



Answering Transportation's Toughest Questions

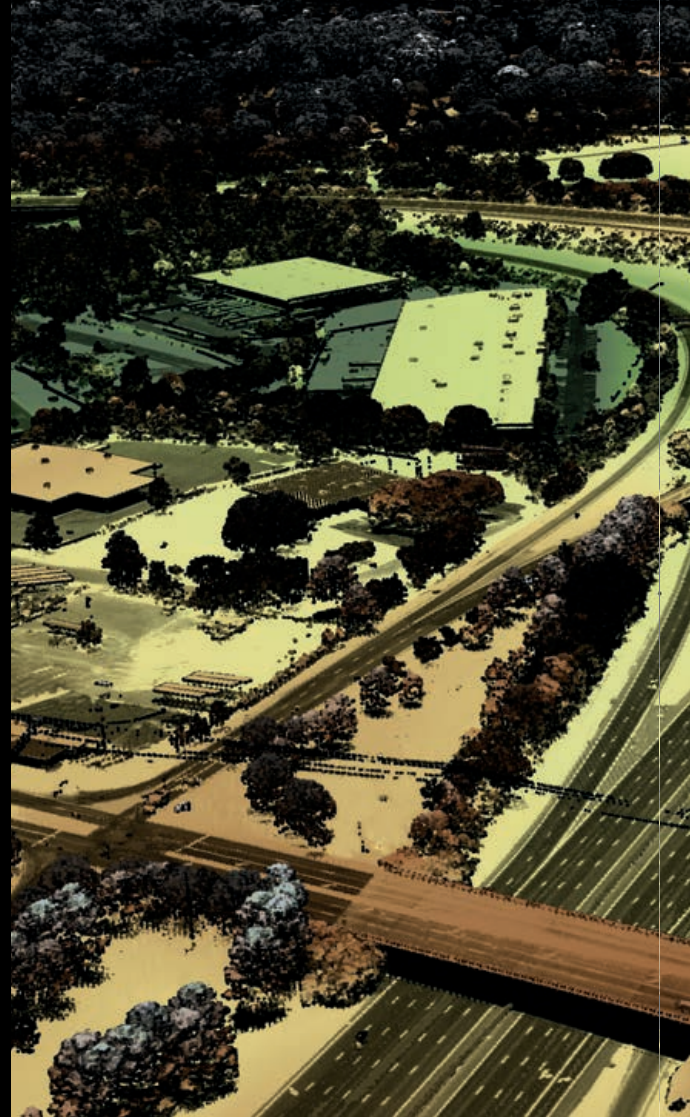
No matter the route, we lead you in the
right direction

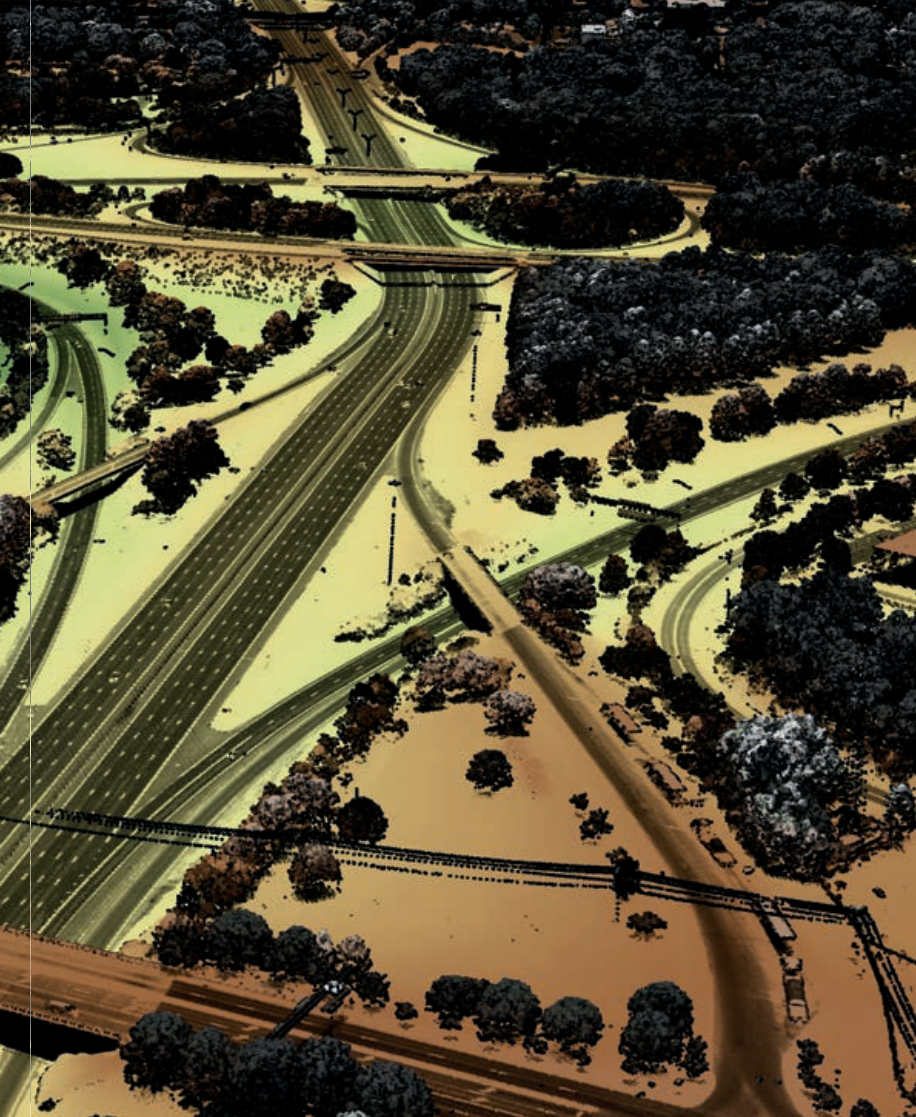
N|V|5 GEOSPATIAL
Delivering Solutions - Improving Lives

