

# Surveyor's Report

Project: WIL-127-15.09

PID: 114748



Scope: •Replace existing slab top culvert located at WIL-127-15.09, near West Unity corp. limit

Type: Culvert

Gray boxes denote *INPUT*

Tan boxes denote *OUTPUT* (check)

## Datum and Coordinate System

Coordinate System:	OHDOT Williams (County Coordinate System)
Horizontal Reference Datum:	NAD83 (2011)
Ellipsoid:	GRS1980
Grid to Ground Multiplier (1/CSF):	1.00000000 Factor is 8 Does not apply
Origin of Combined Scale Factor:	(0,0) Does not apply
Vertical Reference Datum:	NAVD88
Geoid Model:	Geoid 18
Units:	US Survey Feet (sft)
Original Survey Subdivision:	Congress Lands North and East of the First Principal Meridian
Township:	Brady Township
Quarter Section/Section/Lot:	NE & SE 1/4 of Section 5, Twp 7-N, Range 4-E

## Files

24SU029_Control-Mod.txt	SJCA Control & Benchmarks
24SU029_LCRS_RMF-Mod.txt	Property Pins, centerline monuments, etc
24SU029_TOPO_AG-Mod.txt	Topographic Features
24SU029.DAT	Digital Level Loop

## Description

## References

Alignment based on the following plan: WIL-127-14.52 (1928)

Other references used:

WIL-127-14.85 (1907)

## Equipment Maintenance

Equipment maintenance logs are on file at the Ohio Department of Transportation, Central Office

# Methodology and Equipment Used

This survey was made from an actual field survey performed in June, 2024. The basemap was prepared in accordance with the Ohio Administrative Code Chapter 4733-37 Standards for Boundary Surveys.

## GPS Antenna Used

Trimble R10 GPS (#5248418464)

Trimble R12i (#612F00968 & #612F00969)

Data Collector (#DAD212700657 & DAD222200039)

Trimble DINI (#773247)

Trimble S6 (#93112439)

Report Submitted/Prepared by: Nathan Patronsky

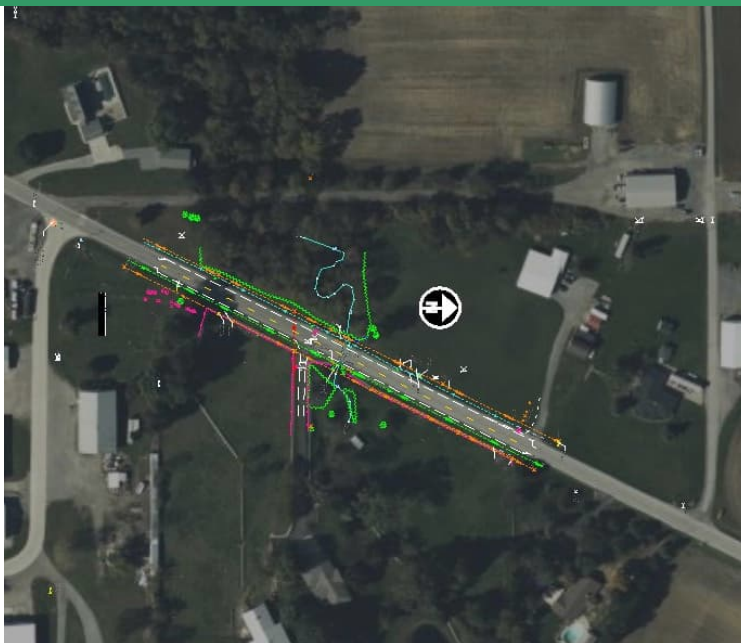
Date Submitted: 7/10/2024

Surveying Performed by: Robert Fitzwater

Surveying Performed by: Andrew Goldman

Checked By: Brian Critchlow, Robert Bosworth

## DGN Overview Map



First	Last	Address	City	State	Zip Code	Deed Book/Page	Auditor Parcel Number	Area	Section	Lot	Tax Map Parcel
Thomas J. & Shirley A.	Taylor ETAL J/S	12484 US Hwy 127	West Unity	OH	43570		074-050-01-004.000	4.550	5		
Thomas J. & Shirley A.	Taylor ETAL J/S	US Hwy 127 (see above)					074-050-01-005.000	7.710	5		
Cemetery (Rings)		US Hwy 127	West Unity	OH	43570		074-050-01-006.001	0.450	5		
Clark Farms		US Hwy 127					074-050-02-056.000	1.180	5		
Clark Farms, Inc.		14457 US Hwy 127					074-050-02-001.000	33.300	5		
Clark Farm		Site: 12505 US Hwy 127					074-050-02-002.000	77.630	5		
Thomas L.	Holsopple ETAL	12525 US Hwy 127	West Unity	OH	43570		074-050-02-057.000	3.330	5		
Todd J. & Angela K.	Roth	700 N. Liberty	West Unity	OH	43570		074-050-01-003.000	1.680	5		

