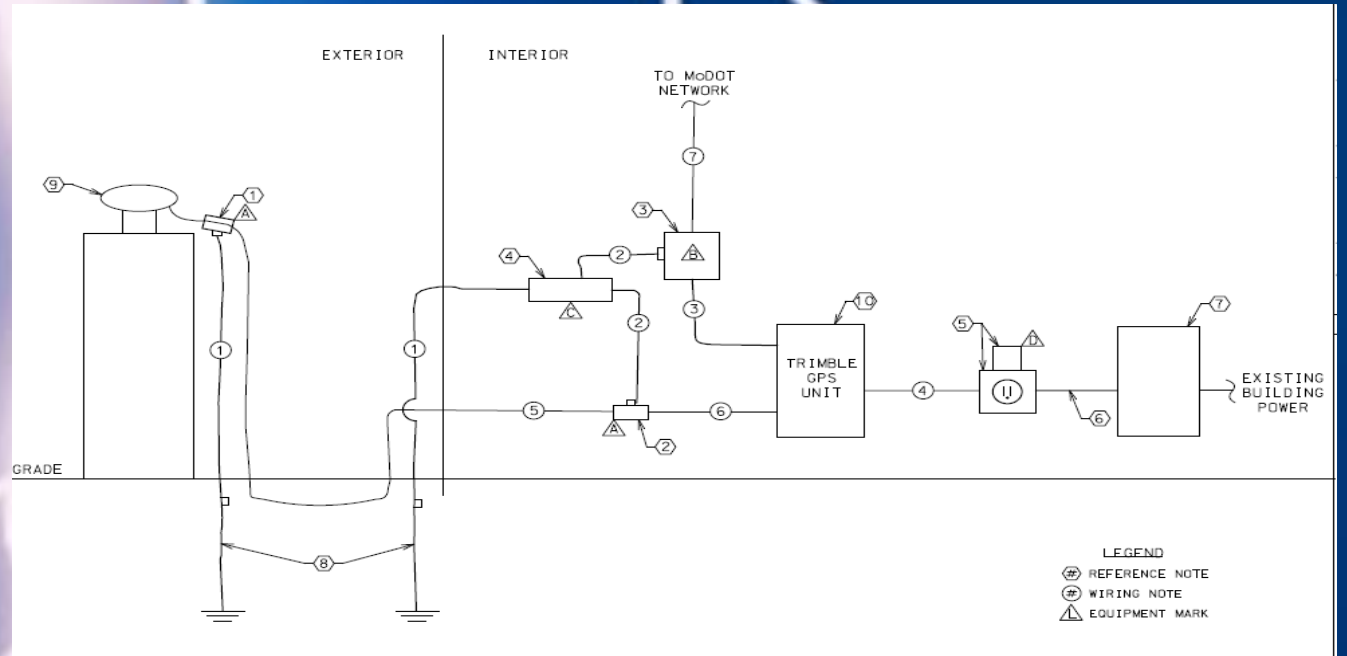
- 10 feet deep
- 24 inches diameter
- 5/8 Delrin rods in upper 1 foot
- Height determined by location around facilities
- SECO adjustable tilt antenna mount