Bringing Solutions to Transportation

NV5 Geospatial has been trusted to provide on-target geospatial solutions for roadways, airports, and all modes of rail infrastructure for decades. Our clients trust us because we've proven time and time again that we can find a better way to ensure the right solutions for their specific needs.

In each case, we work with our transportation clients to select the appropriate platform, methodology, and analytics to maximize the value of our services. We continue to push ourselves to serve our clients better, from fixed and rotary wing aircraft to UAS or ground-based mobile platforms. It's what led to our new Comprehensive Low-Altitude Sensor Solution (CLASS) development, and we won't stop there. Our Departments of Transportation experience and transportation consulting expertise are unparalleled. So when you're ready to ask, we're prepared to get moving.





Our Solutions

- Corridor Mapping
- Asset Management
- Engineering Design
Mapping & Surveys
- Environmental Mapping
- GIS Data Mapping
- Hazard Mapping
- Emergency Response

Plan For Success

A host of steps need to be taken during the preliminary stages of a project.

Planners, environmental scientists, and engineers depend on our data and expertise to make decisions for corridor studies, route realignments, and road and bridge improvements.

Our services support the assessment and characterization of environmental conditions required for permitting applications.



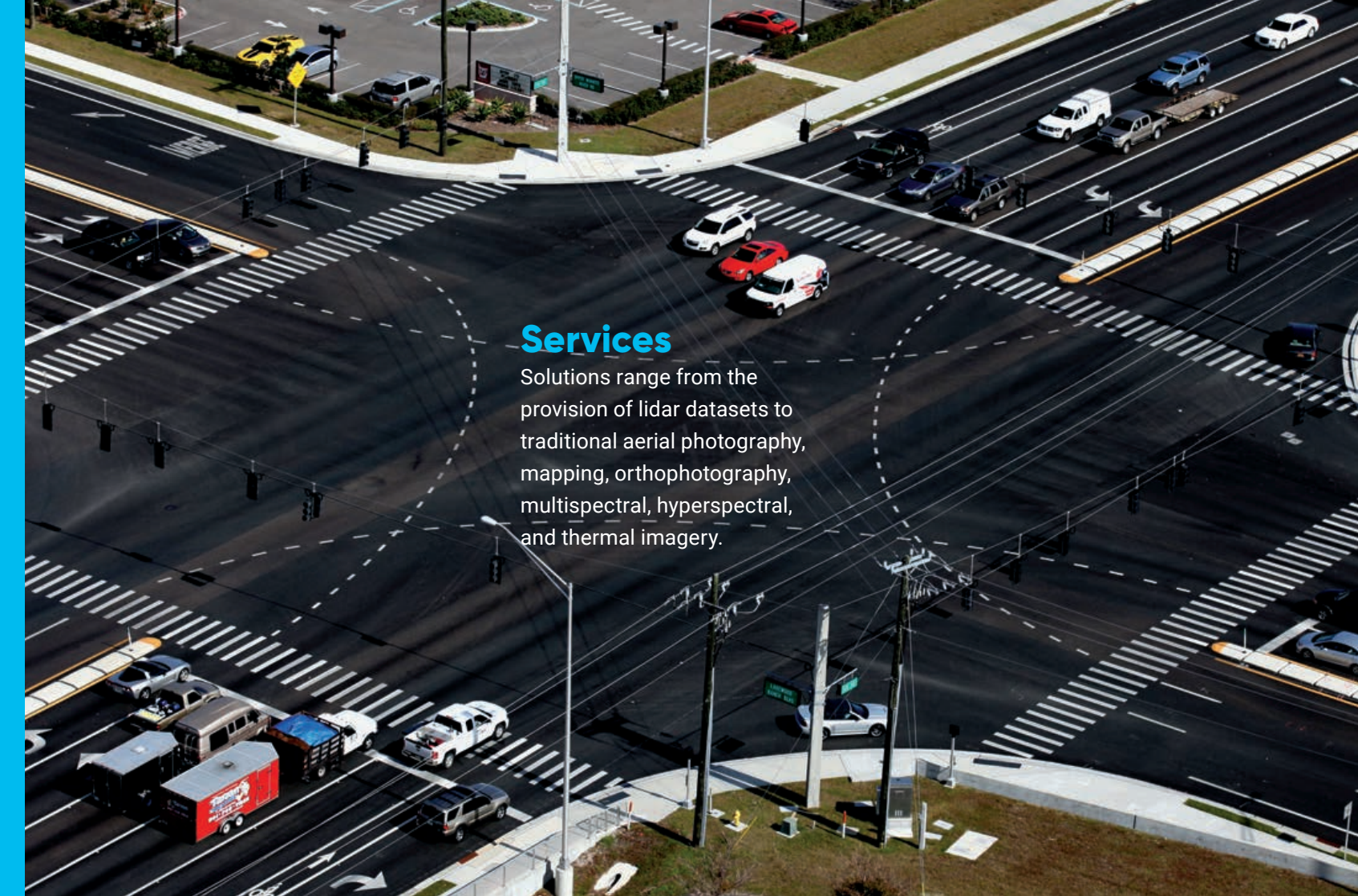
Traffic Studies



