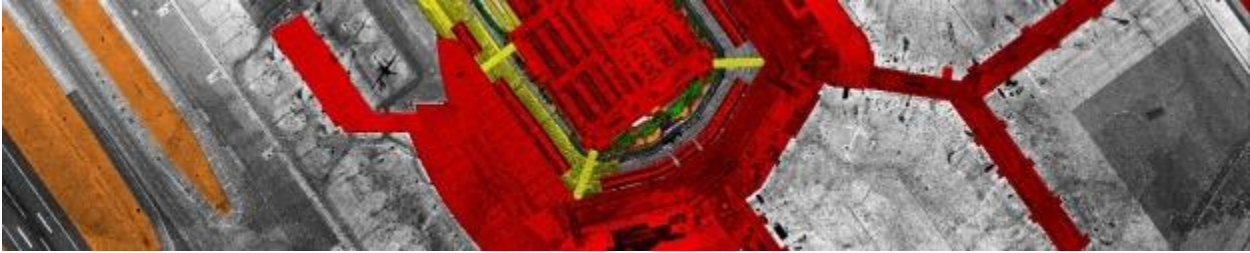


Mapping an Airport

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LiDAR Classification of an Airport Terminal

With air travel increasing across the US and abroad, it's become apparent that airport infrastructure has not kept pace with the demand for additional flights. Many engineering and surveying firms are finding themselves in a position to consult with airports looking to renovate, redesign or expand to accommodate additional traffic through their facilities. Sooner or later, you will have a client approach you with a request for a base map of their airport. Immediately the questions begin to swirl in your head. Questions like:

- **What kind of access will we have?**
- **What type of clearance will we need to get?**
- **What type of obstacles and obstruction will there be?**
- **How much area do we need to cover?**
- **What will the data be used for?**
- **What is the best way to collect the data?**

Let's take a quick look at each of the questions and try to break them down some. This article is not intended to give a step by step procedure, but to give guidance.

“What kind of access will we have to the site in general?” Let's face it, we're talking about an airport. Airports have restricted areas that are dangerous to you and occupying them may pose security risks to the day to day operations of the site. This is a question that you must ask the client up front and receive clear answers. They should be able to show you exact locations that you may have no access, or very limited access.

“What type of clearance will we need to get to entire the site?” Gaining security clearance at an airport can be very difficult at times. The bigger the airport, the more red tape that seems to be involved. Plan on this process taking time for each person to have a background check run on them. Once you have your field crew cleared to enter the site, will they have to have an escort with them at all times. Plan to be tied to their schedule of available personnel to perform this duty. This will dictate the times of day you will be allowed into certain areas.

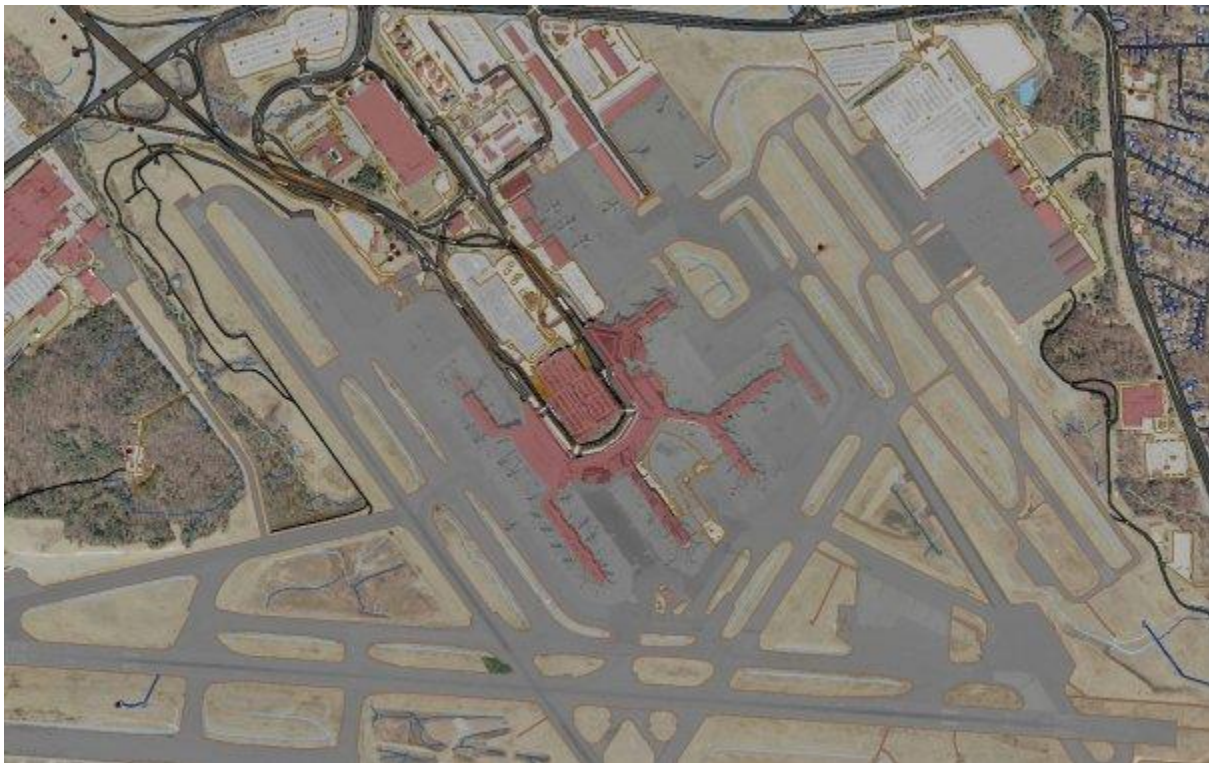


Airport Building Vectors

“What type of obstacles and obstructions will there be?” The first of the obstacles are access and clearance to the site. Are there trees in the way, buildings, classified areas, etc. All of these questions need to be asked in the beginning so that you can make the best decision on how to collect the data.

