Foth

GEOSPATIAL

SOLVING OUR CLIENTS' TOUGHEST
SCIENCE AND ENGINEERING CHALLENGES

KEEP CHARTING NEW TERRITORIES

As aerial imagery, land management, mapping, and survey data grow in value and sophistication, choosing the best technology and tools in the collection, application, and management of complex project information presents unique challenges. We understand information requirements and their uses for federal agencies, municipalities, public utilities, and private sector clients as well as how to best collect it.

Foth's geospatial solutions team is on the cutting edge of the industry, providing comprehensive services and product innovation to meet all your survey, imagery, and mapping needs.

1

LiDAR
Stationary
Mobile
sUAS

2

PHOTOGRAMMETRY
sUAS

3

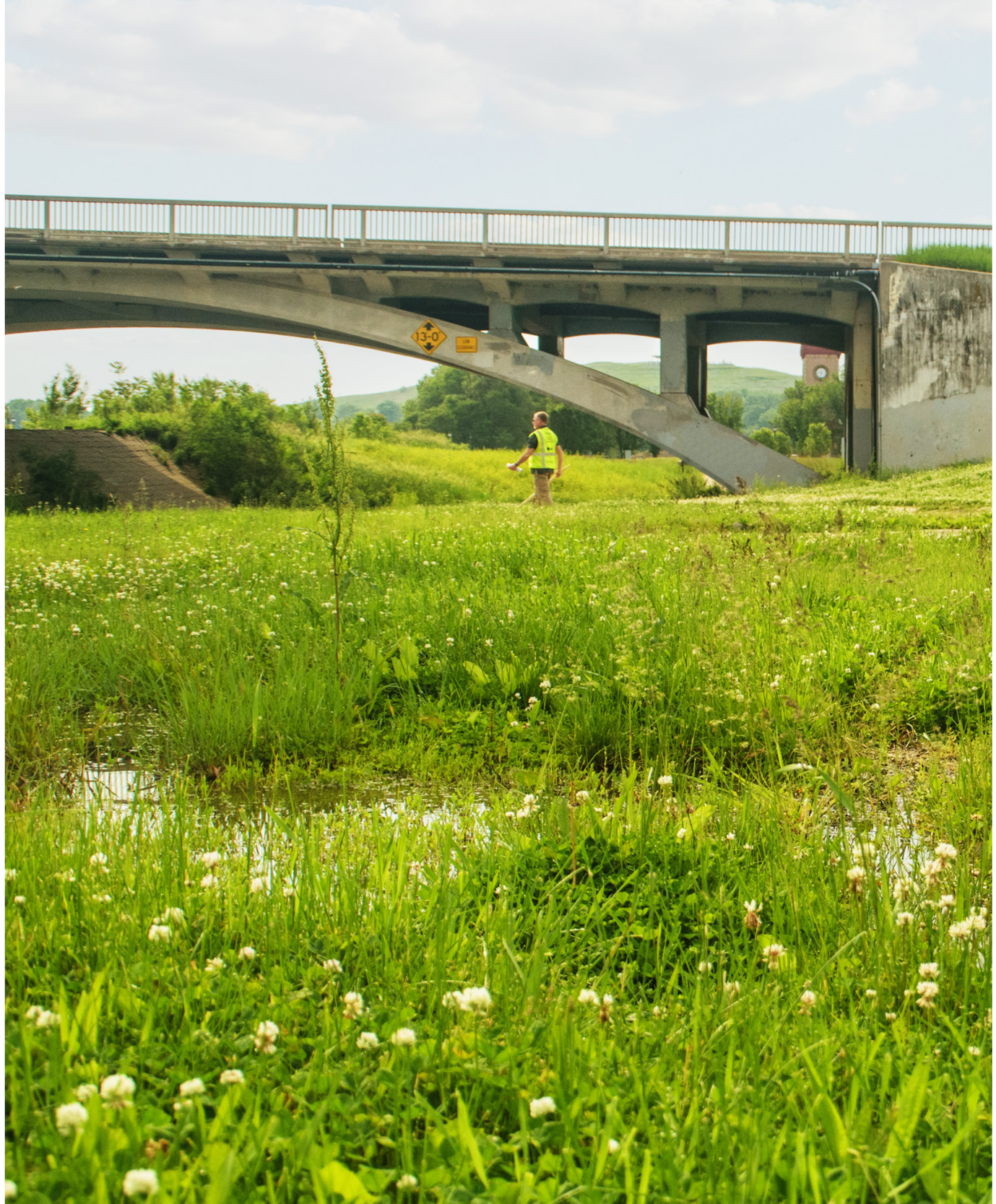
TRADITIONAL
Boots on the Ground
GPS
Digital Levels
Total Station

