

Ground Control Report

Wisconsin WROC - 3DEP | Lafayette County Lidar 2019

1.1 Ground Control Design and Methodology

The ground control network and design used for the Lafayette County lidar acquisition was made up of calibration points, GPS base stations, NGS base stations, and independent check points from the vertical accuracy ground control survey. This report will focus on the lidar calibration points that were collected at 16 locations in and around the LaFayette County project area. The control points are used for QC checks and calibration of the raw point cloud and for additional vertical checks against the processed bare earth surface.

The ground control calibration survey was done in Wisconsin County Coordinate System-Lafayette County, NAD83 (2011), US survey feet; NAVD88 (Geoid 12B), US survey feet. The field work was conducted by Ayres surveyors. All field work was completed between April 20, 2019, and May 1, 2019.

Control Summary and Methodology

Control Summary

Horizontal Datum:	North American Datum of 1983, 2011 Adjustment – NAD83 (2011)
Vertical Datum:	North American Vertical Datum of 1988, 2012 Adjustment – NAVD88 Geoid 12B
Rectangular Coordinate System:	WISCRS Lafayette County
Used NGS Control?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
List any NGS control points used:	Mineral Point S GPS, Schullsburg GPS
Summary of control checks and calibration (if applicable):	See field notes for checks.
Survey Methods Used:	WISCORS Network through VRS connection was the origination of the control and checks used. GPS methods were used through VRS connection throughout the entire project.
Equipment Used:	Trimble TSC3 Data Collector – 74.11 76.11 Trimble R8-4 GNSS Rover using WISCORS VRS connection

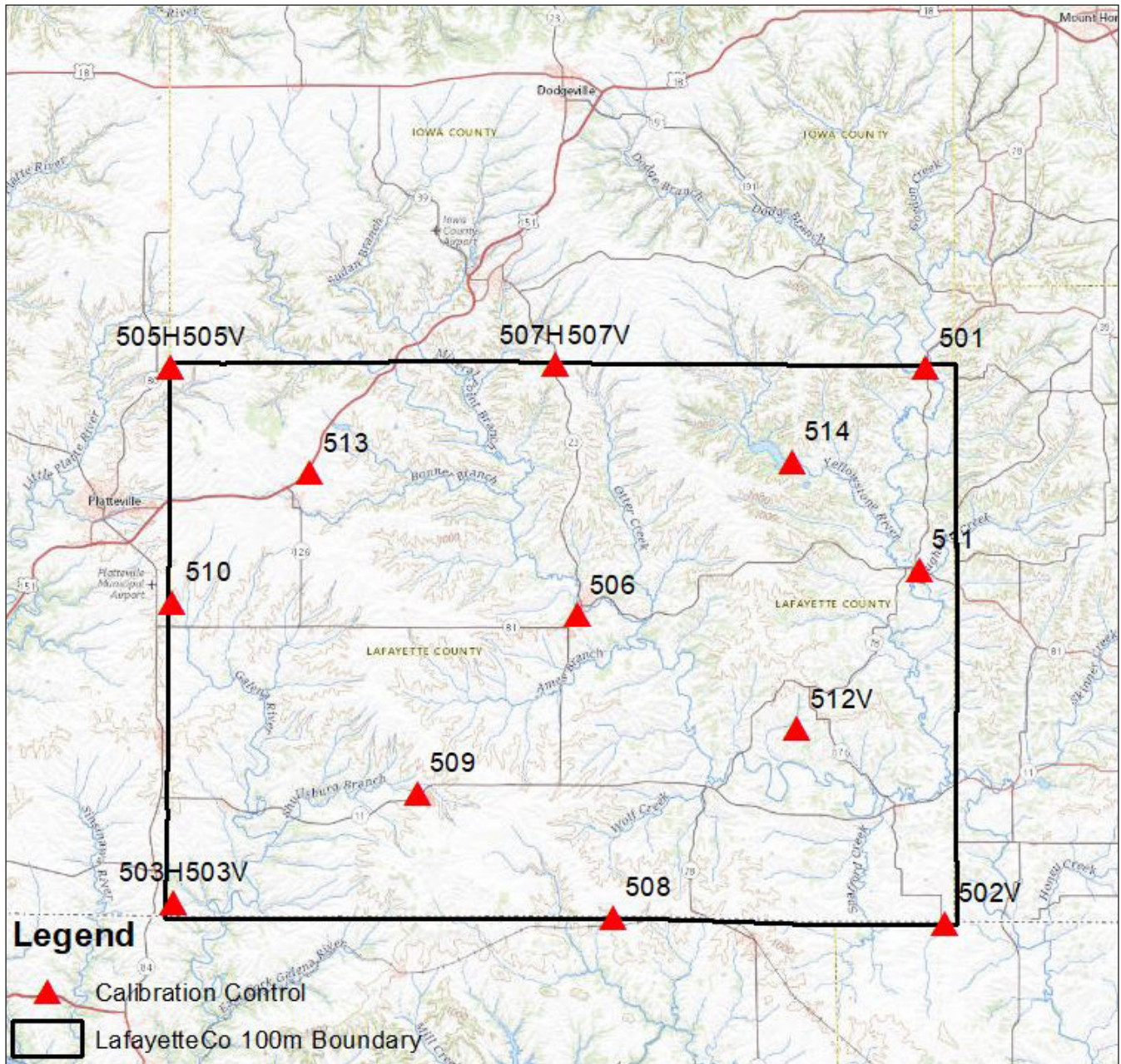
Crew Chief Notes

All aerial targets were measured using 2 - 180 Epoch averaged solutions.