Feasibility
Assessments



Environmental
Impacts

An aerial photograph of a complex multi-lane intersection. The image shows various vehicles including cars, trucks, and a semi-trailer. White dashed lines and crosswalks are clearly visible on the dark asphalt. Traffic lights and street signs are positioned at the corners. The scene is captured from a high angle, providing a comprehensive view of the road layout and traffic flow.

Services

Solutions range from the provision of lidar datasets to traditional aerial photography, mapping, orthophotography, multispectral, hyperspectral, and thermal imagery.

Design With Confidence

With NV5 Geospatial support, design teams can develop their construction documents with confidence.

NV5 Geospatial supports transportation design with:

- Large-scale mapping solutions, including:
 - High-accuracy lidar
 - Low-altitude photogrammetric mapping
- Mobile mapping to capture existing road, slope, ramp, and bridge abutment conditions

Additionally, our high resolution orthophotography is considered by many engineers to be an indispensable design tool.





Services

NV5 Geospatial can provide dense elevation point clouds, TINs, and detailed mapping of existing conditions.

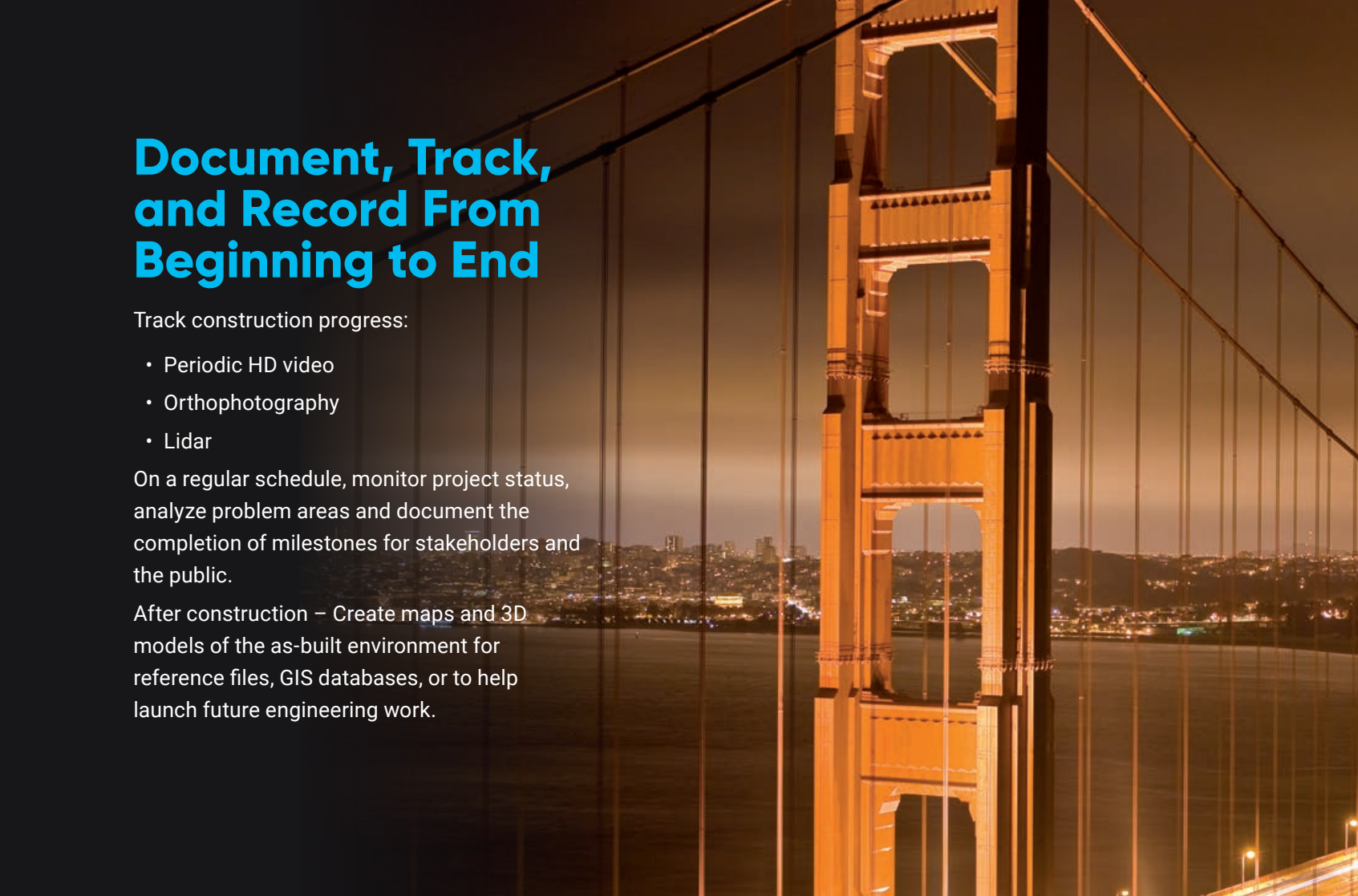
Document, Track, and Record From Beginning to End

Track construction progress:

- Periodic HD video
- Orthophotography
- Lidar

On a regular schedule, monitor project status, analyze problem areas and document the completion of milestones for stakeholders and the public.

