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Keys to a Successful Survey & Deploying New Technology

Kory Baxley, PS
Kyle Palmer, RPLS
Travis Lucia, GIS

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Safety Moment

Distracted & Drowsy Driving

70 drivers hurt per hour

31,000+ fatalities annually

5 seconds at 55 MPH is 100 yards

Introductions

Kory Baxley, PS

- Survey Operations Manager
- Professionally licensed in FL, OH, PA and NM
- 14 years of experience

Kyle Palmer, RPLS

- Professional Surveyor
- 11 years of experience
- 5 years of laser scanning experience

Travis Lucia

- GIS Specialist
- 3 years of UAV experience
- Independent Study of UAV use in GIS and 3D Products

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Keys to a Successful Survey

Kory Baxley, PS

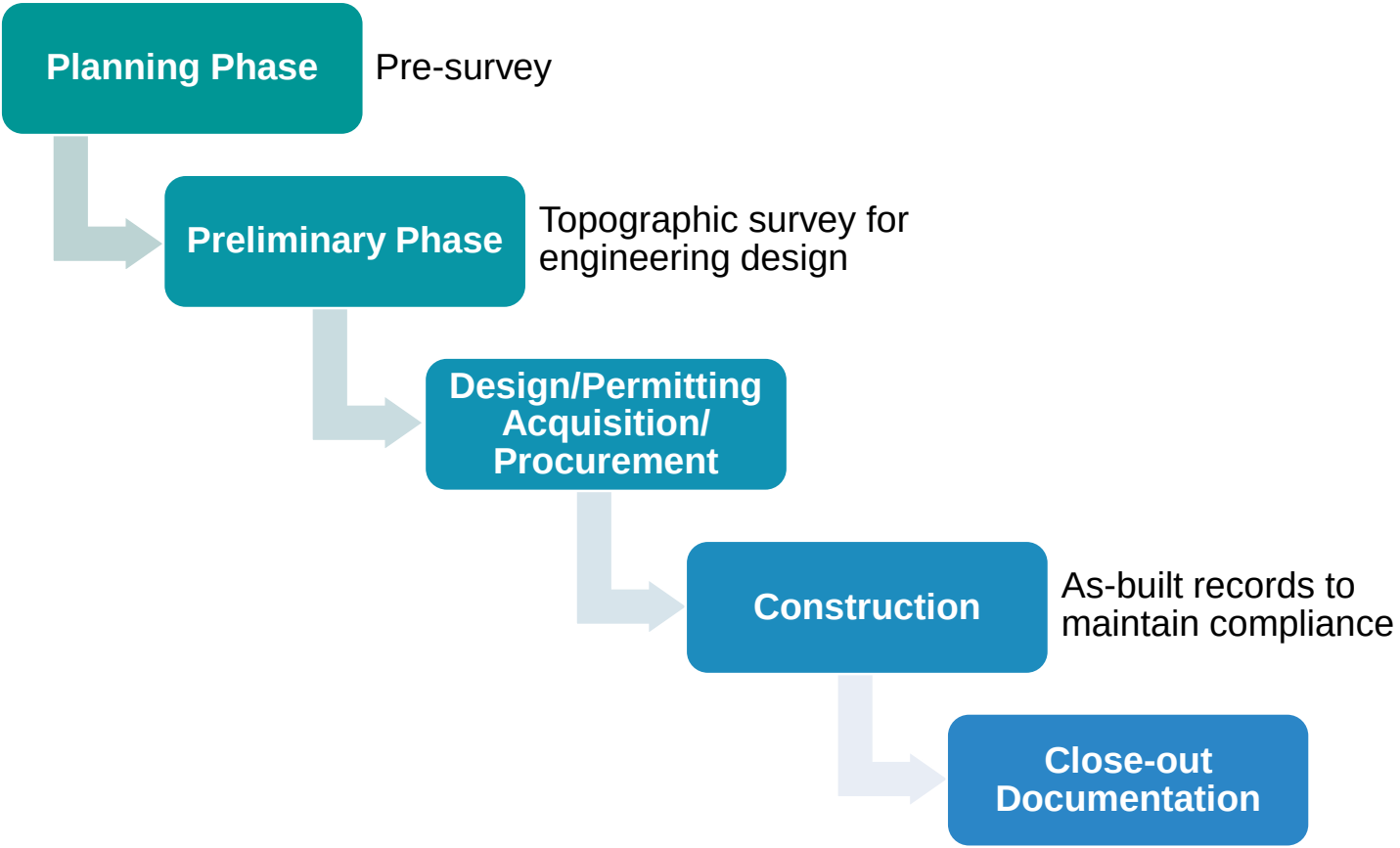
Develop a solid **TEAM**

Together
Everyone
Achieves
More

Time
Energy
And
Money

- Select your team based on experience, reputation and qualification
- Promote project collaboration
- Understand the project lifecycle

Understand Project Lifecycle



Planning Phase

Landowner outreach

Legal requirements

- Certified plats

Permitting requirements

- Road and water way crossings, driveways, municipal utilities

High level route study

- Reduce route changes

Deed research

- When should we start?

