Building Footprint Data Collection

May 21, 2002

Objective

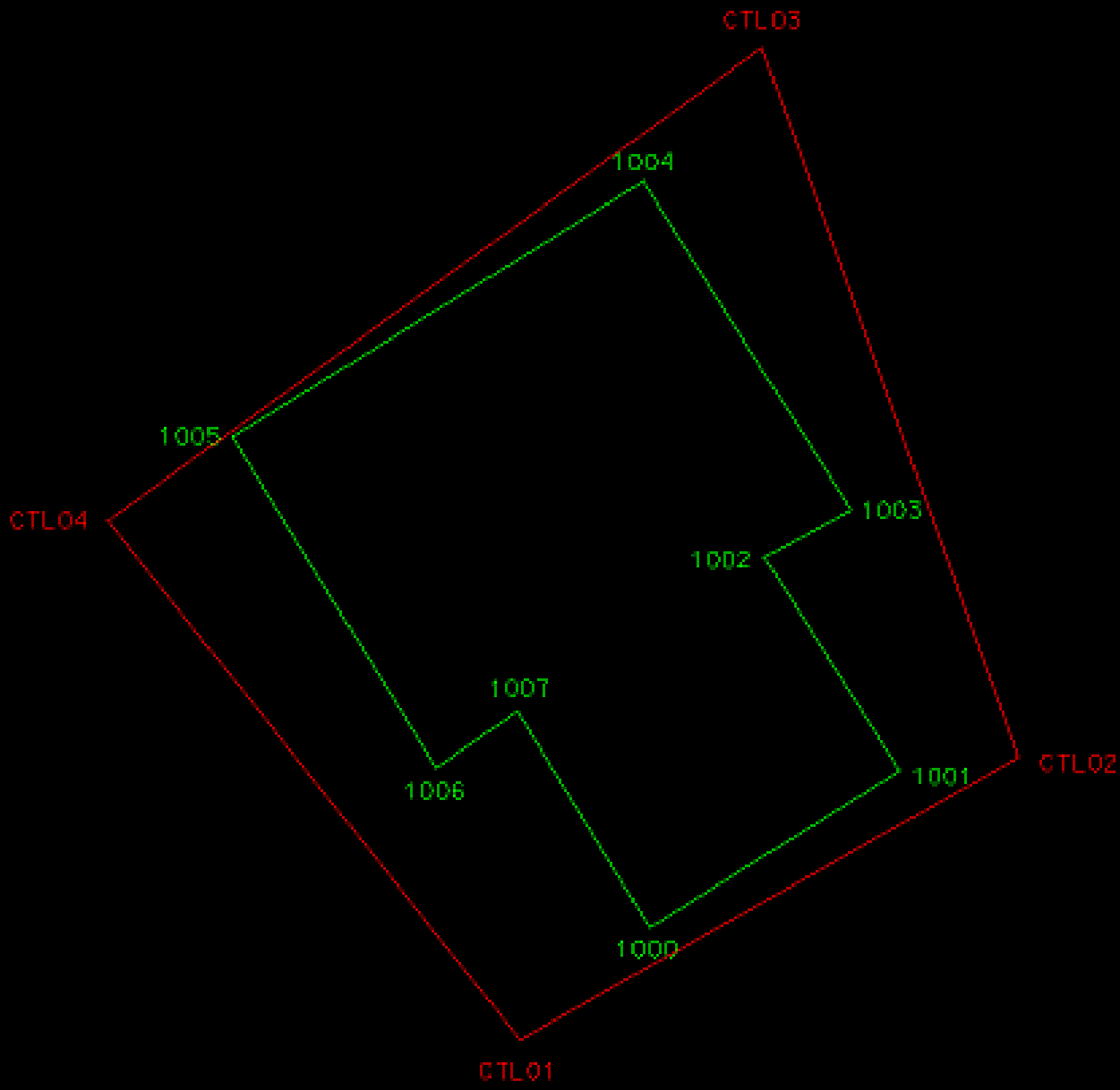
- Determine the level of repeatability achievable with GPS+DISTO vs. Leica TC2002 Total Station
- Time Management
- Understand DISTO hardware/software interaction with Leica GPS system