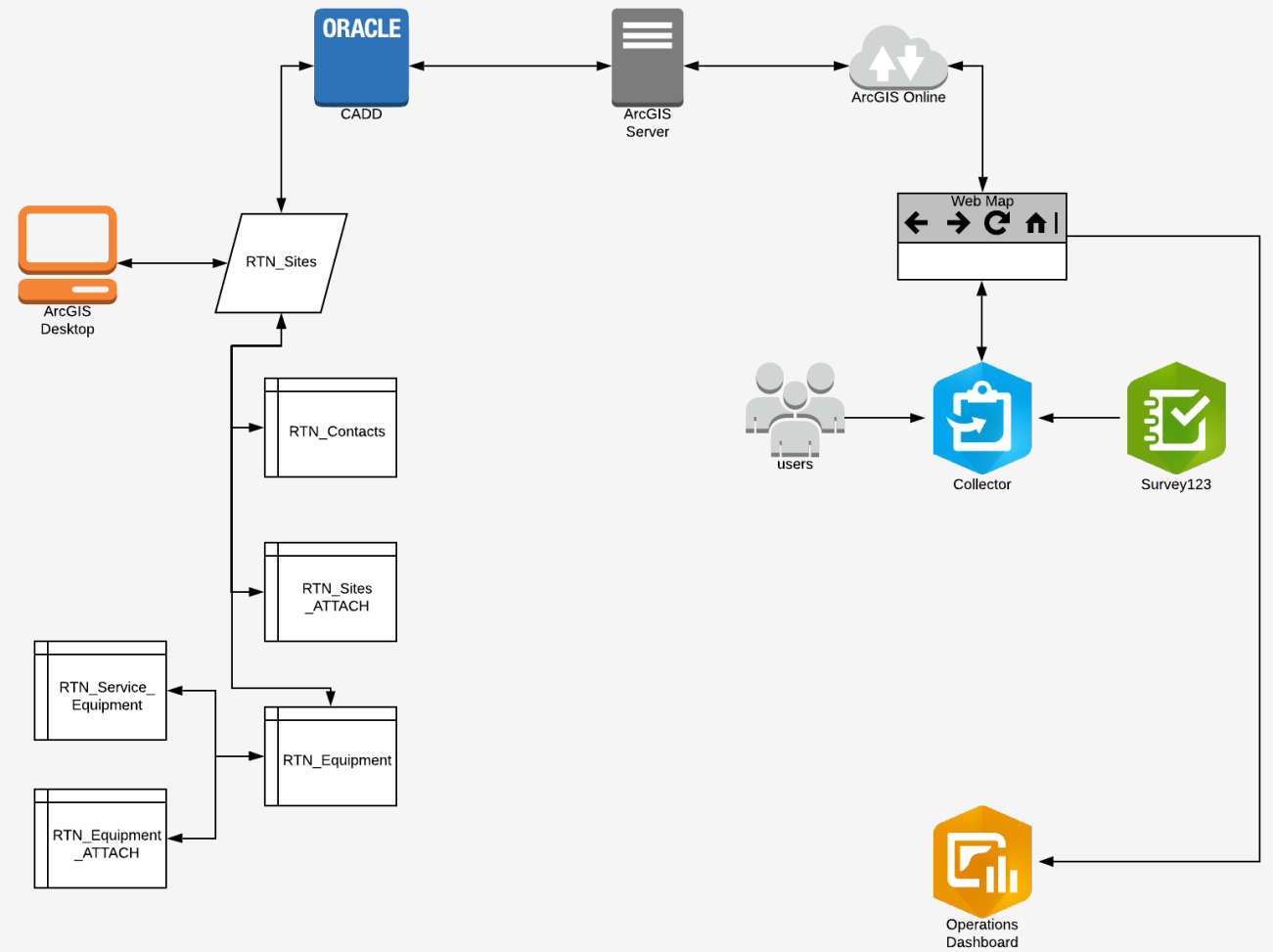


Lightning Suppression

An "electrifying" experience



Asset Management



Surveying Applications

Network Users

- Law enforcement
 - Crash and forensic investigation
- Surveyors and Engineers
 - Construction Contractors
- Local, State, and Federal Government
 - Utilities
 - GIS
 - Environmental/Historic Preservation
- Precision Agriculture
 - Tilling, Planting, Fertilizing, and Harvesting
- Equipment Vendors
- Academia

