Survey Report

Control Survey
City of College Station
2010

Submitted to:

City of College Station
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CDS/MS Project No.: 109158
May 2010

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Section

1

Project Overview

Preliminary project discussions began in April 2009, concerning what steps the City of College Station (COCS or City) community should take to update the existing geodetic control monuments previously established in 1994 to the latest datum's and to densify the network in areas where numerous stations have been destroyed. This improved system would supply local entities with updated control values for importing data to the existing GIS system and reference the vertical datum to the proposed FEMA flood maps currently being produced by others. It was stated in the roundtable discussion held in the College Station Conference Center April 28, 2009 that the new FEMA's consultant was utilizing an existing contour map, supplied by the City, generated by a past aerial mapping project in 2005.

Brazos County and its surrounding counties currently have no published adjusted North American Vertical Datum of 1988 (NAVD88) leveled benchmarks. The listed NAVD88 heights for all the NGS benchmarks are derived from applying the VERTCON shift value to the NGVD29 heights listed in the NGS superseded survey control values. These NAVD88 elevations are posted to only the closest tenth of a foot (+/- 2cm).

The 2005 project was controlled using the original control established in 1994 by George W. Muery Services. The datum used was Texas State Plane Coordinates Texas Central Zone (4203) NAD83 1986 (NAD83 (86)) horizontal adjustment values and vertical datum of National Geodetic Vertical Datum of 1929 adjustment (NGVD29).

The roundtable discussions resulted in the City contracting with CDS/Muery Services to construct eleven new deep rod monuments, perform a static GPS survey based on the Texas State Plane Coordinate System Texas Central Zone (4203) North American Datum of 1983 (CORS Adjustment) (NAD 83(CORS)) for horizontal positions and ellipsoid heights and (NAVD 88) for orthometric heights by converting the NGVD29 vertical positions using VERTCON. The latest geoid model, Geoid09, was used for this project. The survey is referenced to these datums through measurements to control points of the National Spatial Reference System (NSRS), existing City geodetic control network monuments and static control points utilized for the 2005 aerial mapping project. The control network complies with TXDOT Level 2 accuracy standards as found in the *TX DOT GPS User's Manual August*

Project Overview

2005.

The deliverable from CDS/Muery Services will be this Survey Report containing monuments sheets for the eleven new monuments, a detailed report describing the survey methods and procedures used for all aspects of this survey and all raw static data submitted in Trimble .dat or RINEX format on DVD.

Section

2

Control Survey

GPS

The project began near the end of November 2009. Monument reconnaissance on existing City of College Station and GeoMetrics GPS, Inc. control was performed simultaneously with the placement of eleven new monument locations. GPS obstruction plots were made at each location to determine the optimum window for static GPS observations. The eleven new monument locates were sent to the City for approval along with the planned static network and session plan. Adjustments were made from the City to various points, due to planned construction projects for those locations and to ensure monument longevity. After all sites were approved utility locates were processed and construction began on April 26, 2010. A total of twenty-three points comprised the static network, three CORS sites, one City of College Station base site (located in the Public Works building), four 1994 City of College Station monuments, four 2005 GeoMetrics GPS, Inc. points and the eleven new deep rod monuments. Static GPS observations were recorded April 28-30, 2010.

The static control stations were positioned utilizing four Trimble 4000 SSi's receivers. All units are dual frequency (full wavelength L2) GPS receivers. Observation periods were one hour to ninety minute sessions depending on baseline lengths. The GPS satellite observation sessions on repeat occupations were separated by a minimum of two hours to ensure that at least two completely different satellite constellations were used for each station.

For each GPS observation session, there were independent setups for the stations and multiple observations recorded for each point. Heights of the GPS antenna above each station mark were measured in feet and in meters at the beginning and end of each measurement session. Adjustable wooden tripods were used for all station setups.

Control Survey

The following items were addressed during the field survey:

- GPS antennae were pointed north to ensure that antenna phase center offsets would be cancelled in the baseline processing session.
- Frequent antenna HI and centering checks were made during the course of the survey.
- GPS data was collected at a 10 second sync rate (epoch interval).

All data was collected using a 15-degree elevation mask. PDOP times and space environment predictions were reviewed prior to GPS data collection. The PDOP times and solar reports for the times GPS observations were observed are located in **Appendix D** along with the GPS static observation logs.

The control stations recovered in the reconnaissance phase of the survey are listed below and were recovered in good condition. The existing published control data sheets are located in **Appendix B** and the station recovery reports and GPS visibility diagrams are in **Appendix E**.

Station Recovery Tables

PID	Name	Station Description	Horiz. Order	Vert. Order	Stability
N/A	KI 1	5/8IR w/cap	N/A	N/A	D
N/A	KI 2	5/8IR w/cap	N/A	N/A	D
N/A	KI 5	5/8IR w/cap	N/A	N/A	D
N/A	KI 8	5/8IR w/cap	N/A	N/A	D
N/A	MON 101	Disk in Concrete	N/A	N/A	C
N/A	MON 107	Disk in Concrete	N/A	N/A	C
N/A	MON 135	Disk in Concrete	N/A	N/A	C
N/A	MON 242	Disk in Concrete	N/A	N/A	C
DG9804	TXBY	CORS Station	CORS	N/A	N/A
DH3604	TXCN	CORS Station	CORS	N/A	N/A
DH3608	TXHE	CORS Station	CORS	N/A	N/A
N/A	COCS	COCS Base	N/A	N/A	N/A

Control Survey

The static GPS plan was made up of ten sessions and was collected over three days. The first day one receiver failed to record the first session's data and was re-run the last day. The static session plan is posted below.

Static GPS Session Plan

PC		Chad Tarver	Joe Montez	Bobby Martinez	AJ Escobar
Unit		4000SSI	4000SSI	4000SSI	4000SSI
Serial #		3609A14775	3615A15385	3518A10289	3515A15357
Antenna Serial #		Compact L1/L2 w/GP 220022983	Compact L1/L2 w/GP 220021404	Compact L1/L2 w/GP 220124914	Compact L1/L2 w/GP 220126287
Phone #		827-6649	827-6632	827-6669	827-6673
Session 28-Apr-10	Obs Period JD=118	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID
1	1 HR	KI 2	MON 107	MON 242	MON 8
RED	7:30-8:30	5.485'	5.21'	5.09'	NO GPS!!
2	1 HR	MON 1	MON 10	MON 9	MON 11
RED	9:15-10:15	5.625'	5.54'	5.41'	5.40'
3	1.5 HR	KI 1	MON 6	KI 5	MON 5
RED	11:00-12:26	5.415'	5.02'	5.39'	5.45'
4	1 HR	KI 2	MON 107	MON 101	MON 2
BLUE	17:22-18:22	5.485'	5.23'	5.00'	5.55'

Control Survey

Static GPS Session Plan cont'd.

PC		Chad Tarver	Joe Montez	Bobby Martinez	AJ Escobar
Unit		4000SSI	4000SSI	4000SSI	4000SSI
Serial #		3609A14775	3615A15385	3518A10289	3515A15357
Antenna		Compact L1/L2 w/GP	Compact L1/L2 w/GP	Compact L1/L2 w/GP	Compact L1/L2 w/GP
Serial #		220022983	220021404	220124914	220126287
Phone #		827-6649	827-6632	827-6669	827-6673
Session 29-Apr-10	Obs Period JD=119	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID
5	1 HR	MON 1	MON 7	MON 242	MON 8
BLUE	7:26-8:26	5.37'	5.26'	5.225'	5.32'
6	1 HR	MON 135	MON 4	KI 5	MON 5
YELLOW	9:11-10:11	5.63'	5.26'	5.58'	5.34'
7	1 HR	KI 8	MON 3	MON 101	MON 2
RED	11:00-12:00	5.77'	5.22'	5.54'	5.67'
8	1 HR	KI 1	MON 7	MON 9	MON 6
GREEN	17:26-18:26	5.235'	5.42'	5.55'	5.25'
Session 30-Apr-10	Obs Period JD=120	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID
9	1.5 HR	MON 135	MON 4	KI 5	MON 11
GREEN	6:40-8:10	5.56'	5.23'	5.53'	5.42'
10	1 HR	KI 8	MON 10	MON 3	MON 4
BLUE	8:55-9:55	5.78'	5.40'	5.60'	5.42'
11	45 MIN			MON 242	MON 8
RED	10:40-11:25			5.15'	5.31'

Maps' showing the GPS static sessions with baseline vectors and approximate locations is located in **Appendix A**.

Control Survey

Baseline Processing and Verification

NGS rapid precise ephemeris GPS orbit data was used for all baseline processing. NAD83 (CORS) station coordinates were used for all vector processing in Trimble's Geomatics Office Weighted Ambiguity Vector Estimator (WAVE) Software, Version 1.61, Build 25. Loop closures and adjustments were performed using Trimble's Geomatics Office Network Adjustment Software, Version 1.61.

The following items were addressed during the processing of the data:

- Iono-free Fixed Solutions were used for all baselines less than 150 kilometers, but greater than 5 kilometers.
- L1 Fixed Solutions were used for baselines less than or equal to 5 kilometers.
- Rapid precise ephemerides were used for all baseline processing.

The RMS of the post-fit double difference residuals did not exceed 0.020 m in any location and the average being 0.010 m.

The average reference variance of the data for the L1 Fixed solutions is 4.631 and 9.729 for the maximum value, for the Ion-Free Fixed solutions, 2.278 is the maximum value and 1.256 is the average. The overall average for the reference variances of each of the baselines is 2.531.

The summary of the static baseline processing results for all baselines is on the following page.

Control Survey

Static GPS Baseline Results

From Pt Name	To Pt Name	Slope Dist.	RMS	Ratio	Ref.Var.	VectStartTime	Solution
TXBY	MON 107	18622	0.014	15.2	2.112	4/28/2010 7:38	Iono Free Fixed
MON 107	KI 2	30328	0.012	13.9	1.331	4/28/2010 7:38	Iono Free Fixed
MON 107	MON 242	33852	0.017	16.2	2.170	4/28/2010 7:38	Iono Free Fixed
COCS	MON 9	17298	0.010	13.7	0.845	4/28/2010 9:06	Iono Free Fixed
MON 9	MON 11	10949	0.004	12.0	1.949	4/28/2010 9:12	L1 Fixed
MON 9	MON 10	20211	0.009	20.3	0.701	4/28/2010 9:13	Iono Free Fixed
MON 10	MON 1	11368	0.003	26.1	0.892	4/28/2010 9:15	L1 Fixed
MON 5	KI 5	5549	0.005	38.4	1.916	4/28/2010 10:52	L1 Fixed
COCS	MON 5	48605	0.008	72.9	0.486	4/28/2010 10:52	Iono Free Fixed
MON 5	MON 6	18355	0.007	21.2	0.337	4/28/2010 10:58	Iono Free Fixed
TXCN	MON 5	245227	0.011	18.0	0.820	4/28/2010 10:59	Iono Free Fixed
MON 6	KI 1	21167	0.011	58.7	0.885	4/28/2010 11:00	Iono Free Fixed
TXBY	MON 107	18622	0.017	17.7	2.278	4/28/2010 17:20	Iono Free Fixed
COCS	MON 107	26974	0.014	21.8	1.343	4/28/2010 17:20	Iono Free Fixed
MON 2	MON 101	8978	0.003	75.4	0.979	4/28/2010 17:20	L1 Fixed
KI 2	MON 2	2912	0.003	92.9	0.726	4/28/2010 17:22	L1 Fixed
MON 107	KI 2	30328	0.013	22.4	1.199	4/28/2010 17:22	Iono Free Fixed
MON 242	MON 8	8393	0.005	26.6	2.425	4/29/2010 7:18	L1 Fixed
COCS	MON 242	20084	0.015	14.4	1.964	4/29/2010 7:18	Iono Free Fixed
MON 242	MON 7	26181	0.013	32.0	1.465	4/29/2010 7:24	Iono Free Fixed
MON 8	MON 1	20108	0.009	24.9	0.731	4/29/2010 7:26	Iono Free Fixed
COCS	MON 5	48605	0.010	22.0	0.867	4/29/2010 8:57	Iono Free Fixed
MON 5	KI 5	5549	0.007	159.8	4.894	4/29/2010 9:03	L1 Fixed
KI 5	MON 4	35031	0.011	24.5	1.249	4/29/2010 9:10	Iono Free Fixed
MON 4	MON 135	10736	0.008	17.7	4.934	4/29/2010 9:11	L1 Fixed
MON 2	MON 101	8978	0.009	219.3	6.501	4/29/2010 10:56	L1 Fixed
COCS	MON 2	38392	0.011	20.1	0.906	4/29/2010 10:56	Iono Free Fixed
KI 8	MON 3	5169	0.008	15.0	6.622	4/29/2010 11:00	L1 Fixed
MON 101	KI 8	13647	0.009	12.9	8.443	4/29/2010 11:00	L1 Fixed
COCS	MON 9	17298	0.013	11.9	1.515	4/29/2010 17:22	Iono Free Fixed
MON 7	KI 1	3782	0.009	13.6	7.065	4/29/2010 17:26	L1 Fixed
MON 6	KI 1	21167	0.011	15.1	1.130	4/29/2010 17:26	Iono Free Fixed
KI 1	MON 9	22054	0.016	18.1	2.142	4/29/2010 17:26	Iono Free Fixed
KI 5	MON 4	35031	0.013	29.9	1.615	4/30/2010 6:39	Iono Free Fixed
TXHE	MON 4	165467	0.015	18.7	1.098	4/30/2010 6:39	Iono Free Fixed
MON 4	MON 135	10736	0.009	176.5	6.949	4/30/2010 6:47	L1 Fixed

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Static GPS Baseline Results

From Pt Name	To Pt Name	Slope Dist.	RMS	Ratio	Ref.Var.	VectStartTime	Solution
MON 11	MON 135	12340	0.010	151.9	9.729	4/30/2010 6:47	L1 Fixed
COCS	MON 4	36199	0.014	27.4	1.640	4/30/2010 6:59	Iono Free Fixed
MON 3	MON 4	17073	0.008	26.2	0.593	4/30/2010 8:51	Iono Free Fixed
COCS	MON 4	36199	0.011	38.5	1.011	4/30/2010 8:51	Iono Free Fixed
TXHE	MON 4	165467	0.011	27.7	0.806	4/30/2010 8:51	Iono Free Fixed
KI 8	MON 3	5169	0.006	20.8	3.961	4/30/2010 9:00	L1 Fixed
MON 10	KI 8	15245	0.007	17.1	4.812	4/30/2010 9:00	L1 Fixed
MON 242	MON 8	8393	0.008	23.7	5.928	4/30/2010 10:37	L1 Fixed
COCS	MON 242	20084	0.015	19.7	1.915	4/30/2010 10:37	Iono Free Fixed

There were 15 repeat (redundant) baselines measured in the static network. The repeat baseline average difference in distance is 0.024’ and the average of the ellipsoid height differences is 0.046’. The repeat baseline report is posted below.

Repeat Baseline Report

Baseline No.	From Station	To Station	NS Forward Azimuth DDD.MMSS	Ellipsoid Distance	Ellip. Dist. Diff.	Delta Height	Delta Height Diff.
30	TXBY	MON 107	188°45'08"	18621.562		-37.914	
31	TXBY	MON 107	188°45'08"	18621.555	0.007	-38.031	0.117
12	MON 107	KI 2	205°12'24"	30327.677		-107.021	
15	MON 107	KI 2	205°12'24"	30327.681	-0.004	-106.942	-0.079
104	COCS	MON 107	293°13'04"	26974.121		59.010	
105	COCS	MON 107	293°13'04"	26974.066	0.055	58.904	0.106
63	MON 242	MON 8	228°01'12"	8392.846		-57.132	
66	MON 242	MON 8	228°01'12"	8392.857	-0.011	-57.136	0.004
122	COCS	MON 242	24°00'41"	20083.335		38.510	
134	COCS	MON 242	24°00'41"	20083.306	0.029	38.465	0.045

Control Survey

Repeat Baseline Report cont'd.

Baseline No.	From Station	To Station	NS Forward Azimuth DDD.MMSS	Ellipsoid Distance	Ellip. Dist. Diff.	Delta Height	Delta Height Diff.
6	MON 6	KI 1	353°34'33"	21166.790		-3.974	
56	MON 6	KI 1	353°34'33"	21166.825	-0.035	-4.010	0.036
96	COCS	MON 9	120°14'36"	17297.593		-13.876	
113	COCS	MON 9	120°14'37"	17297.645	-0.052	-13.809	-0.067
137	COCS	MON 4	177°54'08"	36198.430		2.896	
138	COCS	MON 4	177°54'08"	36198.391	0.039	2.914	-0.018
18	MON 2	MON 101	120°25'25"	8977.610		11.429	
59	MON 2	MON 101	120°25'25"	8977.600	0.010	11.446	-0.017
45	KI 8	MON 3	182°35'00"	5168.396		-52.990	
72	KI 8	MON 3	182°35'00"	5168.382	0.014	-52.966	-0.024
48	MON 4	MON 135	57°15'25"	10736.293		-8.250	
77	MON 4	MON 135	57°15'25"	10736.318	-0.025	-8.239	-0.011
49	KI 5	MON 4	276°55'21"	35030.253		37.989	
78	KI 5	MON 4	276°55'21"	35030.257	-0.004	37.923	0.066
92	TXHE	MON 4	333°40'12"	165465.946		38.426	
94	TXHE	MON 4	333°40'12"	165465.978	-0.032	38.387	0.039
110	COCS	MON 5	138°07'23"	48604.187		-81.258	
126	COCS	MON 5	138°07'23"	48604.233	-0.046	-81.294	0.036
21	MON 5	KI 5	138°47'38"	5548.814		46.218	
64	MON 5	KI 5	138°47'38"	5548.817	-0.003	46.241	-0.023

Loop closures were performed to help determine the quality of the baseline processing results. The loop closures are located on the following pages.

Control Survey

Loop Closure Reports

Loop 1

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:00:12 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *

Number of Loops: 8

Number Passed: 8

Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.027sft	-0.008sft	0.198
Worst		0.053sft	-0.108sft	0.810
Average Loop	144831.424sft	0.040sft	-0.058sft	0.509
Standard Deviation	0.008sft	0.009sft	0.041sft	0.243

Passed Loops

GPS Loop 1:
MON 10: KI 8: MON 101: MON 2: KI 2: MON 107: MON 242: MON 8: MON 1: MON 10

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B69	S79	MON 10	KI 8	L1 fixed	09:00:56 30 Apr 2010
B57	S68	MON 101	KI 8	L1 fixed	11:00:16 29 Apr 2010
B18	S66	MON 2	MON 101	L1 fixed	17:20:31 28 Apr 2010
B59	S67	MON 2	MON 101	L1 fixed	10:56:56 29 Apr 2010
B16	S65	KI 2	MON 2	L1 fixed	17:22:16 28 Apr 2010
B12	S30	MON 107	KI 2	Iono free fixed	07:38:26 28 Apr 2010
B15	S31	MON 107	KI 2	Iono free fixed	17:22:16 28 Apr 2010
B19	S29	MON 107	MON 242	Iono free fixed	07:38:26 28 Apr 2010
B66	S82	MON 242	MON 8	L1 fixed	10:37:16 30 Apr 2010
B63	S32	MON 242	MON 8	L1 fixed	07:18:26 29 Apr 2010
B65	S33	MON 8	MON 1	Iono free fixed	07:26:16 29 Apr 2010
B9	S58	MON 10	MON 1	L1 fixed	09:15:16 28 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S79 - S68 - S66 - S65 - S30 - S29 - S82 - S33 - S58	144831.433sft	0.027sft	-0.011sft	0.198
S79 - S68 - S66 - S65 - S30 - S29 - S32 - S33 - S58	144831.422sft	0.041sft	-0.008sft	0.287
S79 - S68 - S66 - S65 - S31 - S29 - S82 - S33 - S58	144831.436sft	0.039sft	-0.090sft	0.679
S79 - S68 - S66 - S65 - S31 - S29 - S32 - S33 - S58	144831.425sft	0.048sft	-0.087sft	0.687
S79 - S68 - S67 - S65 - S30 - S29 - S82 - S33 - S58	144831.423sft	0.028sft	-0.029sft	0.275
S79 - S68 - S67 - S65 - S30 - S29 - S32 - S33 - S58	144831.412sft	0.041sft	-0.025sft	0.330
S79 - S68 - S67 - S65 - S31 - S29 - S82 - S33 - S58	144831.426sft	0.046sft	-0.108sft	0.808
S79 - S68 - S67 - S65 - S31 - S29 - S32 - S33 - S58	144831.415sft	0.053sft	-0.104sft	0.810

Loop 2

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:01:29 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203

Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *
Number of Loops: 2
Number Passed: 2
Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.018sft	-0.075sft	0.710
Worst		0.028sft	-0.078sft	0.712
Average Loop	112097.469sft	0.023sft	-0.076sft	0.711
Standard Deviation	0.006sft	0.005sft	0.002sft	0.001

Passed Loops

GPS Loop 1:
MON 242: MON 8: MON 1: MON 10: MON 9: KI 1: MON 7: MON 242

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B66	S82	MON 242	MON 8	L1 fixed	10:37:16 30 Apr 2010
B63	S32	MON 242	MON 8	L1 fixed	07:18:26 29 Apr 2010
B65	S33	MON 8	MON 1	Iono free fixed	07:26:16 29 Apr 2010
B9	S58	MON 10	MON 1	L1 fixed	09:15:16 28 Apr 2010
B2	S57	MON 9	MON 10	Iono free fixed	09:13:16 28 Apr 2010
B43	S56	KI 1	MON 9	Iono free fixed	17:26:26 29 Apr 2010

B54	S38	MON 7	KI 1	L1 fixed	17:26:26 29 Apr 2010
B51	S35	MON 242	MON 7	Iono free fixed	07:24:16 29 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S82 - S33 - S58 - S57 - S56 - S38 - S35	112097.475sft	0.018sft	-0.078sft	0.712
S32 - S33 - S58 - S57 - S56 - S38 - S35	112097.464sft	0.028sft	-0.075sft	0.710

Loop 3

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:17:39 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *
Number of Loops: 16
Number Passed: 16
Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.004sft	0.003sft	0.135
Worst		0.061sft	0.081sft	0.616
Average Loop	136180.736sft	0.029sft	0.012sft	0.364
Standard Deviation	0.021sft	0.017sft	0.040sft	0.145

Passed Loops

GPS Loop 1:
MON 5: MON 6: KI 1: MON 9: MON 11: MON 135: MON 4: KI 5: MON 5

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B8	S42	MON 5	MON 6	Iono free fixed	10:58:56 28 Apr 2010
B6	S46	MON 6	KI 1	Iono free fixed	11:00:16 28 Apr 2010
B56	S49	MON 6	KI 1	Iono free fixed	17:26:26 29 Apr 2010
B43	S56	KI 1	MON 9	Iono free fixed	17:26:26 29 Apr 2010
B1	S59	MON 9	MON 11	L1 fixed	09:12:46 28 Apr 2010
B67	S71	MON 11	MON 135	L1 fixed	06:47:36 30 Apr 2010
B48	S64	MON 4	MON 135	L1 fixed	09:11:16 29 Apr 2010
B77	S70	MON 4	MON 135	L1 fixed	06:47:36 30 Apr 2010
B49	S63	KI 5	MON 4	Iono free fixed	09:10:16 29 Apr 2010
B78	S76	KI 5	MON 4	Iono free fixed	06:39:46 30 Apr 2010
B21	S60	MON 5	KI 5	L1 fixed	10:52:31 28 Apr 2010
B64	S61	MON 5	KI 5	L1 fixed	09:03:36 29 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S42 - S46 - S56 - S59 - S71 - S64 - S63 - S60	136180.702sft	0.018sft	0.014sft	0.166
S42 - S46 - S56 - S59 - S71 - S64 - S63 - S61	136180.706sft	0.016sft	-0.008sft	0.135
S42 - S46 - S56 - S59 - S71 - S64 - S76 - S60	136180.706sft	0.023sft	0.081sft	0.616
S42 - S46 - S56 - S59 - S71 - S64 - S76 - S61	136180.710sft	0.024sft	0.058sft	0.463
S42 - S46 - S56 - S59 - S71 - S70 - S63 - S60	136180.727sft	0.021sft	0.003sft	0.155
S42 - S46 - S56 - S59 - S71 - S70 - S63 - S61	136180.731sft	0.016sft	-0.019sft	0.187
S42 - S46 - S56 - S59 - S71 - S70 - S76 - S60	136180.731sft	0.008sft	0.070sft	0.515
S42 - S46 - S56 - S59 - S71 - S70 - S76 - S61	136180.735sft	0.004sft	0.047sft	0.347
S42 - S49 - S56 - S59 - S71 - S64 - S63 - S60	136180.737sft	0.045sft	-0.022sft	0.369
S42 - S49 - S56 - S59 - S71 - S64 - S63 - S61	136180.741sft	0.048sft	-0.045sft	0.484
S42 - S49 - S56 - S59 - S71 - S64 - S76 - S60	136180.741sft	0.058sft	0.044sft	0.536
S42 - S49 - S56 - S59 - S71 - S64 - S76 - S61	136180.745sft	0.061sft	0.022sft	0.478
S42 - S49 - S56 - S59 - S71 - S70 - S63 - S60	136180.762sft	0.021sft	-0.033sft	0.288
S42 - S49 - S56 - S59 - S71 - S70 - S63 - S61	136180.766sft	0.025sft	-0.056sft	0.448
S42 - S49 - S56 - S59 - S71 - S70 - S76 - S60	136180.766sft	0.034sft	0.033sft	0.350

S42 - S49 - S56 - S59 - S71 - S70 - S76 - S61	136180.770sft	0.038sft	0.011sft	0.291

Loop 4

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:18:22 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *

Number of Loops: 4

Number Passed: 4

Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.013sft	0.022sft	0.425
Worst		0.032sft	0.057sft	0.637
Average Loop	91722.932sft	0.023sft	0.039sft	0.515
Standard Deviation	0.014sft	0.007sft	0.013sft	0.084

Passed Loops

GPS Loop 1:
MON 3: MON 4: MON 135: MON 11: MON 9: MON 10: KI 8: MON 3

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B75	S78	MON 3	MON 4	Iono free fixed	08:51:06 30 Apr 2010
B48	S64	MON 4	MON 135	L1 fixed	09:11:16 29 Apr 2010
B77	S70	MON 4	MON 135	L1 fixed	06:47:36 30 Apr 2010
B67	S71	MON 11	MON 135	L1 fixed	06:47:36 30 Apr 2010
B1	S59	MON 9	MON 11	L1 fixed	09:12:46 28 Apr 2010
B2	S57	MON 9	MON 10	Iono free fixed	09:13:16 28 Apr 2010
B69	S79	MON 10	KI 8	L1 fixed	09:00:56 30 Apr 2010
B45	S69	KI 8	MON 3	L1 fixed	11:00:16 29 Apr 2010
B72	S77	KI 8	MON 3	L1 fixed	09:00:56 30 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S78 - S64 - S71 - S59 - S57 - S79 - S69	91722.926sft	0.032sft	0.022sft	0.425
S78 - S64 - S71 - S59 - S57 - S79 - S77	91722.912sft	0.020sft	0.046sft	0.546
S78 - S70 - S71 - S59 - S57 - S79 - S69	91722.951sft	0.025sft	0.033sft	0.451
S78 - S70 - S71 - S59 - S57 - S79 - S77	91722.937sft	0.013sft	0.057sft	0.637

Loop 5

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:19:10 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *

Number of Loops: 2
Number Passed: 2
Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.026sft	-0.033sft	0.516
Worst		0.031sft	-0.078sft	1.032
Average Loop	80910.208sft	0.028sft	-0.055sft	0.774
Standard Deviation	0.014sft	0.003sft	0.022sft	0.258

Passed Loops

GPS Loop 1:
COCS: MON 107: MON 242: COCS

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B105	S95	COCS	MON 107	Iono free fixed	17:20:16 28 Apr 2010
B19	S29	MON 107	MON 242	Iono free fixed	07:38:26 28 Apr 2010
B122	S101	COCS	MON 242	Iono free fixed	07:18:26 29 Apr 2010
B134	S124	COCS	MON 242	Iono free fixed	10:37:16 30 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S95 - S29 - S101	80910.222sft	0.031sft	-0.078sft	1.032
S95 - S29 - S124	80910.194sft	0.026sft	-0.033sft	0.516

Loop 6

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:19:30 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *
Number of Loops: 2
Number Passed: 2
Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.022sft	-0.014sft	0.263
Worst		0.029sft	0.065sft	0.724
Average Loop	98606.643sft	0.026sft	0.025sft	0.493
Standard Deviation	0.002sft	0.004sft	0.040sft	0.230

Passed Loops

GPS Loop 1:
COCS: MON 107: KI 2: MON 2: COCS

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B105	S95	COCS	MON 107	Iono free fixed	17:20:16 28 Apr 2010
B12	S30	MON 107	KI 2	Iono free fixed	07:38:26 28 Apr 2010
B15	S31	MON 107	KI 2	Iono free fixed	17:22:16 28 Apr 2010
B16	S65	KI 2	MON 2	L1 fixed	17:22:16 28 Apr 2010
B125	S109	COCS	MON 2	Iono free fixed	10:56:56 29 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S95 - S30 - S65 - S109	98606.641sft	0.022sft	-0.014sft	0.263
S95 - S31 - S65 - S109	98606.645sft	0.029sft	0.065sft	0.724

Loop 7

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:19:51 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *

Number of Loops: 8

Number Passed: 8

Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.016sft	-0.002sft	0.201
Worst		0.038sft	-0.045sft	0.430
Average Loop	119457.579sft	0.025sft	-0.015sft	0.281
Standard Deviation	0.021sft	0.007sft	0.018sft	0.074

Passed Loops

GPS Loop 1:
MON 3: MON 4: COCS: MON 2: MON 101: KI 8: MON 3

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B75	S78	MON 3	MON 4	Iono free fixed	08:51:06 30 Apr 2010
B138	S117	COCS	MON 4	Iono free fixed	06:59:46 30 Apr 2010
B137	S121	COCS	MON 4	Iono free fixed	08:51:06 30 Apr 2010
B125	S109	COCS	MON 2	Iono free fixed	10:56:56 29 Apr 2010
B18	S66	MON 2	MON 101	L1 fixed	17:20:31 28 Apr 2010
B59	S67	MON 2	MON 101	L1 fixed	10:56:56 29 Apr 2010
B57	S68	MON 101	KI 8	L1 fixed	11:00:16 29 Apr 2010
B45	S69	KI 8	MON 3	L1 fixed	11:00:16 29 Apr 2010
B72	S77	KI 8	MON 3	L1 fixed	09:00:56 30 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S78 - S117 - S109 - S66 - S68 - S69	119457.572sft	0.025sft	-0.045sft	0.430
S78 - S117 - S109 - S66 - S68 - S77	119457.557sft	0.017sft	-0.021sft	0.223
S78 - S117 - S109 - S67 - S68 - S69	119457.562sft	0.026sft	-0.028sft	0.318
S78 - S117 - S109 - S67 - S68 - S77	119457.547sft	0.024sft	-0.003sft	0.201
S78 - S121 - S109 - S66 - S68 - S69	119457.610sft	0.016sft	-0.026sft	0.257
S78 - S121 - S109 - S66 - S68 - S77	119457.596sft	0.031sft	-0.002sft	0.261
S78 - S121 - S109 - S67 - S68 - S69	119457.600sft	0.023sft	-0.009sft	0.209
S78 - S121 - S109 - S67 - S68 - S77	119457.586sft	0.038sft	0.015sft	0.346

Loop 8

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:20:12 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *
Number of Loops: 8
Number Passed: 8
Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.016sft	0.019sft	0.403
Worst		0.093sft	-0.049sft	1.087
Average Loop	87522.070sft	0.048sft	0.000sft	0.715
Standard Deviation	0.035sft	0.028sft	0.035sft	0.246