Preliminary Phase

Corridor width for topographic survey

- Drainage design required?
- E&S plans?

Environmental and civil survey contractors

- Define scope

Sketches or certified plats? Or both?

- Georgia Law Title 43, Chapter 15

Limited Title Certificates

- Prevents errors in ownership
- Prepares 90% of work for condemnation

Georgia Law

Title 43, Chapter 15

§ 43-15-2. Definitions (6) "Land Surveying"

- (E) Conducting horizontal and vertical control surveys, layout or stake-out of proposed construction, or the preparation of as-built surveys which relate to property, **easement, or right of way boundaries**;
- (F) Utilization of measurement devices or systems, such as aerial photogrammetry, geodetic positioning systems, land information systems, or similar technology for evaluation or location of property, **easement, or right of way boundaries**; or
- (G) The preparation and perpetuation of maps, record plats, drawings, exhibits, field notes, or property descriptions representing these services.

§ 43-15-7. Unlawful practice as a professional engineer or land surveyor

- (b) It shall be unlawful for any person other than a land surveyor to practice or to offer to practice land surveying in this state.

§ 43-15-22. Registrant required to obtain seal; inscription; purpose…

- (b) Plans, specifications, plats, and reports issued by a registrant shall be stamped or sealed and countersigned by the registrant;

Construction Phase

Deliverables

- Work with your internal groups
- PODS database upload
- As-built alignment sheets
- Materials traceability

Integrity management plan

- What are the components?
- What will I need to know years from now?

Advantages of database

- Best bang for your buck
- Accounts for multitudes of data in one central location
- Answers questions quickly
- Choose the right tool for the job

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Deploying New Technology

Laser Scanning

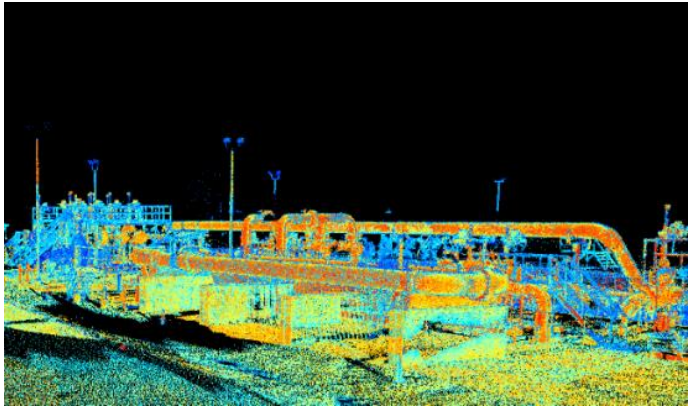
Kyle Palmer, RPLS

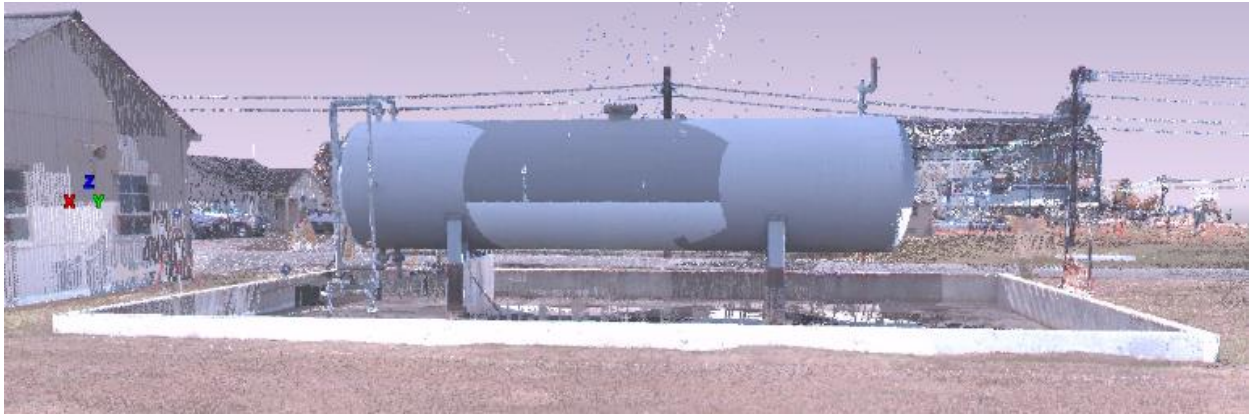
Laser Scanning

Ideal for facility work or other complex sites

Used to quickly collect a vast amount of data in a very short time period

Commonly used to create 3D models of objects of interest





What is My Scope?