After construction – Create maps and 3D models of the as-built environment for reference files, GIS databases, or to help launch future engineering work.





Services

Imagery can be used for orthophotography and planimetric mapping.

Lidar can be used for a variety of applications, such as mapping final surface elevations and gradients and extracting cross-section data sets.

Mobile mapping systems have the ability to drive down the completed right-of-way and capture as-built information for the record.

Manage With a Single Click: eGIS

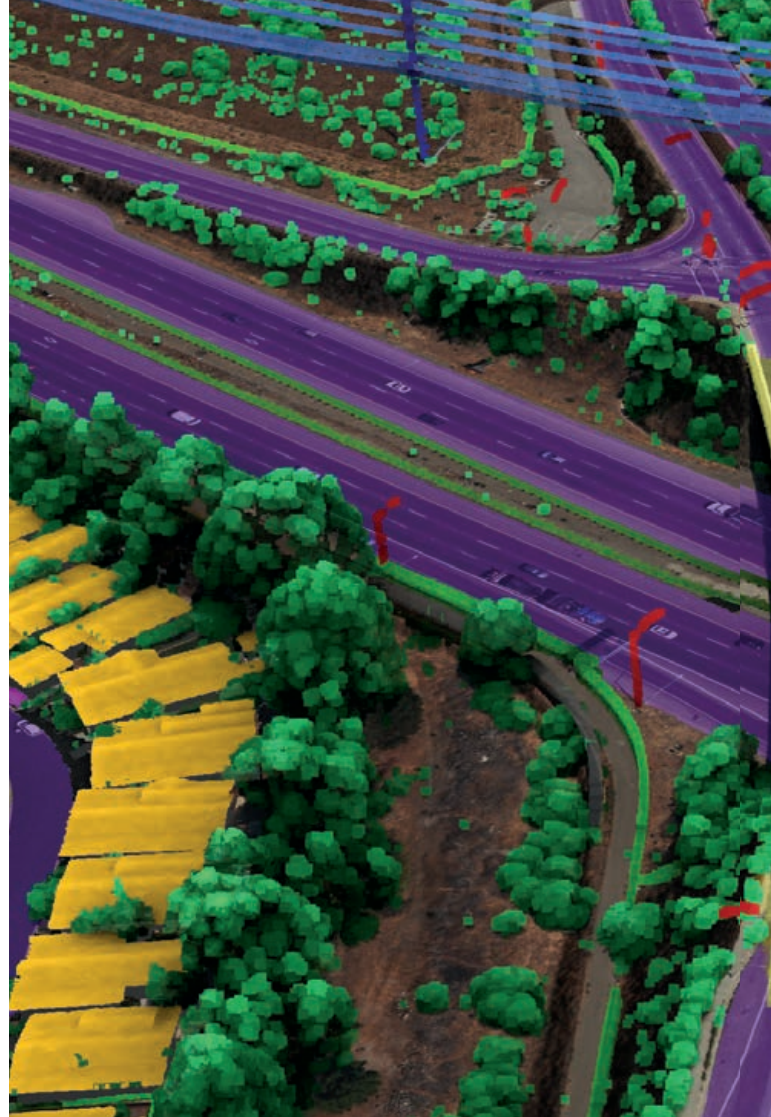
NV5 Geospatial's Enterprise GIS services offer a high degree of user functionality to help our clients manage their transportation corridors.