# VRS GNSS Project Control Monument Coordinate Analysis

Project: <b>WIL-127-15.09</b>		GPS Antenna: <b>Trimble R10 GPS (#5248418464)</b>		Report Date: <b>7/10/2024</b>	
PID: <b>114748</b>		VRS Network: <b>ODOT VRS</b>		Prepared By: <b>Nathan Patronskey</b>	
Point ID: <b>103</b>	No. of Sessions: <b>16</b>	(GROUND)			
Checked By: <b>an Critchlow, Robert Bosworth</b>					

SESSION #	Point	Observation Date	Start Time	Northing(sft)	Easting(sft)	Height(sft)	Δ Northing(sft)	Δ Easting(sft)	Δ Height(sft)	Include in Solution?
1	103	0:00:00	12:00:00 AM	362044.51140	197153.21110	793.36200	0.00000	0.00000	0.00000	<input type="checkbox"/>
2	103	0:00:00	12:00:00 AM	362044.48250	197153.16700	793.25000	-0.03671	-0.00042	-0.04670	<input checked="" type="checkbox"/>
3	103	0:00:00	12:00:00 AM	362044.47740	197153.18530	793.17600	-0.03161	-0.01872	0.02730	<input checked="" type="checkbox"/>
4	103	0:00:00	12:00:00 AM	362044.47430	197153.20270	793.20600	-0.02851	-0.03612	-0.00270	<input checked="" type="checkbox"/>
5	103	0:00:00	12:00:00 AM	362044.38790	197153.13030	793.57000	0.00000	0.00000	0.00000	<input type="checkbox"/>
6	103	0:00:00	12:00:00 AM	362044.35860	197153.10170	793.49300	0.00000	0.00000	0.00000	<input type="checkbox"/>
7	103	0:00:00	12:00:00 AM	362044.35080	197153.09280	793.48900	0.00000	0.00000	0.00000	<input type="checkbox"/>
8	103	0:00:00	12:00:00 AM	362044.34550	197153.11420	793.28400	0.00000	0.00000	0.00000	<input type="checkbox"/>
9	103	0:00:00	12:00:00 AM	362044.41550	197153.12280	793.21000	0.03029	0.04378	-0.00670	<input checked="" type="checkbox"/>
10	103	0:00:00	12:00:00 AM	362044.44860	197153.13240	793.21400	-0.00281	0.03418	-0.01070	<input checked="" type="checkbox"/>
11	103	0:00:00	12:00:00 AM	362044.45850	197153.18050	793.20700	-0.01271	-0.01392	-0.00370	<input checked="" type="checkbox"/>
12	103	0:00:00	12:00:00 AM	362044.45320	197153.16670	793.21800	-0.00741	-0.00012	-0.01470	<input checked="" type="checkbox"/>
13	103	0:00:00	12:00:00 AM	362044.42960	197153.17840	793.16900	0.01619	-0.01182	0.03430	<input checked="" type="checkbox"/>
14	103	0:00:00	12:00:00 AM	362044.41290	197153.17570	793.15600	0.03289	-0.00912	0.04730	<input checked="" type="checkbox"/>
15	103	0:00:00	12:00:00 AM	362044.40540	197153.15430	793.22700	0.04039	0.01228	-0.02370	<input checked="" type="checkbox"/>

<b>AVERAGE</b>	<b>362044.44579</b>	<b>197153.16658</b>	<b>793.20330</b>	<b>RMSE:</b>	<b>RMSE:</b>	<b>RMSE:</b>
				RMSE IN U.S. Survey FT:	<b>0.02698</b>	<b>0.02304</b>
				Tolerance:	<b>0.02900</b>	<b>0.03900</b>
				<b>PASS</b>	<b>PASS</b>	<b>PASS</b>

AVERAGED GPS-DERIVED POSITION			
MONUMENT COORDINATES	NORTHING	EASTING	ORTHO HEIGHT
U.S. Survey FT (GROUND)	<b>362044.4458</b>	<b>197153.1666</b>	<b>793.203</b>