How much detail?

- Site plan?
- Proximity locations?
- Detailed retrofit?

Below ground?

- If tie-in is below grade, conventional survey methods are required

How much information on how many sites?

- Don’t know?

Laser Scanning

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Deploying New Technology

Drones/UAVs

Travis Lucia

Drones

Accuracy	2D imagery and 3D models, centimeters over meters
Resolution	Unmatched ground sample distance
Repeatability & Safety	Consistently capture areas of interest
Customizability	Variety of camera and payload options (LiDAR, Infrared)
Versatility	Inspection, asset management, volumetric measurements, 2D & 3D products

UAV
Fixed Wing

Ideal for long distance flights, interchangeable cameras to meet specific needs

Great battery life (maximum flight times of 59 minutes)

Designed with survey in mind integrating RTK/PPK technology

Fully autonomous flight with auto return

UAV
Rotary Wing

Ideal for small survey areas & condensed take-off points

Greater payload potential to include LiDAR capability

Accuracy is achieved through the use of ground control points

Fully autonomous flight with auto return

UAV

- FAA Part 107 Certification
- General Rules and Regulations
  - Class G airspace*
  - Must keep the aircraft in sight (visual line-of-sight)*
  - Must fly under 400 feet*
  - Must fly during the day*
  - Must fly at or below 100 mph*
  - Must yield right of way to manned aircraft*
  - Must NOT fly over people*
  - Must NOT fly from a moving vehicle*

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Deploying New Technology

Remote-controlled Hydrographic Surveying

Kory Baxley, PS

Remote-controlled Hydrographic Surveying

Size: 3’ W x 6’ L

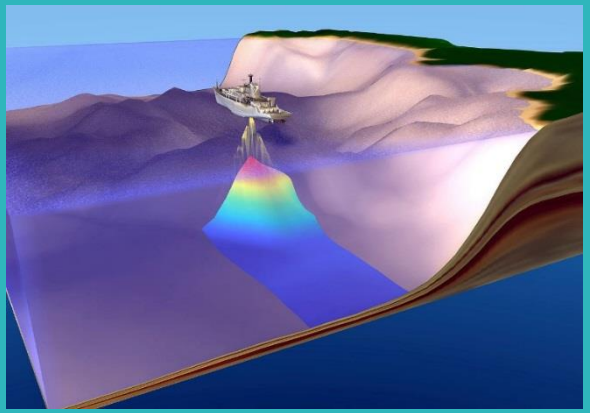
Weight: 66lbs

For crossings of lakes, ponds, rivers, streams

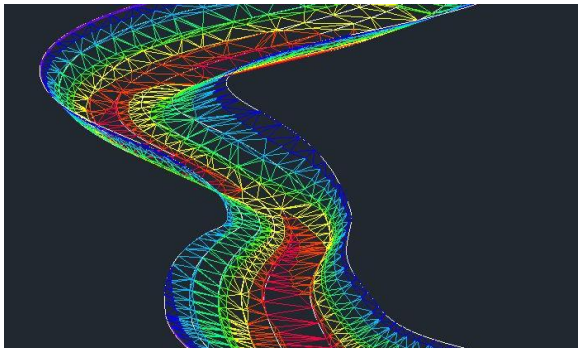
Single-beam and multi-beam technology

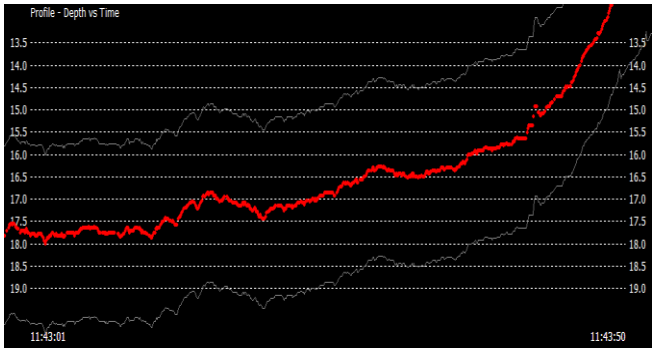
Pairs with software that delivers real time modeling

Paired with GPS for the fastest sounding data possible



Remote-controlled Hydrographic Surveying





Can be used to generate TIN

High (shallow) and low (deep) frequency soundings return surface and subsurface

Much more accurate and much safer than a crew on a John boat!

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Opening opportunities with connected thinking

Questions?