Passed Loops

GPS Loop 1:
COCS: MON 9: MON 11: MON 135: MON 4: COCS

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B96	S90	COCS	MON 9	Iono free fixed	09:06:46 28 Apr 2010
B113	S111	COCS	MON 9	Iono free fixed	17:22:16 29 Apr 2010
B1	S59	MON 9	MON 11	L1 fixed	09:12:46 28 Apr 2010
B67	S71	MON 11	MON 135	L1 fixed	06:47:36 30 Apr 2010
B48	S64	MON 4	MON 135	L1 fixed	09:11:16 29 Apr 2010
B77	S70	MON 4	MON 135	L1 fixed	06:47:36 30 Apr 2010
B138	S117	COCS	MON 4	Iono free fixed	06:59:46 30 Apr 2010
B137	S121	COCS	MON 4	Iono free fixed	08:51:06 30 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S90 - S59 - S71 - S64 - S117	87522.012sft	0.057sft	-0.038sft	0.778
S90 - S59 - S71 - S64 - S121	87522.051sft	0.093sft	-0.019sft	1.087
S90 - S59 - S71 - S70 - S117	87522.037sft	0.056sft	-0.049sft	0.851
S90 - S59 - S71 - S70 - S121	87522.076sft	0.086sft	-0.030sft	1.035
S111 - S59 - S71 - S64 - S117	87522.065sft	0.019sft	0.030sft	0.403

S111 - S59 - S71 - S64 - S121	87522.104sft	0.021sft	0.049sft	0.604
S111 - S59 - S71 - S70 - S117	87522.090sft	0.039sft	0.019sft	0.494
S111 - S59 - S71 - S70 - S121	87522.129sft	0.016sft	0.038sft	0.467

Loop 9

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:20:33 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *
Number of Loops: 16
Number Passed: 16
Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.010sft	-0.002sft	0.101
Worst		0.067sft	0.076sft	0.783
Average Loop	125382.990sft	0.035sft	0.004sft	0.416
Standard Deviation	0.030sft	0.018sft	0.041sft	0.171

Passed Loops

GPS Loop 1:
COCS: MON 5: KI 5: MON 4: COCS

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B110	S92	COCS	MON 5	Iono free fixed	10:52:31 28 Apr 2010
B126	S105	COCS	MON 5	Iono free fixed	08:57:26 29 Apr 2010
B21	S60	MON 5	KI 5	L1 fixed	10:52:31 28 Apr 2010
B64	S61	MON 5	KI 5	L1 fixed	09:03:36 29 Apr 2010
B49	S63	KI 5	MON 4	Iono free fixed	09:10:16 29 Apr 2010
B78	S76	KI 5	MON 4	Iono free fixed	06:39:46 30 Apr 2010
B138	S117	COCS	MON 4	Iono free fixed	06:59:46 30 Apr 2010
B137	S121	COCS	MON 4	Iono free fixed	08:51:06 30 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S92 - S60 - S63 - S117	125382.944sft	0.039sft	0.034sft	0.416
S92 - S60 - S63 - S121	125382.983sft	0.067sft	0.053sft	0.682
S92 - S60 - S76 - S117	125382.948sft	0.039sft	-0.032sft	0.406
S92 - S60 - S76 - S121	125382.987sft	0.059sft	-0.013sft	0.482
S92 - S61 - S63 - S117	125382.948sft	0.037sft	0.057sft	0.539
S92 - S61 - S63 - S121	125382.986sft	0.063sft	0.076sft	0.783
S92 - S61 - S76 - S117	125382.952sft	0.038sft	-0.010sft	0.314
S92 - S61 - S76 - S121	125382.991sft	0.055sft	0.009sft	0.443
S105 - S60 - S63 - S117	125382.990sft	0.012sft	-0.002sft	0.101
S105 - S60 - S63 - S121	125383.028sft	0.027sft	0.017sft	0.255
S105 - S60 - S76 - S117	125382.994sft	0.026sft	-0.068sft	0.583
S105 - S60 - S76 - S121	125383.033sft	0.015sft	-0.049sft	0.411
S105 - S61 - S63 - S117	125382.994sft	0.017sft	0.021sft	0.215
S105 - S61 - S63 - S121	125383.032sft	0.022sft	0.040sft	0.363
S105 - S61 - S76 - S117	125382.998sft	0.030sft	-0.046sft	0.438
S105 - S61 - S76 - S121	125383.037sft	0.010sft	-0.027sft	0.228

Loop 10

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:20:59 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)

Coordinate Units	US survey feet
Distance Units	US survey feet
Height Units	US survey feet

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *

Number of Loops: 8

Number Passed: 8

Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	
Best		0.010sft	-0.006sft	0.228
Worst		0.072sft	-0.087sft	0.636
Average Loop	138172.556sft	0.043sft	-0.029sft	0.454
Standard Deviation	0.032sft	0.019sft	0.034sft	0.117

Passed Loops

GPS Loop 1:
COCS: MON 5: MON 6: KI 1: MON 7: MON 242: COCS

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B110	S92	COCS	MON 5	Iono free fixed	10:52:31 28 Apr 2010
B126	S105	COCS	MON 5	Iono free fixed	08:57:26 29 Apr 2010
B8	S42	MON 5	MON 6	Iono free fixed	10:58:56 28 Apr 2010
B6	S46	MON 6	KI 1	Iono free fixed	11:00:16 28 Apr 2010
B56	S49	MON 6	KI 1	Iono free fixed	17:26:26 29 Apr 2010
B54	S38	MON 7	KI 1	L1 fixed	17:26:26 29 Apr 2010
B51	S35	MON 242	MON 7	Iono free fixed	07:24:16 29 Apr 2010
B122	S101	COCS	MON 242	Iono free fixed	07:18:26 29 Apr 2010

B134	S124	COCS	MON 242	Iono free fixed	10:37:16 30 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S92 - S42 - S46 - S38 - S35 - S101	138172.530sft	0.050sft	-0.015sft	0.381
S92 - S42 - S46 - S38 - S35 - S124	138172.502sft	0.062sft	0.030sft	0.500
S92 - S42 - S49 - S38 - S35 - S101	138172.565sft	0.041sft	-0.051sft	0.474
S92 - S42 - S49 - S38 - S35 - S124	138172.537sft	0.072sft	-0.006sft	0.526
S105 - S42 - S46 - S38 - S35 - S101	138172.576sft	0.051sft	-0.051sft	0.521
S105 - S42 - S46 - S38 - S35 - S124	138172.548sft	0.031sft	-0.006sft	0.228
S105 - S42 - S49 - S38 - S35 - S101	138172.611sft	0.010sft	-0.087sft	0.636
S105 - S42 - S49 - S38 - S35 - S124	138172.582sft	0.027sft	-0.042sft	0.365

Loop 10

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:21:17 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Contents

Summary

Report includes both active and inactive solutions (if any).
Report applies to current selection only.

Legs in loop: *

Number of Loops: 4

Number Passed: 4

Number Failed: 0

	Length	ΔHoriz	ΔVert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	

Best		0.044sft	0.011sft	0.511
Worst		0.086sft	-0.101sft	1.306
Average Loop	89398.375sft	0.062sft	-0.045sft	0.929
Standard Deviation	0.030sft	0.015sft	0.040sft	0.315

Passed Loops

GPS Loop 1:
COCS: MON 9: KI 1: MON 7: MON 242: COCS

Observations:

Baseline ID	Solution ID	From	To	Solution Type	Start Time
B96	S90	COCS	MON 9	Iono free fixed	09:06:46 28 Apr 2010
B113	S111	COCS	MON 9	Iono free fixed	17:22:16 29 Apr 2010
B43	S56	KI 1	MON 9	Iono free fixed	17:26:26 29 Apr 2010
B54	S38	MON 7	KI 1	L1 fixed	17:26:26 29 Apr 2010
B51	S35	MON 242	MON 7	Iono free fixed	07:24:16 29 Apr 2010
B122	S101	COCS	MON 242	Iono free fixed	07:18:26 29 Apr 2010
B134	S124	COCS	MON 242	Iono free fixed	10:37:16 30 Apr 2010

Passed combinations for loop 1:

	Length	ΔHoriz	ΔVert	PPM
S90 - S56 - S38 - S35 - S101	89398.362sft	0.059sft	-0.101sft	1.306
S90 - S56 - S38 - S35 - S124	89398.334sft	0.086sft	-0.056sft	1.149
S111 - S56 - S38 - S35 - S101	89398.415sft	0.058sft	-0.034sft	0.749
S111 - S56 - S38 - S35 - S124	89398.387sft	0.044sft	0.011sft	0.511

Control Survey

Minimally Constrained Adjustment NAD83(CORS)

Control Survey

Network Adjustment Results Minimally Constrained Adjustments

After the static baseline vectors were processed and checked, a minimally constrained adjustment was performed on the NAD83 (CORS) datum. All points in this survey were controlled in the minimally constrained adjustment to the published NGS values of CORS station TXBY. The misclosure to the existing CORS and City of College Station control is shown in the chart below.

Minimally Constrained versus Published

Station	Stability	Class	Agency	Published Minus Measured Delta Northing	Published Minus Measured Delta Easting
COCS (OPUS)	N/A	N/A	COCS	-0.05	0.01
COCS (PUB)	N/A	N/A	COCS	-0.10	0.08
KI 1	D	N/A	COCS	1.66	1.80
KI 2	D	N/A	COCS	1.67	1.80
KI 5	D	N/A	COCS	1.67	1.73
KI 8	D	N/A	COCS	1.61	1.85
MON 101	C	N/A	COCS	1.64	1.84
MON 107	C	N/A	COCS	1.60	1.85
MON 135	C	N/A	COCS	1.67	1.80
MON 242	C	N/A	COCS	1.55	1.93
TXBY	N/A	CORS	NGS	0.00	0.00
TXCN	N/A	CORS	NGS	-0.02	0.05
TXHE	N/A	CORS	NGS	-0.03	0.00

The horizontal datum for the 2005 aerial mapping project is Texas Central Zone (4203) State Plane Coordinates NAD83 (86) adjustment values as is evident by the difference in position above. The COCS (OPUS) position fit better than the published value supplied by the City.

Control Survey

Minimally Constrained Adjustment Report

NAD83(CORS)

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:22:18 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Adjustment Style Settings - 95% with Setup Errors

Residual Tolerances

To End Iterations : 0.000033sft
Final Convergence Cutoff : 0.016404sft

Covariance Display

Horizontal
Propagated Linear Error [E] : U.S.
Constant Term [C] : 0.00000000sft
Scale on Linear Error [S] : 1.96

Three-Dimensional
Propagated Linear Error [E] : U.S.
Constant Term [C] : 0.00000000sft
Scale on Linear Error [S] : 1.96

Elevation Errors were used in the calculations.

Adjustment Controls

Compute Correlations for Geoid : False

Horizontal and Vertical adjustment performed

Set-up Errors

GPS
Error in Height of Antenna : 0.010sft
Centering Error : 0.007sft

Statistical Summary

Successful Adjustment in 1 iteration(s)

Network Reference Factor : 1.11
Chi Square Test (α=95%) : PASS
Degrees of Freedom : 69.00

GPS Observation Statistics

Reference Factor : 1.11
Redundancy Number (r) : 69.00

Individual GPS Observation Statistics

Observation ID	Reference Factor	Redundancy Number
B1	0.99	0.80
B2	0.66	1.15
B6	0.85	1.47
B8	0.34	0.68
B9	0.82	0.62
B12	0.82	2.11
B15	1.13	1.73
B16	0.64	0.55
B18	0.54	1.54
B19	0.73	2.12
B21	0.58	1.75

B30	0.96	1.62
B31	1.04	1.38
B40	1.00	0.00
B43	0.89	1.96
B45	0.65	1.84
B48	1.06	1.75
B49	1.29	1.98
B51	0.86	0.85
B54	0.84	1.07
B56	1.02	2.10
B57	0.53	1.00
B59	0.58	1.85
B63	0.73	1.50
B64	0.66	1.92
B65	0.78	0.85
B66	0.39	1.88
B67	0.95	0.98
B69	0.70	0.98
B72	0.79	1.67
B75	0.33	1.02
B77	0.91	1.71
B78	1.09	2.06
B92	1.56	1.53
B94	1.45	1.47
B96	2.56	1.77
B105	0.68	1.66
B110	2.07	1.89
B113	1.66	2.46
B122	1.24	1.93
B125	0.55	1.29
B126	1.34	2.04
B134	1.05	2.15

B137	1.76	2.11
B138	0.83	2.21

Weighting Strategies

GPS Observations
User-defined Scalar Applied to All Observations

Scalar : 2.08

Adjusted Coordinates

Adjustment performed in WGS-84

Number of Points : 23
Number of Constrained Points : 1
Horizontal and Height Only : 1

Adjusted Grid Coordinates

Errors are reported using 1.96σ.

Point Name	Northing	N error	Easting	E error	Elevation	e error	Fix
MON 9	10198966.931sft	0.037sft	3580149.787sft	0.038sft	N/A	N/A	
MON 11	10188165.436sft	0.040sft	3581934.101sft	0.040sft	N/A	N/A	
MON 10	10194022.885sft	0.038sft	3560554.955sft	0.039sft	N/A	N/A	
MON 6	10190245.509sft	0.040sft	3601664.715sft	0.041sft	N/A	N/A	
KI 1	10211174.575sft	0.040sft	3598514.279sft	0.041sft	N/A	N/A	
MON 5	10172144.510sft	0.037sft	3598634.487sft	0.037sft	N/A	N/A	
MON 1	10203667.635sft	0.040sft	3554539.405sft	0.040sft	N/A	N/A	
MON 107	10216858.807sft	0.026sft	3539745.763sft	0.027sft	N/A	N/A	
KI 2	10188979.977sft	0.033sft	3527814.016sft	0.034sft	N/A	N/A	
MON 2	10190067.179sft	0.035sft	3530514.484sft	0.036sft	N/A	N/A	
MON 101	10185797.083sft	0.037sft	3538410.652sft	0.038sft	N/A	N/A	
MON 242	10225758.941sft	0.036sft	3572403.177sft	0.037sft	N/A	N/A	
KI 5	10168108.958sft	0.038sft	3602442.212sft	0.038sft	N/A	N/A	

TXBY	10235350.911sft	0.000sft	3541921.711sft	0.000sft	N/A	N/A	N E h
TXCN	10124571.995sft	0.045sft	3839185.910sft	0.046sft	N/A	N/A	
KI 8	10181792.990sft	0.038sft	3551455.966sft	0.038sft	N/A	N/A	
MON 3	10176625.261sft	0.039sft	3551408.174sft	0.039sft	N/A	N/A	
MON 4	10171032.037sft	0.036sft	3567536.955sft	0.037sft	N/A	N/A	
MON 135	10177162.330sft	0.039sft	3576349.947sft	0.039sft	N/A	N/A	
MON 7	10213503.470sft	0.041sft	3595535.514sft	0.042sft	N/A	N/A	
MON 8	10219921.941sft	0.038sft	3566373.630sft	0.039sft	N/A	N/A	
TXHE	10025662.337sft	0.041sft	3646557.920sft	0.041sft	N/A	N/A	
COCS	10207131.206sft	0.034sft	3564901.945sft	0.035sft	N/A	N/A	

Adjusted Geodetic Coordinates

Errors are reported using 1.96σ.

Point Name	Latitude	N error	Longitude	E error	Height	h error	Fix
MON 9	30°34'55.39580"N	0.037sft	96°15'11.66293"W	0.038sft	181.801sft	0.092sft	
MON 11	30°33'07.89995"N	0.040sft	96°14'55.79914"W	0.040sft	195.766sft	0.094sft	
MON 10	30°34'13.54682"N	0.038sft	96°18'57.73985"W	0.039sft	220.810sft	0.093sft	
MON 6	30°33'21.25101"N	0.040sft	96°11'09.40491"W	0.041sft	111.145sft	0.095sft	
KI 1	30°36'49.43728"N	0.040sft	96°11'36.50720"W	0.041sft	107.167sft	0.097sft	
MON 5	30°30'23.31673"N	0.037sft	96°11'51.73498"W	0.037sft	114.380sft	0.091sft	
MON 1	30°35'51.09957"N	0.040sft	96°20'02.54416"W	0.040sft	221.544sft	0.094sft	
MON 107	30°38'06.82382"N	0.026sft	96°22'46.35204"W	0.027sft	254.560sft	0.072sft	
KI 2	30°33'35.20997"N	0.033sft	96°25'14.07465"W	0.034sft	147.574sft	0.087sft	
MON 2	30°33'45.02402"N	0.035sft	96°24'42.76715"W	0.036sft	188.399sft	0.088sft	
MON 101	30°33'00.01902"N	0.037sft	96°23'14.23598"W	0.038sft	199.837sft	0.090sft	
MON 242	30°39'23.22614"N	0.036sft	96°16'29.05059"W	0.037sft	234.143sft	0.091sft	
KI 5	30°29'41.99511"N	0.038sft	96°11'09.95547"W	0.038sft	160.606sft	0.092sft	
TXBY	30°41'08.98727"N	0.000sft	96°22'13.92022"W	0.000sft	292.533sft	0.000sft	Lat Long h
TXCN	30°20'56.20585"N	0.045sft	95°26'28.33747"W	0.046sft	164.608sft	0.105sft	
KI 8	30°32'15.80580"N	0.038sft	96°20'46.77347"W	0.038sft	187.616sft	0.092sft	
MON 3	30°31'24.70221"N	0.039sft	96°20'49.43686"W	0.039sft	134.638sft	0.093sft	

MON 4	30°30'23.61691"N	0.036sft	96°17'47.46427"W	0.037sft	198.563sft	0.091sft	
MON 135	30°31'21.08186"N	0.039sft	96°16'04.22214"W	0.039sft	190.315sft	0.093sft	
MON 7	30°37'13.56999"N	0.041sft	96°12'09.58494"W	0.042sft	142.807sft	0.099sft	
MON 8	30°38'27.65812"N	0.038sft	96°17'40.46726"W	0.039sft	177.011sft	0.093sft	
TXHE	30°05'56.47287"N	0.041sft	96°03'48.54557"W	0.041sft	160.159sft	0.096sft	
COCS	30°36'21.65948"N	0.034sft	96°18'02.61071"W	0.035sft	195.660sft	0.088sft	

Coordinate Deltas

Point Name	ΔNorthing	ΔEasting	ΔElevation	ΔHeight	ΔGeoid Separation
MON 9	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 11	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 10	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 6	0.000sft	0.000sft	N/A	0.000sft	N/A
KI 1	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 5	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 1	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 107	0.000sft	0.000sft	N/A	0.000sft	N/A
KI 2	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 2	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 101	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 242	0.000sft	0.000sft	N/A	0.000sft	N/A
KI 5	0.000sft	0.000sft	N/A	0.000sft	N/A
TXBY	0.000sft	0.000sft	N/A	0.000sft	N/A
TXCN	0.000sft	0.000sft	N/A	0.000sft	N/A
KI 8	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 3	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 4	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 135	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 7	0.000sft	0.000sft	N/A	0.000sft	N/A
MON 8	0.000sft	0.000sft	N/A	0.000sft	N/A
TXHE	0.000sft	0.000sft	N/A	0.000sft	N/A
COCS	0.000sft	0.000sft	N/A	0.000sft	N/A

Control Coordinate Comparisons

Values shown are control coord minus adjusted coord.

Point Name	ΔNorthing	ΔEasting	ΔElevation	ΔHeight
MON 6	N/A	N/A	N/A	N/A
KI 1	N/A	N/A	N/A	N/A
MON 107	N/A	N/A	N/A	N/A
KI 2	N/A	N/A	N/A	N/A
MON 101	N/A	N/A	N/A	N/A
MON 242	N/A	N/A	N/A	N/A
KI 5	N/A	N/A	N/A	N/A
TXBY	N/A	N/A	N/A	N/A
TXCN	-0.023sft	0.055sft	N/A	0.013sft
KI 8	N/A	N/A	N/A	N/A
MON 135	N/A	N/A	N/A	N/A
TXHE	-0.028sft	-0.004sft	N/A	-0.105sft
COCS	-0.100sft	0.083sft	N/A	-0.306sft

Adjusted Observations

Adjustment performed in WGS-84

GPS Observations

Number of Observations : 45
Number of Outliers : 0

Observation Adjustment (Critical Tau = 3.43). Any outliers are in red.

Obs. ID	From Pt.	To Pt.		Observation	A-posteriori Error (1.96σ)	Residual	Stand. Residual
B96	COCS	MON 9	**Az.**	120°14'36.4780"	0°00'00.1893"	0°00'00.2559"	2.21
			ΔHt.	-13.859sft	0.028sft	0.017sft	1.08

			Dist.	17297.624sft	0.014sft	0.031sft	3.29
B110	COCS	MON 5	**Az.**	138°07'22.4987"	0°00'00.0590"	-0°00'00.0086"	-0.22
			ΔHt.	-81.280sft	0.023sft	-0.022sft	-1.49
			Dist.	48604.215sft	0.014sft	0.028sft	2.87
B137	COCS	MON 4	**Az.**	177°54'07.9910"	0°00'00.0754"	0°00'00.0055"	0.09
			ΔHt.	2.903sft	0.024sft	0.007sft	0.36
			Dist.	36198.401sft	0.014sft	-0.029sft	-2.60
B92	TXHE	MON 4	**Az.**	333°40'11.9636"	0°00'00.0225"	0°00'00.0172"	1.42
			ΔHt.	38.404sft	0.032sft	-0.022sft	-1.28
			Dist.	165465.962sft	0.018sft	0.017sft	1.85
B126	COCS	MON 5	**Az.**	138°07'22.4987"	0°00'00.0590"	-0°00'00.0161"	-0.36
			ΔHt.	-81.280sft	0.023sft	0.014sft	0.80
			Dist.	48604.215sft	0.014sft	-0.018sft	-1.78
B113	COCS	MON 9	**Az.**	120°14'36.4780"	0°00'00.1893"	-0°00'00.3751"	-1.72
			ΔHt.	-13.859sft	0.028sft	-0.051sft	-1.31
			Dist.	17297.624sft	0.014sft	-0.021sft	-1.60
B49	KI 5	MON 4	**Az.**	276°55'21.4262"	0°00'00.0916"	-0°00'00.0542"	-0.79
			ΔHt.	37.957sft	0.028sft	-0.032sft	-1.60
			Dist.	35030.251sft	0.015sft	-0.001sft	-0.10
B94	TXHE	MON 4	**Az.**	333°40'11.9636"	0°00'00.0225"	-0°00'00.0144"	-1.32
			ΔHt.	38.404sft	0.032sft	0.017sft	1.06
			Dist.	165465.962sft	0.018sft	-0.015sft	-1.58
B122	COCS	MON 242	**Az.**	24°00'40.8040"	0°00'00.1621"	0°00'00.0050"	0.04
			ΔHt.	38.483sft	0.032sft	-0.027sft	-1.24
			Dist.	20083.317sft	0.017sft	-0.018sft	-1.57
B48	MON 4	MON 135	**Az.**	57°15'24.9770"	0°00'00.2904"	-0°00'00.0909"	-0.52
			ΔHt.	-8.248sft	0.025sft	0.002sft	0.16
			Dist.	10736.308sft	0.015sft	0.014sft	1.57
B134	COCS	MON 242	**Az.**	24°00'40.8040"	0°00'00.1621"	-0°00'00.2217"	-1.54
			ΔHt.	38.483sft	0.032sft	0.018sft	0.67
			Dist.	20083.317sft	0.017sft	0.011sft	0.77

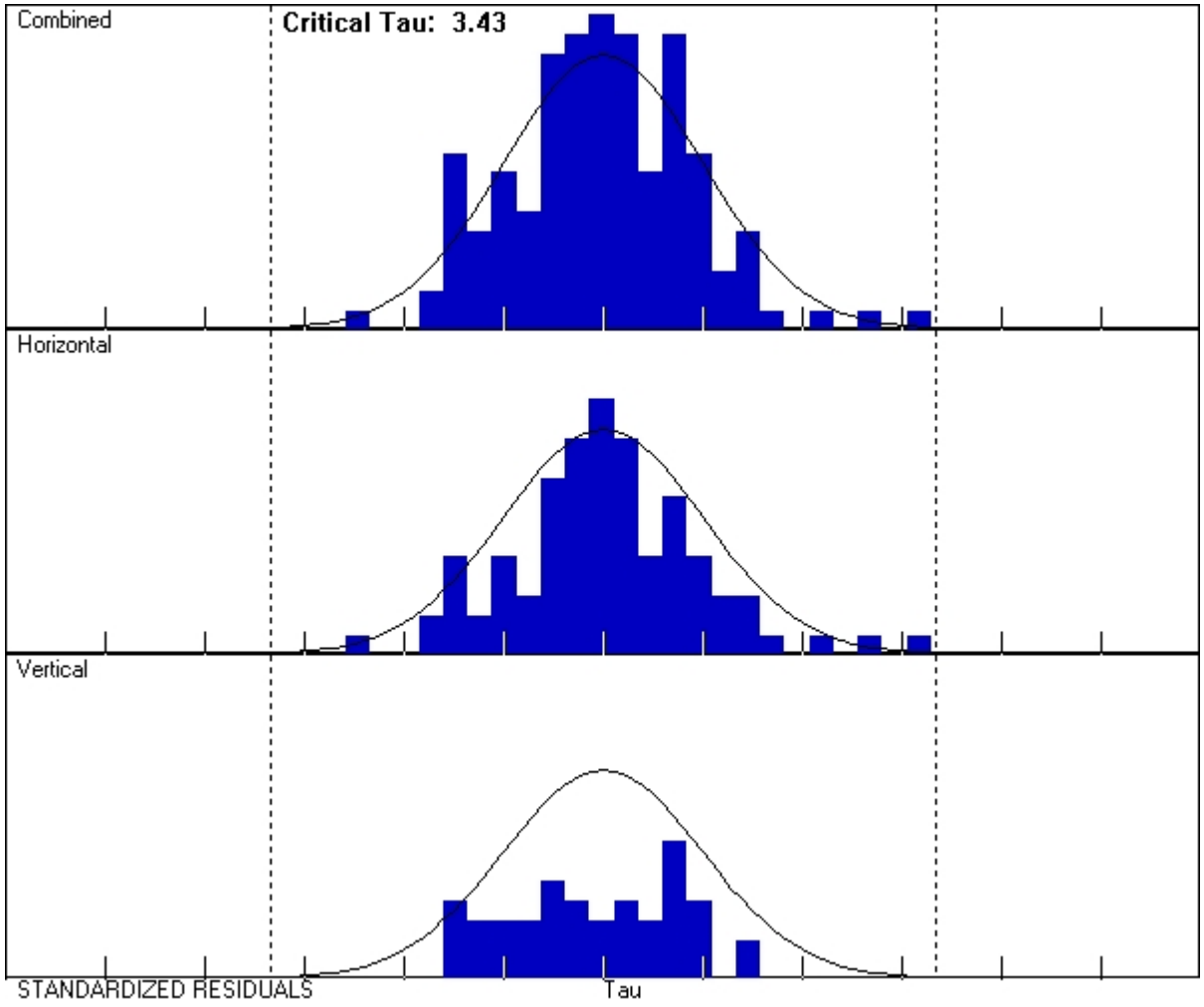
B31	TXBY	MON 107	**Az.**	188°45'07.6770"	0°00'00.2893"	-0°00'00.0010"	-0.01
			ΔHt.	-37.973sft	0.072sft	0.058sft	1.54
			Dist.	18621.560sft	0.027sft	0.005sft	0.44
B30	TXBY	MON 107	**Az.**	188°45'07.6770"	0°00'00.2893"	-0°00'00.0795"	-0.47
			ΔHt.	-37.973sft	0.072sft	-0.059sft	-1.51
			Dist.	18621.560sft	0.027sft	-0.002sft	-0.09
B78	KI 5	MON 4	**Az.**	276°55'21.4262"	0°00'00.0916"	0°00'00.0227"	0.36
			ΔHt.	37.957sft	0.028sft	0.034sft	1.49
			Dist.	35030.251sft	0.015sft	-0.005sft	-0.48
B56	MON 6	KI 1	**Az.**	353°34'32.5394"	0°00'00.1801"	-0°00'00.1856"	-0.98
			ΔHt.	-3.978sft	0.034sft	0.032sft	1.03
			Dist.	21166.800sft	0.017sft	-0.024sft	-1.44
B1	MON 9	MON 11	**Az.**	172°43'17.1952"	0°00'00.3508"	-0°00'00.0176"	-0.16
			ΔHt.	13.965sft	0.030sft	0.005sft	0.62
			Dist.	10948.862sft	0.019sft	0.009sft	1.41
B15	MON 107	KI 2	**Az.**	205°12'23.6095"	0°00'00.1292"	-0°00'00.0772"	-0.99
			ΔHt.	-106.986sft	0.049sft	-0.044sft	-1.40
			Dist.	30327.672sft	0.022sft	-0.008sft	-0.65
B77	MON 4	MON 135	**Az.**	57°15'24.9770"	0°00'00.2904"	-0°00'00.0822"	-0.48
			ΔHt.	-8.248sft	0.025sft	-0.009sft	-0.59
			Dist.	10736.308sft	0.015sft	-0.010sft	-1.20
B9	MON 10	MON 1	**Az.**	330°07'00.4125"	0°00'00.3470"	0°00'00.1143"	1.19
			ΔHt.	0.734sft	0.029sft	-0.002sft	-0.28
			Dist.	11368.016sft	0.019sft	0.001sft	0.21
B6	MON 6	KI 1	**Az.**	353°34'32.5394"	0°00'00.1801"	0°00'00.0213"	0.23
			ΔHt.	-3.978sft	0.034sft	-0.004sft	-0.24
			Dist.	21166.800sft	0.017sft	0.011sft	1.18
B65	MON 8	MON 1	**Az.**	218°08'13.9802"	0°00'00.2083"	0°00'00.0178"	0.27
			ΔHt.	44.532sft	0.036sft	0.003sft	0.26
			Dist.	20107.936sft	0.021sft	0.008sft	1.17
B54	MON 7	KI 1	**Az.**	130°08'49.2595"	0°00'01.5773"	0°00'00.5019"	0.62

			ΔHt.	-35.640sft	0.045sft	-0.006sft	-0.34
			Dist.	3781.473sft	0.020sft	-0.007sft	-1.09
B67	MON 11	MON 135	**Az.**	209°00'42.4942"	0°00'00.3235"	-0°00'00.1097"	-0.94
			ΔHt.	-5.451sft	0.033sft	0.006sft	0.52
			Dist.	12340.065sft	0.020sft	0.007sft	1.06
B43	KI 1	MON 9	**Az.**	238°31'06.4139"	0°00'00.1990"	0°00'00.1233"	1.05
			ΔHt.	74.634sft	0.046sft	-0.043sft	-1.02
			Dist.	22053.848sft	0.026sft	0.004sft	0.21
B12	MON 107	KI 2	**Az.**	205°12'23.6095"	0°00'00.1292"	0°00'00.1000"	1.02
			ΔHt.	-106.986sft	0.049sft	0.035sft	0.82
			Dist.	30327.672sft	0.022sft	-0.004sft	-0.22
B63	MON 242	MON 8	**Az.**	228°01'11.8976"	0°00'00.3865"	-0°00'00.0876"	-0.45
			ΔHt.	-57.132sft	0.025sft	0.000sft	0.03
			Dist.	8392.854sft	0.015sft	0.008sft	1.01
B19	MON 107	MON 242	**Az.**	76°47'31.5774"	0°00'00.1432"	-0°00'00.0122"	-0.12
			ΔHt.	-20.417sft	0.056sft	0.055sft	0.99
			Dist.	33851.828sft	0.026sft	-0.001sft	-0.04
B105	COCS	MON 107	**Az.**	293°13'03.7375"	0°00'00.1757"	0°00'00.0934"	0.99
			ΔHt.	58.899sft	0.051sft	-0.005sft	-0.14
			Dist.	26974.059sft	0.021sft	-0.007sft	-0.59
B2	MON 9	MON 10	**Az.**	257°56'25.2379"	0°00'00.1936"	0°00'00.0037"	0.05
			ΔHt.	39.009sft	0.032sft	-0.012sft	-0.96
			Dist.	20210.771sft	0.018sft	-0.003sft	-0.36
B64	MON 5	KI 5	**Az.**	138°47'38.2707"	0°00'00.5190"	-0°00'00.0916"	-0.26
			ΔHt.	46.226sft	0.022sft	-0.015sft	-0.95
			Dist.	5548.819sft	0.014sft	0.002sft	0.22
B51	MON 242	MON 7	**Az.**	120°00'18.6153"	0°00'00.1868"	0°00'00.0306"	0.58
			ΔHt.	-91.336sft	0.043sft	-0.008sft	-0.56
			Dist.	26180.839sft	0.022sft	-0.007sft	-0.94
B138	COCS	MON 4	**Az.**	177°54'07.9910"	0°00'00.0754"	0°00'00.0484"	0.77
			ΔHt.	2.903sft	0.024sft	-0.012sft	-0.55