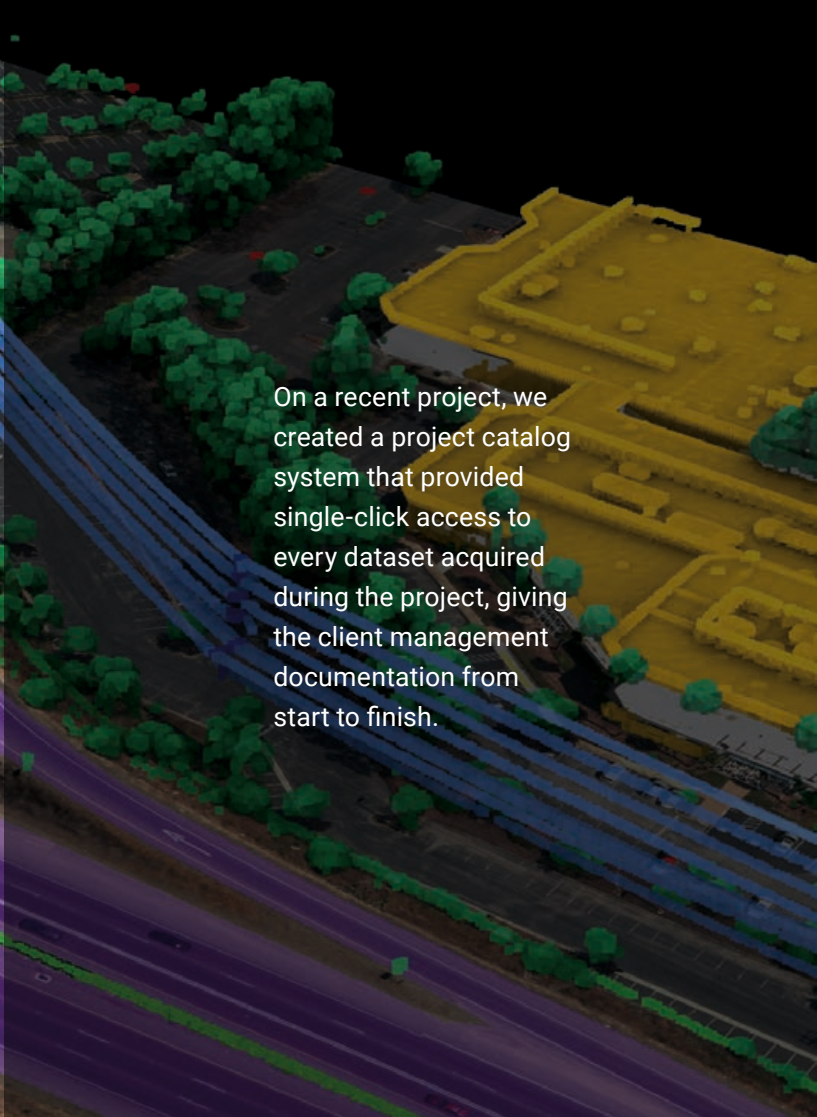
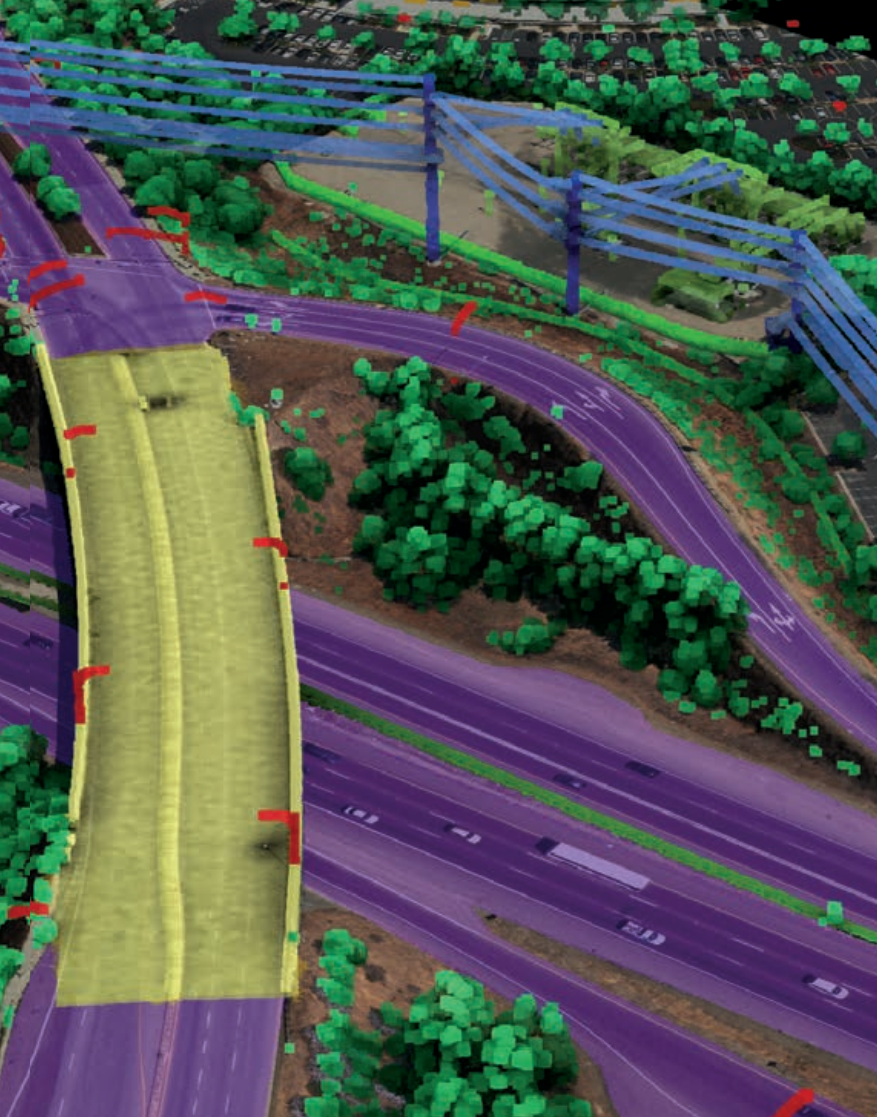
System

- Analyses
- Development
- Design
- Updating

Services

- Data Capture & Conversion
- Geodatabase Modeling
- Document Imaging
- Archiving Solutions





On a recent project, we created a project catalog system that provided single-click access to every dataset acquired during the project, giving the client management documentation from start to finish.