1.1.2 Control Layout

The locations were selected around the outer geometry of the project boundary and on major roads within the project area. This layout design is preferred when the calibration points will be used to check different areas across a large flight block. The control survey was conducted with a Trimble R-8 GPS receiver and a VRS connection with a TSC3 data collector.

1.1.2.1 Map of Lafayette County Calibration Points



1.1.3 Lafayette County Lidar, Calibration Point Statistics

The final step in using the calibration points is to run a statistical comparison against the bare earth ground surface to confirm that the vertical accuracy is within specification. The follow results indicate that the overall RMSEz of the calibration points is 0.098'. This is a separate check as compared to the Vertical Accuracy Survey QA/QC report. These points are used in the calibration of the raw point cloud, and therefore are not an independent set of checkpoints like those used in the vertical accuracy testing.

1.1.3.1 Statistical Report for Calibration Points

NUMBER	EASTING	NORTHING	KNOWN Z	LASER Z	DZ
501	552635.637	214403.582	856.398	856.470	+0.072
502V	556538.098	102288.586	811.948	811.794	-0.154
503H	400862.532	106508.610	824.138	824.213	+0.075
503V	400855.457	106479.893	819.723	819.796	+0.073
505H	400240.335	214459.192	1083.155	1083.320	+0.165
505V	400212.099	214421.380	1086.339	1086.300	-0.039
506	482316.120	164484.469	824.211	824.200	-0.011
507H	477835.282	214909.972	1073.045	1073.093	+0.048
507V	477791.601	214930.057	1074.680	1074.595	-0.085
508	489452.639	103434.000	1016.441	1016.332	-0.109
509	450121.007	128592.653	925.136	924.975	-0.161
510	400734.614	167069.288	998.396	998.316	-0.080
511	551276.445	173548.686	858.570	858.676	+0.106
512V	526528.986	141438.079	946.298	946.188	-0.110
513	428487.654	193140.981	1094.682	1094.687	+0.005
514	525691.289	195427.293	865.743	865.648	-0.095
Average Dz		-0.019			
Minimum Dz		-0.161			
Maximum Dz		+0.165			
Average Magnitude		0.087			
Root Mean Square		0.098			
Std Deviation		0.100			

1.1.4 Field Notes

501-

Most westerly corner of
inlet cover @ Madison St./
Graceland St.
Ne. Across the street from
New Hope Lutheran Church
in Blanchardville.

505H-

Base of P.P. # 4-1-19 0/49
East side of Grant County line Rd.
Set # measured spike 2.00'
W/O P.P. # 4-1-19 0/49

502V-

Set p.k. nail opposite 1st
P.P. west of Box Culvert
@ base of Hill on state line
Rd. E/O CTH D

505V-

Set p.k. nail in E. Co. line Rd.
on extension of fence line to
the south west

503 H-

Base of P.P. # 1-1-81 14/31
Set # measured spike 1.55'
center of P.P. Base S/O

506-

Center of MH cover in E
Ravine St., ± 50' E/O Private Ent.
119

503X-

Set p.k. nail in E of
opposite P.P. # 1-1-81 14/31

507 H-

Base of stop sign SW quad
STH 23 / Ivy Rd.

Set # measured spike 2.00' N/O
center of stop sign base

1.1.4 Field Notes (Continued)

507 V -

P.K. nail @ E Ivy Rd
 @ change in pavement color
 ±80' W/O E STH 23

511 - 1

Northeast Cor. of Inlet
 in SE Quad. N. Lafayette St./
 E. Milwaukee St.

508 -

Set p.K. in center of fog line
 @ joint in pavement west side of
 road. Location is at state line
 in Apple River, IL.

512V-

Set p.K. nail in E West
 Church Rd. opposite P.P. in
 NW Quad. West Church Rd/
 South Rd.

509 -

Center of MH Cover in CTHO
 @ Entrance to Schullsburg
 Wastewater Treatment Facility
 @ 780 W. Water St.

513 -

Set a p.K. nail in flagline
 @ North end of curb line
 North Quad. Cottage Inn Rd/
 Cottage Inn Trail

510 -

Center Drive
 North side of ~~IPSWITCH~~ Rd.
 @ Intersection with East edge
 of paved private Ent. # 30882

514

Set a p.K. nail @ intersection
 of parking stall striping
 SW corner of parking stalls
 N. side of Park Rd @
 Yellowstone Dairy Restaurant
 "Yellowstone Lake State Park"

1.1.5 Field Photos



Point 501



Point 502V



Point 503H



Point 503V



Point 505H



Point 505V

1.1.5 Field Photos (Continued)



Point 506



Point 507H



Point 507V



Point 508



Point 509



Point 510

1.1.5 Field Photos (Continued)



Point 511



Point 512V



Point 513



Point 514