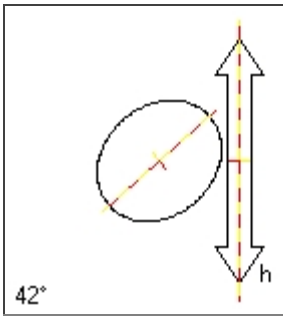
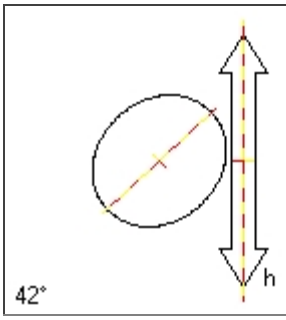
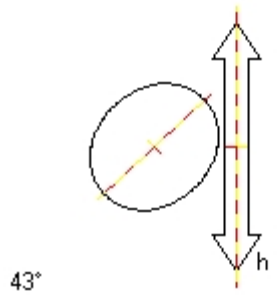
			Dist.	36198.401sft	0.014sft	0.010sft	0.86
B72	KI 8	MON 3	**Az.**	182°35'00.2743"	0°00'00.5928"	-0°00'00.1119"	-0.32
			ΔHt.	-52.978sft	0.025sft	-0.012sft	-0.86
			Dist.	5168.388sft	0.015sft	0.007sft	0.73
B125	COCS	MON 2	**Az.**	245°41'05.2331"	0°00'00.1031"	-0°00'00.0019"	-0.04
			ΔHt.	-7.261sft	0.033sft	0.012sft	0.86
			Dist.	38392.048sft	0.018sft	-0.001sft	-0.19
B16	KI 2	MON 2	**Az.**	70°05'08.6332"	0°00'01.3401"	-0°00'00.1525"	-0.40
			ΔHt.	40.825sft	0.031sft	-0.004sft	-0.80
			Dist.	2911.365sft	0.019sft	0.003sft	0.63
B69	MON 10	KI 8	**Az.**	218°43'05.2727"	0°00'00.2549"	-0°00'00.0069"	-0.08
			ΔHt.	-33.194sft	0.032sft	-0.008sft	-0.72
			Dist.	15244.764sft	0.019sft	0.005sft	0.75
B18	MON 2	MON 101	**Az.**	120°25'24.7183"	0°00'00.3427"	-0°00'00.0252"	-0.13
			ΔHt.	11.438sft	0.024sft	0.009sft	0.74
			Dist.	8977.606sft	0.015sft	-0.003sft	-0.41
B45	KI 8	MON 3	**Az.**	182°35'00.2743"	0°00'00.5928"	0°00'00.1177"	0.31
			ΔHt.	-52.978sft	0.025sft	0.012sft	0.72
			Dist.	5168.388sft	0.015sft	-0.007sft	-0.73
B59	MON 2	MON 101	**Az.**	120°25'24.7183"	0°00'00.3427"	-0°00'00.0487"	-0.23
			ΔHt.	11.438sft	0.024sft	-0.009sft	-0.55
			Dist.	8977.606sft	0.015sft	0.007sft	0.67
B21	MON 5	KI 5	**Az.**	138°47'38.2707"	0°00'00.5190"	0°00'00.0198"	0.06
			ΔHt.	46.226sft	0.022sft	0.008sft	0.64
			Dist.	5548.819sft	0.014sft	0.006sft	0.65
B57	MON 101	KI 8	**Az.**	109°05'44.8292"	0°00'00.3104"	-0°00'00.0698"	-0.62
			ΔHt.	-12.221sft	0.035sft	0.005sft	0.41
			Dist.	13647.169sft	0.020sft	0.002sft	0.32
B66	MON 242	MON 8	**Az.**	228°01'11.8976"	0°00'00.3865"	0°00'00.1445"	0.54
			ΔHt.	-57.132sft	0.025sft	0.004sft	0.21
			Dist.	8392.854sft	0.015sft	-0.003sft	-0.28

B8	MON 5	MON 6	**Az.**	11°38'01.3443"	0°00'00.2172"	0°00'00.0134"	0.20
			ΔHt.	-3.235sft	0.032sft	-0.001sft	-0.07
			Dist.	18354.443sft	0.020sft	0.003sft	0.47
B75	MON 3	MON 4	**Az.**	111°10'44.8957"	0°00'00.2349"	0°00'00.0129"	0.15
			ΔHt.	63.925sft	0.032sft	-0.005sft	-0.41
			Dist.	17072.487sft	0.019sft	0.002sft	0.23
B40	TXCN	MON 5	**Az.**	283°42'10.9756"	0°00'00.0218"	0°00'00.0000"	0.00
			ΔHt.	-50.227sft	0.053sft	0.000sft	0.00
			Dist.	245227.115sft	0.027sft	0.000sft	0.00

Histograms of Standardized Residuals



Point Error Ellipses

MON 9	MON 11	MON 10
		
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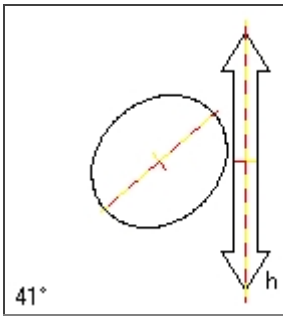
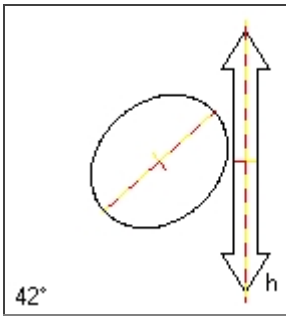
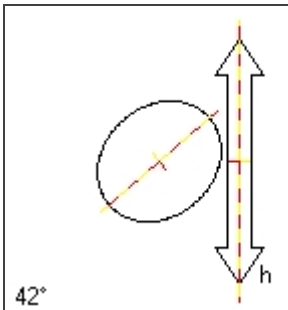
MON 6	**KI 1**	**MON 5**
		
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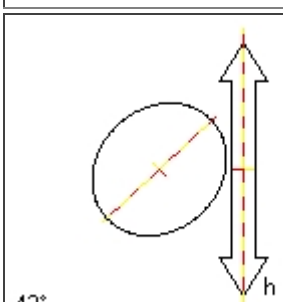
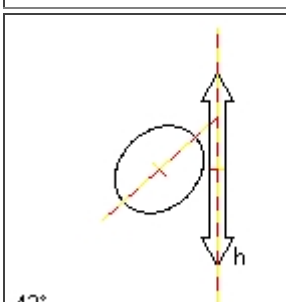
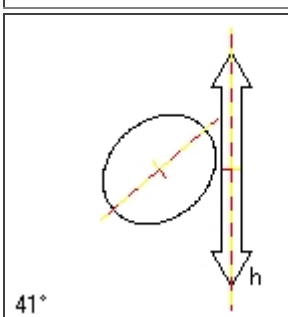
MON 1	**MON 107**	**KI 2**
		
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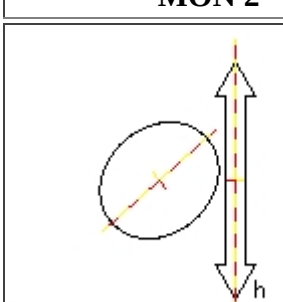
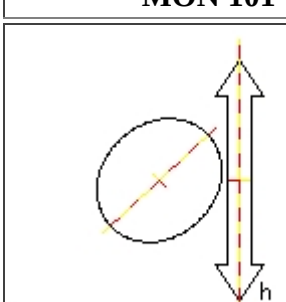
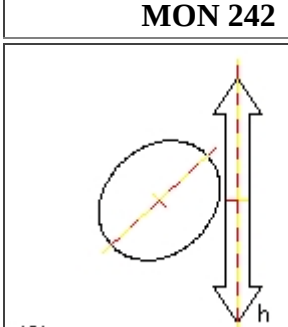
MON 2	**MON 101**	**MON 242**
		

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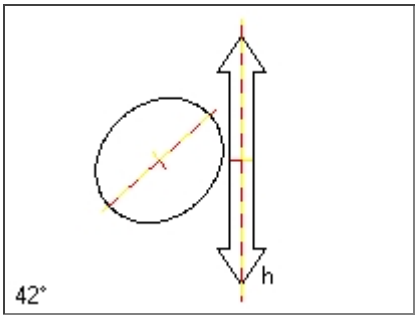
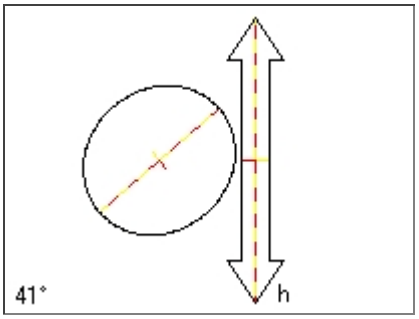
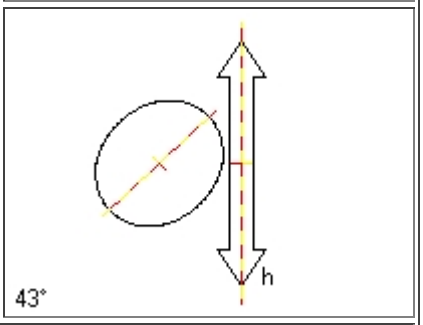
KI 5	**TXCN**	**KI 8**
		
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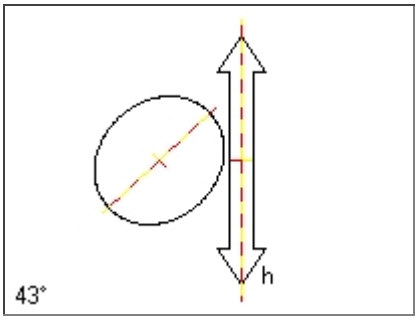
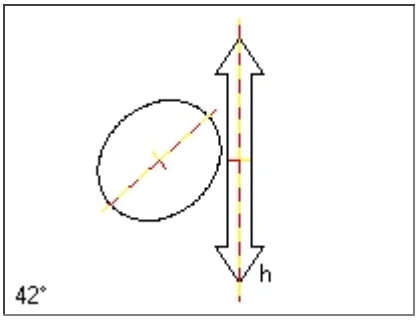
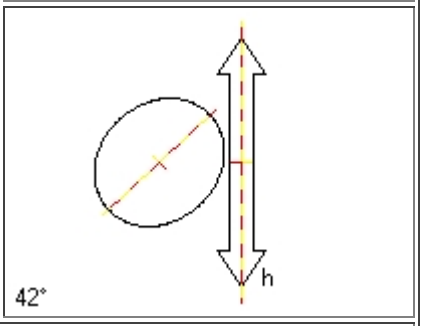
MON 3	**MON 4**	**MON 135**
		
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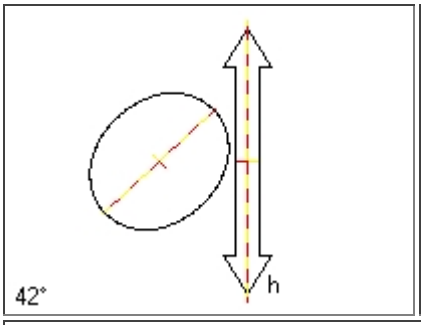
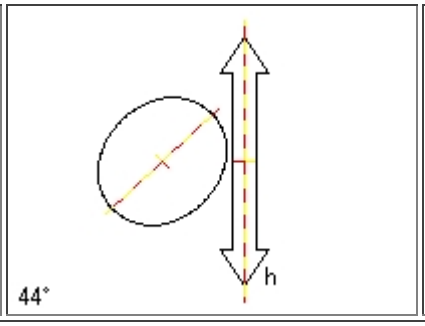
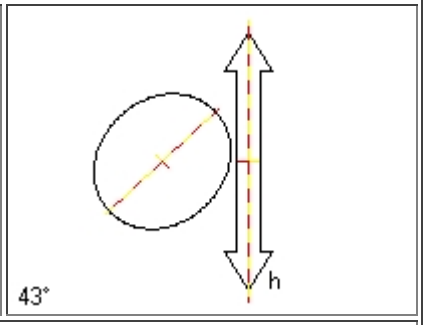
MON 7	**MON 8**	**TXHE**
		
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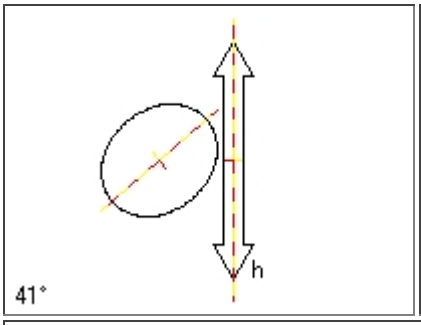
COCS		
		
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		

Covariant Terms

Adjustment performed in WGS-84

From Point	To Point		Components	A-posteriori Error (1.96σ)	Horiz. Precision (Ratio)	3D Precision (Ratio)
MON 9	MON 11	**Az.**	172°43'17.1952"	0°00'00.3508"	1:577409	1:577409
		ΔHt.	13.965sft	0.030sft		
		ΔElev.	?	?		
		Dist.	10948.862sft	0.019sft		
MON 9	MON 10	**Az.**	257°56'25.2379"	0°00'00.1936"	1:1096596	1:1096596
		ΔHt.	39.009sft	0.032sft		
		ΔElev.	?	?		
		Dist.	20210.771sft	0.018sft		
MON 9	KI 1	**Az.**	58°29'16.8975"	0°00'00.1989"	1:838375	1:838375
		ΔHt.	-74.634sft	0.046sft		
		ΔElev.	?	?		
		Dist.	22053.848sft	0.026sft		
MON 9	COCS	**Az.**	300°16'03.4822"	0°00'00.1892"	1:1209268	1:1209268
		ΔHt.	13.859sft	0.028sft		
		ΔElev.	?	?		
		Dist.	17297.624sft	0.014sft		
MON 11	MON 135	**Az.**	209°00'42.4942"	0°00'00.3235"	1:631773	1:631773
		ΔHt.	-5.451sft	0.033sft		
		ΔElev.	?	?		
		Dist.	12340.065sft	0.020sft		
MON 10	MON 1	**Az.**	330°07'00.4125"	0°00'00.3470"	1:592494	1:592494
		ΔHt.	0.734sft	0.029sft		
		ΔElev.	?	?		
		Dist.	11368.016sft	0.019sft		
MON 10	KI 8	**Az.**	218°43'05.2727"	0°00'00.2549"	1:787409	1:787409

		ΔHt.	-33.194sft	0.032sft		
		ΔElev.	?	?		
		Dist.	15244.764sft	0.019sft		
MON 6	KI 1	**Az.**	353°34'32.5394"	0°00'00.1801"	1:1242279	1:1242279
		ΔHt.	-3.978sft	0.034sft		
		ΔElev.	?	?		
		Dist.	21166.800sft	0.017sft		
MON 6	MON 5	**Az.**	191°38'22.8482"	0°00'00.2173"	1:937547	1:937547
		ΔHt.	3.235sft	0.032sft		
		ΔElev.	?	?		
		Dist.	18354.443sft	0.020sft		
KI 1	MON 7	**Az.**	310°09'06.1060"	0°00'01.5772"	1:186201	1:186201
		ΔHt.	35.640sft	0.045sft		
		ΔElev.	?	?		
		Dist.	3781.473sft	0.020sft		
MON 5	KI 5	**Az.**	138°47'38.2707"	0°00'00.5190"	1:400409	1:400409
		ΔHt.	46.226sft	0.022sft		
		ΔElev.	?	?		
		Dist.	5548.819sft	0.014sft		
MON 5	TXCN	**Az.**	103°19'11.6924"	0°00'00.0218"	1:9207921	1:9207921
		ΔHt.	50.227sft	0.053sft		
		ΔElev.	?	?		
		Dist.	245227.115sft	0.027sft		
MON 5	COCS	**Az.**	318°10'31.0460"	0°00'00.0590"	1:3577838	1:3577838
		ΔHt.	81.280sft	0.023sft		
		ΔElev.	?	?		
		Dist.	48604.215sft	0.014sft		
MON 1	MON 8	**Az.**	38°07'01.6161"	0°00'00.2082"	1:975064	1:975064
		ΔHt.	-44.532sft	0.036sft		
		ΔElev.	?	?		
		Dist.	20107.936sft	0.021sft		

MON 107	KI 2	**Az.**	205°12'23.6095"	0°00'00.1292"	1:1396654	1:1396654
		ΔHt.	-106.986sft	0.049sft		
		ΔElev.	?	?		
		Dist.	30327.672sft	0.022sft		
MON 107	MON 242	**Az.**	76°47'31.5774"	0°00'00.1432"	1:1324410	1:1324410
		ΔHt.	-20.417sft	0.056sft		
		ΔElev.	?	?		
		Dist.	33851.828sft	0.026sft		
MON 107	TXBY	**Az.**	8°44'51.1384"	0°00'00.2892"	1:681858	1:681858
		ΔHt.	37.973sft	0.072sft		
		ΔElev.	?	?		
		Dist.	18621.560sft	0.027sft		
MON 107	COCS	**Az.**	113°10'39.2135"	0°00'00.1758"	1:1307712	1:1307712
		ΔHt.	-58.899sft	0.051sft		
		ΔElev.	?	?		
		Dist.	26974.059sft	0.021sft		
KI 2	MON 2	**Az.**	70°05'08.6332"	0°00'01.3401"	1:149635	1:149635
		ΔHt.	40.825sft	0.031sft		
		ΔElev.	?	?		
		Dist.	2911.365sft	0.019sft		
MON 2	MON 101	**Az.**	120°25'24.7183"	0°00'00.3427"	1:593917	1:593917
		ΔHt.	11.438sft	0.024sft		
		ΔElev.	?	?		
		Dist.	8977.606sft	0.015sft		
MON 2	COCS	**Az.**	65°37'41.6315"	0°00'00.1031"	1:2119274	1:2119274
		ΔHt.	7.261sft	0.033sft		
		ΔElev.	?	?		
		Dist.	38392.048sft	0.018sft		
MON 101	KI 8	**Az.**	109°05'44.8292"	0°00'00.3104"	1:668366	1:668366
		ΔHt.	-12.221sft	0.035sft		
		ΔElev.	?	?		

		Dist.	13647.169sft	0.020sft		
MON 242	MON 7	**Az.**	120°00'18.6153"	0°00'00.1868"	1:1213655	1:1213655
		ΔHt.	-91.336sft	0.043sft		
		ΔElev.	?	?		
		Dist.	26180.839sft	0.022sft		
MON 242	MON 8	**Az.**	228°01'11.8976"	0°00'00.3865"	1:555205	1:555205
		ΔHt.	-57.132sft	0.025sft		
		ΔElev.	?	?		
		Dist.	8392.854sft	0.015sft		
MON 242	COCS	**Az.**	204°01'28.4739"	0°00'00.1622"	1:1206696	1:1206696
		ΔHt.	-38.483sft	0.032sft		
		ΔElev.	?	?		
		Dist.	20083.317sft	0.017sft		
KI 5	MON 4	**Az.**	276°55'21.4262"	0°00'00.0916"	1:2340313	1:2340313
		ΔHt.	37.957sft	0.028sft		
		ΔElev.	?	?		
		Dist.	35030.251sft	0.015sft		
KI 8	MON 3	**Az.**	182°35'00.2743"	0°00'00.5928"	1:333893	1:333893
		ΔHt.	-52.978sft	0.025sft		
		ΔElev.	?	?		
		Dist.	5168.388sft	0.015sft		
MON 3	MON 4	**Az.**	111°10'44.8957"	0°00'00.2349"	1:915035	1:915035
		ΔHt.	63.925sft	0.032sft		
		ΔElev.	?	?		
		Dist.	17072.487sft	0.019sft		
MON 4	MON 135	**Az.**	57°15'24.9770"	0°00'00.2904"	1:713138	1:713138
		ΔHt.	-8.248sft	0.025sft		
		ΔElev.	?	?		
		Dist.	10736.308sft	0.015sft		
MON 4	TXHE	**Az.**	153°33'08.6676"	0°00'00.0226"	1:9155389	1:9155389
		ΔHt.	-38.404sft	0.032sft		

		ΔElev.	?	?		
		Dist.	165465.962sft	0.018sft		
MON 4	COCS	**Az.**	357°54'15.6912"	0°00'00.0753"	1:2627265	1:2627265
		ΔHt.	-2.903sft	0.024sft		
		ΔElev.	?	?		
		Dist.	36198.401sft	0.014sft		

Control Survey

Metadata

Minimally Constrained Adjustment results with TXBY fixed LLh
CDSMS Project No.: 109158
TX DOT Quality: 2
Date Established: April 2010
State: TX
County: Brazos
Established By: CDS/Muery Services
Horizontal Datum: NAD 1983 (Conus)
Horizontal Adjustment: CORS
State Plane Projection: N/A
Vertical Datum: N/A
Vertical Adjustment: N/A
Geoid Model Used: N/A
Unit of Measure: US Feet

Control Survey

Minimally Constrained Geodetic Adjustment Results (CORS)

Station	Latitude	Longitude	Ellip. Ht.
			(ft)
COCS	30ø36'21.65948"N	96ø18'02.61071"W	195.660
KI 1	30ø36'49.43728"N	96ø11'36.50720"W	107.167
KI 2	30ø33'35.20997"N	96ø25'14.07465"W	147.574
KI 5	30ø29'41.99511"N	96ø11'09.95547"W	160.606
KI 8	30ø32'15.80580"N	96ø20'46.77347"W	187.616
MON 1	30ø35'51.09957"N	96ø20'02.54416"W	221.544
MON 10	30ø34'13.54682"N	96ø18'57.73985"W	220.810
MON 101	30ø33'00.01902"N	96ø23'14.23598"W	199.837
MON 107	30ø38'06.82382"N	96ø22'46.35204"W	254.560
MON 11	30ø33'07.89995"N	96ø14'55.79914"W	195.766
MON 135	30ø31'21.08186"N	96ø16'04.22214"W	190.315
MON 2	30ø33'45.02402"N	96ø24'42.76715"W	188.399
MON 242	30ø39'23.22614"N	96ø16'29.05059"W	234.143
MON 3	30ø31'24.70221"N	96ø20'49.43686"W	134.638
MON 4	30ø30'23.61691"N	96ø17'47.46427"W	198.563
MON 5	30ø30'23.31673"N	96ø11'51.73498"W	114.380
MON 6	30ø33'21.25101"N	96ø11'09.40491"W	111.145
MON 7	30ø37'13.56999"N	96ø12'09.58494"W	142.807
MON 8	30ø38'27.65812"N	96ø17'40.46726"W	177.011
MON 9	30ø34'55.39580"N	96ø15'11.66293"W	181.801
TXBY	30ø41'08.98727"N	96ø22'13.92022"W	292.533
TXCN	30ø20'56.20585"N	95ø26'28.33747"W	164.608
TXHE	30ø05'56.47287"N	96ø03'48.54557"W	160.159

Control Survey

Fully Constrained Adjustment NAD83(CORS)

Control Survey

Network Adjustment Results Fully Constrained Adjustments

For the final adjustment, all three CORS control monuments were held horizontally, one City of College Station monument was held vertically. The results to the remaining control monuments are posted in the table below.

Fully Constrained versus Published (CORS)

Station	Published	Published Minus Measured Delta Northing	Published Minus Measured Delta Easting	Published Minus Measured Delta Elevation
COCS (OPUS)	NGS	-0.05	0.01	N/A
COCS (PUB)	COCS	-0.11	0.08	N/A
KI 1	COCS	1.65	1.79	0.36
KI 2	COCS	1.67	1.81	0.03
KI 5	COCS	1.67	1.72	0.01
KI 8	COCS	1.61	1.86	0.03
MON 101	COCS	1.63	1.84	-0.03
MON 107	COCS	1.59	1.86	0.00
MON 135	COCS	1.67	1.80	-0.03
MON 242	COCS	1.54	1.93	-0.09
MON 6	COCS	N/A	N/A	0.03
TXBY	NGS	0.00	0.00	N/A
TXCN	NGS	0.00	0.00	N/A
TXHE	NGS	0.00	0.00	N/A

The new primary control data sheets for the static monuments for the NAD83 (CORS) adjustment are located in **Appendix C**.

Control Survey

Fully Constrained Adjustment Report

NAD83(CORS)

Project : 109158 Static

User name	B_GAINES	**Date & Time**	10:38:52 AM 5/13/2010
Coordinate System	US State Plane 1983	**Zone**	Texas Central 4203
Project Datum	NAD 1983 (Conus)		
Vertical Datum		**Geoid Model**	GEOID09 (CONUS)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Adjustment Style Settings - 95% with Setup Errors

Residual Tolerances

To End Iterations : 0.000033sft
Final Convergence Cutoff : 0.016404sft

Covariance Display

Horizontal
Propagated Linear Error [E] : U.S.
Constant Term [C] : 0.00000000sft
Scale on Linear Error [S] : 1.96
Three-Dimensional
Propagated Linear Error [E] : U.S.
Constant Term [C] : 0.00000000sft
Scale on Linear Error [S] : 1.96

Elevation Errors were used in the calculations.

Adjustment Controls

Compute Correlations for Geoid : False

Horizontal and Vertical adjustment performed

Set-up Errors

GPS
Error in Height of Antenna : 0.010sft
Centering Error : 0.007sft

Statistical Summary

Successful Adjustment in 1 iteration(s)

Network Reference Factor : 1.06
Chi Square Test (α=95%) : PASS
Degrees of Freedom : 71.00

GPS Observation Statistics

Reference Factor : 1.06
Redundancy Number (r) : 71.00

Individual GPS Observation Statistics

Observation ID	Reference Factor	Redundancy Number
B1	0.92	0.78
B2	0.63	1.14
B6	0.77	1.45
B8	0.29	0.65
B9	0.82	0.60
B12	0.81	2.15
B15	1.05	1.76
B16	0.74	0.54
B18	0.54	1.51
B19	0.68	2.20

B21	0.51	1.75
B30	0.91	1.83
B31	0.92	1.64
B40	0.99	0.51
B43	0.85	2.01
B45	0.65	1.85
B48	1.05	1.75
B49	1.20	2.01
B51	0.81	0.85
B54	0.79	1.09
B56	0.96	2.12
B57	0.54	1.02
B59	0.56	1.88
B63	0.71	1.47
B64	0.61	1.94
B65	0.78	0.85
B66	0.39	1.90
B67	0.87	0.99
B69	0.70	0.98
B72	0.74	1.66
B75	0.29	1.03
B77	0.88	1.71
B78	0.99	2.10
B92	1.37	1.75
B94	1.42	1.69
B96	2.46	1.75
B105	0.54	1.81
B110	2.05	1.90
B113	1.58	2.49
B122	1.18	1.93
B125	0.52	1.30
B126	1.31	2.06

B134	0.97	2.17
B137	1.81	2.15
B138	0.82	2.27

Geoid Model Statistics

Reference Factor : 1.00
Redundancy Number (r) : 0.00

The GPS height errors exceed the geoid errors. Further scaling of the geoid errors is not recommended.

Weighting Strategies

GPS Observations
User-defined Scalar Applied to All Observations

Scalar : 2.30

Geoid Observations
User-defined Scalar Applied to All Observations

Scalar : 0.01

Adjusted Coordinates

Adjustment performed in NAD 1983 (Conus)

Number of Points : 23
Number of Constrained Points : 4
Horizontal Only : 3
Elevation Only : 1

Adjusted Grid Coordinates

Errors are reported using 1.96σ.

Point Name	Northing	N error	Easting	E error	Elevation	e error	Fix
MON 9	10198966.935sft	0.026sft	3580149.789sft	0.026sft	269.440sft	0.062sft	
MON 11	10188165.439sft	0.028sft	3581934.102sft	0.029sft	283.583sft	0.066sft	

MON 10	10194022.890sft	0.029sft	3560554.954sft	0.029sft	308.286sft	0.064sft	
MON 6	10190245.511sft	0.028sft	3601664.723sft	0.029sft	199.200sft	0.068sft	
KI 1	10211174.580sft	0.030sft	3598514.287sft	0.031sft	194.884sft	0.070sft	
MON 5	10172144.509sft	0.022sft	3598634.493sft	0.022sft	202.658sft	0.061sft	
MON 1	10203667.641sft	0.032sft	3554539.403sft	0.032sft	308.813sft	0.066sft	
MON 107	10216858.811sft	0.023sft	3539745.760sft	0.023sft	341.500sft	0.000sft	e
KI 2	10188979.980sft	0.029sft	3527814.010sft	0.028sft	234.811sft	0.055sft	
MON 2	10190067.183sft	0.029sft	3530514.478sft	0.028sft	275.645sft	0.057sft	
MON 101	10185797.086sft	0.030sft	3538410.647sft	0.029sft	287.221sft	0.060sft	
MON 242	10225758.949sft	0.028sft	3572403.180sft	0.028sft	321.321sft	0.062sft	
KI 5	10168108.957sft	0.023sft	3602442.217sft	0.023sft	248.993sft	0.063sft	
TXBY	10235350.911sft	0.000sft	3541921.711sft	0.000sft	379.258sft	0.078sft	N E
TXCN	10124571.972sft	0.000sft	3839185.965sft	0.000sft	254.546sft	0.082sft	N E
KI 8	10181792.993sft	0.029sft	3551455.962sft	0.028sft	275.184sft	0.063sft	
MON 3	10176625.264sft	0.029sft	3551408.169sft	0.028sft	222.288sft	0.064sft	
MON 4	10171032.039sft	0.022sft	3567536.952sft	0.022sft	286.465sft	0.061sft	
MON 135	10177162.331sft	0.026sft	3576349.947sft	0.026sft	278.222sft	0.065sft	
MON 7	10213503.476sft	0.032sft	3595535.521sft	0.033sft	230.452sft	0.073sft	
MON 8	10219921.950sft	0.031sft	3566373.632sft	0.031sft	264.199sft	0.065sft	
TXHE	10025662.308sft	0.000sft	3646557.916sft	0.000sft	250.067sft	0.069sft	N E
COCS	10207131.212sft	0.024sft	3564901.946sft	0.025sft	283.005sft	0.057sft	

Adjusted Geodetic Coordinates

Errors are reported using 1.96σ.

Point Name	Latitude	N error	Longitude	E error	Height	h error	Fix
MON 9	30°34'55.39585"N	0.026sft	96°15'11.66290"W	0.026sft	181.455sft	0.060sft	
MON 11	30°33'07.89998"N	0.028sft	96°14'55.79912"W	0.029sft	195.420sft	0.064sft	
MON 10	30°34'13.54687"N	0.029sft	96°18'57.73986"W	0.029sft	220.464sft	0.062sft	
MON 6	30°33'21.25103"N	0.028sft	96°11'09.40483"W	0.029sft	110.800sft	0.066sft	
KI 1	30°36'49.43733"N	0.030sft	96°11'36.50711"W	0.031sft	106.822sft	0.069sft	
MON 5	30°30'23.31672"N	0.022sft	96°11'51.73491"W	0.022sft	114.034sft	0.059sft	

MON 1	30°35'51.09964"N	0.032sft	96°20'02.54418"W	0.032sft	221.198sft	0.064sft	
MON 107	30°38'06.82387"N	0.023sft	96°22'46.35207"W	0.023sft	254.215sft	0.016sft	e
KI 2	30°33'35.21001"N	0.029sft	96°25'14.07472"W	0.028sft	147.228sft	0.053sft	
MON 2	30°33'45.02407"N	0.029sft	96°24'42.76722"W	0.028sft	188.053sft	0.055sft	
MON 101	30°33'00.01906"N	0.030sft	96°23'14.23604"W	0.029sft	199.491sft	0.058sft	
MON 242	30°39'23.22623"N	0.028sft	96°16'29.05054"W	0.028sft	233.798sft	0.060sft	
KI 5	30°29'41.99510"N	0.023sft	96°11'09.95542"W	0.023sft	160.260sft	0.061sft	
TXBY	30°41'08.98727"N	0.000sft	96°22'13.92022"W	0.000sft	292.191sft	0.076sft	Lat Long
TXCN	30°20'56.20560"N	0.000sft	95°26'28.33685"W	0.000sft	164.260sft	0.080sft	Lat Long
KI 8	30°32'15.80583"N	0.029sft	96°20'46.77351"W	0.028sft	187.270sft	0.060sft	
MON 3	30°31'24.70224"N	0.029sft	96°20'49.43692"W	0.028sft	134.292sft	0.062sft	
MON 4	30°30'23.61693"N	0.022sft	96°17'47.46431"W	0.022sft	198.217sft	0.059sft	
MON 135	30°31'21.08188"N	0.026sft	96°16'04.22215"W	0.026sft	189.969sft	0.062sft	
MON 7	30°37'13.57005"N	0.032sft	96°12'09.58486"W	0.033sft	142.463sft	0.071sft	
MON 8	30°38'27.65820"N	0.031sft	96°17'40.46723"W	0.031sft	176.666sft	0.063sft	
TXHE	30°05'56.47259"N	0.000sft	96°03'48.54562"W	0.000sft	159.813sft	0.067sft	Lat Long
COCS	30°36'21.65954"N	0.024sft	96°18'02.61070"W	0.025sft	195.315sft	0.055sft	

Coordinate Deltas

Point Name	ΔNorthing	ΔEasting	ΔElevation	ΔHeight	ΔGeoid Separation
MON 9	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 11	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 10	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 6	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
KI 1	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 5	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 1	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 107	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
KI 2	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 2	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 101	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 242	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

KI 5	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
TXBY	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
TXCN	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
KI 8	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 3	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 4	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 135	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 7	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
MON 8	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
TXHE	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
COCS	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Control Coordinate Comparisons

Values shown are control coord minus adjusted coord.