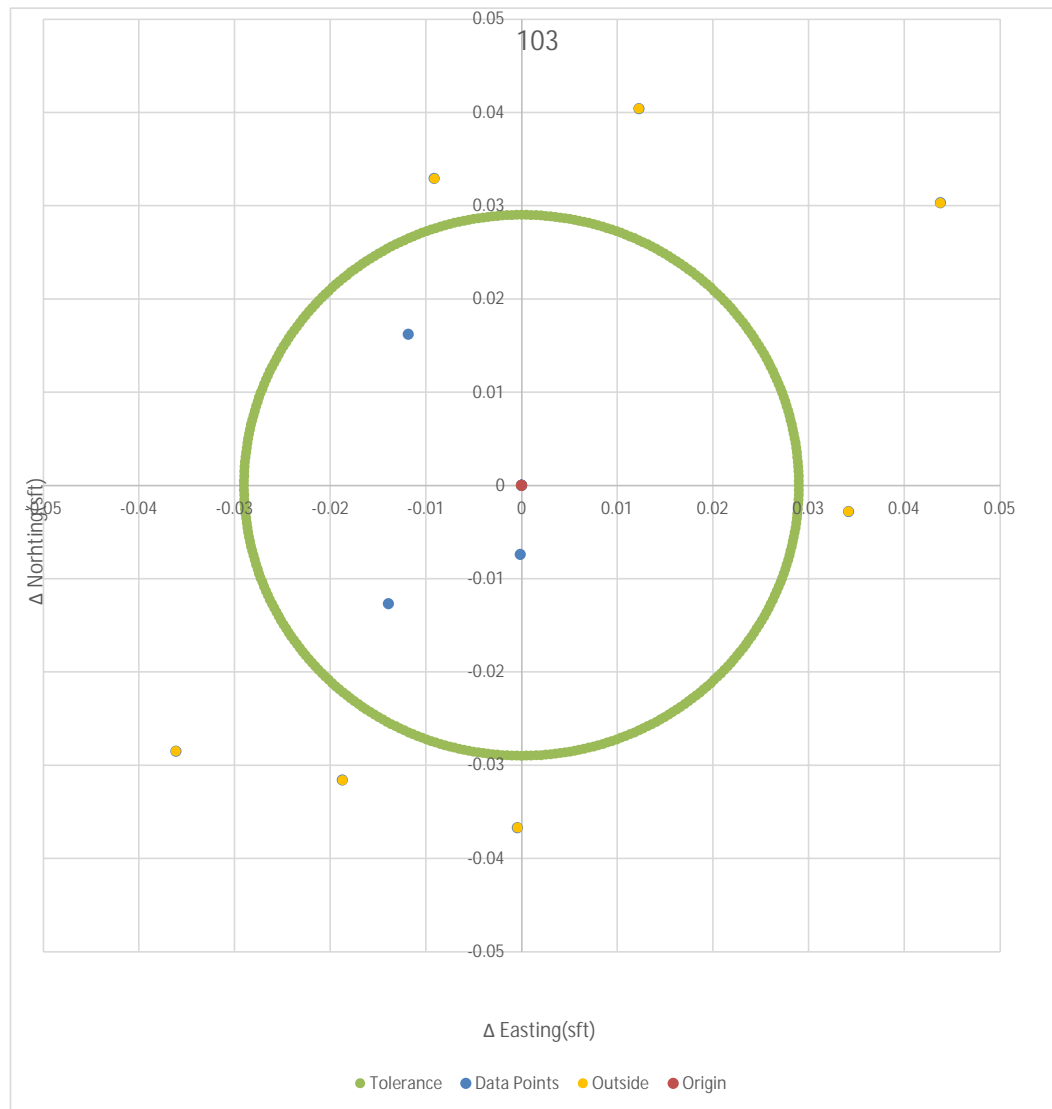
LEVELED ELEVATION	
U.S. Survey FT	N/A (Fill out Level Run Sheet or N/A if no leveled elevation is available)
MONUMENT HELD	(Type the monument name from which leveling originated)
LEVELED ELEVATION - GPS DERIVED ELEVATION =	N/A sft

FINAL MONUMENT COORDINATES				
MONUMENT COORDINATES	NORTHING	EASTING	ELEVATION	FEATURE CODE
U.S. Survey FT (GRID)	<b>362044.4458</b>	<b>197153.1666</b>	<b>793.203</b>	<b>IPIN</b>
U.S. Survey FT (GROUND)	<b>362044.4458</b>	<b>197153.1666</b>	<b>793.203</b>	<b>IPIN</b>

Notes:

Δ North, Δ East, and Δ Ht. are the difference between the average northing, easting, and height for each observation.

