

What Orthoimagery Resolution is Right for Me?

Before you can plan an orthoimagery acquisition project, you must decide what imagery resolution is right for you. The main factors that will determine the proper resolution are your goals and your budget. As you review your goals, you must consider the end-users and their intended uses for the imagery. County assessors intending to perform tax assessment will probably need a different resolution than a sewer district seeking to map storm drains.

The most common resolutions are 3", 6" and 12" GSD. Imagery of rural areas is typically captured at 6" and 12" GSD, whereas urban areas commonly require 6" or even 3" GSD. Clients that want to monitor extreme flooding need their imagery as soon as possible and therefore usually select 12" GSD; this allows faster acquisition while still enabling users to see all the detail needed of the flood areas.

Precise transportation planning and engineering projects, on the other hand, typically require 3" GSD imagery – and in some cases, an even higher resolution. Keep in mind that you can split your project area into different resolutions. For example, many counties acquire imagery over the whole county at 12" GSD, except for one or two main urban areas which are captured at 6" GSD. Surdex has developed and refined a successful process for projects with multiple resolutions that entails combining correctly placed ground control with resampled higher/lower resolution imagery, resulting in one seamless project.

Most of the time, orthoimagery is used for some mapping purpose. Roads and buildings are some of the most common features of interest for planimetric mapping, but there are many other cultural artifacts or natural features that can be mapped using aerial imagery. The table below details the different features that are sufficiently visible for mapping in 12", 6" and 3" GSD imagery.

| Features Visible at Different Orthoimagery Resolutions | | | |
|--|---------------------|--------------------------|---------------------------|
| 12" GSD (200 Scale Mapping) | | | |
| Primary Roads | Unpaved Roads | Trails | Railroads — single line |
| Buildings | Foundations/Ruins | Concrete Pads | Under Construction Zones |
| Airports | Utility Substations | Parking Lots | Bridges/Abutments |
| Culverts (large) | Concrete Dams | Athletic Fields | Tennis Courts |
| Golf Course | Cemetery | Pipelines | Large Signs/Billboards |
| Antenna | Transmission Towers | Water Tanks | Walls-free/retaining/high |
| Treelines | Brushline | Major Fencelines | Swamps |
| Lakes/Ponds | Rivers/streams | Single Trees (35' crown) | |
| 6" GSD (100 Scale Mapping) | | | |
| All of the 12' GSD features PLUS | | | |
| Alleys | Driveways | Shoulders | Public Sidewalks |
| Guardrails | Culverts (small) | Catch basins | In ground pools |
| Light Poles | Utility Poles | Traffic Light | Utility Pole w/light |
| Traffic light | Manholes | Single Trees (25' crown) | Residential Fencelines |
| 3" GSD (500 Scale Mapping) | | | |
| All of the 12" and 6" GSD features PLUS | | | |
| Curbs | Post | Small Signs | Railroads — double |
| Fire Hydrants | Bushes | Single Tree (>10' crown) | |

When deciding on the proper resolution for your project, consult with your end users to determine their intended uses of the imagery. Consider the aforementioned potential uses of aerial imagery and reach out to potential partners for your imagery project.

Perhaps your parks department was already considering acquiring imagery and could piggy-back on your project – just be sure to find out what resolution they will need based on their intended use for the imagery. Contact us if you would like assistance helping you determine which resolution best suits your needs.



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