Point Name	ΔNorthing	ΔEasting	ΔElevation	ΔHeight
MON 6	N/A	N/A	0.033sft	N/A
KI 1	N/A	N/A	0.356sft	N/A
MON 107	N/A	N/A	N/A	N/A
KI 2	N/A	N/A	0.029sft	N/A
MON 101	N/A	N/A	-0.031sft	N/A
MON 242	N/A	N/A	-0.091sft	N/A
KI 5	N/A	N/A	0.007sft	N/A
TXBY	N/A	N/A	N/A	0.341sft
TXCN	N/A	N/A	N/A	0.360sft
KI 8	N/A	N/A	0.026sft	N/A
MON 135	N/A	N/A	-0.032sft	N/A
TXHE	N/A	N/A	N/A	0.242sft
COCS	-0.106sft	0.082sft	N/A	0.039sft

Adjusted Observations

Adjustment performed in NAD 1983 (Conus)

GPS Observations

GPS Transformation Group: <GPS Default>

Azimuth Rotation : -0°00'00.0137" **(1.96σ)** : 0°00'00.0246"
Network Scale : 0.99999982 **(1.96σ)** : 0.00000011
Number of Observations : 45
Number of Outliers : 0

Observation Adjustment (Critical Tau = 3.47). Any outliers are in red.

Obs. ID	From Pt.	To Pt.		Observation	A-posteriori Error (1.96σ)	Residual	Stand. Residual
B96	COCS	MON 9	**Az.**	120°14'36.4749"	0°00'00.1875"	0°00'00.2528"	2.22
			ΔHt.	-13.860sft	0.028sft	0.016sft	1.05
			Dist.	17297.623sft	0.014sft	0.031sft	3.31
B110	COCS	MON 5	**Az.**	138°07'22.4903"	0°00'00.0566"	-0°00'00.0170"	-0.45
			ΔHt.	-81.281sft	0.023sft	-0.022sft	-1.54
			Dist.	48604.215sft	0.013sft	0.028sft	2.95
B137	COCS	MON 4	**Az.**	177°54'08.0021"	0°00'00.0708"	0°00'00.0166"	0.28
			ΔHt.	2.902sft	0.024sft	0.006sft	0.33
			Dist.	36198.399sft	0.013sft	-0.031sft	-2.75
B94	TXHE	MON 4	**Az.**	333°40'11.9678"	0°00'00.0195"	-0°00'00.0102"	-0.85
			ΔHt.	38.404sft	0.033sft	0.017sft	1.06
			Dist.	165465.957sft	0.016sft	-0.019sft	-1.88
B126	COCS	MON 5	**Az.**	138°07'22.4903"	0°00'00.0566"	-0°00'00.0245"	-0.56
			ΔHt.	-81.281sft	0.023sft	0.014sft	0.77
			Dist.	48604.215sft	0.013sft	-0.018sft	-1.78
B113	COCS	MON 9	**Az.**	120°14'36.4749"	0°00'00.1875"	-0°00'00.3782"	-1.67
			ΔHt.	-13.860sft	0.028sft	-0.051sft	-1.26
			Dist.	17297.623sft	0.014sft	-0.022sft	-1.63

B48	MON 4	MON 135	**Az.**	57°15'24.9834"	0°00'00.2825"	-0°00'00.0845"	-0.49
			ΔHt.	-8.248sft	0.025sft	0.002sft	0.16
			Dist.	10736.308sft	0.015sft	0.015sft	1.63
B92	TXHE	MON 4	**Az.**	333°40'11.9678"	0°00'00.0195"	0°00'00.0215"	1.61
			ΔHt.	38.404sft	0.033sft	-0.021sft	-1.24
			Dist.	165465.957sft	0.016sft	0.013sft	1.28
B122	COCS	MON 242	**Az.**	24°00'40.8072"	0°00'00.1612"	0°00'00.0082"	0.07
			ΔHt.	38.483sft	0.032sft	-0.027sft	-1.19
			Dist.	20083.317sft	0.017sft	-0.018sft	-1.60
B49	KI 5	MON 4	**Az.**	276°55'21.4259"	0°00'00.0888"	-0°00'00.0545"	-0.78
			ΔHt.	37.957sft	0.028sft	-0.032sft	-1.56
			Dist.	35030.253sft	0.014sft	0.001sft	0.10
B30	TXBY	MON 107	**Az.**	188°45'07.6960"	0°00'00.2597"	-0°00'00.0605"	-0.32
			ΔHt.	-37.976sft	0.074sft	-0.062sft	-1.50
			Dist.	18621.552sft	0.024sft	-0.010sft	-0.49
B134	COCS	MON 242	**Az.**	24°00'40.8072"	0°00'00.1612"	-0°00'00.2185"	-1.49
			ΔHt.	38.483sft	0.032sft	0.018sft	0.65
			Dist.	20083.317sft	0.017sft	0.010sft	0.74
B78	KI 5	MON 4	**Az.**	276°55'21.4259"	0°00'00.0888"	0°00'00.0224"	0.35
			ΔHt.	37.957sft	0.028sft	0.034sft	1.45
			Dist.	35030.253sft	0.014sft	-0.003sft	-0.29
B56	MON 6	KI 1	**Az.**	353°34'32.5320"	0°00'00.1789"	-0°00'00.1930"	-0.98
			ΔHt.	-3.977sft	0.034sft	0.033sft	1.01
			Dist.	21166.800sft	0.017sft	-0.024sft	-1.42
B15	MON 107	KI 2	**Az.**	205°12'23.6149"	0°00'00.1281"	-0°00'00.0718"	-0.90
			ΔHt.	-106.987sft	0.050sft	-0.046sft	-1.37
			Dist.	30327.670sft	0.022sft	-0.010sft	-0.80
B1	MON 9	MON 11	**Az.**	172°43'17.2046"	0°00'00.3386"	-0°00'00.0082"	-0.08
			ΔHt.	13.965sft	0.029sft	0.005sft	0.63
			Dist.	10948.861sft	0.018sft	0.008sft	1.37
B31	TXBY	MON 107	**Az.**	188°45'07.6960"	0°00'00.2597"	0°00'00.0180"	0.11

			ΔHt.	-37.976sft	0.074sft	0.054sft	1.36
			Dist.	18621.552sft	0.024sft	-0.003sft	-0.20
B9	MON 10	MON 1	**Az.**	330°07'00.4116"	0°00'00.3350"	0°00'00.1133"	1.24
			ΔHt.	0.734sft	0.028sft	-0.002sft	-0.25
			Dist.	11368.016sft	0.019sft	0.001sft	0.16
B77	MON 4	MON 135	**Az.**	57°15'24.9834"	0°00'00.2825"	-0°00'00.0758"	-0.45
			ΔHt.	-8.248sft	0.025sft	-0.009sft	-0.59
			Dist.	10736.308sft	0.015sft	-0.010sft	-1.21
B65	MON 8	MON 1	**Az.**	218°08'13.9843"	0°00'00.2036"	0°00'00.0218"	0.34
			ΔHt.	44.532sft	0.036sft	0.003sft	0.24
			Dist.	20107.936sft	0.020sft	0.008sft	1.21
B40	TXCN	MON 5	**Az.**	283°42'10.9725"	0°00'00.0186"	-0°00'00.0032"	-0.57
			ΔHt.	-50.226sft	0.055sft	0.001sft	0.54
			Dist.	245227.123sft	0.023sft	0.008sft	1.15
B6	MON 6	KI 1	**Az.**	353°34'32.5320"	0°00'00.1789"	0°00'00.0139"	0.15
			ΔHt.	-3.977sft	0.034sft	-0.003sft	-0.18
			Dist.	21166.800sft	0.017sft	0.010sft	1.14
B54	MON 7	KI 1	**Az.**	130°08'49.2436"	0°00'01.5940"	0°00'00.4860"	0.57
			ΔHt.	-35.640sft	0.046sft	-0.006sft	-0.33
			Dist.	3781.473sft	0.020sft	-0.007sft	-1.12
B43	KI 1	MON 9	**Az.**	238°31'06.4216"	0°00'00.1978"	0°00'00.1311"	1.08
			ΔHt.	74.633sft	0.047sft	-0.044sft	-0.99
			Dist.	22053.849sft	0.026sft	0.005sft	0.23
B67	MON 11	MON 135	**Az.**	209°00'42.5065"	0°00'00.3145"	-0°00'00.0974"	-0.85
			ΔHt.	-5.451sft	0.033sft	0.006sft	0.51
			Dist.	12340.065sft	0.019sft	0.007sft	1.07
B63	MON 242	MON 8	**Az.**	228°01'11.9057"	0°00'00.3773"	-0°00'00.0795"	-0.42
			ΔHt.	-57.132sft	0.025sft	0.000sft	0.03
			Dist.	8392.854sft	0.015sft	0.008sft	1.04
B12	MON 107	KI 2	**Az.**	205°12'23.6149"	0°00'00.1281"	0°00'00.1054"	1.04
			ΔHt.	-106.987sft	0.050sft	0.034sft	0.75

			Dist.	30327.670sft	0.022sft	-0.006sft	-0.32
B64	MON 5	KI 5	**Az.**	138°47'38.3055"	0°00'00.4976"	-0°00'00.0568"	-0.16
			ΔHt.	46.226sft	0.022sft	-0.015sft	-0.98
			Dist.	5548.818sft	0.013sft	0.001sft	0.08
B51	MON 242	MON 7	**Az.**	120°00'18.6114"	0°00'00.1866"	0°00'00.0267"	0.52
			ΔHt.	-91.335sft	0.044sft	-0.008sft	-0.52
			Dist.	26180.839sft	0.021sft	-0.007sft	-0.95
B138	COCS	MON 4	**Az.**	177°54'08.0021"	0°00'00.0708"	0°00'00.0595"	0.94
			ΔHt.	2.902sft	0.024sft	-0.013sft	-0.57
			Dist.	36198.399sft	0.013sft	0.008sft	0.70
B2	MON 9	MON 10	**Az.**	257°56'25.2356"	0°00'00.1900"	0°00'00.0015"	0.02
			ΔHt.	39.009sft	0.032sft	-0.012sft	-0.94
			Dist.	20210.771sft	0.018sft	-0.003sft	-0.37
B19	MON 107	MON 242	**Az.**	76°47'31.5504"	0°00'00.1386"	-0°00'00.0392"	-0.35
			ΔHt.	-20.417sft	0.058sft	0.055sft	0.93
			Dist.	33851.828sft	0.024sft	0.000sft	-0.01
B72	KI 8	MON 3	**Az.**	182°35'00.2953"	0°00'00.5752"	-0°00'00.0909"	-0.27
			ΔHt.	-52.978sft	0.025sft	-0.012sft	-0.86
			Dist.	5168.388sft	0.015sft	0.006sft	0.68
B125	COCS	MON 2	**Az.**	245°41'05.2269"	0°00'00.1016"	-0°00'00.0081"	-0.16
			ΔHt.	-7.262sft	0.034sft	0.012sft	0.82
			Dist.	38392.049sft	0.018sft	-0.001sft	-0.15
B16	KI 2	MON 2	**Az.**	70°05'08.5267"	0°00'01.2877"	-0°00'00.2590"	-0.70
			ΔHt.	40.826sft	0.030sft	-0.004sft	-0.81
			Dist.	2911.365sft	0.019sft	0.003sft	0.65
B45	KI 8	MON 3	**Az.**	182°35'00.2953"	0°00'00.5752"	0°00'00.1388"	0.38
			ΔHt.	-52.978sft	0.025sft	0.012sft	0.73
			Dist.	5168.388sft	0.015sft	-0.008sft	-0.80
B69	MON 10	KI 8	**Az.**	218°43'05.2750"	0°00'00.2481"	-0°00'00.0046"	-0.05
			ΔHt.	-33.194sft	0.032sft	-0.008sft	-0.73
			Dist.	15244.764sft	0.019sft	0.005sft	0.79

B105	COCS	MON 107	**Az.**	293°13'03.7050"	0°00'00.1638"	0°00'00.0609"	0.59
			ΔHt.	58.900sft	0.053sft	-0.004sft	-0.11
			Dist.	26974.057sft	0.019sft	-0.009sft	-0.75
B57	MON 101	KI 8	**Az.**	109°05'44.8154"	0°00'00.3044"	-0°00'00.0836"	-0.75
			ΔHt.	-12.221sft	0.036sft	0.006sft	0.44
			Dist.	13647.168sft	0.020sft	0.001sft	0.17
B18	MON 2	MON 101	**Az.**	120°25'24.7158"	0°00'00.3322"	-0°00'00.0277"	-0.15
			ΔHt.	11.437sft	0.023sft	0.008sft	0.74
			Dist.	8977.606sft	0.015sft	-0.004sft	-0.48
B59	MON 2	MON 101	**Az.**	120°25'24.7158"	0°00'00.3322"	-0°00'00.0512"	-0.24
			ΔHt.	11.437sft	0.023sft	-0.009sft	-0.56
			Dist.	8977.606sft	0.015sft	0.006sft	0.65
B21	MON 5	KI 5	**Az.**	138°47'38.3055"	0°00'00.4976"	0°00'00.0546"	0.18
			ΔHt.	46.226sft	0.022sft	0.008sft	0.64
			Dist.	5548.818sft	0.013sft	0.004sft	0.52
B66	MON 242	MON 8	**Az.**	228°01'11.9057"	0°00'00.3773"	0°00'00.1526"	0.57
			ΔHt.	-57.132sft	0.025sft	0.004sft	0.21
			Dist.	8392.854sft	0.015sft	-0.003sft	-0.30
B75	MON 3	MON 4	**Az.**	111°10'44.8901"	0°00'00.2290"	0°00'00.0072"	0.08
			ΔHt.	63.925sft	0.032sft	-0.005sft	-0.45
			Dist.	17072.486sft	0.018sft	0.001sft	0.08
B8	MON 5	MON 6	**Az.**	11°38'01.3409"	0°00'00.2118"	0°00'00.0101"	0.16
			ΔHt.	-3.235sft	0.032sft	0.000sft	-0.04
			Dist.	18354.442sft	0.019sft	0.002sft	0.43

Geoid Observations

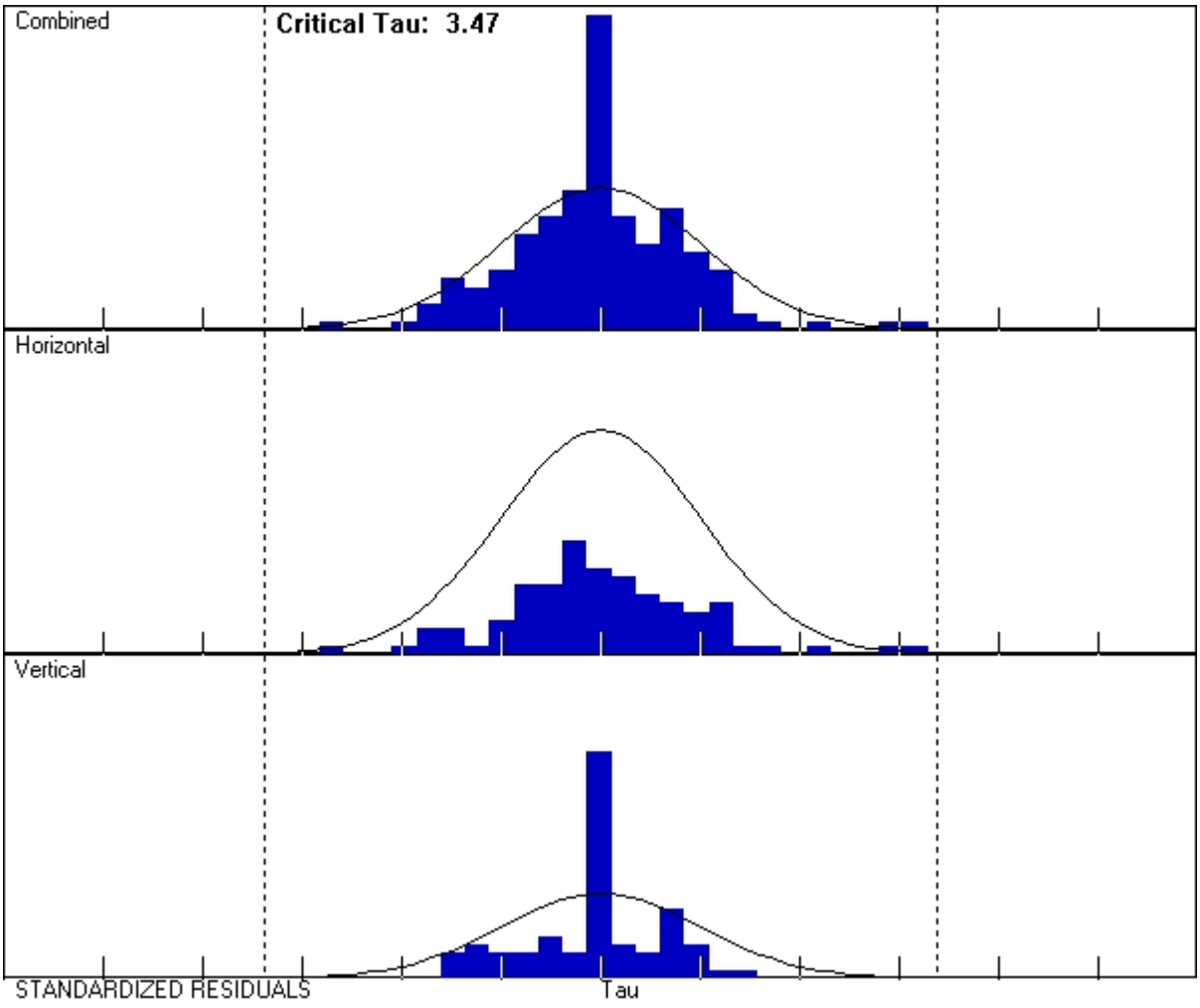
Number of Observations : 23
Number of Outliers : 0

Observation Adjustment (Critical Tau = 3.47). Any outliers are in red.

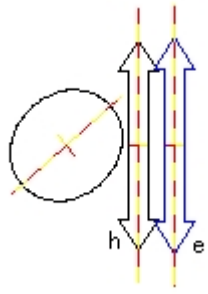
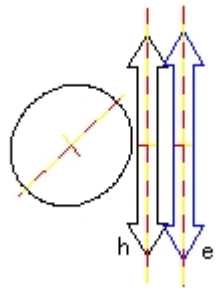
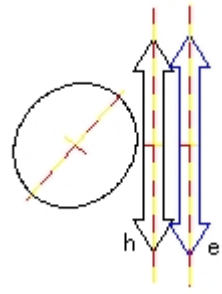
Observation ID	Point Name	Separation	A-posteriori Error (1.96σ)	Residual	Standardized Residual

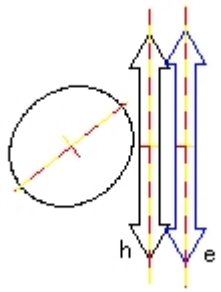
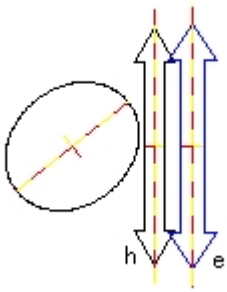
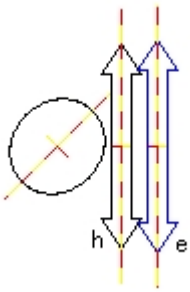
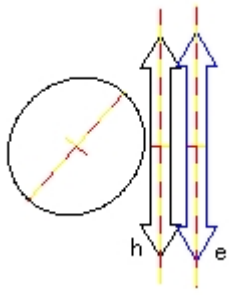
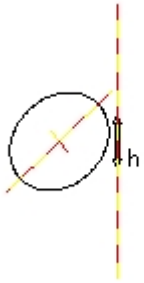
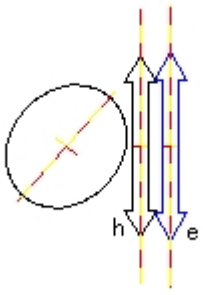
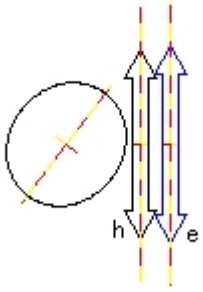
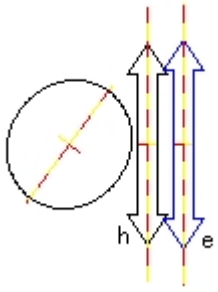
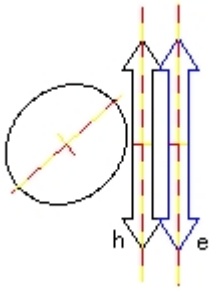
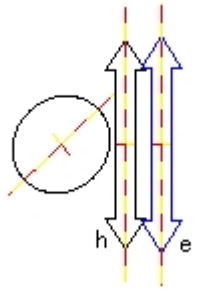
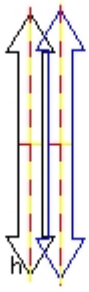
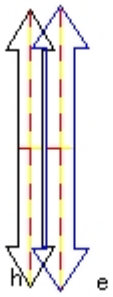
G67	MON 8	-87.533sft	0.016sft	0.000sft	0.00
G69	COCS	-87.690sft	0.016sft	0.000sft	0.00
G68	TXHE	-90.255sft	0.016sft	0.000sft	0.00
G66	MON 7	-87.989sft	0.016sft	0.000sft	0.00
G65	MON 135	-88.253sft	0.016sft	0.000sft	0.00
G64	MON 4	-88.248sft	0.016sft	0.000sft	0.00
G63	MON 3	-87.996sft	0.016sft	0.000sft	0.00
G62	KI 8	-87.914sft	0.016sft	0.000sft	0.00
G61	TXCN	-90.285sft	0.016sft	0.000sft	0.00
G60	TXBY	-87.067sft	0.016sft	0.000sft	0.00
G59	KI 5	-88.733sft	0.016sft	0.000sft	0.00
G58	MON 242	-87.523sft	0.016sft	0.000sft	0.00
G57	MON 101	-87.731sft	0.016sft	0.000sft	0.00
G56	MON 2	-87.591sft	0.016sft	0.000sft	0.00
G55	KI 2	-87.583sft	0.016sft	0.000sft	0.00
G54	MON 107	-87.285sft	0.016sft	0.000sft	0.00
G53	MON 1	-87.615sft	0.016sft	0.000sft	0.00
G52	MON 5	-88.624sft	0.016sft	0.000sft	0.00
G51	KI 1	-88.062sft	0.016sft	0.000sft	0.00
G50	MON 6	-88.400sft	0.016sft	0.000sft	0.00
G49	MON 10	-87.822sft	0.016sft	0.000sft	0.00
G48	MON 11	-88.163sft	0.016sft	0.000sft	0.00
G47	MON 9	-87.985sft	0.016sft	0.000sft	0.00

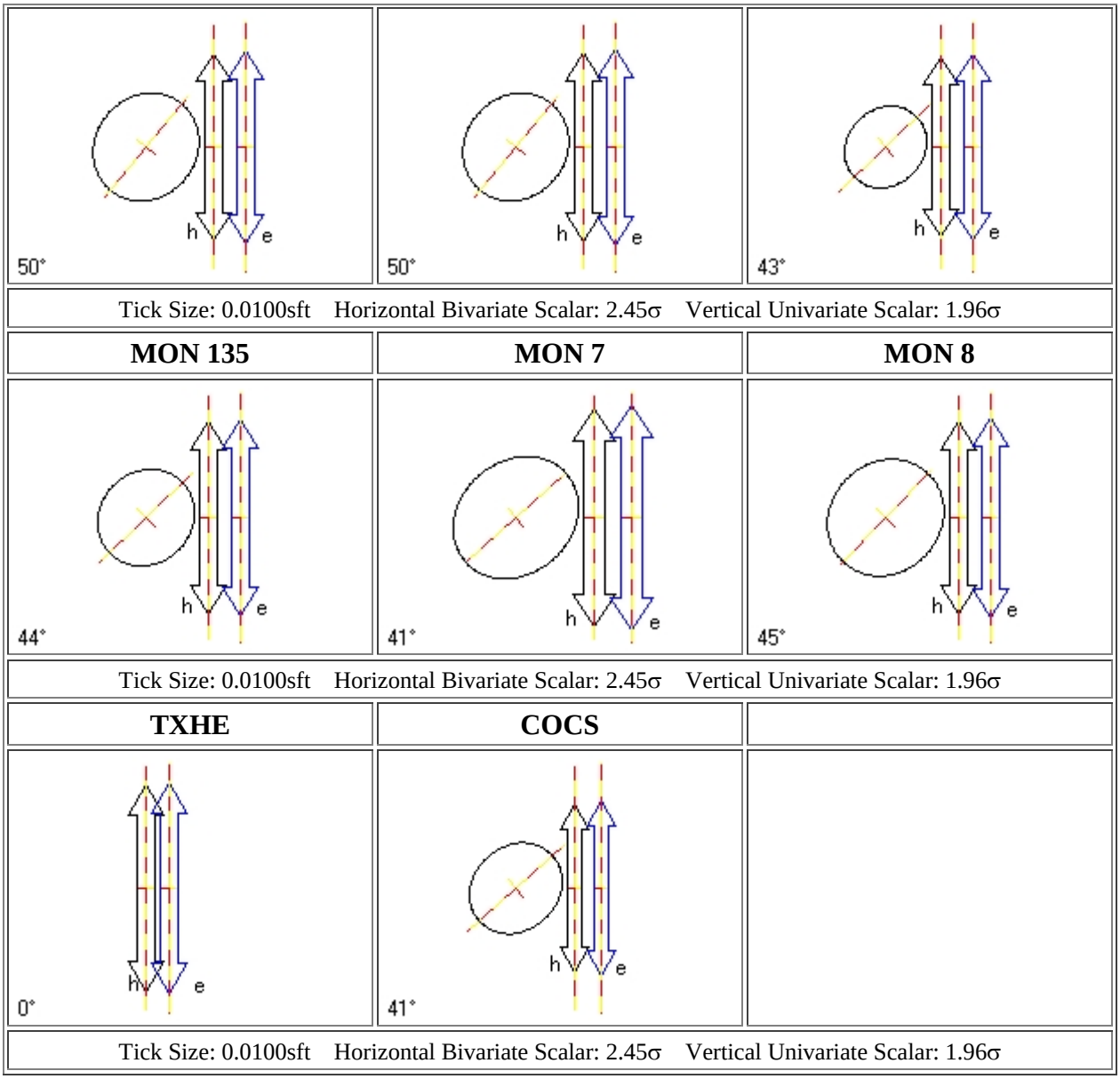
Histograms of Standardized Residuals



Point Error Ellipses

MON 9	MON 11	MON 10
 43°	 44°	 47°
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		

MON 6	KI 1	MON 5
		
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
MON 1	**MON 107**	**KI 2**
		
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
MON 2	**MON 101**	**MON 242**
		
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
KI 5	**TXBY**	**TXCN**
		
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
KI 8	**MON 3**	**MON 4**



Covariant Terms

Adjustment performed in NAD 1983 (Conus)

From Point	To Point		Components	A-posteriori Error (1.96σ)	Horiz. Precision (Ratio)	3D Precision (Ratio)
MON 9	MON 11	**Az.**	172°43'17.2183"	0°00'00.3386"	1:596473	1:596473
		ΔHt.	13.965sft	0.029sft		
		ΔElev.	14.143sft	0.091sft		

		Dist.	10948.863sft	0.018sft		
MON 9	MON 10	**Az.**	257°56'25.2494"	0°00'00.1910"	1:1117489	1:1117489
		ΔHt.	39.009sft	0.032sft		
		ΔElev.	38.846sft	0.089sft		
		Dist.	20210.775sft	0.018sft		
MON 9	KI 1	**Az.**	58°29'16.9189"	0°00'00.1976"	1:839564	1:839564
		ΔHt.	-74.633sft	0.047sft		
		ΔElev.	-74.556sft	0.094sft		
		Dist.	22053.853sft	0.026sft		
MON 9	COCS	**Az.**	300°16'03.4928"	0°00'00.1889"	1:1219697	1:1219697
		ΔHt.	13.860sft	0.028sft		
		ΔElev.	13.566sft	0.085sft		
		Dist.	17297.626sft	0.014sft		
MON 11	MON 135	**Az.**	209°00'42.5202"	0°00'00.3143"	1:649273	1:649273
		ΔHt.	-5.451sft	0.033sft		
		ΔElev.	-5.361sft	0.092sft		
		Dist.	12340.067sft	0.019sft		
MON 10	MON 1	**Az.**	330°07'00.4253"	0°00'00.3357"	1:612767	1:612767
		ΔHt.	0.734sft	0.028sft		
		ΔElev.	0.527sft	0.092sft		
		Dist.	11368.018sft	0.019sft		
MON 10	KI 8	**Az.**	218°43'05.2887"	0°00'00.2488"	1:803565	1:803565
		ΔHt.	-33.194sft	0.032sft		
		ΔElev.	-33.102sft	0.089sft		
		Dist.	15244.767sft	0.019sft		
MON 6	KI 1	**Az.**	353°34'32.5457"	0°00'00.1805"	1:1250831	1:1250831
		ΔHt.	-3.977sft	0.034sft		
		ΔElev.	-4.316sft	0.098sft		
		Dist.	21166.804sft	0.017sft		
MON 6	MON 5	**Az.**	191°38'22.8586"	0°00'00.2139"	1:957779	1:957779
		ΔHt.	3.235sft	0.032sft		

		ΔElev.	3.458sft	0.091sft		
		Dist.	18354.446sft	0.019sft		
KI 1	MON 7	**Az.**	310°09'06.1038"	0°00'01.5929"	1:189975	1:189975
		ΔHt.	35.640sft	0.046sft		
		ΔElev.	35.568sft	0.101sft		
		Dist.	3781.474sft	0.020sft		
MON 5	KI 5	**Az.**	138°47'38.3192"	0°00'00.4990"	1:416412	1:416412
		ΔHt.	46.226sft	0.022sft		
		ΔElev.	46.335sft	0.088sft		
		Dist.	5548.819sft	0.013sft		
MON 5	TXCN	**Az.**	103°19'11.7027"	0°00'00.0194"	1:11254402	1:11254402
		ΔHt.	50.226sft	0.055sft		
		ΔElev.	51.888sft	0.102sft		
		Dist.	245227.167sft	0.022sft		
MON 5	COCS	**Az.**	318°10'31.0514"	0°00'00.0575"	1:3689894	1:3689894
		ΔHt.	81.281sft	0.023sft		
		ΔElev.	80.347sft	0.084sft		
		Dist.	48604.224sft	0.013sft		
MON 1	MON 8	**Az.**	38°07'01.6338"	0°00'00.2046"	1:991118	1:991118
		ΔHt.	-44.532sft	0.036sft		
		ΔElev.	-44.615sft	0.093sft		
		Dist.	20107.940sft	0.020sft		
MON 107	KI 2	**Az.**	205°12'23.6287"	0°00'00.1279"	1:1399674	1:1399674
		ΔHt.	-106.987sft	0.050sft		
		ΔElev.	-106.689sft	0.055sft		
		Dist.	30327.676sft	0.022sft		
MON 107	MON 242	**Az.**	76°47'31.5641"	0°00'00.1362"	1:1397055	1:1397055
		ΔHt.	-20.417sft	0.058sft		
		ΔElev.	-20.179sft	0.062sft		
		Dist.	33851.835sft	0.024sft		
MON 107	TXBY	**Az.**	8°44'51.1711"	0°00'00.2506"	1:783524	1:783524