4

GEODETIC CONTROL NETWORK

5

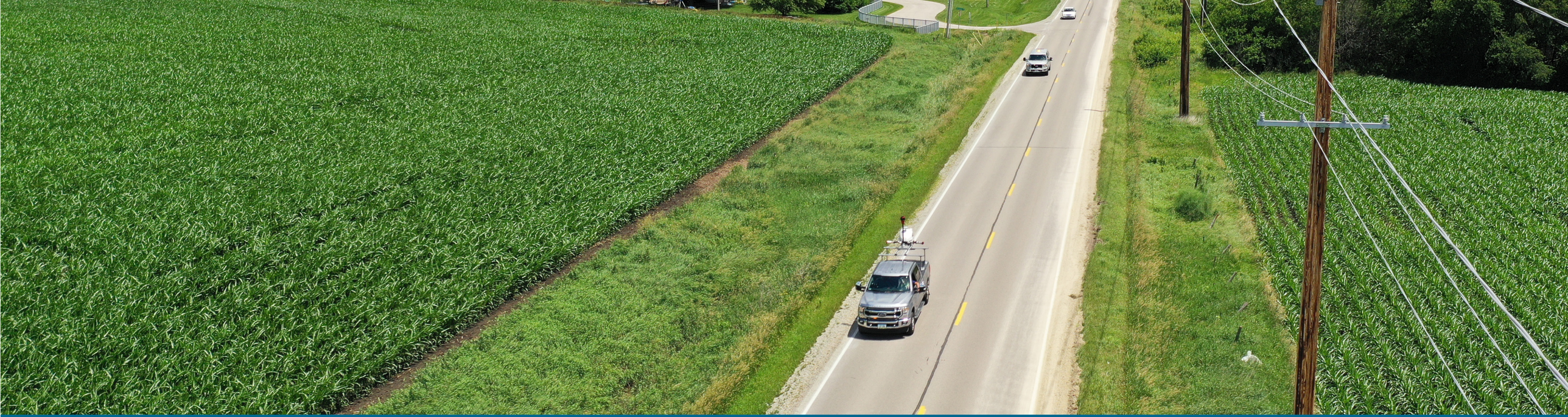
ASSET MANAGEMENT



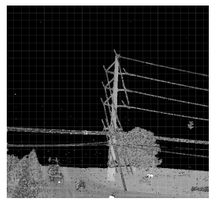
MAPPING SERVICES

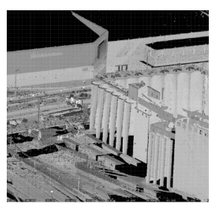
Utilizing technology to collect high-accuracy geospatial data while applying century-old land and property laws, allows us to maximize geospatial information through project lifecycles. Including traditional surveying devices (digital levels / GPS receivers / total stations), mobile / stationary /sUAS Lidar systems), our team of professionals assist federal, state and local governmental agencies, development organizations, and private industries.

Incorporating these various techniques provides us the flexibility to meet the needs of our clients while providing quality deliverables on time and budget.



MOBILE SCANNING TECHNOLOGY





While mobile scanning technology has proven most beneficial when utilized for data collection along roadway corridors greater than 1 mile, interchanges with extensive data needs, or restrictive schedules, it also serves to provide high-accuracy data regarding:

- Transportation Infrastructure Mapping
- Road Surface Measurement
- HD Mapping for Autonomous Vehicles
- City Modeling
- Rapid Capture of Construction Sites & Bulk Material
- Open-Pit Mine Surveying
- GIS Mapping & Asset Management
- As-Built Surveying
- ADA Compliance

3D SURFACE MODELS

Provides the user both tools and technology that allow for full, real-time data capture of transportation infrastructure, facades, overhead structures, power lines, bridges, tunnels, etc.

ELEVATED QUALITY

Through comprehensive data processing, enhanced scan data can both be overlapped and fit to specific control objects providing consistent point cloud precision and geo-referenced accuracy. Utilizing special high-sensitive 5MP, 9MP and 12MP cameras with leading edge CMOS technology, high-resolution images with rapid frame rates and minimized lens distortion are collected.

FIELD SAFETY

In addition to elevated safety for field personnel, mobile scanning services provide safety and convenience to members within the community. Vehicle mounted, the scanner is able to collect data at the pace of neighboring traffic. Ultimately, this both eliminates moving or temporary lane closures, as well as detours, collisions, or possible fatalities.