Mask Angle: **10°**



# VRS GNSS Project Control Monument Coordinate Analysis

Project: <b>WIL-127-15.09</b>		GPS Antenna: <b>Trimble R10 GPS (#5248418464)</b>		Report Date: <b>7/10/2024</b>	
PID: <b>114748</b>		VRS Network: <b>ODOT VRS</b>		Prepared By: <b>Nathan Patronskey</b>	
Point ID: <b>104</b>	No. of Sessions: <b>17</b>	(GROUND)			
Checked By: <b>an Critchlow, Robert Bosworth</b>					

SESSION #	Point	Observation Date	Start Time	Northing(sft)	Easting(sft)	Height(sft)	Δ Northing(sft)	Δ Easting(sft)	Δ Height(sft)	Include in Solution?
1	104	0:00:00	12:00:00 AM	362436.32500	197288.24320	783.70900	-0.01262	0.00890	-0.00175	<input checked="" type="checkbox"/>
2	104	0:00:00	12:00:00 AM	362436.31480	197288.24240	783.68300	-0.00242	0.00970	0.02425	<input checked="" type="checkbox"/>
3	104	0:00:00	12:00:00 AM	362436.32990	197288.25150	783.68900	-0.01752	0.00060	0.01825	<input checked="" type="checkbox"/>
4	104	0:00:00	12:00:00 AM	362436.36560	197288.27140	783.80200	0.00000	0.00000	0.00000	<input type="checkbox"/>
5	104	0:00:00	12:00:00 AM	362436.34670	197288.26380	783.77300	0.00000	0.00000	0.00000	<input type="checkbox"/>
6	104	0:00:00	12:00:00 AM	362436.32660	197288.25380	783.73500	-0.01422	-0.00170	-0.02775	<input checked="" type="checkbox"/>
7	104	0:00:00	12:00:00 AM	362436.32640	197288.27710	783.78800	0.00000	0.00000	0.00000	<input type="checkbox"/>
8	104	0:00:00	12:00:00 AM	362436.33290	197288.26900	783.79200	0.00000	0.00000	0.00000	<input type="checkbox"/>
9	104	0:00:00	12:00:00 AM	362436.31050	197288.24590	783.74700	0.00188	0.00620	-0.03975	<input checked="" type="checkbox"/>
10	104	0:00:00	12:00:00 AM	362436.30540	197288.25290	783.73600	0.00698	-0.00080	-0.02875	<input checked="" type="checkbox"/>
11	104	0:00:00	12:00:00 AM	362436.29300	197288.26100	783.72200	0.01938	-0.00890	-0.01475	<input checked="" type="checkbox"/>
12	104	0:00:00	12:00:00 AM	362436.26430	197288.29430	783.66700	0.00000	0.00000	0.00000	<input type="checkbox"/>
13	104	0:00:00	12:00:00 AM	362436.28320	197288.28350	783.67900	0.00000	0.00000	0.00000	<input type="checkbox"/>
14	104	0:00:00	12:00:00 AM	362436.29380	197288.26610	783.63700	0.01858	-0.01400	0.07025	<input checked="" type="checkbox"/>
15	104	0:00:00	12:00:00 AM	362436.30290	197288.27270	783.62700	0.00000	0.00000	0.00000	<input type="checkbox"/>

<b>AVERAGE</b>	<b>362436.31238</b>	<b>197288.25210</b>	<b>783.70725</b>	<b>RMSE:</b>	<b>RMSE:</b>	<b>RMSE:</b>
				RMSE IN U.S. Survey FT:	<b>0.01345</b>	<b>0.00783</b>
				Tolerance:	<b>0.02900</b>	<b>0.03900</b>
				<b>PASS</b>	<b>PASS</b>	<b>PASS</b>