		ΔHt.	37.976sft	0.074sft		
		ΔElev.	37.758sft	0.078sft		
		Dist.	18621.555sft	0.024sft		
MON 107	COCS	**Az.**	113°10'39.1947"	0°00'00.1558"	1:1468332	1:1468332
		ΔHt.	-58.900sft	0.053sft		
		ΔElev.	-58.495sft	0.057sft		
		Dist.	26974.062sft	0.018sft		
KI 2	MON 2	**Az.**	70°05'08.5404"	0°00'01.2868"	1:155803	1:155803
		ΔHt.	40.826sft	0.030sft		
		ΔElev.	40.834sft	0.079sft		
		Dist.	2911.365sft	0.019sft		
MON 2	MON 101	**Az.**	120°25'24.7296"	0°00'00.3323"	1:611873	1:611873
		ΔHt.	11.437sft	0.023sft		
		ΔElev.	11.577sft	0.083sft		
		Dist.	8977.608sft	0.015sft		
MON 2	COCS	**Az.**	65°37'41.6390"	0°00'00.1032"	1:2143440	1:2143440
		ΔHt.	7.262sft	0.034sft		
		ΔElev.	7.361sft	0.081sft		
		Dist.	38392.056sft	0.018sft		
MON 101	KI 8	**Az.**	109°05'44.8291"	0°00'00.3044"	1:683771	1:683771
		ΔHt.	-12.221sft	0.036sft		
		ΔElev.	-12.037sft	0.087sft		
		Dist.	13647.171sft	0.020sft		
MON 242	MON 7	**Az.**	120°00'18.6251"	0°00'00.1875"	1:1223279	1:1223279
		ΔHt.	-91.335sft	0.044sft		
		ΔElev.	-90.869sft	0.096sft		
		Dist.	26180.844sft	0.021sft		
MON 242	MON 8	**Az.**	228°01'11.9194"	0°00'00.3779"	1:571059	1:571059
		ΔHt.	-57.132sft	0.025sft		
		ΔElev.	-57.122sft	0.090sft		
		Dist.	8392.856sft	0.015sft		

MON 242	COCS	**Az.**	204°01'28.4908"	0°00'00.1627"	1:1201412	1:1201412
		ΔHt.	-38.483sft	0.032sft		
		ΔElev.	-38.316sft	0.085sft		
		Dist.	20083.320sft	0.017sft		
KI 5	MON 4	**Az.**	276°55'21.4396"	0°00'00.0882"	1:2439028	1:2439028
		ΔHt.	37.957sft	0.028sft		
		ΔElev.	37.472sft	0.088sft		
		Dist.	35030.259sft	0.014sft		
KI 8	MON 3	**Az.**	182°35'00.3091"	0°00'00.5747"	1:342269	1:342269
		ΔHt.	-52.978sft	0.025sft		
		ΔElev.	-52.896sft	0.090sft		
		Dist.	5168.389sft	0.015sft		
MON 3	MON 4	**Az.**	111°10'44.9038"	0°00'00.2297"	1:944334	1:944334
		ΔHt.	63.925sft	0.032sft		
		ΔElev.	64.176sft	0.088sft		
		Dist.	17072.489sft	0.018sft		
MON 4	MON 135	**Az.**	57°15'24.9971"	0°00'00.2829"	1:732552	1:732552
		ΔHt.	-8.248sft	0.025sft		
		ΔElev.	-8.243sft	0.089sft		
		Dist.	10736.310sft	0.015sft		
MON 4	TXHE	**Az.**	153°33'08.6855"	0°00'00.0287"	1:8033420	1:8033420
		ΔHt.	-38.404sft	0.033sft		
		ΔElev.	-36.397sft	0.092sft		
		Dist.	165465.987sft	0.021sft		
MON 4	COCS	**Az.**	357°54'15.7160"	0°00'00.0704"	1:2831454	1:2831454
		ΔHt.	-2.902sft	0.024sft		
		ΔElev.	-3.459sft	0.084sft		
		Dist.	36198.406sft	0.013sft		

Control Survey

Metadata

Fully Constrained Adjustment NAD83 (CORS)/NAVD88
CDSMS Project No.: 109158
TX DOT Quality: 2
Date Established: April 2010
State: TX
County: Brazos
Established By: CDS/Muery Services
Horizontal Datum: NAD 1983 (Conus)
Horizontal Adjustment: CORS
State Plane Projection: Texas Central (4203)
Vertical Datum: NAVD
Vertical Adjustment: 1988
Geoid Model Used: Geoid09 (Conus)
Unit of Measure: US Feet

NAD83 (CORS) Geodetic Adjustment Results

Station	Latitude	Longitude	Ellip. Ht. (ft)
COCS	30ø36'21.65954"N	96ø18'02.61070"W	195.314
KI 1	30ø36'49.43733"N	96ø11'36.50711"W	106.821
KI 2	30ø33'35.21000"N	96ø25'14.07473"W	147.228
KI 5	30ø29'41.99509"N	96ø11'09.95542"W	160.260
KI 8	30ø32'15.80583"N	96ø20'46.77351"W	187.270
TXBY	30ø41'08.98727"N	96ø22'13.92022"W	292.191
TXCN	30ø20'56.20560"N	95ø26'28.33685"W	164.260
TXHE	30ø05'56.47259"N	96ø03'48.54562"W	159.812
MON 1	30ø35'51.09963"N	96ø20'02.54418"W	221.197
MON 2	30ø33'45.02407"N	96ø24'42.76722"W	188.053
MON 3	30ø31'24.70224"N	96ø20'49.43691"W	134.292
MON 4	30ø30'23.61692"N	96ø17'47.46431"W	198.217
MON 5	30ø30'23.31672"N	96ø11'51.73491"W	114.034
MON 6	30ø33'21.25102"N	96ø11'09.40483"W	110.799
MON 7	30ø37'13.57004"N	96ø12'09.58486"W	142.461
MON 8	30ø38'27.65820"N	96ø17'40.46723"W	176.665
MON 9	30ø34'55.39584"N	96ø15'11.66290"W	181.455

Control Survey

NAD83 (CORS) Geodetic Adjustment Results cont'd.

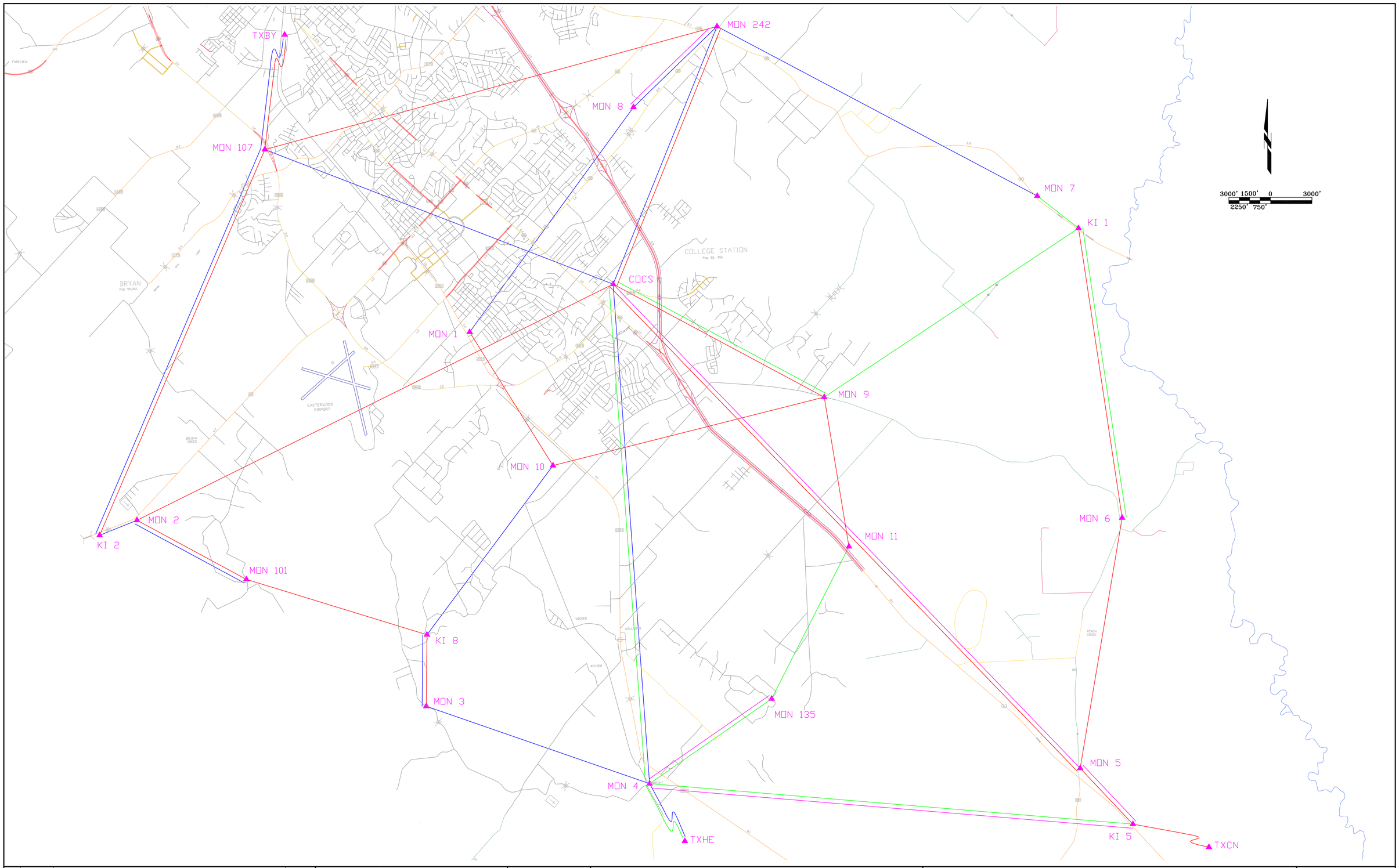
Station	Latitude	Longitude	Ellip. Ht.
			(ft)
MON 10	30ø34'13.54687"N	96ø18'57.73986"W	220.464
MON 11	30ø33'07.89997"N	96ø14'55.79912"W	195.420
MON 101	30ø33'00.01906"N	96ø23'14.23605"W	199.491
MON 107	30ø38'06.82387"N	96ø22'46.35207"W	254.215
MON 135	30ø31'21.08188"N	96ø16'04.22215"W	189.969
MON 242	30ø39'23.22623"N	96ø16'29.05054"W	233.797

NAD83 (CORS)/NAVD88 Adjustment Results

Station	Northing	Easting	Ortho. Ht.	Convergence	Grid Scale	Elev. Scale	Combined
	(us ft)	(us ft)	(ft)	Angle	Factor	Factor	Factor
COCS	10207131.21	3564901.95	283.10	2ø04'37"	0.99990540	0.99999067	0.99989608
KI 1	10211174.58	3598514.29	194.95	2ø07'56"	0.99990449	0.99999490	0.99989939
KI 2	10188979.98	3527814.01	234.91	2ø00'55"	0.99991125	0.99999297	0.99990422
KI 5	10168108.96	3602442.22	249.06	2ø08'10"	0.99992054	0.99999235	0.99991288
KI 8	10181792.99	3551455.96	275.28	2ø03'13"	0.99991427	0.99999106	0.99990533
TXBY	10235350.91	3541921.71	379.37	2ø02'28"	0.99989682	0.99998605	0.99988287
TXCN	10124571.97	3839185.97	254.54	2ø31'11"	0.99994611	0.99999216	0.99993826
TXHE	10025662.31	3646557.92	250.12	2ø11'57"	1.00000476	0.99999237	0.99999713
MON 1	10203667.64	3554539.40	308.91	2ø03'36"	0.99990643	0.99998944	0.99989587
MON 2	10190067.18	3530514.48	275.74	2ø01'11"	0.99991089	0.99999102	0.99990191
MON 3	10176625.26	3551408.17	222.38	2ø03'11"	0.99991629	0.99999359	0.99990988
MON 4	10171032.04	3567536.95	286.56	2ø04'45"	0.99991879	0.99999054	0.99990932
MON 5	10172144.51	3598634.49	202.73	2ø07'48"	0.99991880	0.99999456	0.99991335
MON 6	10190245.51	3601664.72	199.26	2ø08'10"	0.99991177	0.99999471	0.99990648
MON 7	10213503.48	3595535.52	230.52	2ø07'39"	0.99990371	0.99999320	0.99989691
MON 8	10219921.95	3566373.63	264.29	2ø04'49"	0.99990140	0.99999156	0.99989296
MON 9	10198966.93	3580149.79	269.52	2ø06'05"	0.99990835	0.99999134	0.99989969
MON 10	10194022.89	3560554.95	308.39	2ø04'09"	0.99990985	0.99998947	0.99989932
MON 11	10188165.44	3581934.10	283.66	2ø06'14"	0.99991227	0.99999067	0.99990294
MON 101	10185797.09	3538410.65	287.32	2ø01'57"	0.99991257	0.99999048	0.99990305
MON 107	10216858.81	3539745.76	341.61	2ø02'11"	0.99990204	0.99998786	0.99988990
MON 135	10177162.33	3576349.95	278.31	2ø05'38"	0.99991644	0.99999093	0.99990737
MON 242	10225758.95	3572403.18	321.410	2ø05'25"	0.99989975	0.99998884	0.99988859

Appendix A

Control Map



NO	DATE	REVISION	BY
–			

DESIGNED BY REG
DRAWN BY RML
CHECKED BY REG
REVIEWED BY REG
DATE May 2010

CDS/MUERY SERVICES
Engineering & Surveying
3411 MAGIC DR. • SAN ANTONIO, TEXAS 78229 • 210-581-1111

City of College Station
2010 Control Survey
Brazos County, Texas

SHEET NO. 1
OF 1 SHEETS
FILE NO. 109158
Static Network.dwg

Appendix B

Published Control

Data Sheets

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = MAY  7, 2010
 DG9804 ***********************************************************************
 DG9804  CORS         -  This is a GPS Continuously Operating Reference Station.
 DG9804  DESIGNATION -  BRYAN CORS ARP
 DG9804  CORS_ID      -  TXBY
 DG9804  PID          -  DG9804
 DG9804  STATE/COUNTY-  TX/BRAZOS
 DG9804  USGS QUAD    -  BRYAN EAST (1980)
 DG9804
 DG9804                        *CURRENT SURVEY CONTROL
 DG9804
 DG9804* NAD 83(CORS)-  30 41 08.98727(N)     096 22 13.92022(W)      ADJUSTED
 DG9804* NAVD 88      -              **(meters)             **(feet)
 DG9804
 DG9804  EPOCH DATE   -         2002.00
 DG9804  X            -    -609,150.206 (meters)                      COMP
 DG9804  Y            -  -5,456,025.548 (meters)                      COMP
 DG9804  Z            -   3,236,033.962 (meters)                      COMP
 DG9804  ELLIP HEIGHT-           89.164 (meters)          (04/??/05) ADJUSTED
 DG9804  GEOID HEIGHT-          -26.54  (meters)                      GEOID09
 DG9804  HORZ ORDER   -  SPECIAL (CORS)
 DG9804  ELLP ORDER   -  SPECIAL (CORS)
 DG9804
 DG9804.ITRF positions are available for this station.
 DG9804.The coordinates were established by GPS observations
 DG9804.and adjusted by the National Geodetic Survey in April 2005.
 DG9804.The coordinates are valid at the epoch date displayed above.
 DG9804.The epoch date for horizontal control is a decimal equivalence
 DG9804.of Year/Month/Day.
 DG9804
 DG9804
 DG9804.The PID for the CORS L1 Phase Center is DG9805.
 DG9804
 DG9804.The XYZ, and position/ellipsoidal ht. are equivalent.
 DG9804
 DG9804.The ellipsoidal height was determined by GPS observations
 DG9804.and is referenced to NAD 83.
 DG9804
 DG9804.The geoid height was determined by GEOID09.
 DG9804
 DG9804;                    North         East      Units Scale Factor Converg.
 DG9804;SPC TX C     - 3,119,741.197 1,079,579.897   MT  0.99989682   +2 02 27.9
 DG9804;SPC TX C     -10,235,350.91  3,541,921.71   sFT  0.99989682   +2 02 27.9
 DG9804
 DG9804!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DG9804!SPC TX C     -   0.99998600  x   0.99989682  =   0.99988282
 DG9804
 DG9804                         SUPERSEDED SURVEY CONTROL
 DG9804
 DG9804.No superseded survey control is available for this station.
 DG9804
 DG9804_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU5188697735(NAD 83)
 DG9804_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
 DG9804
 DG9804                         STATION DESCRIPTION
 DG9804
```

```
DG9804'DESCRIBED BY NATIONAL GEODETIC SURVEY 2005
DG9804'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DG9804'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DG9804'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DG9804'    FTP CORS.NGS.NOAA.GOV: CORS/COORD  AND  CORS/STATION_LOG
DG9804'    HTTP://WWW.NGS.NOAA.GOV/CORS.

*** retrieval complete.
Elapsed Time = 00:00:00
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = MAY  7, 2010
 DH3604 ***********************************************************************
 DH3604  CORS         -  This is a GPS Continuously Operating Reference Station.
 DH3604  DESIGNATION -  CONROE CORS ARP
 DH3604  CORS_ID      -  TXCN
 DH3604  PID          -  DH3604
 DH3604  STATE/COUNTY-  TX/MONTGOMERY
 DH3604  USGS QUAD    -  CONROE (1976)
 DH3604
 DH3604                        *CURRENT SURVEY CONTROL
 DH3604
 DH3604* NAD 83(CORS)-  30 20 56.20560(N)     095 26 28.33685(W)      ADJUSTED
 DH3604* NAVD 88     -              **(meters)            **(feet)
 DH3604
 DH3604  EPOCH DATE  -        2002.00
 DH3604  X           -     -522,373.237 (meters)                      COMP
 DH3604  Y           -   -5,484,034.023 (meters)                      COMP
 DH3604  Z           -    3,203,840.050 (meters)                      COMP
 DH3604  ELLIP HEIGHT-          50.176 (meters)          (04/??/08) ADJUSTED
 DH3604  GEOID HEIGHT-         -27.52  (meters)                      GEOID09
 DH3604  HORZ ORDER  -  SPECIAL (CORS)
 DH3604  ELLP ORDER  -  SPECIAL (CORS)
 DH3604
 DH3604.ITRF positions are available for this station.
 DH3604.The coordinates were established by GPS observations
 DH3604.and adjusted by the National Geodetic Survey in April 2008.
 DH3604.The coordinates are valid at the epoch date displayed above.
 DH3604.The epoch date for horizontal control is a decimal equivalence
 DH3604.of Year/Month/Day.
 DH3604
 DH3604
 DH3604.The PID for the CORS L1 Phase Center is DK3561.
 DH3604
 DH3604.The XYZ, and position/ellipsoidal ht. are equivalent.
 DH3604
 DH3604.The ellipsoidal height was determined by GPS observations
 DH3604.and is referenced to NAD 83.
 DH3604
 DH3604.The geoid height was determined by GEOID09.
 DH3604
 DH3604;                    North          East      Units Scale Factor Converg.
 DH3604;SPC TX C     - 3,085,975.709 1,170,186.223   MT  0.99994611   +2 31 11.0
 DH3604;SPC TX C     -10,124,571.97  3,839,185.97    sFT  0.99994611   +2 31 11.0
 DH3604
 DH3604!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DH3604!SPC TX C     -   0.99999212  x   0.99994611  =   0.99993823
 DH3604
 DH3604                          SUPERSEDED SURVEY CONTROL
 DH3604
 DH3604  NAD 83(CORS)-  30 20 56.20557(N)     095 26 28.33702(W) AD(2002.00) c
 DH3604  ELLIP H (06/??/05)   50.198  (m)                        GP(2002.00) c c
 DH3604
 DH3604.Superseded values are not recommended for survey control.
 DH3604.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DH3604.See file dsdata.txt to determine how the superseded data were derived.
 DH3604
```

```
DH3604_U.S. NATIONAL GRID SPATIAL ADDRESS: 15RTP6534459979(NAD 83)
DH3604_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DH3604
DH3604                          STATION DESCRIPTION
DH3604
DH3604'DESCRIBED BY NATIONAL GEODETIC SURVEY 2008
DH3604'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DH3604'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH3604'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH3604'    FTP CORS.NGS.NOAA.GOV: CORS/COORD  AND  CORS/STATION_LOG
DH3604'    HTTP://WWW.NGS.NOAA.GOV/CORS.

*** retrieval complete.
Elapsed Time = 00:00:00
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = MAY  7, 2010
 DH3608 ***********************************************************************
 DH3608  CORS         -  This is a GPS Continuously Operating Reference Station.
 DH3608  DESIGNATION -  HEMPSTEAD CORS ARP
 DH3608  CORS_ID      -  TXHE
 DH3608  PID          -  DH3608
 DH3608  STATE/COUNTY-  TX/WALLER
 DH3608  USGS QUAD    -  HEMPSTEAD (1980)
 DH3608
 DH3608                        *CURRENT SURVEY CONTROL
 DH3608
 DH3608* NAD 83(CORS)-  30 05 56.47259(N)     096 03 48.54562(W)      ADJUSTED
 DH3608* NAVD 88     -              **(meters)            **(feet)
 DH3608
 DH3608  EPOCH DATE  -        2002.00
 DH3608  X           -    -583,375.535 (meters)                      COMP
 DH3608  Y           -  -5,491,904.770 (meters)                      COMP
 DH3608  Z           -   3,179,899.563 (meters)                      COMP
 DH3608  ELLIP HEIGHT-          48.785 (meters)          (06/??/05) ADJUSTED
 DH3608  GEOID HEIGHT-         -27.51  (meters)                      GEOID09
 DH3608  HORZ ORDER  -  SPECIAL (CORS)
 DH3608  ELLP ORDER  -  SPECIAL (CORS)
 DH3608
 DH3608.ITRF positions are available for this station.
 DH3608.The coordinates were established by GPS observations
 DH3608.and adjusted by the National Geodetic Survey in June 2005.
 DH3608.The coordinates are valid at the epoch date displayed above.
 DH3608.The epoch date for horizontal control is a decimal equivalence
 DH3608.of Year/Month/Day.
 DH3608
 DH3608
 DH3608.The PID for the CORS L1 Phase Center is DK3562.
 DH3608
 DH3608.The XYZ, and position/ellipsoidal ht. are equivalent.
 DH3608
 DH3608.The ellipsoidal height was determined by GPS observations
 DH3608.and is referenced to NAD 83.
 DH3608
 DH3608.The geoid height was determined by GEOID09.
 DH3608
 DH3608;                    North         East      Units Scale Factor Converg.
 DH3608;SPC TXSC     - 4,254,658.291   883,008.372   MT  0.99995196   +1 26 19.1
 DH3608;SPC TXSC     -13,958,824.74  2,897,003.30    sFT 0.99995196   +1 26 19.1
 DH3608
 DH3608!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DH3608!SPC TXSC     -   0.99999234  x   0.99995196  =   0.99994430
 DH3608
 DH3608                          SUPERSEDED SURVEY CONTROL
 DH3608
 DH3608.No superseded survey control is available for this station.
 DH3608
 DH3608_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU8300033396(NAD 83)
 DH3608_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
 DH3608
 DH3608                          STATION DESCRIPTION
 DH3608
```

```
DH3608'DESCRIBED BY NATIONAL GEODETIC SURVEY 2005
DH3608'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DH3608'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH3608'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH3608'    FTP CORS.NGS.NOAA.GOV: CORS/COORD  AND  CORS/STATION_LOG
D  08'    HTTP://WWW.NGS.NOAA.GOV/CORS.