Procedure

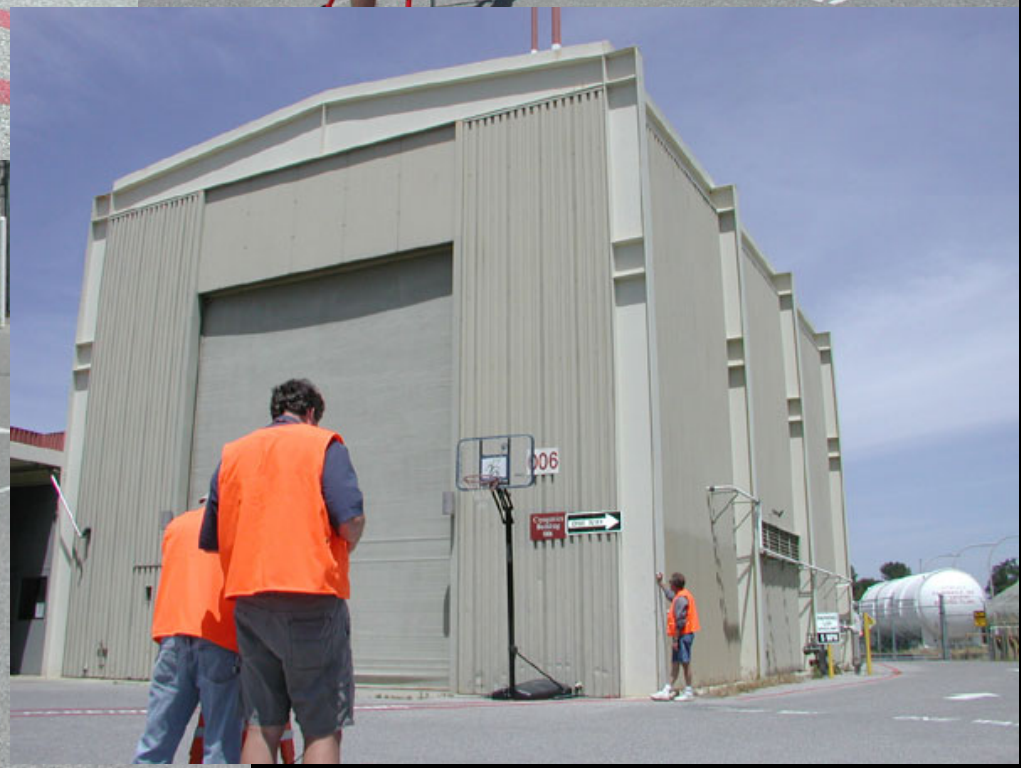
- Measure and record building footprint of Building 006 using GPS+DISTO with bi-pod (x 2)
- Set and record temporary control points for Leica TC2002
- Measure and record building footprint of Building 006 using Leica TC2002

Results

- 8 Building Corners (6 outside, 2 inside)
- 4 Temporary Control Points
  - One in each quadrant
- 2 Independent GPS Session
  - <10m double distance offsets
- 1 T2002 Session
  - 0.75 inch Prism Offset


CTL03
1004
1005
CTL04
1003
1002
1007
1001
CTL02
1006
1000
CTL01


006
ONE WAY
ONE WAY


006

GPS Session 1 vs. GPS Session 2

STATION	ΔN (m)	ΔE (m)	Lin. Err.
1000	-0.006	0.019	0.020
1001	0.007	-0.014	0.016
1002	*-0.052*	-0.020	*0.056*
1003	-0.004	-0.006	0.007
1004	0.003	-0.004	0.005
1005	0.012	-0.013	0.018
1006	-0.016	-0.022	0.027
1007	-0.031	*0.032*	0.044

Control Session 1 vs. Session 2

STA	**ΔE(m)**	**ΔN(m)**	**ΔH(m)**	Lin Err	3D LE
CTL01	*-0.013*	0.010	0.003	0.016	0.016
CTL02	-0.005	-0.004	-0.005	0.006	0.008
CTL03	-0.003	0.001	-0.002	0.004	0.004
CTL04	-0.010	*0.022*	*-0.049*	*0.024*	*0.055*

T2002 vs. GPS Session 1

STATION	ΔN (m)	ΔE (m)	Lin. Err.
1000	-0.021	-0.024	0.032
1001	-0.012	-0.021	0.016
1002	*0.072*	0.032	*0.076*
1003	0.015	0.010	0.022
1004	0.015	-0.012	0.017
1005	0.003	0.016	0.039
1006	0.001	0.027	0.012
1007	0.007	*0.072*	0.032

T2002 vs. GPS Session 2

STATION	ΔN (m)	ΔE (m)	Lin. Err.
1000	-0.027	-0.005	0.027
1001	-0.005	-0.004	0.006
1002	0.020	0.007	0.021
1003	0.012	0.010	0.015
1004	0.018	0.004	0.019
1005	0.016	*-0.052*	*0.054*
1006	-0.015	-0.034	0.037
1007	*-0.023*	0.000	0.023

Conclusion

- Acceptable repeatability between TC2002 and GPS with DISTO.
- GPS Data Collection is twice as fast as TC2002.
- *Hidden Points* can be collected in Survey or GIS Data Collection.