“How much area do we need to cover?” Is your client looking to have the entire airport mapped or a portion of it? Do they need to show features off site? If so, to what level of locations? The answer to these questions will once again point to the method of data collection.

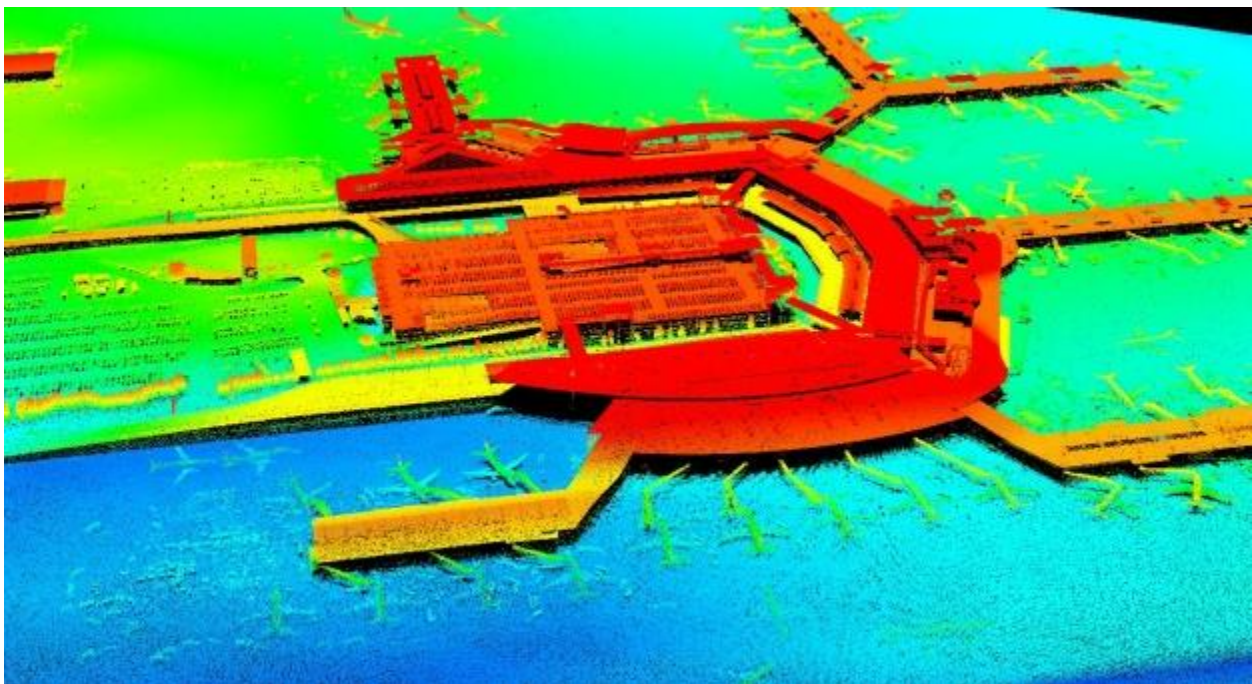
“What will the data be used for?” This is the question that isn’t asked often enough by surveyors. If the data is to create a base map for future planning then the required data may be different. The FAA has certain regulations in place for mapping if design work is going to be done based on the base mapping. Additionally, clients may be seeking an obstruction analysis based on FAA 18C to identify tree tops, buildings and antennae that may pose a risk to air traffic in the area. Is the job intended to help remediate some kind of a problem? For example, are there areas prone to flooding where you will need impervious surface classification or elevation data for stormwater analysis? The level of accuracy required will depend on the application. Always keep the end user in mind when developing your plan.



Planimetric Map designed from an Ortholmage of an Airport

“What is the best way to collect the data?” Due to the site and the various access issues and obstacles that may be in play, the best method would be with High Definition LiDAR from a fixed wing plane. This approach would require the least amount of access to the site itself. A control network would be required to be performed on the ground. The network can be predominantly completed without entering the site at all. Some additional field edits / checks may be required due to obstructed areas. These smaller areas can be done on the ground either by traditional survey methods or by 3D terrestrial scanning. This data would be added to the point cloud collected during the flight, and an all-inclusive base map can be produced and given to the client. The data can also be delivered in a 3D model if chosen by the client.

After considering these questions, you will be in a better position to serve your airport client. Remember that there is no better approach than a methodical, consultative one that is customized to your end user.



LiDAR Intensity Image of Airport Terminal

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