*** retrieval complete.
Elapsed Time = 00:00:00
```

College Station
Brazos County, TX
Photogrammetric Control Survey

February 2, 2005

For

Kucera International, Inc.
105-006

GEOMETRICS GPS, INC.

236 Cambridge St., Fredericksburg, VA. 22405
(540)372-3499 fax (540)371-5703
www.geometrics-gps.com

Report of Survey

GeoMetrics GPS, Inc., of Fredericksburg, Virginia (under contract to Kucera International, Inc.) performed a photogrammetric ground control survey throughout the southern portion of Brazos County, Texas. The purpose of the survey was to provide horizontal and vertical control for mapping. The survey was performed from January 26, 2005, through January 31, 2005.

The ground control for aerial photography was targeted on January 28, 2005. Twenty-five (25) photogrammetric control points were targeted. Seventeen (17) of the targeted points were existing county marks stamped COLLEGE STATION, Mon. #, 1994. The remaining eight (8) control points were 18 inch long rebar with a yellow plastic cap driven flush with the ground surface, set by GeoMetrics. The set points were designated 1 through 8 and were sketched and referenced for future recovery. The sketches and photos were submitted earlier in a targeting report dated February 2, 2005.

The eight (8) photogrammetric control points set by GeoMetrics were surveyed January 29, 2005, using Global Positioning Systems (GPS) Technology. GeoMetrics used Trimble 4000ssi dual frequency geodetic GPS receivers. Fast static carrier phase methodology was used to determine vectors from existing survey control stations to and through the new control stations. The vectors were combined to form a network, which was adjusted by the method of least squares. County monuments 101, 135 and 261 were held fixed to establish positions for the eight (8) new points labeled 1 through 8.

Final adjustments were calculated in NAD83 Texas State Plane coordinates system, Central Zone. The vertical datum is NGVD29. The U.S. Survey Foot definition is used to convert from meters (1 meter = 39.37/12 feet).

CITY OF COLLEGE STATION

HORIZONTAL CONTROL MONUMENT

MENT NAME	DATE ESTABLISHED	STATE:	COUNTY
101	1994	TEXAS	BRAZOS

AD-27 GEODETIC POSITION		NAD-83 GEODETIC POSITION	
ATITUDE	N 030° 32' 59.30552"	LATITUDE	N 030° 33' 00.03457"
ONGITUDE	W 096° 23' 13.34621"	LONGITUDE	W 096° 23' 14.21430"

AD-27 TEXAS STATE PLANE COORDINATES CENTRAL ZONE		NAD-83 TEXAS STATE PLANE COORDINATES CENTRAL ZONE (US Survey Feet)	
COORDINATE	343216.744	Y COORDINATE	10185798.719
COORDINATE	3241933.058	X COORDINATE	3538412.491
ONVERGENCE =	2° 01' 57.26"	CONVERGENCE =	2° 01' 56.82"
CALE FACTOR =	0.9999126	SCALE FACTOR =	0.9999126

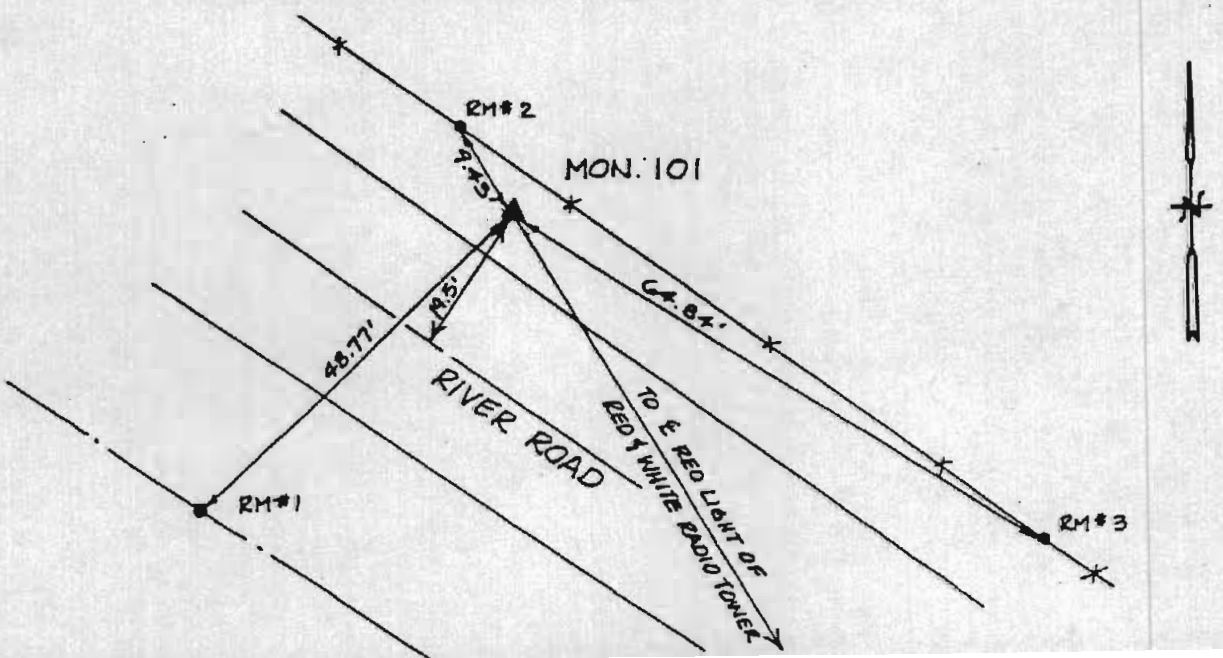
.P.S ELEVATION : 287.19 ft. (NGVD 1929 MEAN SEA LEVEL DATUM)

ZIMUTH MARK	ASTRONOMIC AZIMUTH (FROM NORTH)	GRID AZIMUTH (FROM NORTH)
ADIO TOWER	N 177° 54' 49"	N 175° 52' 52"

EFERENCE MARK DESCRIPTION	DISTANCE (ft)	DIRECTION
ENTER OF RED LIGHT ON RED AND WHITE RADIO TOWER		000°00'00"
M 1: P.K. NAIL WITH SHINER NORTHEAST FACE OF P.P.	48.77'	075°47'28"
: P.K. NAIL WITH SHINER IN CREOSOTE FENCE POST.	9.43'	156°53'25"
: P.K. NAIL WITH SHINER IN CREOSOTE FENCE POST.	64.84'	333°18'26"

ETAILED DESCRIPTION :
LUMINUM CAP SET IN CONCRETE, STAMPED "COLLEGE STATION MON. 101, 1994". HE MONUMENT IS LOCATED IN COLLEGE STATION, TEXAS, ON THE NORTHEAST SIDE OF IVER ROAD. THE MONUMENT IS 305 FEET IN A NORTHERLY DIRECTION ALONG RIVER ROAD ROM ITS INTERSECTION WITH DOGWOOD TRAIL. THE MONUMENT IS 9 FEET NORTHEAST OF HE NORTHEAST EDGE OF RIVER ROAD (GRAVEL).

IELD SKETCH



CITY OF COLLEGE STATION

HORIZONTAL CONTROL MONUMENT

MONUMENT NAME	DATE ESTABLISHED	STATE:	COUNTY
107	1994	TEXAS	BRAZOS

NAD-27 GEODETIC POSITION		NAD-83 GEODETIC POSITION	
LATITUDE	N 030° 38' 06.11970"	LATITUDE	N 030° 38' 06.83897"
LONGITUDE	W 096° 22' 45.46463"	LONGITUDE	W 096° 22' 46.33018"

NAD-27 TEXAS STATE PLANE COORDINATES CENTRAL ZONE		NAD-83 TEXAS STATE PLANE COORDINATES CENTRAL ZONE (US Survey Feet)	
Y COORDINATE	374278.328	Y COORDINATE	10216860.404
X COORDINATE	3243267.953	X COORDINATE	3539747.617
CONVERGENCE =	2° 02' 11.62"	CONVERGENCE =	2° 02' 11.18"
SCALE FACTOR =	0.9999020	SCALE FACTOR =	0.9999020

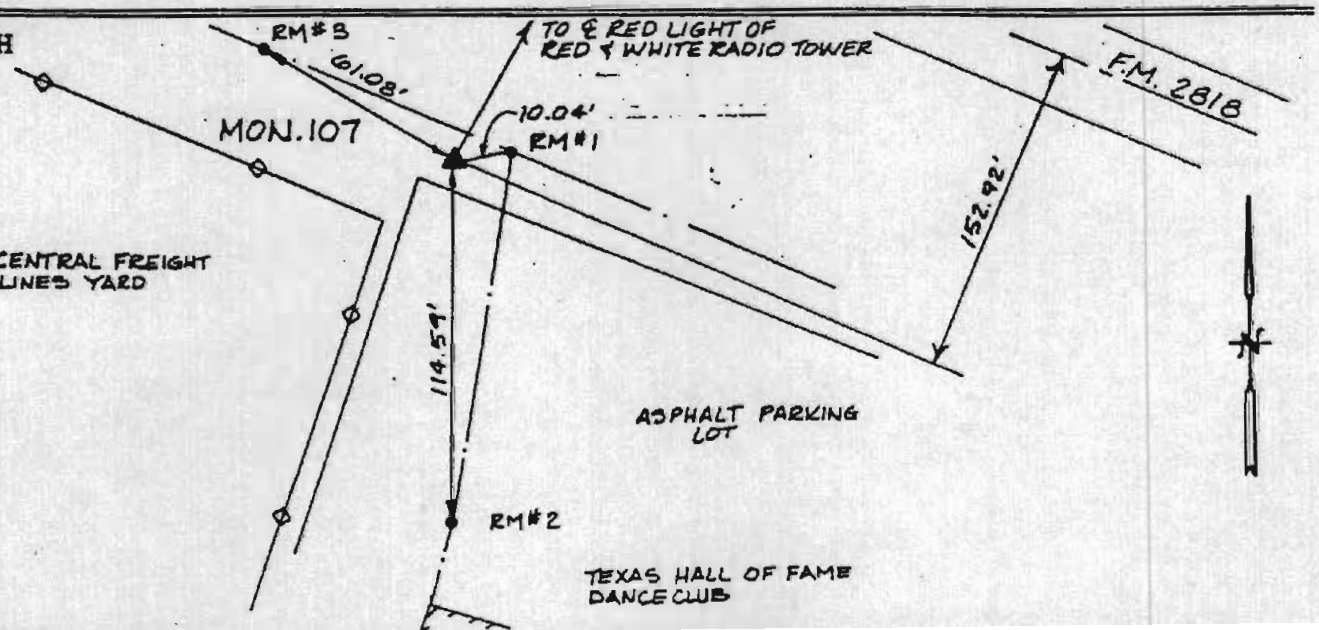
G.P.S ELEVATION : 341.50 ft. (NGVD 1929 MEAN SEA LEVEL DATUM)

AZIMUTH MARK	ASTRONOMIC AZIMUTH (FROM NORTH)	GRID AZIMUTH (FROM NORTH)
RADIO TOWER	N 059° 34' 01"	N 057° 31' 50"

REFERENCE MARK DESCRIPTION	DISTANCE (ft)	DIRECTION
CENTER OF RED LIGHT ON TOP OF RED AND WHITE RADIO TOWER.		000°00'00"
RM 1: P.K. NAIL WITH SHINER IN WEST FACE OF A POWER POLE.	10.04'	057°14'13"
RM 2: P.K. NAIL WITH SHINER IN NORTH FACE OF LIGHT POLE.	114.59'	152°33'21"
RM 3: P.K. NAIL WITH SHINER IN EAST FACE OF P.P.	61.08'	273°18'41"

DETAILED DESCRIPTION :
ALUMINUM CAP SET IN CONCRETE, STAMPED "COLLEGE STATION MON. 107, 1994". THE MONUMENT IS LOCATED IN BRYAN, TEXAS, ON THE SOUTHWEST SIDE OF F.M. 2818. TO REACH THE MONUMENT FROM THE INTERSECTION OF VILLA MARIA (F.M. 1179) AND F.M. 2818, GO NORTHWEST ON F.M. 2818 APPROXIMATELY 0.3 MILES TO THE MONUMENT ON THE LEFT 136.42 FEET SOUTHWEST OF THE SOUTHWEST EDGE OF PAVEMENT OF THE EAST BOUND LANE OF F.M. 2818, 1' NORTHEAST OF THE EDGE OF ASPHALT OF THE PARKING LOT OF THE TEXAS HALL OF FAME DANCE CLUB AND 8' FROM EAST FENCE CORNER OF CENTRAL FREIGHT LINES YARD.

FIELD SKETCH



CITY OF COLLEGE STATION

HORIZONTAL CONTROL MONUMENT

MENT NAME	DATE ESTABLISHED	STATE:	COUNTY
135	1994	TEXAS	BRAZOS

NAD-27 GEODETIC POSITION		NAD-83 GEODETIC POSITION	
LATITUDE	N 030° 31' 20.36777"	LATITUDE	N 030° 31' 21.09775"
ONGITUDE	W 096° 16' 03.34377"	LONGITUDE	W 096° 16' 04.20091"

NAD-27 TEXAS STATE PLANE COORDINATES CENTRAL ZONE		NAD-83 TEXAS STATE PLANE COORDINATES CENTRAL ZONE (US Survey Feet)	
COORDINATE	334582.359	Y COORDINATE	10177164.001
COORDINATE	3279872.212	X COORDINATE	3576351.744
ONVERGENCE =	2° 05' 38.74"	CONVERGENCE =	2° 05' 38.30"
CALE FACTOR =	0.9999165	SCALE FACTOR =	0.9999164

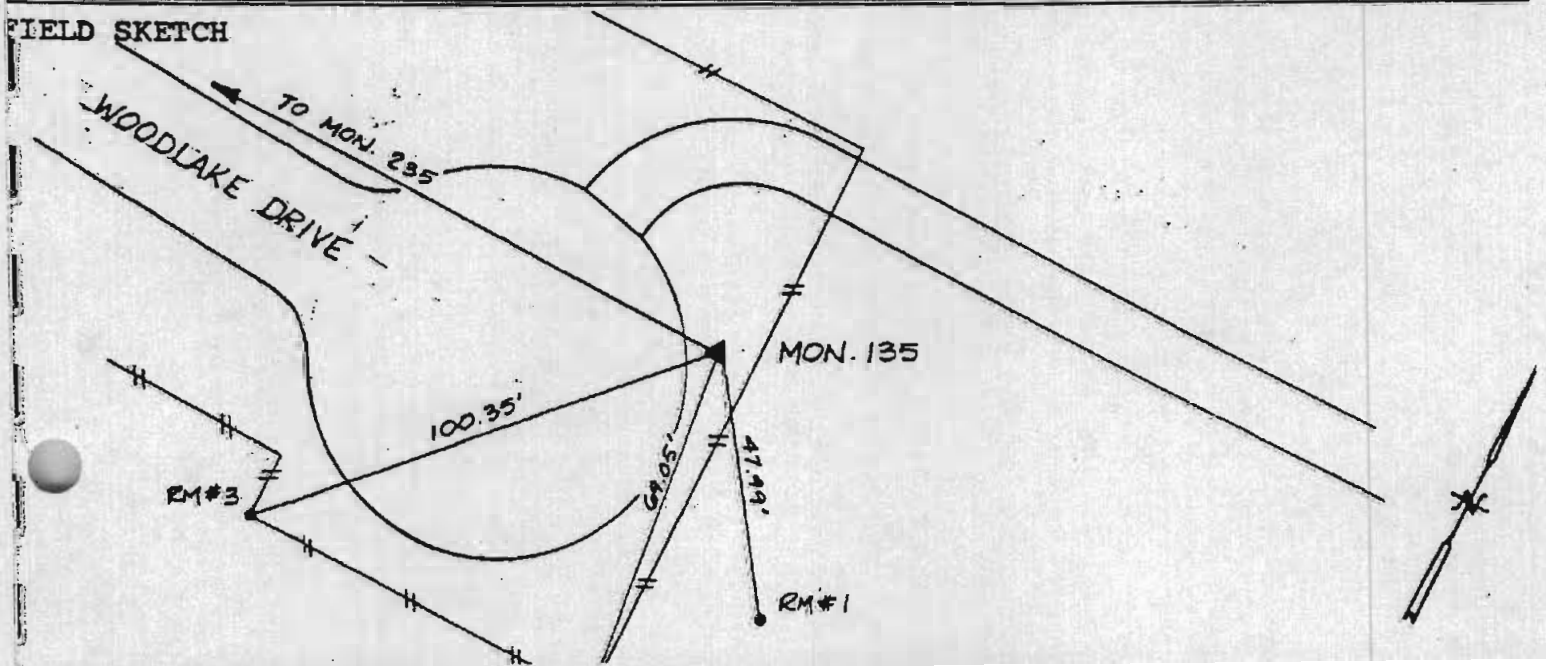
.P.S ELEVATION : 278.19 ft. (NGVD 1929 MEAN SEA LEVEL DATUM)

AZIMUTH MARK	ASTRONOMIC AZIMUTH (FROM NORTH)	GRID AZIMUTH (FROM NORTH)
ONUMENT 235	N 310° 05' 09"	N 307° 59' 31"

REFERENCE MARK DESCRIPTION	DISTANCE (ft)	DIRECTION
ONUMENT 235	812.78'	000°00'00"
M 1: P.K. NAIL WITH SHINER IN LIGHT POLE	47.99'	235°15'45"
: P.K. NAIL WITH SHINER IN CENTER TOP OF FENCE CORNER POST	69.05'	263°43'05
M 3: P.K. NAIL WITH SHINER IN CENTER TOP OF FENCE CORNER POST	100.35'	313°31'45"

ETAILED DESCRIPTION :
LUMINUM CAP SET IN CONCRETE, STAMPED "COLLEGE STATION MON. 135, 1994".
HE MONUMENT IS LOCATED SOUTH OF COLLEGE STATION, AT THE END OF WOODLAKE DRIVE. ONUMENT IS 1.2 MILES EAST OF THE INTERSECTION OF GREENS PRAIRIE ROAD AND OODLAKE DRIVE. THE MONUMENT IS 1.6 FEET EAST OF A WOOD FENCE AND 20.2 FEET OUTH FROM THE CENTERLINE OF WOODLAKE DRIVE.

IELD SKETCH



CITY OF COLLEGE STATION

HORIZONTAL CONTROL MONUMENT

UMENT NAME . 242	DATE ESTABLISHED 1994	STATE: TEXAS	COUNTY BRAZOS

NAD-27 GEODETIC POSITION		NAD-83 GEODETIC POSITION	
LATITUDE	N 030° 39' 22.52590"	LATITUDE	N 030° 39' 23.24080"
LONGITUDE	W 096° 16' 28.17324"	LONGITUDE	W 096° 16' 29.02787"

NAD-27 TEXAS STATE PLANE COORDINATES CENTRAL ZONE		NAD-83 TEXAS STATE PLANE COORDINATES CENTRAL ZONE (US Survey Feet)	
Y COORDINATE	383178.651	Y COORDINATE	10225760.493
X COORDINATE	3275925.208	X COORDINATE	3572405.106
CONVERGENCE =	2° 05' 25.95"	CONVERGENCE =	2° 05' 25.51"
SCALE FACTOR =	0.9998998	SCALE FACTOR =	0.9998998

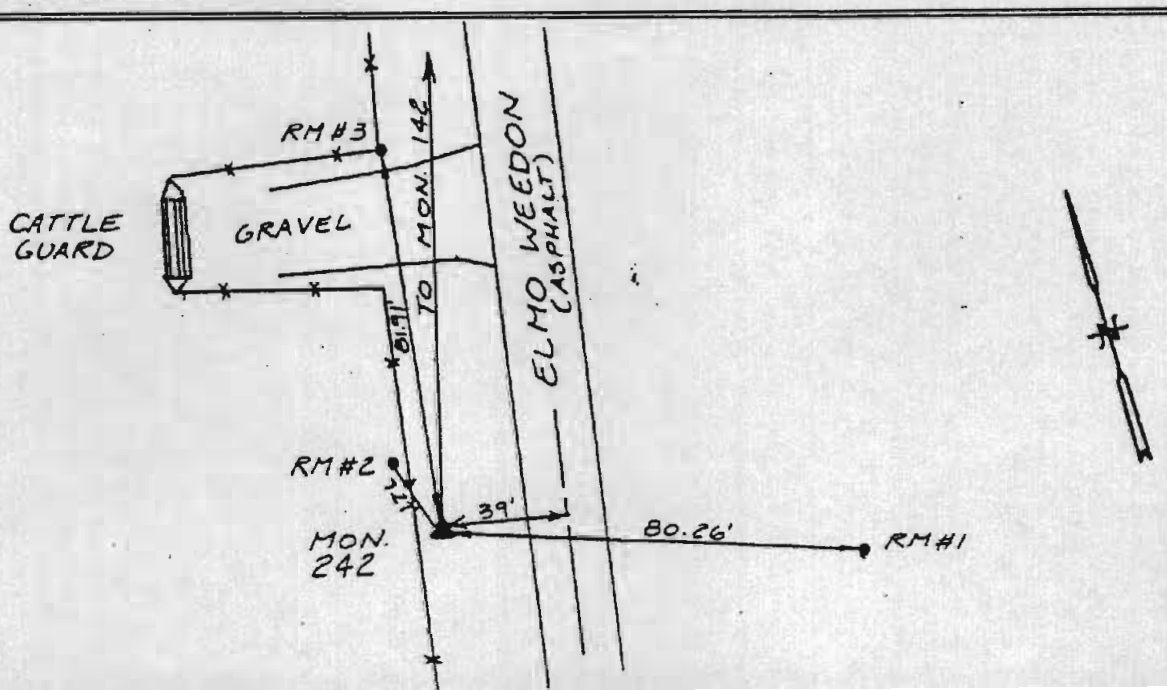
G.P.S ELEVATION : 321.23 ft. (NGVD 1929 MEAN SEA LEVEL DATUM)

AZIMUTH MARK	ASTRONOMIC AZIMUTH (FROM NORTH)	GRID AZIMUTH (FROM NORTH)
MONUMENT 142	N 042° 25' 27"	N 040° 20' 01"

REFERENCE MARK DESCRIPTION	DISTANCE (ft)	DIRECTION
MONUMENT 142	1,660.06'	000°00'00"
RM 1: P.K. NAIL WITH SHINER IN GUY POLE	80.26'	092°46'35"
2: P.K. NAIL WITH SHINER IN POWER POLE	7.27'	326°26'50"
3: P.K. NAIL WITH SHINER IN FENCE CORNER POST	81.91'	353°14'33"

DETAILED DESCRIPTION :
ALUMINUM CAP SET IN CONCRETE, STAMPED "COLLEGE STATION MON. 242, 1994". THE MONUMENT IS LOCATED NORTH OF COLLEGE STATION ON THE WEST SIDE OF ELMO WEEDON ROAD. MONUMENT IS NORTH 0.30 MILE FROM THE INTERSECTION OF HIGHWAY 6 AND ELMO WEEDON ROAD. MONUMENT IS 39.0' FEET WEST OF CENTERLINE OF ELMO WEEDON ROAD AND 1.8 FEET EAST OF FENCE.

FIELD SKETCH



CITY OF COLLEGE STATION

HORIZONTAL CONTROL MONUMENT

MONUMENT NAME	DATE ESTABLISHED	STATE:	COUNTY
261	1994	TEXAS	BRAZOS

NAD-27 GEODETIC POSITION		NAD-83 GEODETIC POSITION	
LATITUDE	N 030° 33' 13.28276"	LATITUDE	N 030° 33' 14.00751"
LONGITUDE	W 096° 11' 09.05442"	LONGITUDE	W 096° 11' 09.90317"

NAD-27 TEXAS STATE PLANE COORDINATES CENTRAL ZONE		NAD-83 TEXAS STATE PLANE COORDINATES CENTRAL ZONE (US Survey Feet)	
Y COORDINATE	346931.159	Y COORDINATE	10189512.625
X COORDINATE	3305168.742	X COORDINATE	3601648.459
CONVERGENCE =	2° 08' 10.32"	CONVERGENCE =	2° 08' 09.88"
SCALE FACTOR =	0.9999121	SCALE FACTOR =	0.9999120

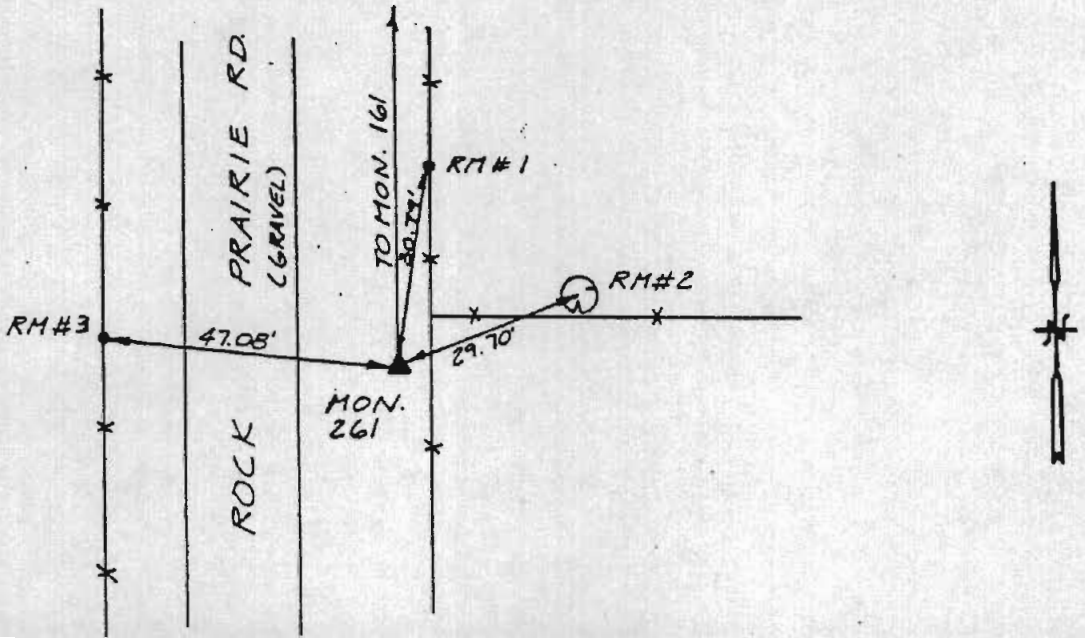
G.P.S ELEVATION : 200.12 ft. (NGVD 1929 MEAN SEA LEVEL DATUM)

AZIMUTH MARK	ASTRONOMIC AZIMUTH (FROM NORTH)	GRID AZIMUTH (FROM NORTH)
MONUMENT 161	N 359° 02' 44"	N 356° 54' 34"

REFERENCE MARK DESCRIPTION	DISTANCE (ft)	DIRECTION
MONUMENT 161	997.25'	000°00'00"
RM 1: P.K. NAIL WITH SHINER IN FENCE POST AT GAP	30.79'	080°08'02"
RM 2: P.K. NAIL WITH SHINER IN 6" HACKBERRY	29.70'	071°21'53"
RM 3: P.K. NAIL WITH SHINER IN H BRACE POST	47.08'	276°07'43"

DETAILED DESCRIPTION :
ALUMINUM CAP SET IN CONCRETE, STAMPED "COLLEGE STATION MON. 261, 1994". THE MONUMENT IS LOCATED IN COLLEGE STATION, ON THE EAST SIDE OF ROCK PRAIRIE ROAD (GRAVEL). THE MONUMENT IS NORTH APPROXIMATELY 175 FEET OF THE INTERSECTION OF SULPHUR SPRINGS ROAD AND ROCK PRAIRIE ROAD. MONUMENT IS 1.2 FEET EAST OF A FENCE LINE AND 24.0 FEET WEST OF THE CENTERLINE OF ROCK PRAIRIE ROAD .

FIELD SKETCH



PHOTOGRAMMETRIC CONTROL SURVEY

Kucera International, Inc
College Station, Brazos County, TX

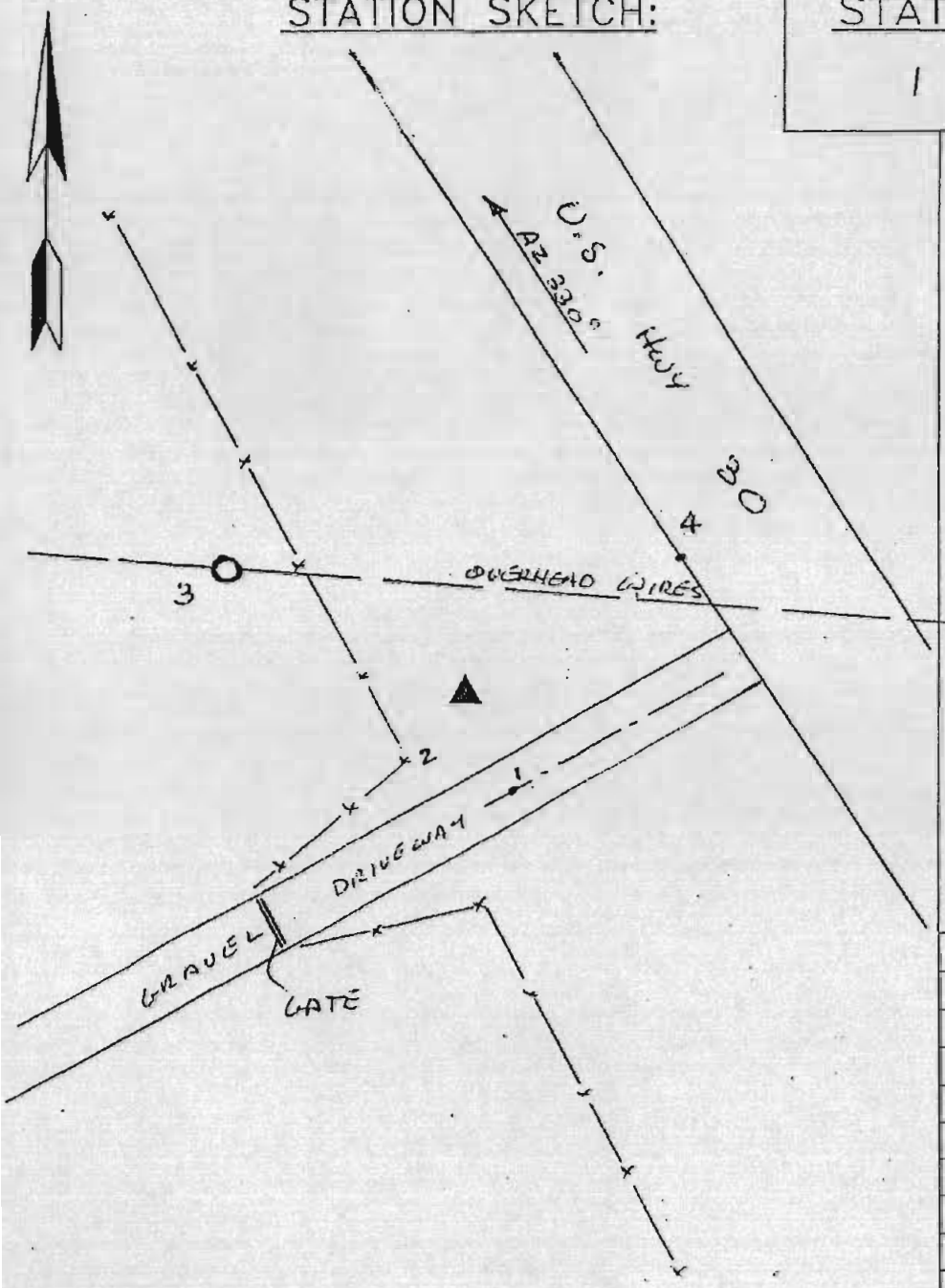