React and Respond

When a crisis erupts along any transportation corridor, NV5 Geospatial's ample resources and nationwide partnerships offer an immediate response.

NV5 Geospatial's Emergency Management solutions provide an effective plan of action and proven fast-track results.



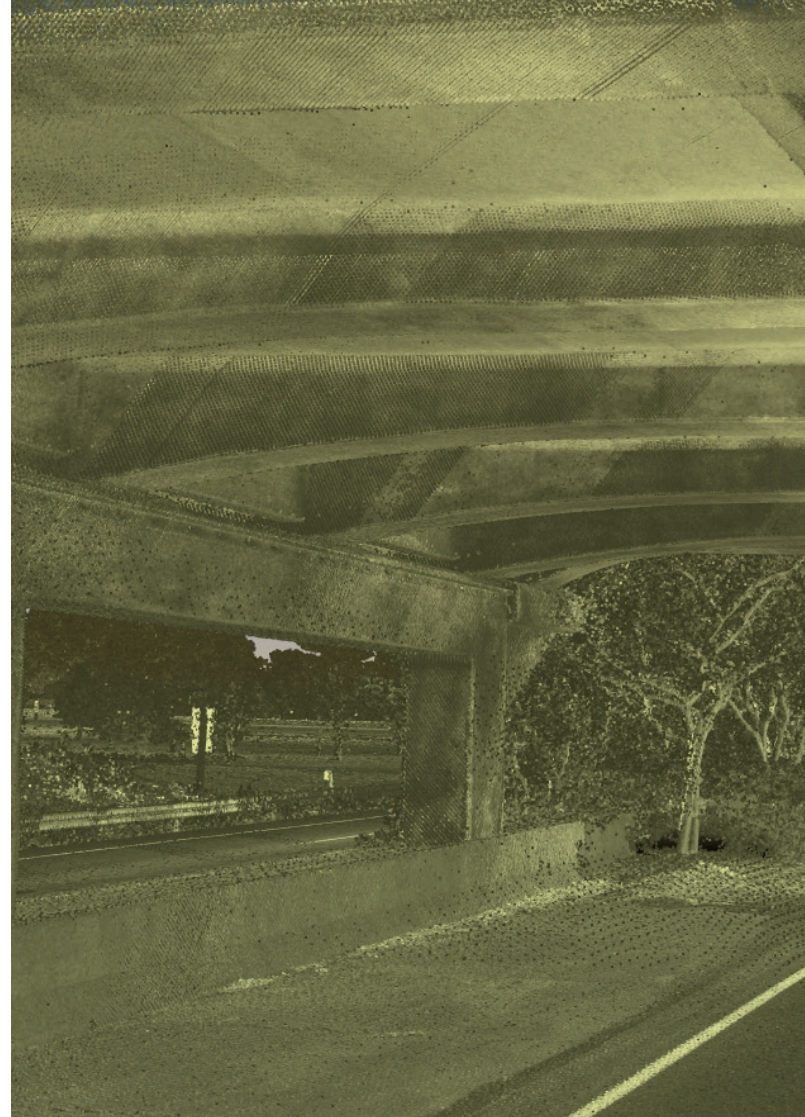


Solutions

- Search & recovery support
- Emergency site access
- Route detouring
- Forensic evidence collection
- Historical data recording
- Reconstruction planning & Implementation

Accuracy

Our suite of transportation-related services allows us to achieve a wide range of horizontal and vertical accuracies in mapping. Generally, ground-based mobile mapping has the greatest accuracy but also comes with the highest cost per mile. Low altitude helicopter-based mapping can achieve accuracies and point densities near that of mobile and often at project costs considerably less than mobile efforts. Fixed wing flights can achieve high accuracy at costs that are often significantly less than other options.





	Horizontal	Vertical
Mobile	0.10 to .30'	0.05 to 0.10'
Rotary Wing	0.40 to .060'	0.10 to 0.25'
Fixed Wing	0.75 to 1.50'	0.25 to 1.00'

Put CLASS in Your Data Acquisition

Where CLASS Works Best

CLASS is ideal for any project that commands a combination of high-density, high-resolution, and high accuracy from a single low-altitude pass of a rotary wing platform. Many corridor projects fit this description, but so do specialty wide-area projects.