LiDAR Applications

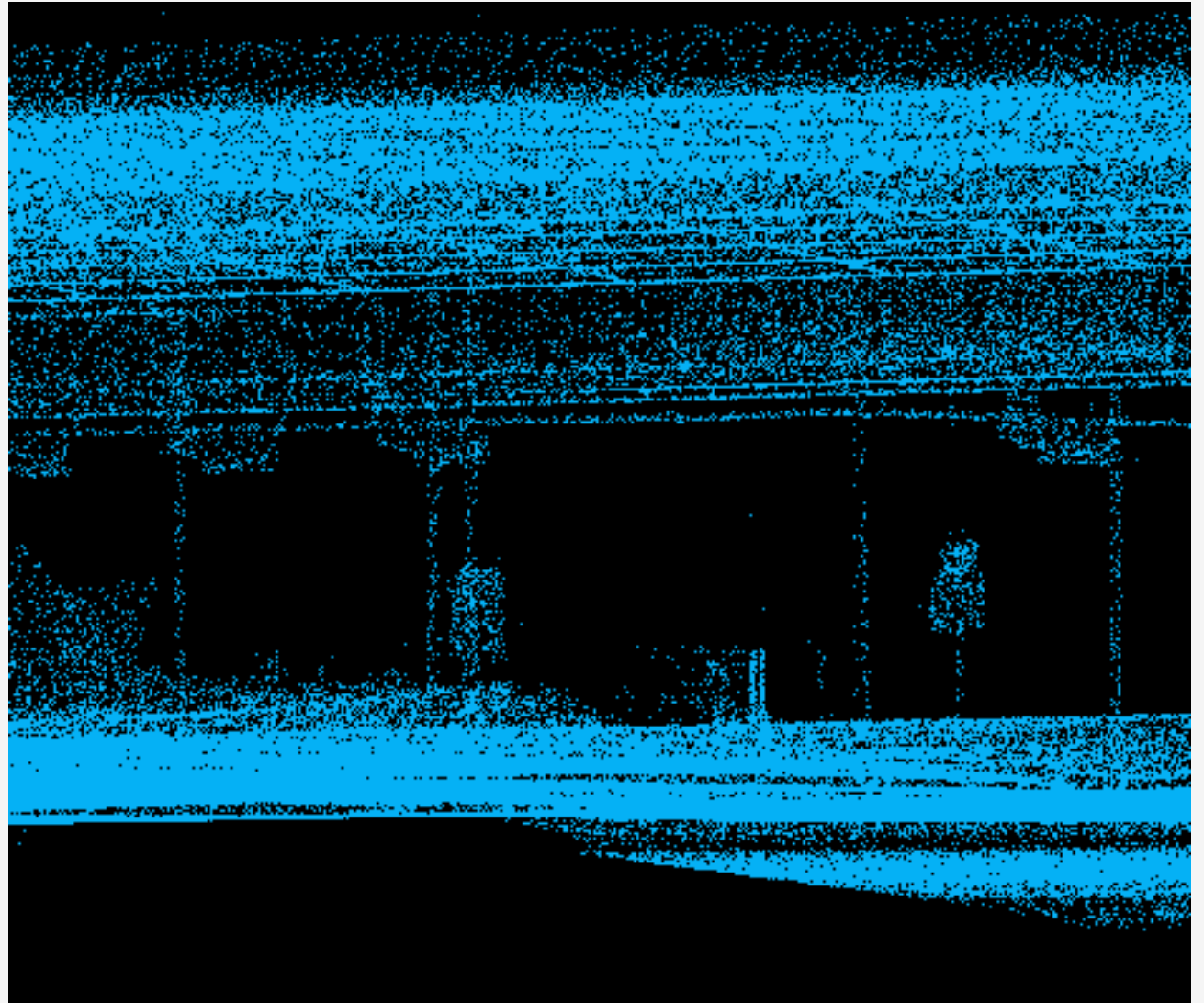
RTN for Mobile LiDAR



- Provides a precise location for mobile LiDAR systems
- Real-time position
 - Eliminates the need to post process positions or use base/rover
 - Reduces delivery time

*Route N –
St. Louis
County*

Mobile LiDAR example



Route N – St. Louis County

Mobile LiDAR example