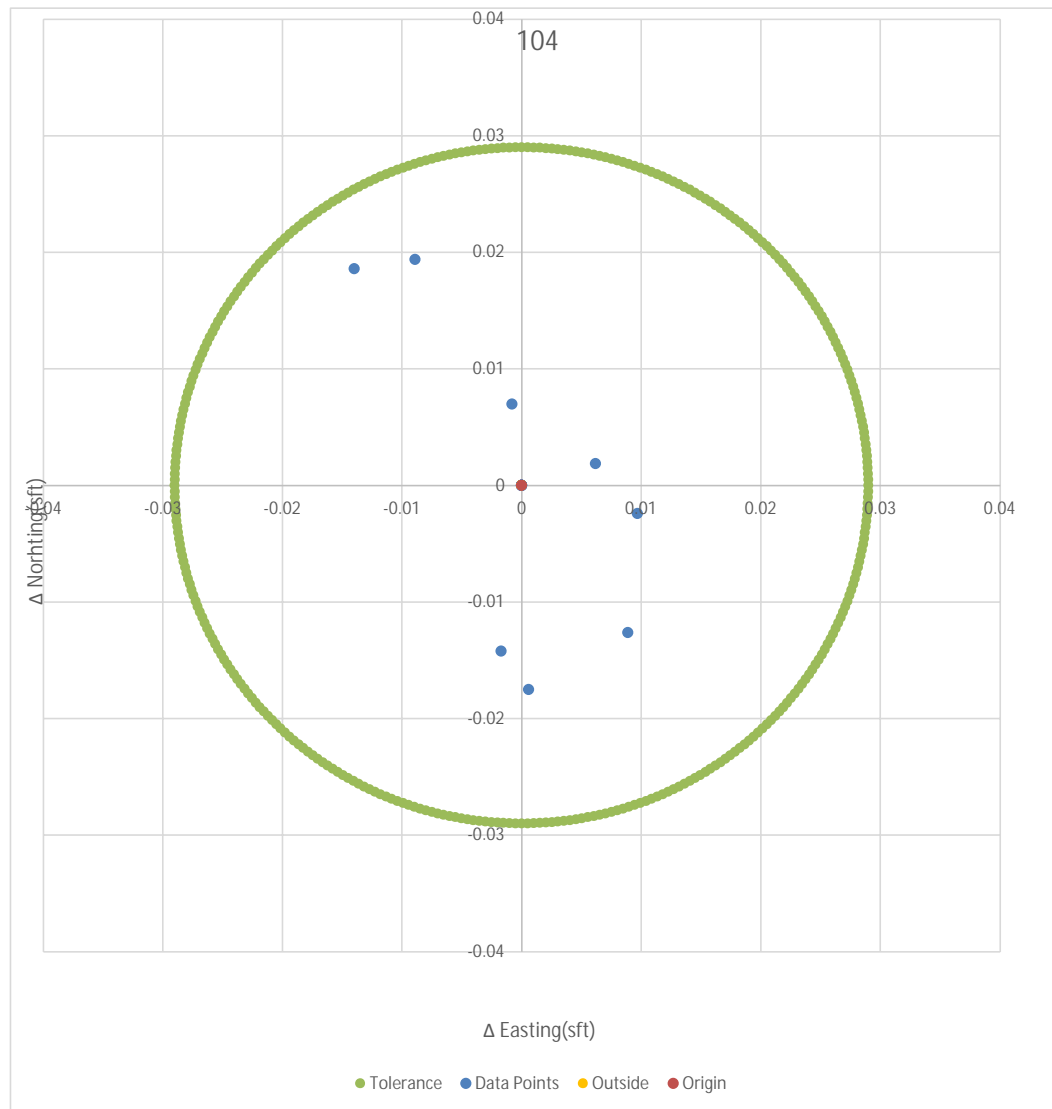
AVERAGED GPS-DERIVED POSITION			
MONUMENT COORDINATES	NORTHING	EASTING	ORTHO HEIGHT
U.S. Survey FT (GROUND)	362436.3124	197288.2521	783.707

LEVELED ELEVATION	
U.S. Survey FT	N/A (Fill out Level Run Sheet or N/A if no leveled elevation is available)
MONUMENT HELD	(Type the monument name from which leveling originated)
LEVELED ELEVATION - GPS DERIVED ELEVATION =	N/A sft

FINAL MONUMENT COORDINATES				
MONUMENT COORDINATES	NORTHING	EASTING	ELEVATION	FEATURE CODE
U.S. Survey FT (GRID)	362436.3124	197288.2521	783.707	IPIN
U.S. Survey FT (GROUND)	362436.3124	197288.2521	783.707	IPIN

Mask Angle: **10°**

Δ North, Δ East, and Δ Ht. are the difference between the average northing, easting, and height for each observation.