Solutions Might Include

- Transportation corridors (roadways and rail)
- Airports
- Infrastructure inspection (e.g., dams, building, bridges)

The Advantage

- High-density point clouds offer advantages in remote sensing applications
- High-resolution imagery allows analysts to read signs, carefully inspect infrastructure, or accurately catalog asset conditions

Reigl VUX-LR Lidar Sensor
with APX-20 IMU

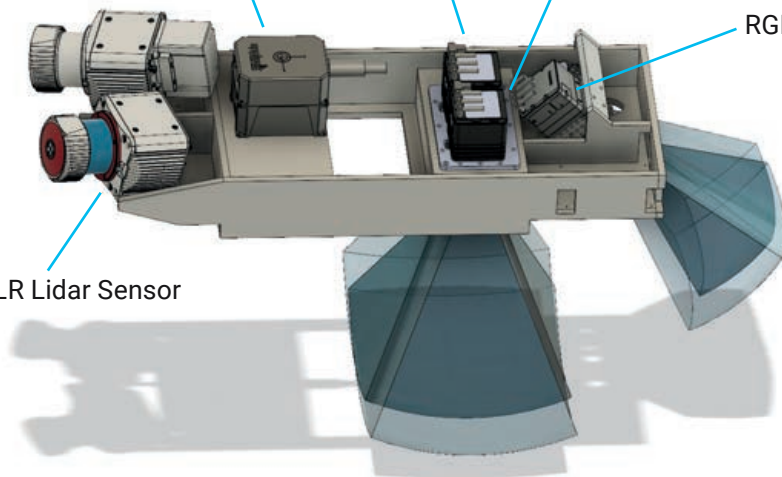
Applanix POS
AV 610 IMU

Phase One
RGB Camera

Phase One
NIR Camera

Phase One Oblique
RGB Camera

Reigl VUX-LR Lidar Sensor



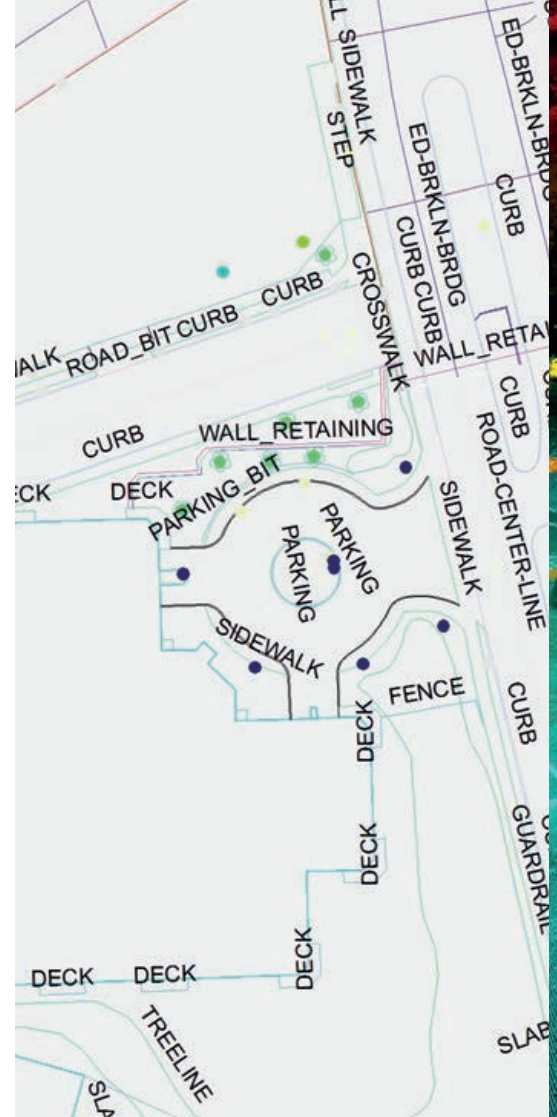
Photogrammetric Mapping

Photogrammetry is the science of dimensioning objects from overlapping aerial imagery. Images are viewed three-dimensionally using softcopy stereo plotters where planimetric and terrain features are digitized.

Photogrammetric attributes are assigned during the compilation process to identify the type of feature collected. These are typically used for route planning studies, design engineering, architectural studies, asset inventories, and other analysis.

Features can be collected as points, lines, line strings, curves, and closed polygons. The features create a graphic representation of artificial and natural surface features and provide a base for pavement inventory, impervious surface studies, above-ground utility location, site drainage studies, documentation of visible boundaries, and vegetation.