The coordinates and elevations shown below were surveyed using the following published federal, state, and county survey control points: 101, 135, and 261.

NAD83, NGVD29
Texas, Central Zone
U.S. Survey Foot

STATION	LATITUDE	LONGITUDE	NORTHING	EASTING	ELEV	REMARKS
1	30°36'49.45301"N	96°11'36.48594"W	10211176.23	3598516.08	195.24	Rebar & Cap
2	30°33'35.22591"N	96°25'14.05330"W	10188981.65	3527815.82	234.84	Rebar & Cap
3	30°28'40.41298"N	96°17'57.53286"W	10160580.86	3567034.79	276.45	Rebar & Cap
4	30°28'34.24322"N	96°14'08.43491"W	10160690.51	3587090.65	305.78	Rebar & Cap
5	30°29'42.01103"N	96°11'09.93502"W	10168110.63	3602443.94	249.00	Rebar & Cap
6	30°30'45.99423"N	96°21'03.40507"W	10172673.58	3550327.27	270.59	Rebar & Cap
7	30°31'46.37108"N	96°11'49.32845"W	10180537.03	3598532.94	229.18	Rebar & Cap
8	30°32'15.82110"N	96°20'46.75159"W	10181794.60	3551457.82	275.21	Rebar & Cap

Checked by: KRo

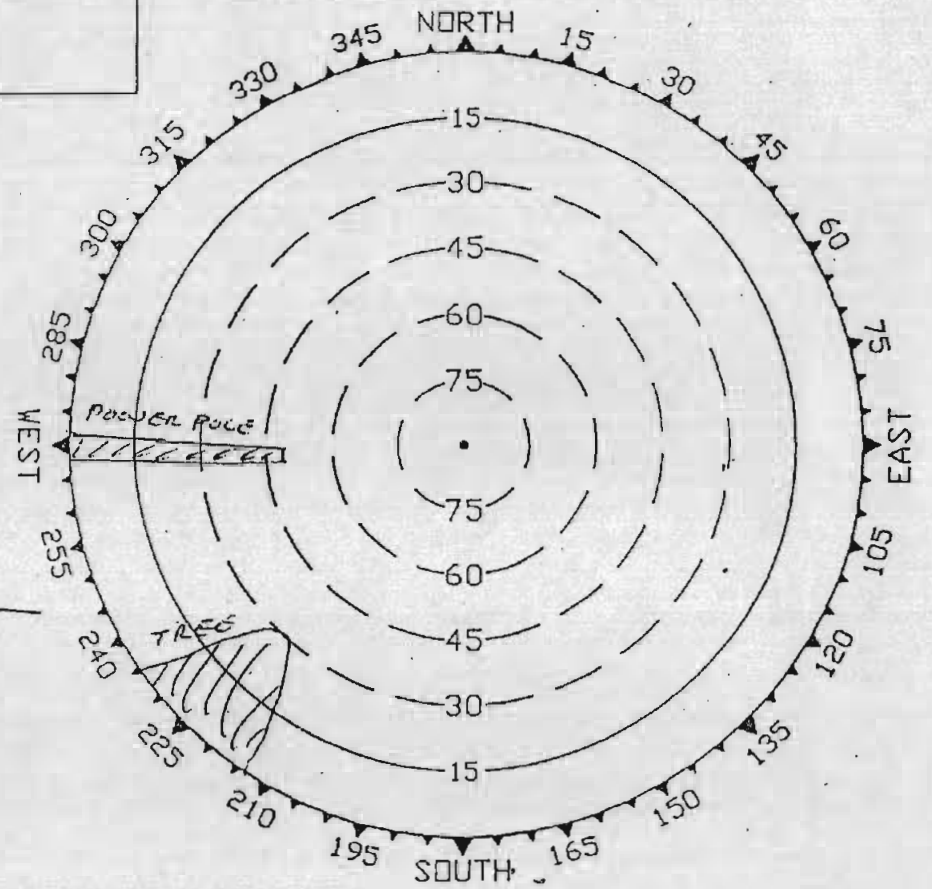
STATION SKETCH:



STATION:

1

OBSTRUCTION DIAGRAM:



REFERENCE TIES (CLOCKWISE FROM NORTH):

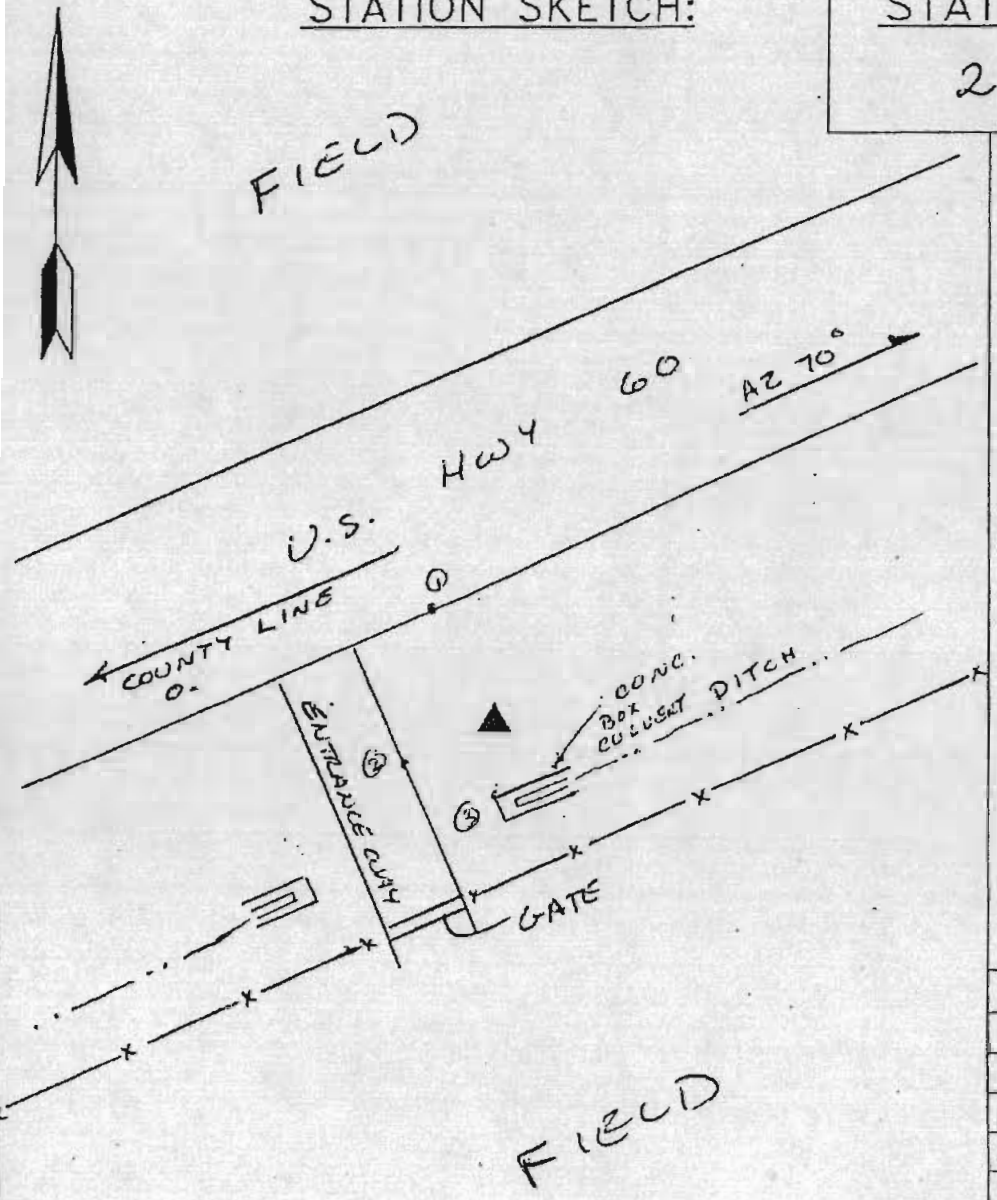
	DIST	AZ	DESCRIPTION
1	43'	120°	℄ OF GRAVEL D/W
2	28'	180°	FENCE CORNER
3	75'	280°	POWER POLE #31
4	61'	30°	EDGE OF PAVEMENT OF U.S. HWY 30
5			
6			

ROAD TIES:

NEED 2 OF 3:

ROAD NAME AND/OR ROUTE NUMBER	TO EP	TO ℄	WIDTH	PAVE	GRAV	SOIL	CONC

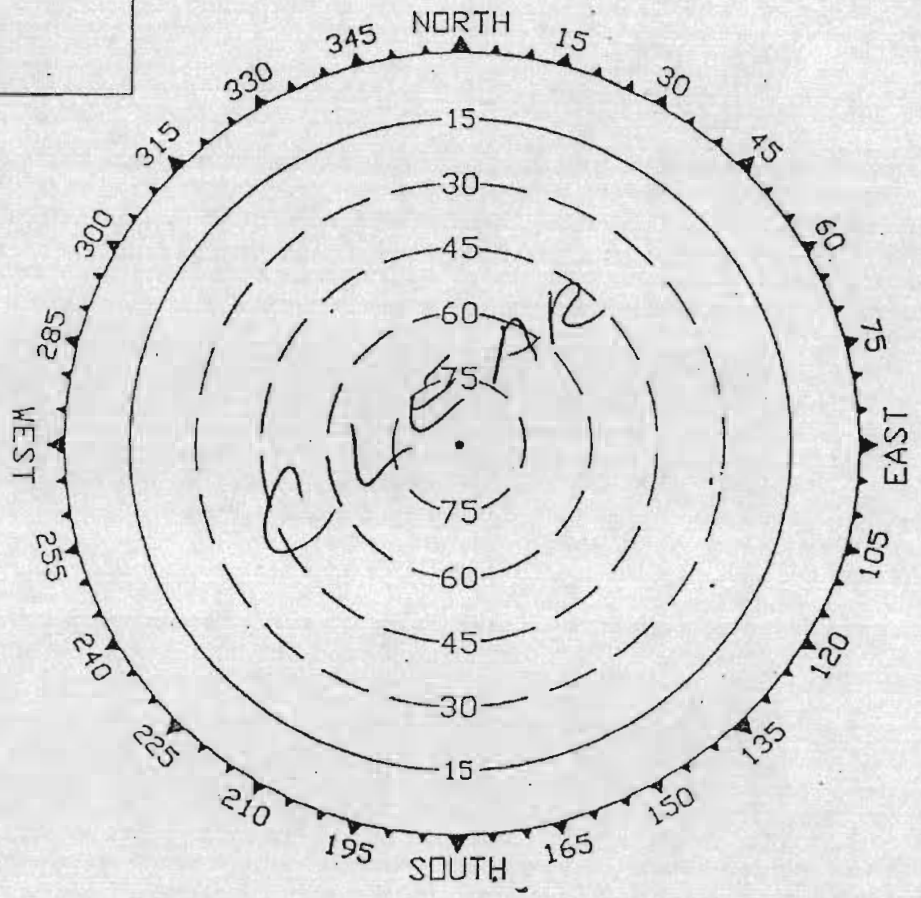
STATION SKETCH:



STATION:

2

OBSTRUCTION DIAGRAM:



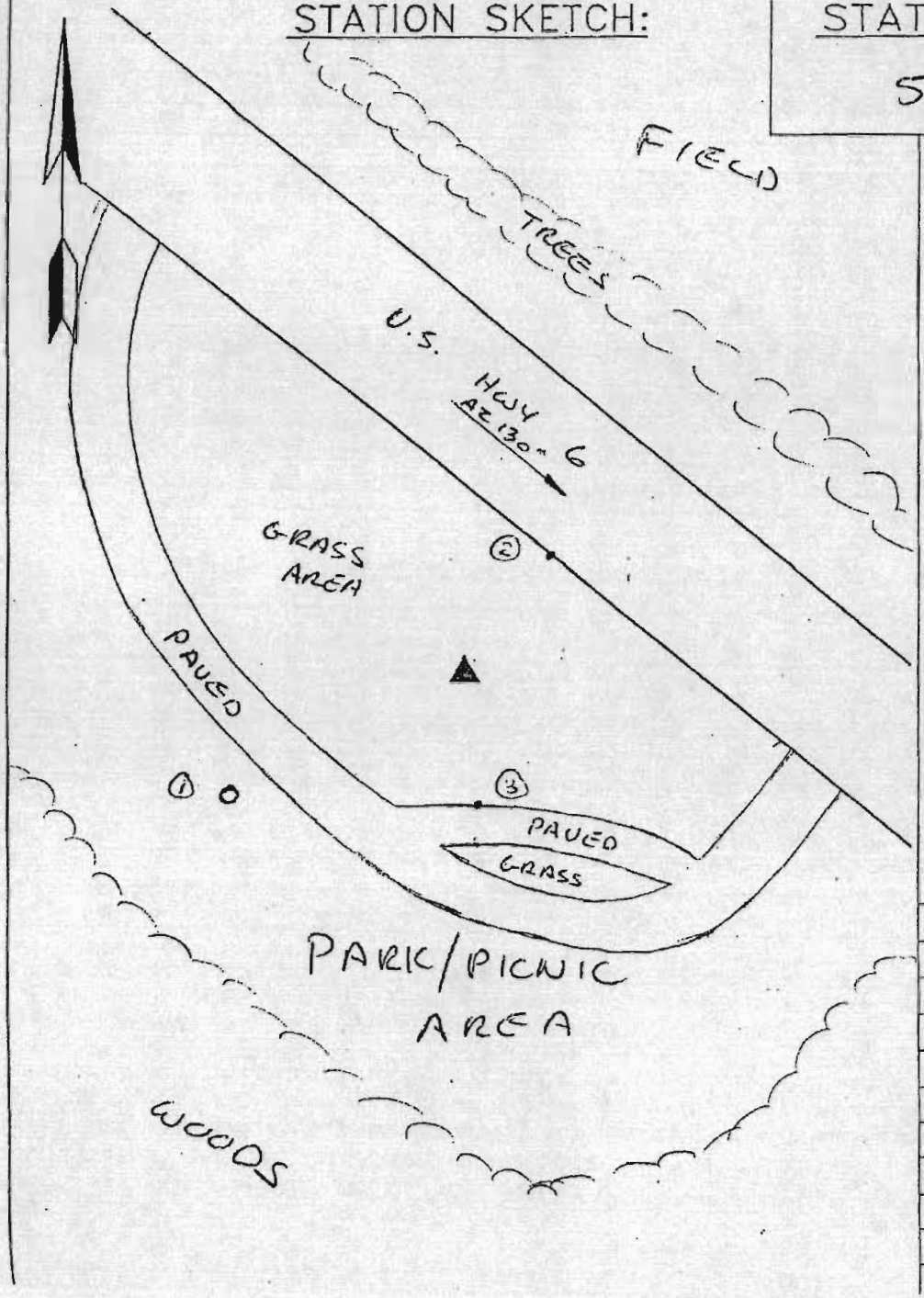
REFERENCE TIES (CLOCKWISE FROM NORTH):

	DIST	AZ	DESCRIPTION
1	12.0'	340°	EDGE OF PAVEMENT
2	8.0'	250°	EDGE OF PAVEMENT
3	6.8'	150°	CORNER OF CONC. BOX CULVERT
4			
5			
6			

ROAD TIES: NEED 2 OF 3

ROAD NAME AND/OR ROUTE NUMBER	TO EP	TO ℄	WIDTH	PAVE	GRAV	SOIL	CONC

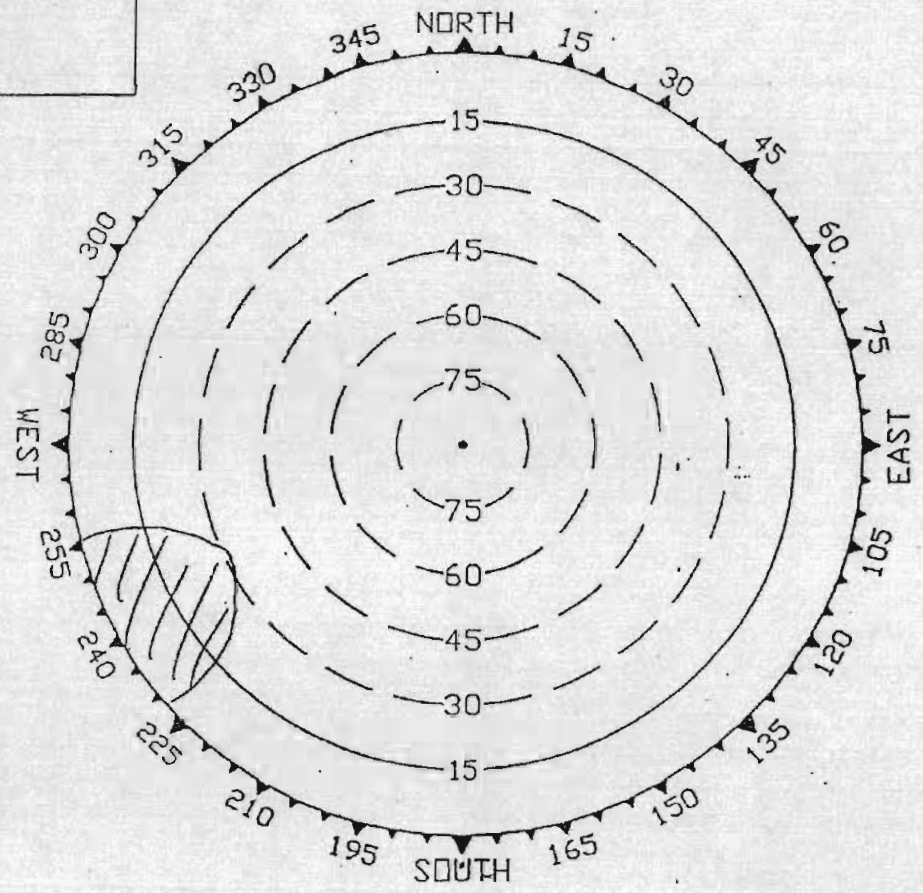
STATION SKETCH:



STATION:

5

OBSTRUCTION DIAGRAM:

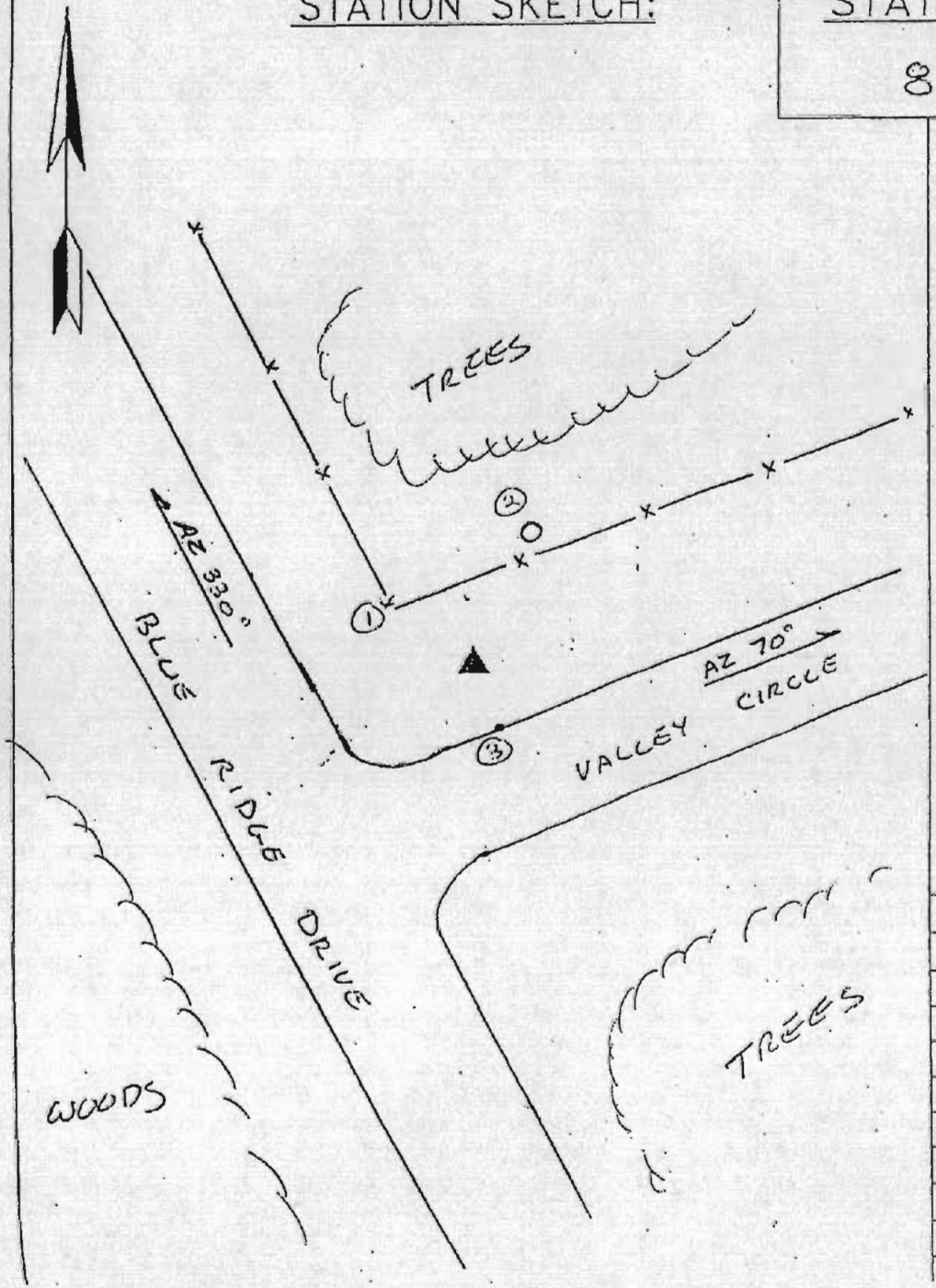


REFERENCE TIES (CLOCKWISE FROM NORTH):

	DIST	AZ	DESCRIPTION
1	64.3'	250°	PARK "NOTICE" SIGN
2	57.0'	40°	WHITE LINE OF TRAVEL LANE OF U.S. HWY 6
3	17.3'	170°	BACK OF CURB
4			
5			
6			

ROAD TIES:	NEED 2 OF 3:			PAVE	GRAV	SOIL	CONC
ROAD NAME AND/OR ROUTE NUMBER	TO EP	TO ℄	WIDTH				

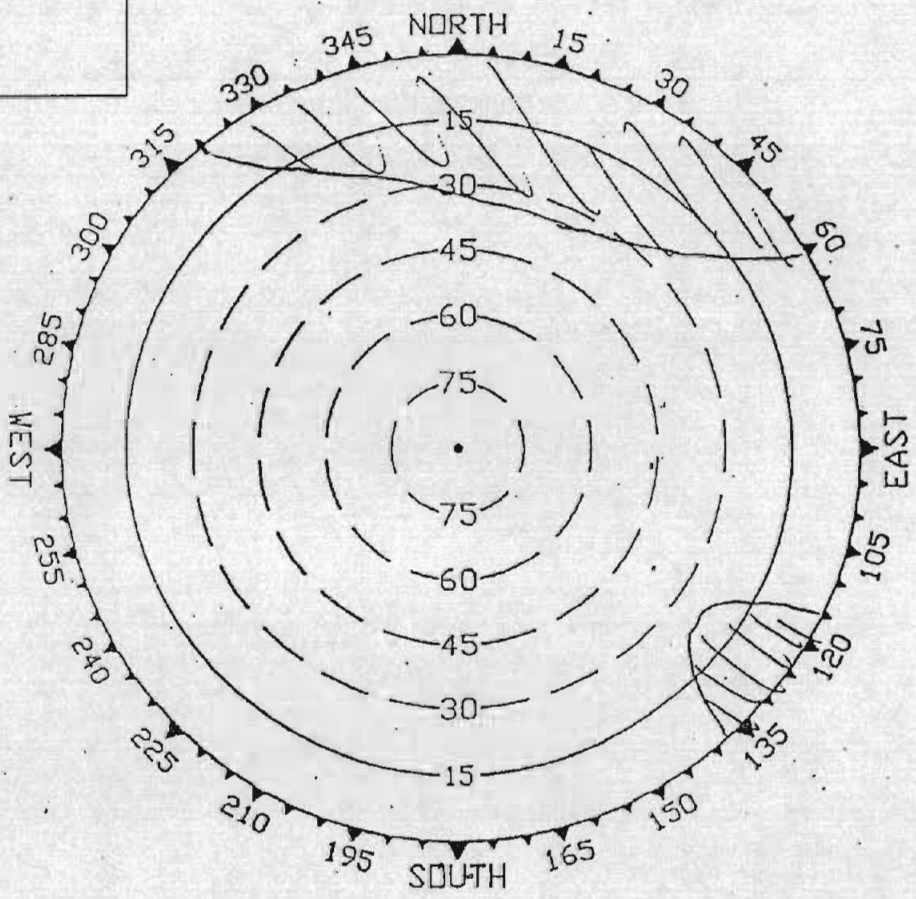
STATION SKETCH:



STATION:

8

OBSTRUCTION DIAGRAM:



REFERENCE TIES (CLOCKWISE FROM NORTH):

	DIST	AZ	DESCRIPTION
1	16.3'		FENCE CORNER
2	16.6'		UTILITY POLE
3	9.0'		EDGE OF PAVEMENT
4			
5			
6			

ROAD TIES:	NEED 2 OF 3			PAVE	GRAV	SOIL	CONC
ROAD NAME AND/OR ROUTE NUMBER	TO EP	TO ℄	WIDTH				

Appendix C

New Control Data

Sheets

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 1

Location: Lonnie Lane **Project No.:** 109158	**Station Name:** 14RQU5561688027 MON 1
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU5561688027	**Northing (Grid):**	10203667.641
Condition:	Good	**Easting (Grid):**	3554539.403
Marker:	18' of Alum. Rod to Refusal	**Elevation:**	308.913’
Stability:	B	**Scale Factor:**	0.9999064257
Latitude:	30ø35'51.09963"N	**Elevation Factor:**	0.99998944
Longitude:	96ø20'02.54418"W	**Combined Factor:**	0.99989587
Ellipsoid Height:	221.197	**Convergence:**	2ø03'36"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located in Wayne Smith Youth Baseball Field. The point is on the north side of Lonnie Lane approximately 200 feet east of Wellborn Rd., 4.4 feet southeast of the northeast corner of concrete curb inlet, 3.9 feet north of corner of concrete riprap, 1.5 feet south of back of curb and 62.5 feet southwest of a light pole.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 2

Location: Lonnie Lane **Project No.:** 109158	**Station Name:** 14RQU5561688027 MON 1

Station Sketch

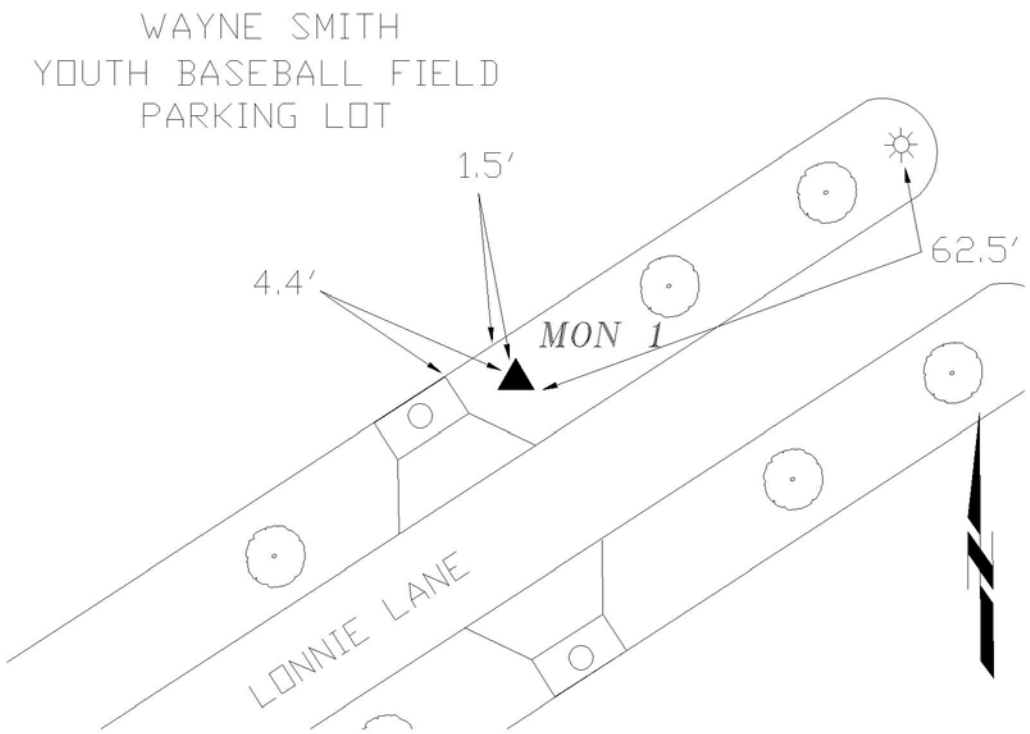


Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
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Geodetic Control Station
Page 1

Location: FM 60 **Project No.:** 109158	**Station Name:** 14RQU4823983970 MON 2
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU4823983970	**Northing (Grid):**	10190067.183
Condition:	Good	**Easting (Grid):**	3530514.478
Marker:	21' of Alum. Rod to Refusal	**Elevation:**	275.741’
Stability:	B	**Scale Factor:**	0.9999108884
Latitude:	30ø33'45.02407"N	**Elevation Factor:**	0.99999102
Longitude:	96ø24'42.76722"W	**Combined Factor:**	0.99990191
Ellipsoid Height:	188.053	**Convergence:**	2ø01'11"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located on the south side of FM 60 approximately 300 feet southwest of Vincent Rd. and 170 feet northeast of the entrance to O. D. Butler Jr Animal Science Complex of Texas A&M University. The point is 8.8 feet west of a fence corner, 5.6 feet north of fence line and 68.7 feet southeast of a highway traffic sign post.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 2

Location: FM 60 **Project No.:** 109158	**Station Name:** 14RQU4823983970 MON 2

Station Sketch

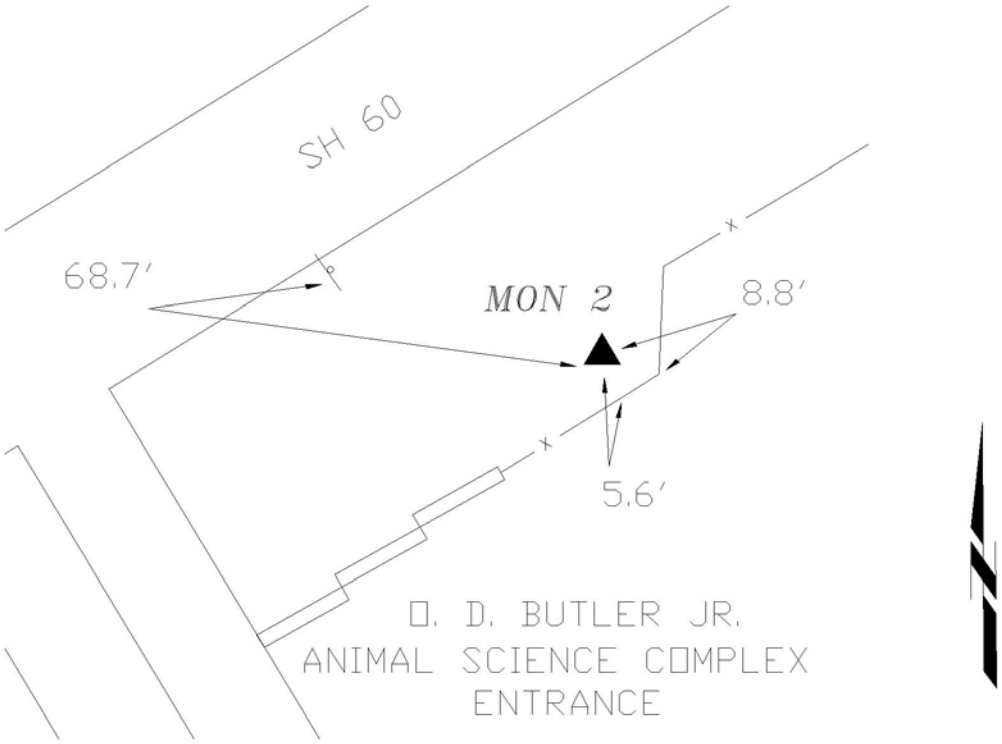

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 1

Location: Koppe Bridge Rd. **Project No.:** 109158	**Station Name:** 14RQU5456079793 MON 3
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU5456079793	**Northing (Grid):**	10176625.263
Condition:	Good	**Easting (Grid):**	3551408.169
Marker:	29' of Alum. Rod to Refusal	**Elevation:**	222.381’
Stability:	B	**Scale Factor:**	0.9999162905
Latitude:	30ø31'24.70224"N	**Elevation Factor:**	0.99999359
Longitude:	96ø20'49.43691"W	**Combined Factor:**	0.99990988
Ellipsoid Height:	134.292	**Convergence:**	2ø03'11"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located on the west side of Koppe Bridge Rd. approximately 0.4 miles southeast of Hopes Creek Meadow circle. The point is 23 feet southwest of centerline of road, 4.5 feet northeast of wooden fence line, 114 feet south of centerline of pasture entrance road and 155 feet northwest of a traffic curve ahead warning sign post.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 2

Location: Koppe Bridge Rd. **Project No.:** 109158	**Station Name:** 14RQU5456079793 MON 3

Station Sketch

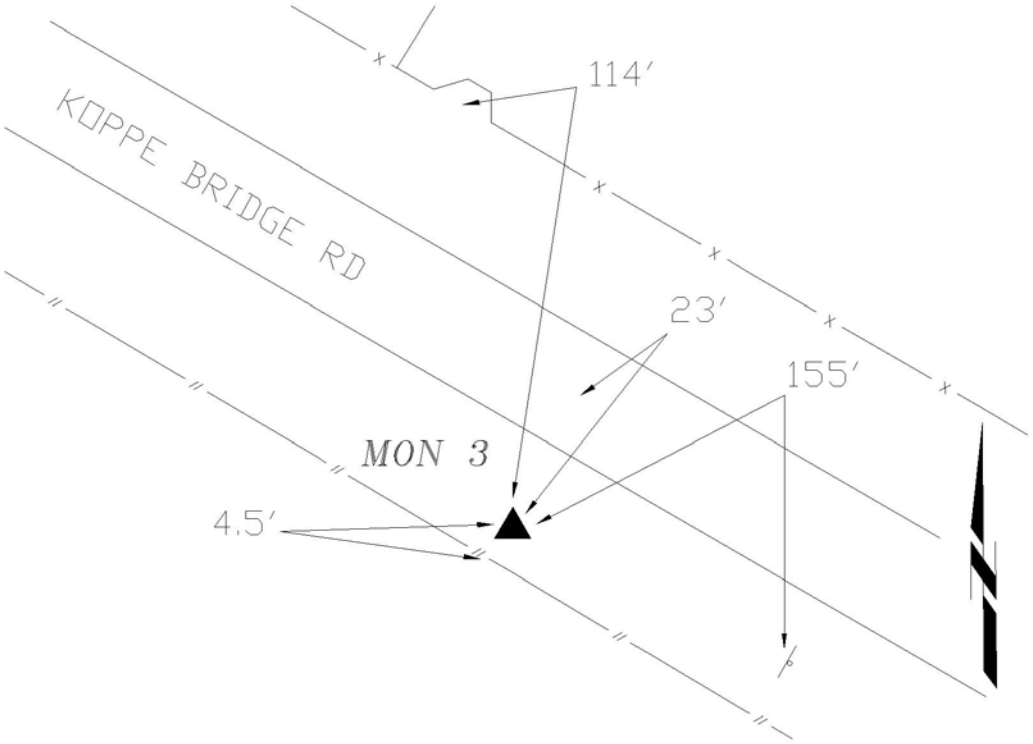

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 1

Location: Straub Rd. **Project No.:** 109158	**Station Name:** 14RQU5945778027 MON 4
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU5945778027	**Northing (Grid):**	10171032.038
Condition:	Good	**Easting (Grid):**	3567536.952
Marker:	6' of Alum. Rod to Refusal	**Elevation:**	286.558’
Stability:	B	**Scale Factor:**	0.9999187853
Latitude:	30ø30'23.61692"N	**Elevation Factor:**	0.99999054
Longitude:	96ø17'47.46431"W	**Combined Factor:**	0.99990932
Ellipsoid Height:	198.217	**Convergence:**	2ø04'45"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located at the northwest corner of Straub and Stousland Rd. intersection across from mailbox #5263. The point is 18.2 feet west of west edge of asphalt, 2 feet east of fence line and 32 feet northeast of fence corner post.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

CITY OF COLLEGE STATION
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Geodetic Control Station
Page 2

Location: Straub Rd. **Project No.:** 109158	**Station Name:** 14RQU5945778027 MON 4

Station Sketch

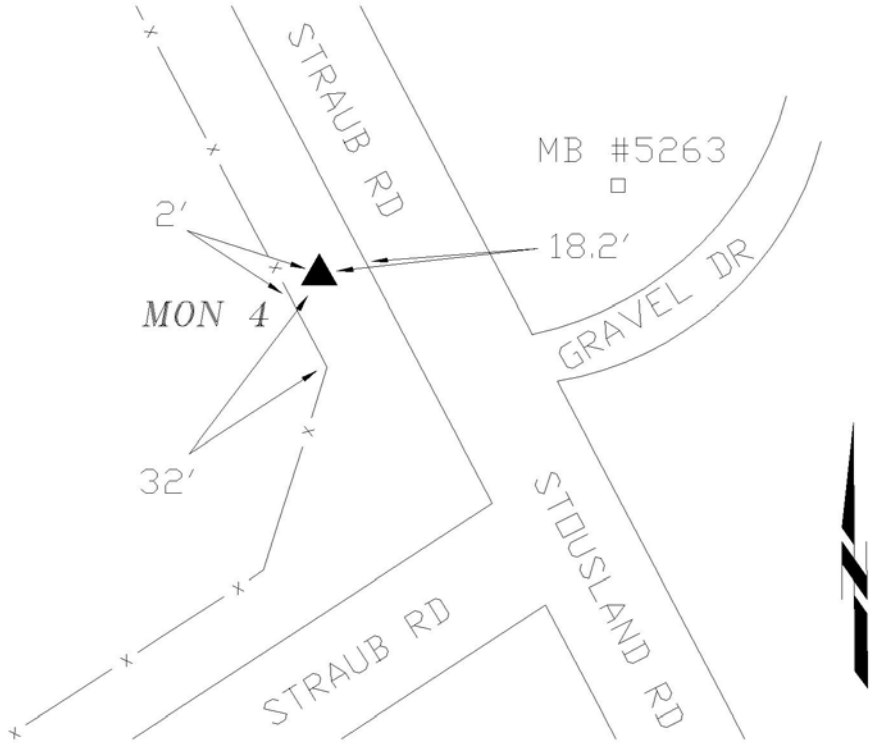

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
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Geodetic Control Station
Page 1

Location: SH 6 **Project No.:** 109158	**Station Name:** 14RQU6894478249 MON 5
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU6894478249	**Northing (Grid):**	10172144.509
Condition:	Good	**Easting (Grid):**	3598634.493
Marker:	20' of Alum. Rod to Refusal	**Elevation:**	202.726’
Stability:	B	**Scale Factor:**	0.9999187978
Latitude:	30ø30'23.31672"N	**Elevation Factor:**	0.99999456
Longitude:	96ø11'51.73491"W	**Combined Factor:**	0.99991335
Ellipsoid Height:	114.034	**Convergence:**	2ø07'48"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located at the northwest corner SH 6 and Peach Creek Rd. The point is 42.7 feet southwest of fence corner post, 50.8 feet north of north edge of asphalt of access road and 72.5 feet northwest of a "FM 159 West" sign post.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 2

Location: SH 6 **Project No.:** 109158	**Station Name:** 14RQU6894478249 MON 5

Station Sketch

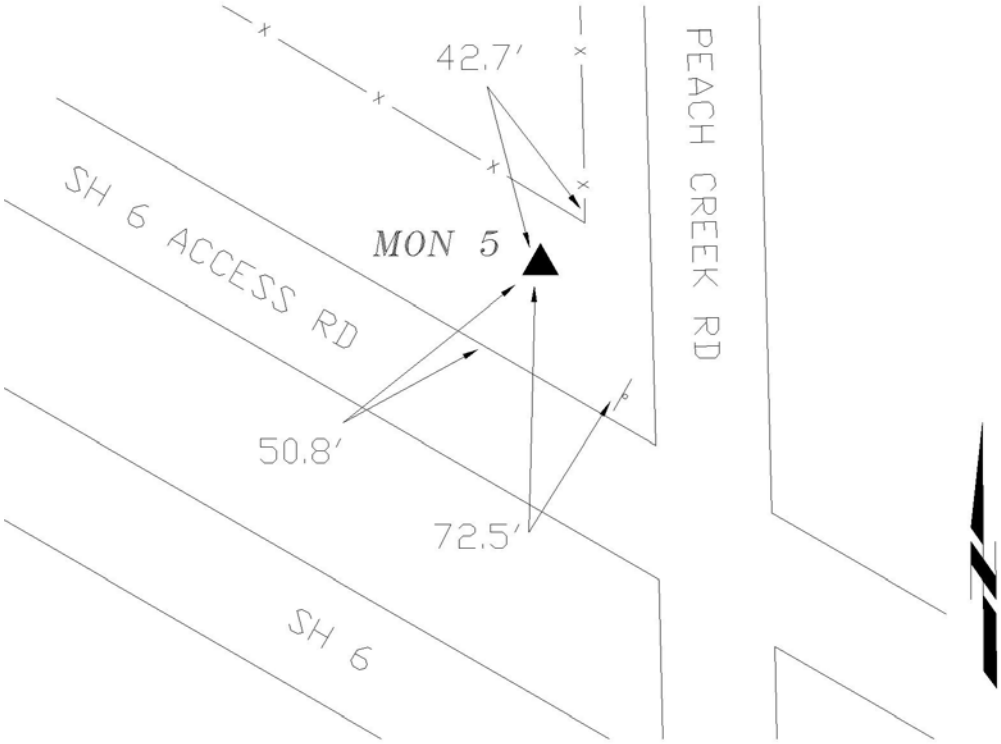

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 1

Location: Rock Prairie Rd. **Project No.:** 109158	**Station Name:** 14RQU6993683758 MON 6
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU6993683758	**Northing (Grid):**	10190245.511
Condition:	Good	**Easting (Grid):**	3601664.723
Marker:	19.5' of Alum. Rod to Refusal	**Elevation:**	199.261’
Stability:	B	**Scale Factor:**	0.9999117714
Latitude:	30ø33'21.25102"N	**Elevation Factor:**	0.99999471
Longitude:	96ø11'09.40483"W	**Combined Factor:**	0.99990648
Ellipsoid Height:	110.799	**Convergence:**	2ø08'10"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located on the east side of Rock Prairie Rd. approximately 0.2 miles north of Sulphur Springs Rd. The point is 4.2 feet west of fence line, 17.5 feet east of east edge of asphalt, 17.7 feet southwest of fence PI and 63 feet northeast of a telephone pedestal.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

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Geodetic Control Station
Page 2

Location: Rock Prairie Rd. **Project No.:** 109158	**Station Name:** 14RQU6993683758 MON 6

Station Sketch

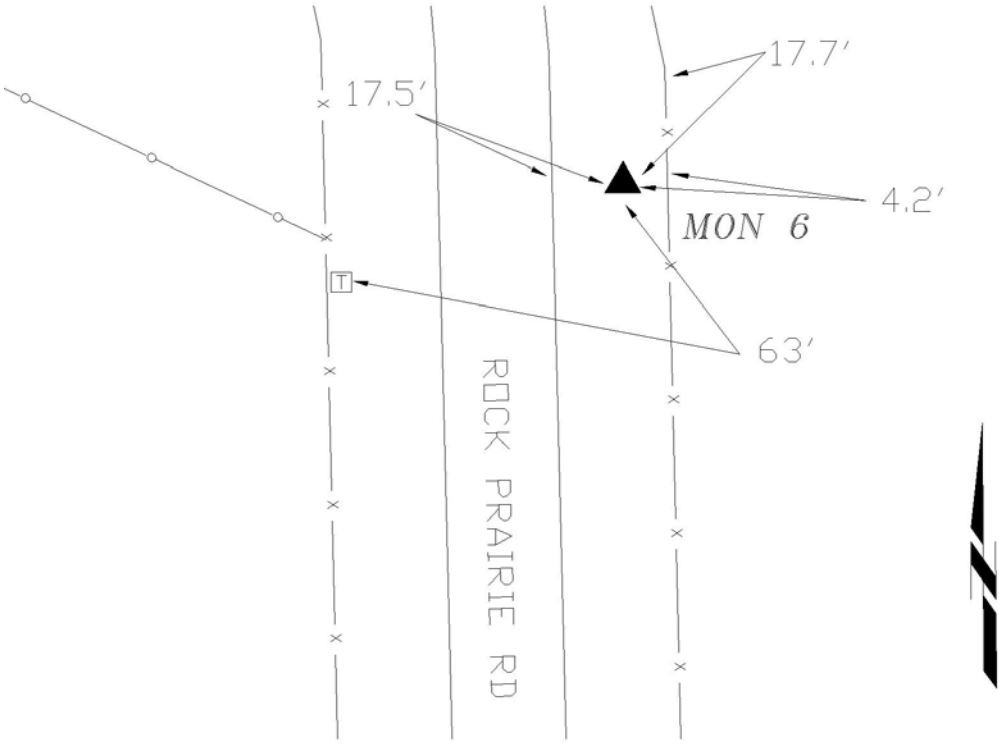

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
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Geodetic Control Station
Page 1

Location: SH 30 **Project No.:** 109158	**Station Name:** 14RQU6815490873 MON 7
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU6815490873	**Northing (Grid):**	10213503.475
Condition:	Good	**Easting (Grid):**	3595535.521
Marker:	24' of Alum. Rod to Refusal	**Elevation:**	230.518’
Stability:	B	**Scale Factor:**	0.9999037068
Latitude:	30ø37'13.57004"N	**Elevation Factor:**	0.9999932
Longitude:	96ø12'09.58486"W	**Combined Factor:**	0.99989691