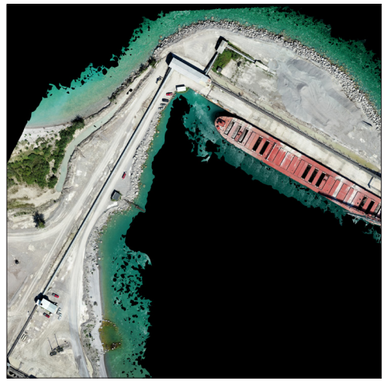
PROJECT EFFICIENCY

The Riegl VMX-2HA mobile scanner is able to collect **more than 500 lines of data per second**, collecting more inclusive and comprehensive data four times faster than previous models. Not only does this minimize time required for data collection, but also cost, as it only requires one field personnel for a fraction of the time.

AERIAL MAPPING & IMAGERY
sUAS(DRONE)

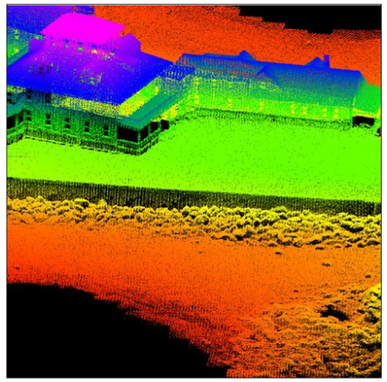
Foth is able to provide sUAS (small Unmanned Aerial System) services from coast to coast. Utilizing today's leading sUAS industry technologies, we can offer clients high-resolution site imagery for transportation, utility, and environmental site projects. This affords our clients faster, more informed decision making, site management, and current 3D datasets for complex sites and projects. Acquiring high-resolution and high-accuracy orthorectified imagery, our data enables measurements of ground features from the imagery directly to help make better decisions.

As with all Foth initiatives, we endeavor to complete these tasks with safety as a primary focus. Always up to speed on modifications to regulations and current best practices, we will collect and deliver all data while maintaining the safety of all personnel and the integrity of surrounding facilities.



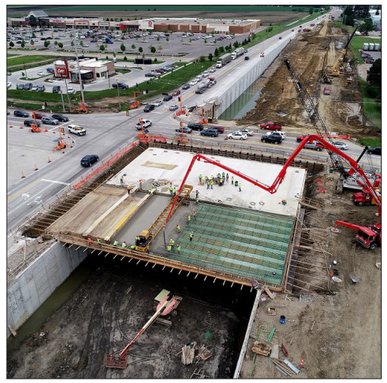
HIGH - RESOLUTION ORTHO-IMAGERY

Acquiring high resolution and high accuracy orthorectified imagery enables measurements of ground features with < 1" ground sample distance resolution.



3D SURFACE MODELS

Remotely collected data, including imagery and aerial LiDAR, from the sUAS sensors allows creation of 3D data for design, as-built verification and planning.



PROGRESS MONITORING & MARKETING

Utilizing unmanned aircraft and sensors to efficiently and effectively monitor and photograph projects.

LAND SURVEYING

Creating strong foundations for successful projects, quality land surveying provides pinpoint accurate data used in engineering and design processes. Additionally, it enhances stakeholders' understanding of project goals, obstacles and outcomes.

Our professional land surveyors work thoughtfully with clients, contractors, and legal counsel to not only collect but also prepare data and documents necessary for development. Our land surveying services include:

- Preliminary and Final Subdivision Plats
- ALTA Surveys
- Topographic Surveys
- Plat of Survey
- Boundary Retracement Surveys
- Lot Surveys
- Property Research
- Public Right-of-Way/Easements
- Utility Easements
- Access Easements
- Construction Easements
- Acquisition Plats

1 BOUNDARY SURVEYS

2 PROPERTY LINES

3 LAND & PROPERTY PRINCIPLES

4 PLATTING DOCUMENTS

CONSTRUCTION SERVICES

With growing urbanization, increasing complexity with revitalization requirements, and rural restructuring, having tools available to produce accurate geospatial context is vital throughout your project's lifecycle - from planning thru construction and maintenance. As a key component used to make educated and future-focused decisions, these tools support and strengthen accuracy, communication, efficiency, and safety.

Foth's experienced professional staff utilize advanced technologies including GNSS, high-precision optical sensors, static and mobile LiDAR, and sUAS technology to create 3D surfaces, obtain volumetric calculations, and confirm regulation adherence pertaining to construction layout, structure and settlement monitoring, material monitoring, and as-built mapping.

