GO TO GEOTECH

# Aerial Mapping

## *Geotech Precision Aerial Mapping*

Geotech utilizes the latest unmanned aircraft and data processing technologies to create high-accuracy aerial maps. Aerial imaging not only allows safe access to challenging terrain, but it can also be used to generate maps for planning, design, and decision-making across many industry sectors. Data from aerial imaging is gathered in a significantly shorter time-frame compared to traditional ground surveying methods, which means more data at a lower cost.

### OUR CAPABILITIES INCLUDE:

- **DSM/DTM/DEM**
  Digital surface and elevation models illustrate geographic characteristics of the surveyed property
- **Topographic Maps**
- **Multispectral Data**
  Understand the health and mix of vegetation on a property
- **Volumetric Measurements**
  Accurately measure the volume of mounds and pits
- **Inspection**
  Assess rate of degradation and structural integrity
- **Custom Drone Solutions**

Authorized by the FAA, Geotech has a full-time aerial acquisition and in-house data processing team allowing for complete control of scheduling and quality.

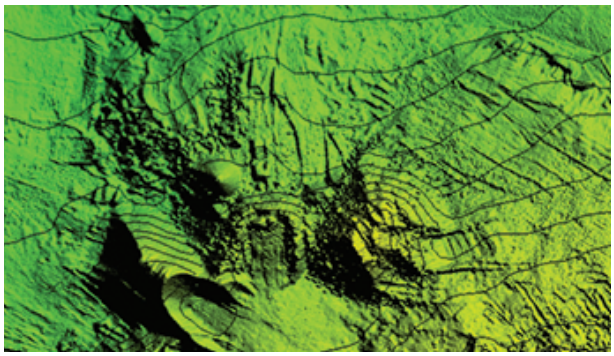
No matter the industry you are in, Geotech is here to serve you.

If you're interested in learning more about our UAS mapping services contact Geotech and we will provide you with options specific to your project or business operations.

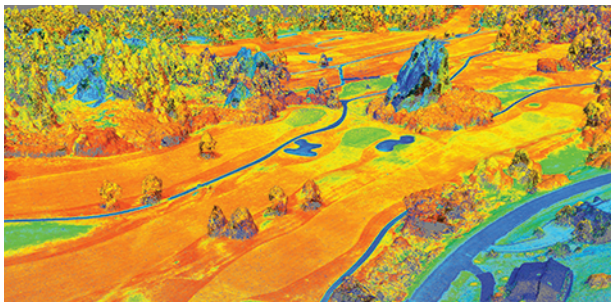
### OUR PORTFOLIO

- Aerial Photography & Videography
- Aerial Mapping – Georectified Orthomosaic
- Digital Surface Model (DSM)
- 3D Modeling – Photogrammetry
- Facility Inspection
- Emergency Planning and Response
- Volumetric Measurements
- Custom Solutions

Aerial Photography



DTM with Topography



Multispectral Data

## CALL GEOTECH TODAY (800) 833-7958

**Geotech Environmental Equipment, Inc.**
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## DATA ACCURACY

**Ground Control Points (GCP)**
GCPs are identifiable markers affixed to the ground at given and precise (X,Y,and Z) coordinates using GPS. GCPs geolocate the site and accurately scale the area of interest. Steep or complex geography may require additional GCPs to maintain relative accuracy. If GCPs cannot be placed due to adjacent private properties, a loss of accuracy near property boundaries can be expected. A professional land surveyor (PLS) with local engineering credentials can be contracted from start to finish for end-products that require such credentials.

**Surface Model**
Using RGB or LiDAR sensor types will result in a point cloud from which a surface model will be derived. The thickness of the point cloud from ground surface is indicative of vegetation, structures, people, animals, vehicles, etc. To obtain a true surface elevation model, processing data sets often require collaboration with someone who has comprehensive knowledge of the area.

**Topographic Maps**
The distinctive characteristic of a topographic map is the use of contour lines showing the shape and elevations of the ground surface. These contour lines are approximations due to smoothing algorithms that generate clean lines. This manipulation of the data results in some loss of accuracy. Additional GCPs can be placed and surveyed in specific areas of interest to accurately obtain/validate contour elevations.

**Coordinate Systems and Datum Planes**
A coordinate system is a three-dimensional reference system that locates points on the Earth's surface. The relative coordinate system and datum plans will be critical for the placement and survey of ground control points, and how the end-product interacts with other maps.

If an inaccurate coordinate system is provided, it is difficult to change to a new coordinate system and losses in accuracy will likely occur.

**Bottom Line Accuracy and Precision**
±5cm X,Y,Z accuracy is achievable in all but the most difficult topographies. When less accuracy is required, or when GCP placement is impaired, estimated accuracy can be determined for the area of interest. Topographic contour line accuracy is determined by setting the processing algorithm parameters. In general ±.5' can be achieved. Specific points of interest can be surveyed as ground control points and placed separately from contour lines.

## OUTPUT FILE TYPES

**Digital Outputs**
- RGB "colored map" elevations photo mosaic
- Topographic Map
  - Shape files
  - GeoTIFF
  - JPEG
  - PNG
  - BMP
  - Multiresolution Google Earch KML Mosaic
  - Google Map Tiles
  - MBTiles
  - WorldWind Tiles
  - Related .xml files

**MultiSpectral**
- GeoTIFF

**ACAD File Output Types**
- DXF
- DWG

**Surface Model**
- STEP
- IGES
- DSM (Digital Surface Model)
- DTM (Digital Terrain Model)
- DEM (Digital Elevation Model)

**Point Cloud**
- ASPRS LAS
- XYX text file
- LAZ

**Still Images**
- JPEG
- Camera Raw

**Processed Outputs**
- Oriented Contour Map with labeled elevations and legend
- Oriented Flat Map with road labels and legend
- Digital Terrain Model with color elevation gradation and legend
- Digital Surface Model with color elevation gradation and legend

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