# VRS GNSS Project Control Monument Coordinate Analysis

Project: <b>WIL-127-15.09</b>		GPS Antenna: <b>Trimble R10 GPS (#5248418464)</b>		Report Date: <b>7/10/2024</b>	
PID: <b>114748</b>		VRS Network: <b>ODOT VRS</b>		Prepared By: <b>Nathan Patrosky</b>	
Point ID: <b>105</b>	No. of Sessions: <b>16</b>	(GROUND)			
Checked By: <b>an Critchlow, Robert Bosworth</b>					

SESSION #	Point	Observation Date	Start Time	Northing(sft)	Easting(sft)	Height(sft)	Δ Northing(sft)	Δ Easting(sft)	Δ Height(sft)	Include in Solution?
1	105	0:00:00	12:00:00 AM	362562.89180	197417.43220	782.10800	0.00000	0.00000	0.00000	<input type="checkbox"/>
2	105	0:00:00	12:00:00 AM	362562.85940	197417.42980	782.13500	0.00000	0.00000	0.00000	<input type="checkbox"/>
3	105	0:00:00	12:00:00 AM	362562.85680	197417.41800	782.12200	0.00000	0.00000	0.00000	<input type="checkbox"/>
4	105	0:00:00	12:00:00 AM	362562.85420	197417.41900	782.12500	0.00000	0.00000	0.00000	<input type="checkbox"/>
5	105	0:00:00	12:00:00 AM	362562.90190	197417.42550	782.15800	0.00000	0.00000	0.00000	<input type="checkbox"/>
6	105	0:00:00	12:00:00 AM	362562.91330	197417.41870	782.18600	0.05577	-0.02136	0.04090	<input checked="" type="checkbox"/>
7	105	0:00:00	12:00:00 AM	362562.96270	197417.38880	782.25100	0.00637	0.00854	-0.02410	<input checked="" type="checkbox"/>
8	105	0:00:00	12:00:00 AM	362562.97980	197417.38820	782.24200	-0.01073	0.00914	-0.01510	<input checked="" type="checkbox"/>
9	105	0:00:00	12:00:00 AM	362562.98020	197417.36800	782.23000	-0.01113	0.02934	-0.00310	<input checked="" type="checkbox"/>
10	105	0:00:00	12:00:00 AM	362562.99810	197417.38000	782.23500	-0.02903	0.01734	-0.00810	<input checked="" type="checkbox"/>
11	105	0:00:00	12:00:00 AM	362562.98220	197417.39210	782.23900	-0.01313	0.00524	-0.01210	<input checked="" type="checkbox"/>
12	105	0:00:00	12:00:00 AM	362562.97040	197417.39160	782.25000	-0.00133	0.00574	-0.02310	<input checked="" type="checkbox"/>
13	105	0:00:00	12:00:00 AM	362562.96770	197417.39940	782.22300	0.00137	-0.00206	0.00390	<input checked="" type="checkbox"/>
14	105	0:00:00	12:00:00 AM	362562.97030	197417.41820	782.20300	-0.00123	-0.02086	0.02390	<input checked="" type="checkbox"/>
15	105	0:00:00	12:00:00 AM	362562.96600	197417.42840	782.21000	0.00307	-0.03106	0.01690	<input checked="" type="checkbox"/>

<b>AVERAGE</b>		<b>362562.96907</b>	<b>197417.39734</b>	<b>782.22690</b>	<b>RMSE:</b>	<b>RMSE:</b>	<b>RMSE:</b>
		RMSE IN U.S. Survey FT:		<b>0.02102</b>	<b>0.01800</b>	<b>0.02027</b>	
		Tolerance:		<b>0.02900</b>	<b>0.03900</b>		
		<b>PASS</b>		<b>PASS</b>	<b>PASS</b>		

AVERAGED GPS-DERIVED POSITION			
MONUMENT COORDINATES	NORTHING	EASTING	ORTHO HEIGHT
U.S. Survey FT (GROUND)	<b>362562.9691</b>	<b>197417.3973</b>	<b>782.227</b>