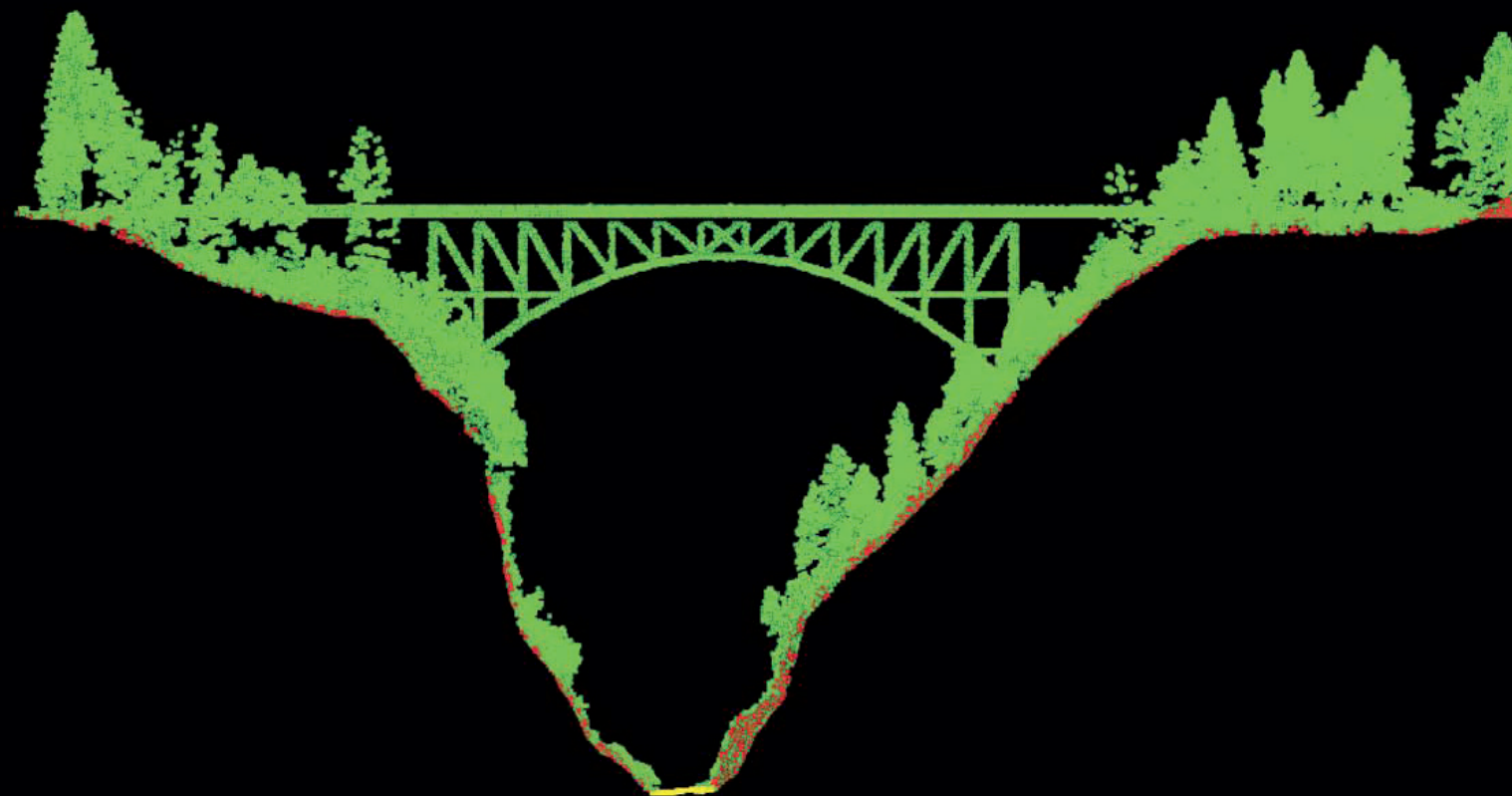
Terrain modeling can also be compiled from stereo photography. Three-dimensional data points are collected to create a Digital Elevation Model (DEM) of the surface. Breaklines are added to make a Digital Terrain Model (DTM), identifying specific features such as roadway centerlines, roadway/pavement edges, drainage structures, walls, and as required to model the terrain surface accurately. DTMs are used for terrain analysis, cut-fill-balance/volumetric analysis, and contour determination.

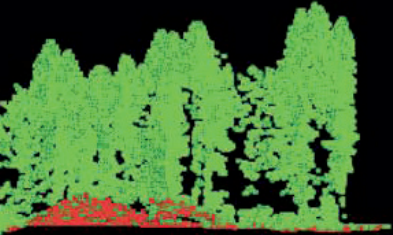




Mobile Lidar

- Transportation ROW inventory
- High-density point cloud collection (2,000-3,000 ppsm)
- Reduces on ground field personnel in ROW
- 3D bridge height modeling
- Ideal for rail networks





Topobathymetric Lidar

Most mapping activities focus on the ground and the built and natural environment above it. Topobathymetric lidar can look below the water's surface to map submerged land. NV5 Geospatial is one of North America's leading firms in this highly specialized area.

Acquisition is complex and challenging; a second (green) laser is added to the airborne sensor to work in parallel to the non-visible near infrared channel that is absorbed by water. Energy in the green spectrum can penetrate the water while the near infrared is used to map adjacent land and the surface of the water, which is needed to model the refraction of light at the water's surface.

Depth penetration is highly dependent on water clarity and bottom reflectance. This limit is typically two to five meters for most riverine environments, which is similar to the performance for nearshore areas along the Atlantic seaboard.

Topobathymetric lidar provides valuable information to transportation professionals. For example, it has been used to locate submerged utility crossing rivers, identify bridge scour, and offer crucial topographical information on submerged lands in rivers, lakes, and nearshore areas.

Why NV5 Geospatial?

NV5 Geospatial is the geospatial pioneer pushing the boundaries of data and analytics to transform the way our clients use and value geospatial data.

We lead the nation as the only end-to-end geospatial solutions provider with the capabilities to deliver the highest quality data and geographical insights.

We combine unmatched expertise and experience with that latest technology and proprietary processes and software to map and analyze all types of terrain. But we are so much more than what we measure.

We are active participants in the research community, constantly exploring new and innovative ways to solve our client's greatest challenges.

Office Locations

Remote sensing &
geospatial experts

Anchorage

Vancouver

Portland

Corvallis

Denver

San Diego

Sheboygan

Lexington

Dulles

Morehead City

St Petersburg





Contact Us

We would like to hear from you. Reach out to us with any questions about technology, challenges in optimizing the value of, or deriving the most critical answers from the data.

My Contact

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