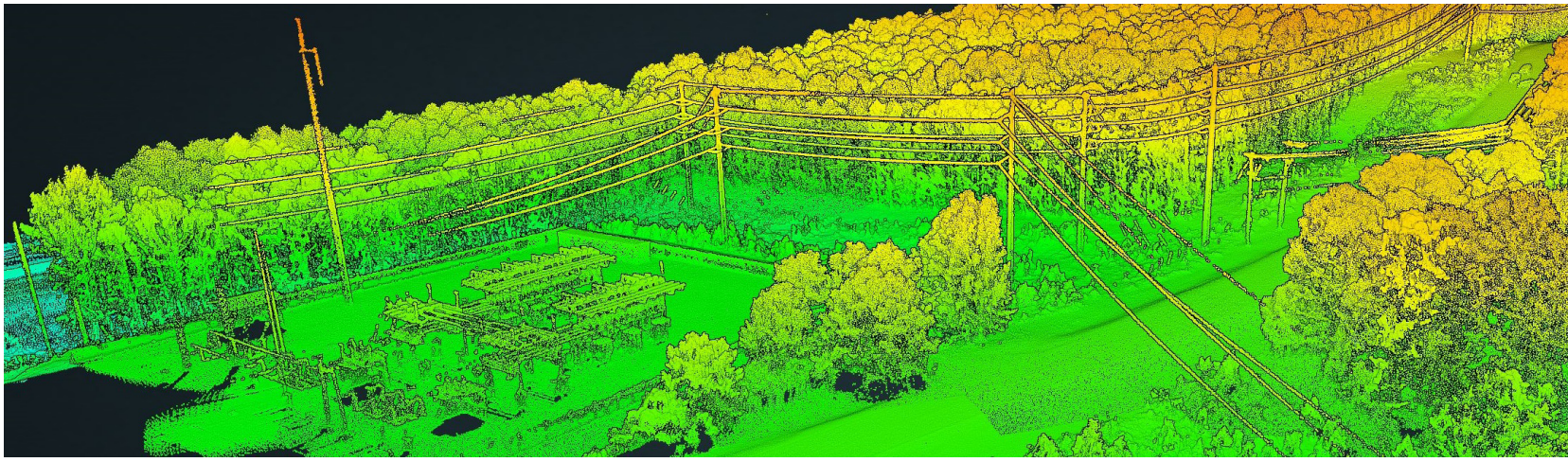

LiDAR SURVEYING SERVICES

At Patterson & Dewar Engineers, Inc. (P&D), we utilize the latest technological advancements to provide accurate deliverables that our clients rely on. Light Detection and Ranging (LiDAR) is a form of remote sensing that can be deployed from the air or ground to collect data by emitting infrared laser pulses to measure distances from the unit to objects. This data generates a point cloud, which is comprised of millions of 3D points.

AERIAL

P&D uses LiDAR every week to collect data on projects throughout the Southeast, ranging from less than an acre to over 1,000 acres. This method allows objects on the ground, such as buildings, utility poles, trees, and signage, to be easily captured. We collect data quickly, extensively, and more accurately, saving time over traditional surveying methods.

TERRESTRIAL

From the ground, P&D can capture abrupt vertical changes, such as curbs and walls, and supplemental data in areas inaccessible to aerial LiDAR, including under roofs, buildings, and confined spaces. We can then develop detailed 3D models to visualize a building's design, construction, and maintenance. The combination of aerial and terrestrial LiDAR makes it ideal for modeling existing utility substation data, especially when no proper record drawings exist.

ADVANTAGES OF LiDAR

- Survey grade precision and accuracy
- Faster results
- Fewer repeat site visits
- More data collected
- Reduced project costs
- Safer collection of data in hazardous environments (i.e. roadways, airports, confined spaces, etc.)

