

Product	Scale of Imagery [a]	Optimal Usage	Optimal Length	Season of Capture [b]	Horizontal Accuracy	Vertical Accuracy [g]	Collection Width	# of Ground Control Targets Required [h]	Comments
DTM and Mapping (DTM) Orthoimagery (Ortho)	1:3000 (1"=250')	Any (supplement urban for C&G)	1 mile or more	Spring	0.6'	0.3' - 0.5'	920'	3 targets every 2700'	1, 7, 8, 12
DTM and Mapping (DTM) Orthoimagery (Ortho)	1:2000 (1"=167')	Any (supplement urban for C&G)	1 mile or more	Spring	0.3'	0.2' - 0.33'	600'	3 targets every 1800'	7, 8, 12
High-Flight DTM (HLDTM) Orthoimagery (Ortho)	1:6000 (1"=500')	Planning	1 mile or more	Spring	1.2'	0.6' - 1.0'	1500'	3 targets every 5400'	2, 8, 12
Low-Flight Expedient Planimetric Mapping (LLEXP)	1:3000 (1"=250')	Pavement replacement, resurfacing	1 mile or more	Spring or Fall	1.2'	None	920'	3 targets every 2700'	3, 4, 8, 12
Expedient Planimetric Mapping (EXP)	1:6000 (1"=500')	Pavement replacement, resurfacing	1 mile or more	Fall [c]	2.5'	None	1500'	3 targets every 5400'	3, 8, 12
Final DTM (FDTM)	1:3000 (1"=250')	Construction	1 mile or more	As Needed [d]	0.6'	0.3' - 0.5'	920'	3 targets every 2700'	5, 8, 12
Railroad Abandonment	1:12,000 (1"=1,000')	Railroad	Any	Spring or Fall [e]	1.25'	None	3000'	3 targets every 10800'	6, 8, 12
Static LiDAR	N/A	Small projects, short corridors, structures, intersections, roundabouts, match-in or fill in areas, utility lines	Less than 2 miles	Any [f]	0.04'-1.0'	0.04'-1.0'	150' - 250' radius from instrument	Min. 4 targets/scanner set-up	9, 11, 13
Mobile LiDAR	N/A	Hard surfaces, corridors, structures, utility lines, asset management	10 miles or more	Spring [f]	0.04'-1.0'	0.04'-1.0'	60' From outside edge of vehicle	2 targets every 500' to 1000' and before/after every overpass	9, 10, 14
Helicopter LiDAR	N/A	Any	1 mile or more	Spring [f]	0.08'-1.0'	0.08'-1.0'	690'	3 targets every 1800'	9, 10, 12
Fixed wing LiDAR	N/A	Any (supplement urban for C&G)	25 miles or more	Spring [f]	0.6'	0.3'	1340'	3 targets every 2700'	9, 10, 12
Georeferenced Imagery (GEOREF)	Varies	Wetlands, airports	Any	Any	Varies	None	Varies	N/A	3, 12
Oblique Aerial Imagery	None	Exhibits, award submittals	Any	Any	None	None	Varies	N/A	12

KEY TO NOTES:

- [a] Typical scale of photos; please contact [dotaerialmapping@dot.wi.gov](mailto:dotaerialmapping@dot.wi.gov) if a different scale is desired.
- [b] Season of capture is defined as follows:
  - Spring - After snow melts and before the trees leaf out. Sun angle > 30 degrees. Typical season is mid-March through early May.
  - Fall - After the leaves drop off the trees and before snowfall accumulates. Sun angle > 30 degrees. Typical season is early October through mid-November.
- [c] Fall is the preferred flying time for this product; please contact [dotaerialmapping@dot.wi.gov](mailto:dotaerialmapping@dot.wi.gov) if a different season is desired.
- [d] Will be flown any time the sun is higher than 30 degrees above the horizon and there is no significant snow or tree cover.
- [e] Aerial imagery must be acquired before rails have been removed and rails must be visible on the imagery (no overgrowth).
- [f] LiDAR data collected during any season; however, spring is preferred for areas with vegetation because the vegetation has been compressed by snow and the scanner can penetrate farther without leaves. LiDAR can be collected anytime when the main features to be collected are hard surface.
- [g] Where two values for vertical accuracy are listed, the first is the 90% confidence level and the second is the 95% confidence level. Where only one value or range of values is listed, it is the 95% confidence level. Where a range of values is listed, it represents different accuracies for different types of ground cover.
- [h] Values shown are for estimating purposes only.

KEY TO COMMENTS:

1. Most requested photogrammetric product.
2. Used when vertical information is needed over a wider area. Due to the greater flying height, positional accuracy is less than the 1:3000-scale product of a normal DTM.
3. No vertical information is provided; only horizontal data delivered.
4. Primarily used in urban areas, where more accurate horizontal data are required. This product requires more surveyed ground control versus normal expedient planimetric mapping.
5. DTM finals receive the highest priority for processing by the Photogrammetry Unit once imagery is captured.
6. Provides horizontal position of existing rails by providing a best fit of alignment.
7. Ortho imagery can only be created after the DTM is complete.
8. Collection width is left and right of flight line. A single flight line along a corridor is typical; however, parallel flights can be flown to increase the width of coverage for investigation of corridor re-alignment.
9. The accuracy is affected by the quantity and quality of the ground control and GPS data, as well as the type of ground cover. Best accuracy is achieved on hard surfaces such as structures and pavement. Lesser accuracy is achieved on vegetation.
10. Collection of multiple swaths increases the width of coverage as well as the accuracy of LiDAR data from mobile, helicopter and fixed wing modes. The stated width is the minimum for one swath.
11. To cover the desired area the static scanner is moved to multiple positions.
12. Access is unlimited.
13. Access is subject to landowner permission.
14. Access is limited to drive-able surface/railroad.