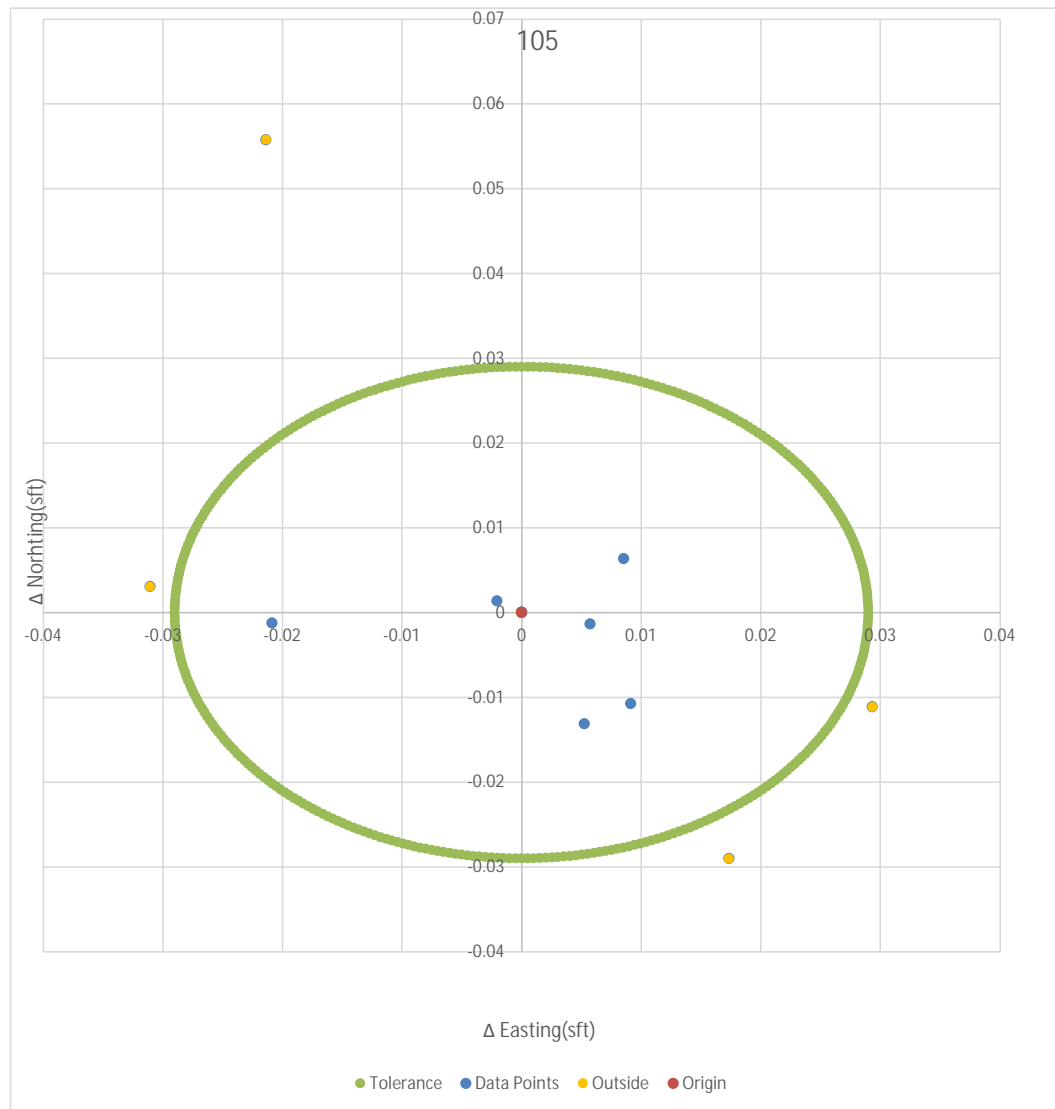
LEVELED ELEVATION	
U.S. Survey FT	N/A (Fill out Level Run Sheet or N/A if no leveled elevation is available)
MONUMENT HELD	(Type the monument name from which leveling originated)
LEVELED ELEVATION - GPS DERIVED ELEVATION	= N/A sft

FINAL MONUMENT COORDINATES				
MONUMENT COORDINATES	NORTHING	EASTING	ELEVATION	FEATURE CODE
U.S. Survey FT (GRID)	<b>362562.9691</b>	<b>197417.3973</b>	<b>782.227</b>	<b>IPIN</b>
U.S. Survey FT (GROUND)	<b>362562.9691</b>	<b>197417.3973</b>	<b>782.227</b>	<b>IPIN</b>

Mask Angle: **10°**

Δ North, Δ East, and Δ Ht. are the difference between the average northing, easting, and height for each observation.





# WIL-127-15.09

Project File Data	Coordinate System
Name:	Default
Size:	Default
Modified:	Datum: WGS 1984
Time zone:	Global reference datum: WGS 1984
Reference number:	Global reference epoch:
Description:	Geoid:
Comment 1:	Vertical datum:
Comment 2:	Calibrated site:
Comment 3:	

## Level Report

Imported file: [24SU029Z.DAT](#)