EXPERIENCE & CAPABILITIES

- Critical Infrastructure Evaluation (i.e. transmission/distribution electric line corridors, electrical substations, storm and sanitary sewer structures, etc.)
- Tree Canopy Height Models (CHMs) & Vegetation Management
- Bridge Surveys - 5.06(a) Topographic Remote Sensing (LiDAR)
- ADA Compliance Surveys
- Building Information Modeling (BIM)
- Volumetric Surveys
- Architectural documentation or historical preservation
- 3D Mapping & Modeling
- Topographic Surveys (Engineering Surveys)
- Route Surveys
- ALTA/NSPS Surveys
- As-Built Surveys

patterson & dewar ENGINEERS

OUR LOCATIONS

Georgia (Corporate)

850 Center Way
Norcross, GA 30071
(770) 453-1410

Arizona

1525 North Hayden Rd.
Suite 100
Scottsdale, AZ 85257

Tennessee

1531 Hunt Club Blvd.
Suite 200
Gallatin, TN 37066
(615) 527-7084

Texas

15924 Midway Rd.
Addison, TX 75001
(214) 461-0760

Virginia

4511 Daly Dr.
Suite I
Chantilly, VA 20151
(571) 299-6773

FREQUENTLY ASKED QUESTIONS

How much data can LiDAR collect daily? *Our aerial LiDAR unit can collect up to 500 acres per day.*

Can aerial and terrestrial LiDAR be used to collect more data for a project? *Yes, sometimes this makes sense based on the client's needs. For example, P&D often proposes using this on substation scanning to create a detailed equipment model.*

Are there any areas in which aerial LiDAR detection would be restricted? *Prohibited flight zones typically exist around correctional facilities, power plants, and airports. You can see if your project lies within a restricted zone by visiting: https://www.dji.com/flysafe/geo-map.*

Is LiDAR approved for use on GDOT projects? *Yes, LiDAR is allowable on GDOT projects. P&D is one of the few firms pre-qualified to collect and process data on GDOT projects. Our professional land surveyors are licensed in several states and are currently prequalified with the Georgia Department of Transportation (GDOT) to perform the following services:*

- *5.01 – Land Surveying*
- *5.02 – Engineering Surveying*
- *5.03 – Geodetic Surveying*
- *5.04(b) – Aerial Photography/Unmanned Aircraft System (Concept Grade)*
- *5.06(a) – Topographic Remote Sensing (LiDAR)*
- *5.06(b) – Topographic Remote Sensing (Unmanned Aircraft Systems LIDAR – Design Grade)*
- *5.06(c) – Topographic Remote Sensing (Unmanned Aircraft Systems LIDAR – Concept Grade)*

Will the large amount of data collected make the survey CAD file difficult to use? *Our clients find our data quite easy to work with. P&D's data reduction process also produces a CAD deliverable that is no larger than a traditional field-run survey.*

How well does aerial LiDAR perform when collecting data over a wooded area? *Aerial LiDAR is an excellent tool for penetrating thick forest canopies. P&D's pre-mission planning ensures that we collect as much data as possible.*

Is data gathered with LiDAR more accurate than traditional data collected with a total station? *LiDAR data is just as accurate as traditionally collected data. However, the benefit of collecting data with LiDAR versus traditional methods is removing the human error factor, such as incorrect rod heights and instrument heights, incorrect point descriptions, and details that need to be included by field crews. LiDAR removes all of these errors from the equation.*

What kind of deliverable can I expect? *We can deliver data in any industry standard CAD format (Autodesk or Microstation), LAS, LAZ, etc.*

OUR SURVEYING TEAM

Ultimately, LiDAR is only as good as its users. P&D's survey team brings decades of knowledge and professional experience to every project. In addition, several members of P&D's surveying team have diverse civil engineering backgrounds, which helps us to effectively communicate with clients, understand their needs, and deliver the highest quality products.

Justin Harbeson, PLS	Zach Buffington, PLS, EIT	Tony Kirby, PLS	Tom Mize	Jason Woods	Melissa Laurent
Manager, Surveying & GIS	Business Manager, Surveying & SUE	Surveying Crew Chief	Surveying Crew Chief	Sr. Surveying CAD Technician	Project Support

THE P&D DIFFERENCE

P&D has delivered consistent results and reliable services to a wide range of clients, many of whom have relied on our expertise for over 60 years. Our team works with owners, developers, designers, contractors, and project managers to complete projects on time and on budget.

For more information, please contact geomatics@pdengineers.com