1 CONSTRUCTION LAYOUT

2 STRUCTURE MONITORING

3 GRADE CHECKS

4 AS-BUILT

VIRTUAL, AUGMENTED & MIXED REALITY

Augmented Reality (AR) and Virtual Reality (VR) bring projects to life allowing designers, clients, stakeholders, and members of a community to be fully-immersed and familiarize themselves with projects firsthand. Visions can be shared, experienced, altered, agreed upon, and delivered before construction even begins, ultimately eliminating change orders and exceeding budget and schedule constraints. Simulating detailed visual encounters foster emotional connections to the space, a clear sense of scale and functionality, as well as a vivid depiction of interior and exterior design elements and how they relate to the surrounding environment.

VIRTUAL REALITY
Provides a fully-immersive experience into digitally generated world.

AUGMENTED REALITY
Adding digital elements to a live view via use of a tablet or smartphone's camera.

MIXED REALITY
Provides an experience in which digital objects interact with the real-world.

HOLOLENS 2
The ability to bring 3D design models to a plant site for design review and potential clashes, or provide as-built review verification is key with this AR technology. Connectivity with other remote teams offers dynamic problem solving and eliminates costly re-work and plant downtime.

SITEVISION
With it's integrated precision GNSS receiver, the use of SiteVision AR technology is assisting with public engagement in the field with cloud connected 3D models viewed outdoors in real-time. Measurements, volumes, site coordination for phasing and design walk-thrus with remotely connected team members is critical to ensure minimized utility disruptions with underground facilities, or potential landowner impacts are known ahead of constructions.

GEOSPATIAL TEAM

The Foth project team possesses the qualifications, ambition, and deep-seated commitment needed to deliver high-quality geospatial services available for your projects. This commitment is shared by every team member, and goes well beyond simply getting the project done on-time and budget. It involves presenting viable solutions in manners that both technical and non-technical individuals can understand; allowing you to develop a broad consensus, make informed decisions, and proceed with the project efficiently and effectively.

It was crystal clear that customer and community satisfaction were at the very core of each project decision that made Foth's project such a success.

Katherine Flesh | Bentley Regional Sales Director
Referencing Foth winning Bentley's International Year in Infrastructure | Highway and Roads Award

JODY BUDDE, PLS

Boundary Research
Legal Descriptions
Plats
Horizontal/Vertical Survey
Topographic Survey
Construction Staking
Geodetic Survey Network
Mobile Scanning
Static Scanning
Structure Monitoring

LEE BUDDE

Boundary Research
Legal Descriptions
Plats
Horizontal/Vertical Survey
Topographic Survey
Construction Staking
Geodetic Survey Network
Mobile Scanning
Static Scanning
Structure Monitoring

JASON FLAHERTY

Horizontal/Vertical Survey
Topographic Survey
Construction Staking
Structure Monitoring

DREW MIAGZA, PLS

Boundary Research
Legal Descriptions
Plats
Horizontal/Vertical Survey
Topographic Survey
Construction Staking
UAS Mapping
Static Scanning
Structure Monitoring

JONATHAN MIRANDA

LiDAR Specialist
UAS Mapping
3D modeling
Horizontal/Vertical Survey
Control
Topographic Survey
Construction Staking
Structure Monitoring

DAVE OVERMAN, PE, LSIT

Boundary Research
Legal Descriptions
Plats
Horizontal/Vertical Survey
Topographic Survey
Construction Staking
Structure Monitoring

AARON PAULSON

Horizontal/Vertical Survey
Topographic Survey
Construction Staking
UAS Mapping
Geodetic Survey Network
Mobile Scanning
Static Scanning
Structure Monitoring

JIM SCHRADER

Horizontal/Vertical Survey
Control
Topographic Survey
Construction Staking
Structure Monitoring

WES SHIMP, PLS

Boundary Research
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Geodetic Survey Network
Mobile Scanning
Structure Monitoring

JEREMY SOUKUP, PLS

Boundary Research
Legal Descriptions
Plats
Horizontal/Vertical Survey
Topographic Survey
Construction Staking

LEVI SUHR

Plats
Horizontal/Vertical Survey
Topographic Survey
Construction Staking
Structure Monitoring

BEN SULLIVAN

Horizontal/Vertical Survey
UAS Mapping
Geodetic Survey Network

MATT SVEC

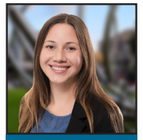
Boundary Research
Legal Descriptions
Plats
Horizontal/Vertical Survey
Topographic Survey
Construction Staking
Structure Monitoring

JOE TEMPESTA

LiDAR Specialist
Plats
UAS Mapping
3D modeling

MARLEE WALTON, PE, PLS

Boundary Research
Legal Descriptions
Plats
QA/QC
Topographic Survey



KATERINA WYATT

Boundary Research
Legal Descriptions
Plats
Horizontal/Vertical Survey
Topographic Survey
Mobile Scanning
Static Scanning


Foth