Instrument: DiNi

Creation option: Delta elevations

Description usage: Ignored

### Run - 1 Raw Observations

Standard error per kilometer of double leveling: 0.00230 ft

Standard error per turn/station setup: 0.00000 ft

Raw Misclosure: 0.01100 ft

Σ BS Distances: 1112.310 ft

Σ FS Distances: 943.930 ft

Run Length: 2056.240 ft

Reduction: Adjusted Values

Create	Point ID	BS	HI	IS	FS	Δ Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
<input checked="" type="checkbox"/>	104	<input checked="" type="checkbox"/> 7.54200 ft	791.24900 ft			0.00000 ft	783.70700 ft	0.00000 ft	783.70700 ft	Benchmark	137.140 ft	3/4" REBAR W/ CONTROL CAP
<input checked="" type="checkbox"/>	11				<input checked="" type="checkbox"/> 5.04700 ft	2.49500 ft	786.20200 ft	-0.00140 ft	786.20060 ft	Computed	124.150 ft	TBM#11
	11	<input checked="" type="checkbox"/> 5.00400 ft	791.20600 ft								124.020 ft	TBM#11
<input checked="" type="checkbox"/>	12				<input checked="" type="checkbox"/> 5.17900 ft	-0.17500 ft	786.02700 ft	-0.00283 ft	786.02417 ft	Computed	143.110 ft	TBM#12
	12	<input checked="" type="checkbox"/> 5.15100 ft	791.17800 ft								143.240 ft	TBM#12
<input checked="" type="checkbox"/>	102				<input checked="" type="checkbox"/> 6.78700 ft	-1.63600 ft	784.39100 ft	-0.00388 ft	784.38712 ft	Computed	54.100 ft	5/8" REBAR W/ CONTROL CAP
	102	<input checked="" type="checkbox"/> 6.81500 ft	791.20600 ft								53.840 ft	5/8" REBAR W/ CONTROL CAP

✓	105			✓ 8.95600 ft	-2.14100 ft	782.25000 ft	-0.00447 ft	782.24553 ft	Computed	56.530 ft	3/4" REBAR W/ CONTROL CAP
	105	✓ 10.70000 ft	792.95000 ft							319.780 ft	3/4" REBAR W/ CONTROL CAP
✓	10			✓ 2.09900 ft	8.60100 ft	790.85100 ft	-0.00741 ft	790.84359 ft	Computed	230.020 ft	TBM#10
	10	✓ 7.60200 ft	798.45300 ft							56.560 ft	TBM#10
✓	100			✓ 4.86900 ft	2.73300 ft	793.58400 ft	-0.00803 ft	793.57597 ft	Computed	59.420 ft	5/8" REBAR W/ CONTROL CAP
	100	✓ 4.90000 ft	798.48400 ft							59.320 ft	5/8" REBAR W/ CONTROL CAP
✓	103			✓ 5.25500 ft	-0.35500 ft	793.22900 ft	-0.00862 ft	793.22038 ft	Computed	50.160 ft	3/4" REBAR W/ CONTROL CAP
	103	✓ 1.01000 ft	794.23900 ft							218.410 ft	3/4" REBAR W/ CONTROL CAP
	104			✓ 10.52100 ft	-9.51100 ft	783.71800 ft	-0.01100 ft	783.70700 ft	Benchmark	226.440 ft	3/4" REBAR W/ CONTROL CAP

### Run - 1 (N2) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
104-11 (E9)	Enabled	2.49500 ft	-0.00140 ft	2.49360 ft	1	261.290 ft	7.54200 ft	5.04700 ft	0.00065 ft
11-12 (E10)	Enabled	-0.17500 ft	-0.00143 ft	-0.17643 ft	1	267.130 ft	5.00400 ft	5.17900 ft	0.00066 ft
12-102 (E11)	Enabled	-1.63600 ft	-0.00106 ft	-1.63706 ft	1	197.340 ft	5.15100 ft	6.78700 ft	0.00056 ft
102-105 (E12)	Enabled	-2.14100 ft	-0.00059 ft	-2.14159 ft	1	110.370 ft	6.81500 ft	8.95600 ft	0.00042 ft
105-10 (E13)	Enabled	8.60100 ft	-0.00294 ft	8.59806 ft	1	549.800 ft	10.70000 ft	2.09900 ft	0.00094 ft
10-100 (E14)	Enabled	2.73300 ft	-0.00062 ft	2.73238 ft	1	115.980 ft	7.60200 ft	4.86900 ft	0.00043 ft
100-103 (E15)	Enabled	-0.35500 ft	-0.00059 ft	-0.35559 ft	1	109.480 ft	4.90000 ft	5.25500 ft	0.00042 ft
103-104 (E16)	Enabled	-9.51100 ft	-0.00238 ft	-9.51338 ft	1	444.850 ft	1.01000 ft	10.52100 ft	0.00085 ft

### Run - 1 (N2) Reduced Coordinates

Point ID	Status	Elevation
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 104	Enabled	783.70700 ft
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Date: 7/9/2024 9:08:55 AM	Project:	Trimble Business Center
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