Ellipsoid Height:	142.461	**Convergence:**	2ø07'39"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located on the south side of SH 30 approximately 0.1 mile southeast of William D. Finch Pkwy. The point is 47.2 feet southwest of the west edge of asphalt, 34.5 feet northeast of fence line and 165.7 feet southeast of traffic warning sign "Shoulder Ends 500 Feet".

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

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Geodetic Control Station
Page 2

Location: SH 30 **Project No.:** 109158	**Station Name:** 14RQU6815490873 MON 7

Station Sketch

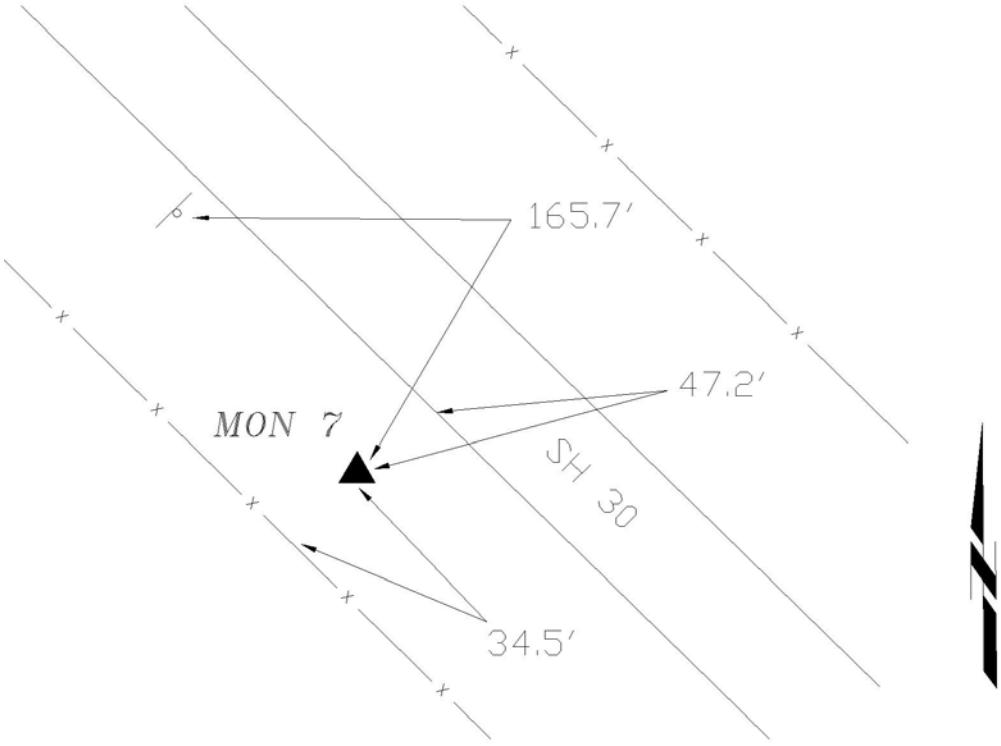

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
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Geodetic Control Station
Page 1

Location: Vetrans Pkwy. **Project No.:** 109158	**Station Name:** 14RQU5928592939 MON 8
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU5928592939	**Northing (Grid):**	10219921.949
Condition:	Good	**Easting (Grid):**	3566373.632
Marker:	36' of Alum. Rod to Refusal	**Elevation:**	264.288’
Stability:	B	**Scale Factor:**	0.9999013993
Latitude:	30ø38'27.65820"N	**Elevation Factor:**	0.99999156
Longitude:	96ø17'40.46723"W	**Combined Factor:**	0.99989296
Ellipsoid Height:	176.665	**Convergence:**	2ø04'49"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located in Veterans Park Athletic Complex on the most southerly brick island south of the City of College Station flag pole. The point is approximately 0.15 mile northwest of Veterans Pkwy. and Harvey Rd. intersection, 24.7 feet northwest of a "Yield" sign post, 56.2 feet southeast of a light pole and 61.3 feet southwest of flag pole.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 2

Location: Vetrans Pkwy. **Project No.:** 109158	**Station Name:** 14RQU5928592939 MON 8

Station Sketch

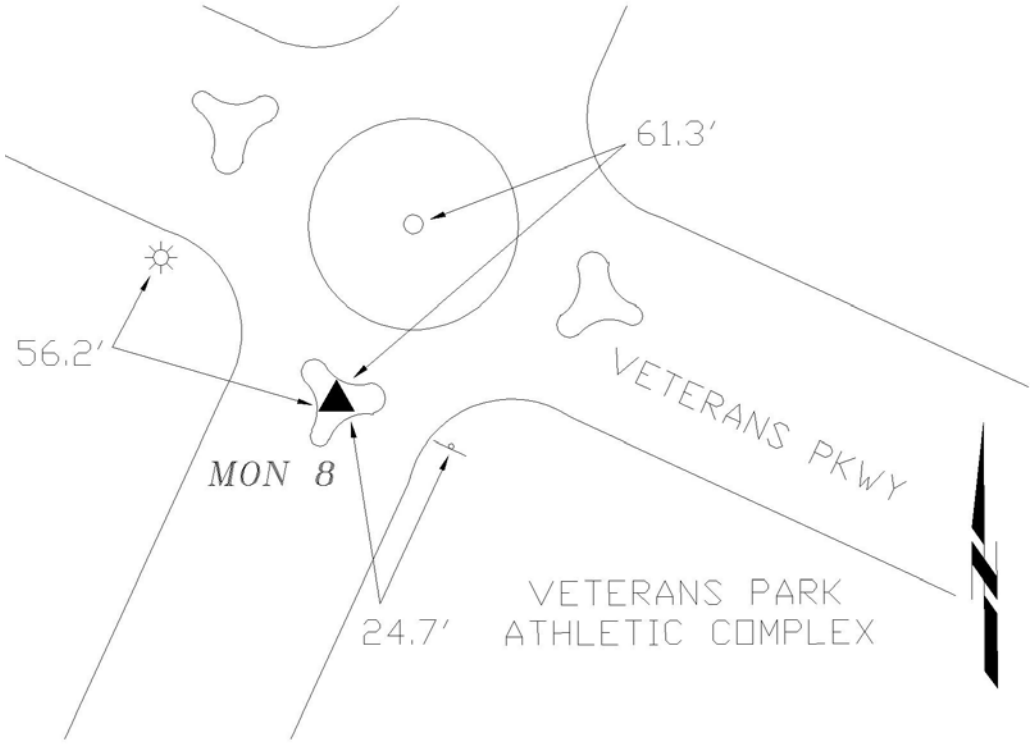

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 1

Location: Rock Prairie Rd. **Project No.:** 109158	**Station Name:** 14RQU6340886498 MON 9
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU6340886498	**Northing (Grid):**	10198966.934
Condition:	Good	**Easting (Grid):**	3580149.79
Marker:	15' of Alum. Rod to Refusal	**Elevation:**	269.52’
Stability:	B	**Scale Factor:**	0.9999083518
Latitude:	30ø34'55.39584"N	**Elevation Factor:**	0.99999134
Longitude:	96ø15'11.66290"W	**Combined Factor:**	0.99989969
Ellipsoid Height:	181.455	**Convergence:**	2ø06'05"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located in a planter area on the north side of the College Station Forestry Building, #7090 Rock Prairie Rd. The point is 63 feet north of the northeast corner of the building, 3.5 feet north of back of curb, 32 feet south of a 3 inch diameter Cypress tree and 83.6 feet west of entrance sign to facility.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

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Geodetic Control Station
Page 2

Location: Rock Prairie Rd. **Project No.:** 109158	**Station Name:** 14RQU6340886498 MON 9

Station Sketch

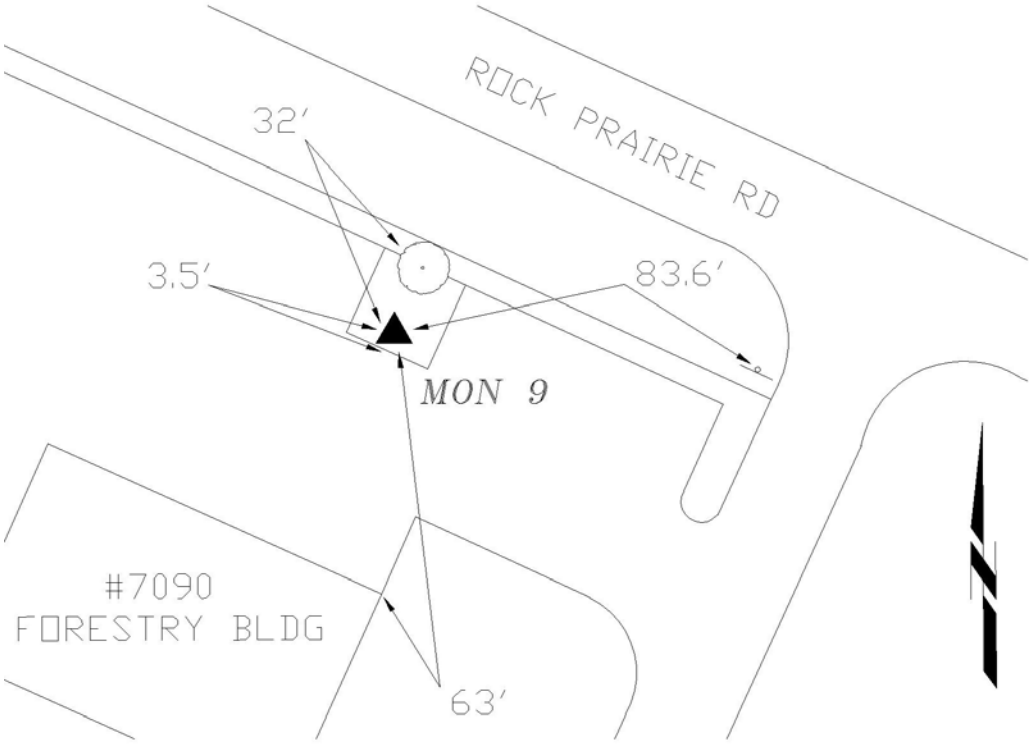

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
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Geodetic Control Station
Page 1

Location: Keefer Loop **Project No.:** 109158	**Station Name:** 14RQU5741485064 MON 10
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU5741485064	**Northing (Grid):**	10194022.889
Condition:	Good	**Easting (Grid):**	3560554.954
Marker:	15' of Alum. Rod to Refusal	**Elevation:**	308.385’
Stability:	B	**Scale Factor:**	0.9999098464
Latitude:	30ø34'13.54687"N	**Elevation Factor:**	0.99998947
Longitude:	96ø18'57.73986"W	**Combined Factor:**	0.99989932
Ellipsoid Height:	220.464	**Convergence:**	2ø04'09"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located at the north end of cul-de-sac of Keefer Loop approximately 0.15 mile northwest of Rock Prairie Rd. The point is 7.3 feet east of the centerline of a storm sewer manhole of curb inlet, 39 feet northwest of multiple metal mailboxes and 14 feet south of centerline of concrete storm drain headwall.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

Geodetic Control Station
Page 2

Location: Keefer Loop **Project No.:** 109158	**Station Name:** 14RQU5741485064 MON 10

Station Sketch

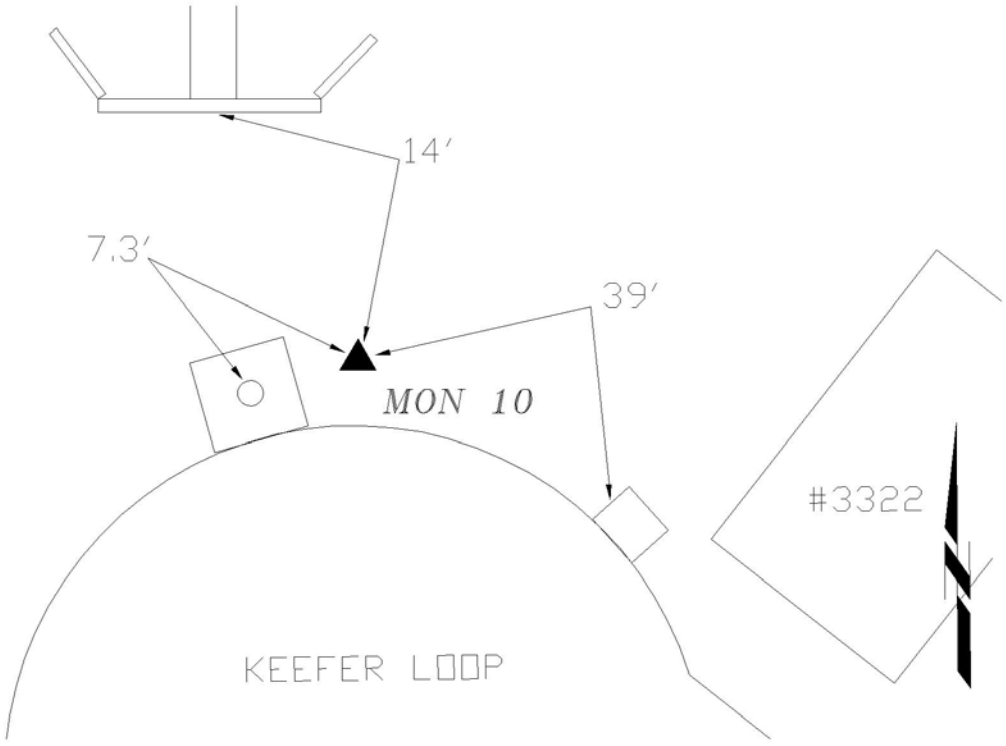

Photo 1 – Station Detail

Photo 2 – Station Area Picture

CITY OF COLLEGE STATION
Home of Texas A&M University®

Geodetic Control Station
Page 1

Location: Gateway Blvd. **Project No.:** 109158	**Station Name:** 14RQU6391183197 MON 11
County: Brazos **State:** TX **Quality Level of Survey:** Tx DOT Level 2	**Established By:** CDS/Muery Services **Date Established:** April, 2010
Intervisible Stations: N/A **Units of Measure:** US Survey Feet	**Survey Method Horizontal:** GPSOBS **Survey Method Vertical:** GPSOBS
Horizontal Datum: NAD 83 **Horizontal Adjustment:** CORS **Projection Zone:** Texas Central 4203	**Vertical Datum:** NAVD **Vertical Adjustment:** 1988 **Geoid Model Used:** GEOID09

Mark Logo:	Access Cover	**NGS PID (If applic.):**	N\A
Stamping:	14RQU6391183197	**Northing (Grid):**	10188165.438
Condition:	Good	**Easting (Grid):**	3581934.102
Marker:	9' of Alum. Rod to Refusal	**Elevation:**	283.664’
Stability:	B	**Scale Factor:**	0.999912273
Latitude:	30ø33'07.89997"N	**Elevation Factor:**	0.99999067
Longitude:	96ø14'55.79912"W	**Combined Factor:**	0.99990294
Ellipsoid Height:	195.42	**Convergence:**	2ø06'14"

To Reach Description

The monument is a 3/4" aluminum rod driven to refusal within an aluminum access cover located in the grass median of Gateway Blvd., just past the granite entrance to "The Business Center at College Station". The point is 40.5 east of a fire hydrant, 74 feet south of a light pole, 18.2 feet west of a 6 inch Live Oak tree, 10.6 feet to north edge of planter and 3.4 feet east of back of curb.

Notes: The vertical for this project was observed and adjusted to NGVD29 benchmarks. The NAVD 88 height was computed by applying the VERTCON shift value to the NGVD 29 height. This is the method used by NGS for all NAVD88 heights for Brazos County.

CITY OF COLLEGE STATION
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Geodetic Control Station
Page 2

Location: Gateway Blvd. **Project No.:** 109158	**Station Name:** 14RQU6391183197 MON 11

Station Sketch

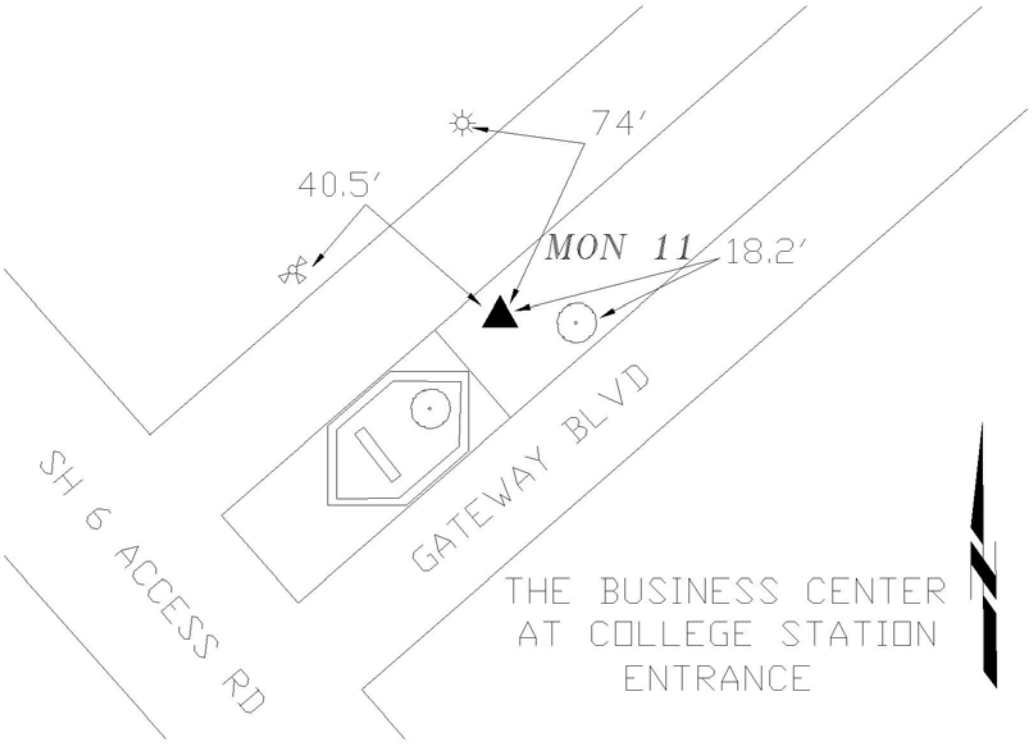


Photo 1 – Station Detail

Photo 2 – Station Area Picture

Appendix D

GPS Static

Observation Logs

DOP and Solar

Reports

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
5/8" IR w/YC	KI 2	KI02	118	4-28-10
Geo Metrics GPS Inc.	**Location**	**Station PID**	**Session #**	**Obs. Agency code**
	Brazos Co./FM 60		1	CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 33' 35.26" N	96° 25' 14.09" W	+0044.9	C. Tarver

Start Time	(Scheduled): Local	7 30
	(Actual): Local	7:32
Stop Time	(Scheduled): Local	8:30
	(Actual): Local	8:30

Other stations observed in this session: Mon. 107, Mon 242

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver S/N: 3615A15357 Receiver P/N: 24840-21	12	1.672	5.485	1.672	5.485
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	4	1.671	5.48	1.671	5.48
Antenna S/N: 022001965 Antenna P/N:	8	1.674	5.49	1.674	5.49
Adjustable or Fixed Ht. Tripod: A X or F ____ Manufacturer: ____ S/N: ____	Mean of Measurements	1.672	5.485	1.672	5.485
Tribrach: Manufacturer: ____ S/N: ____ Calibration Date:					

Photos of Station: Yes ____ No ____
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.485 Feet

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ____ After? ____

Antenna Oriented North? Yes X No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___
Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? N (Y or N)
Obstruction Survey Performed?
Yes ___ No X Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

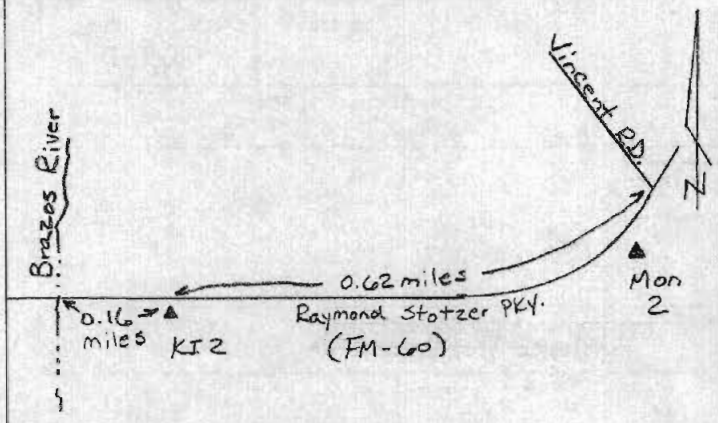
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

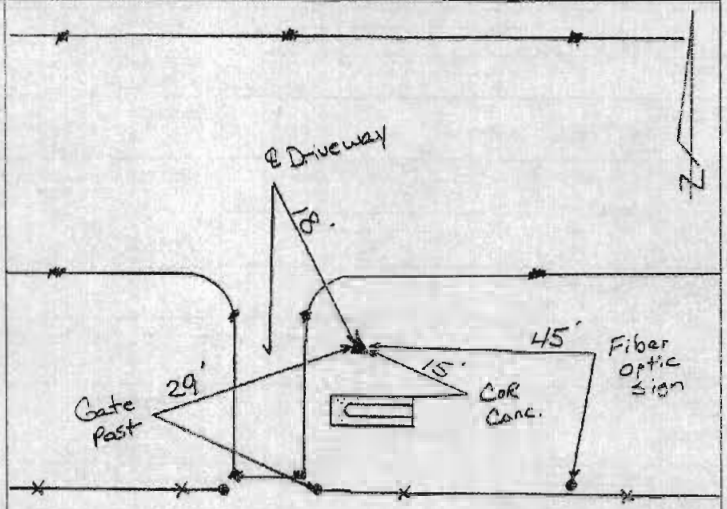
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-28-10

Route Sketch



Detail Sketch

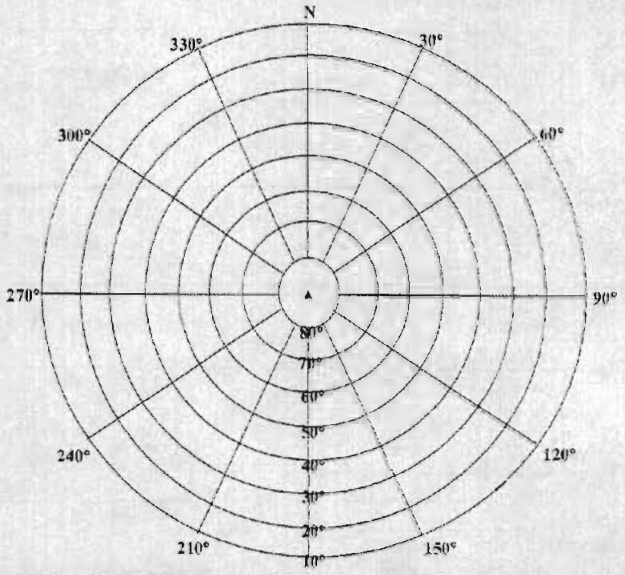


To Reach Description

* KI 2

* No Obstructions

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	m107 118 1

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Alum Disk in Conc	Mon 107	M107	118	4/28/10
Stamp mon 107 1994	Location: Bryan TX	Station PID: Alum Disk	Session #: 1	Obs. Agency code: CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30°38'06.89 N	096°22'46.40 W	+0079.9	J. Montez

Start Time	(Scheduled): Local	
	(Actual): Local	7:38
Stop Time	(Scheduled): Local	8:30
	(Actual): Local	

Other stations observed in this session: K12 mon 242 mon8

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi
Receiver S/N: 3533A12012
Receiver P/N:
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane
Antenna S/N: 02200030199
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ✓ or F ___
Manufacturer: Leica S/N: —
Tribrach:
Manufacturer: Leica S/N: —
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
7	1.589	5.21	1.589	5.21
2	1.589	5.21	1.589	5.21
	1.589	5.21	1.589	5.21
Mean of Measurements	1.589	5.21	1.589	5.21

Photos of Station: Yes ___ No ✓
Roll Number ___
Picture Number(s) ___

Antenna Measurement Method: Bottom Notch of Ground Plane

HI entered into receiver or controller: 5.21 Feet

Antenna Cable Length: 15 (Meters) FT

Antenna Plumb Check: Before? Y After? ✓

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries ___
External 12 Volt ✓
Commercial AC 110 Volt: ___

Barometer MFR/Model: ___
Serial Number: ___
Units of Reading: millibars ___ inches ___ Feet ___ meters

Obstructions > 10 Degrees above Horizon? Y (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ✓

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaaa=4-Char ID, ddd=julian day, s=session,

m107 118 1

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ___

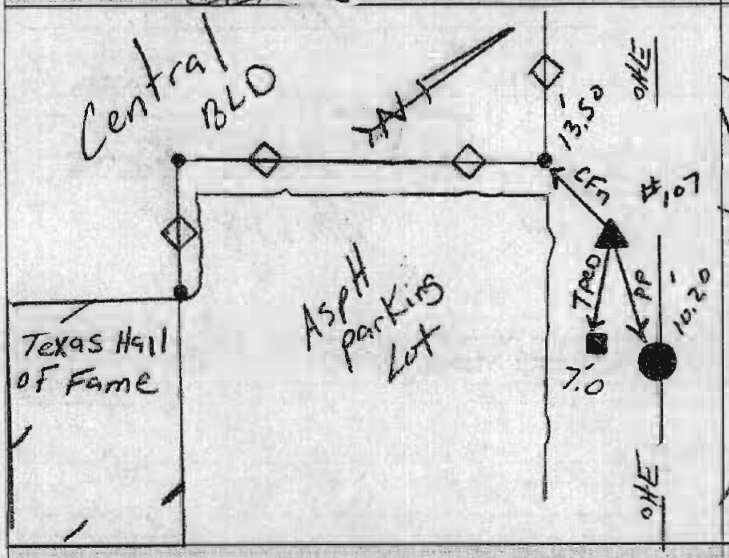
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

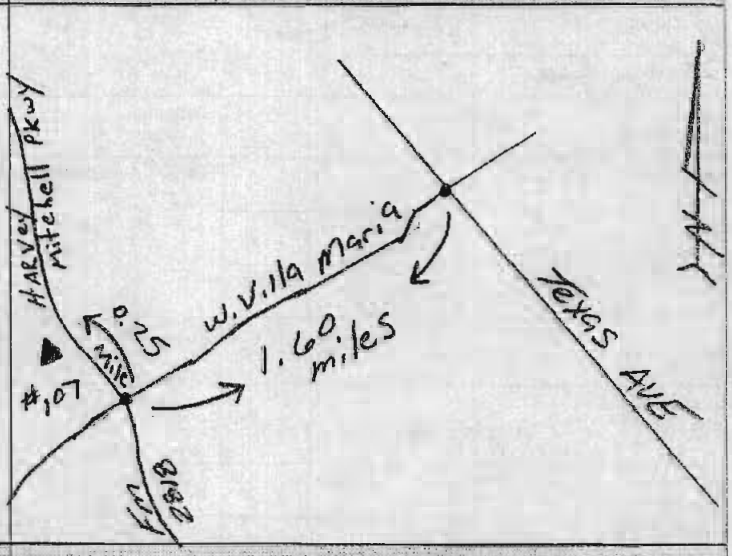
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
Mon 107	109158	4/28/10

Detail Sketch



Route Sketch



To Reach Description

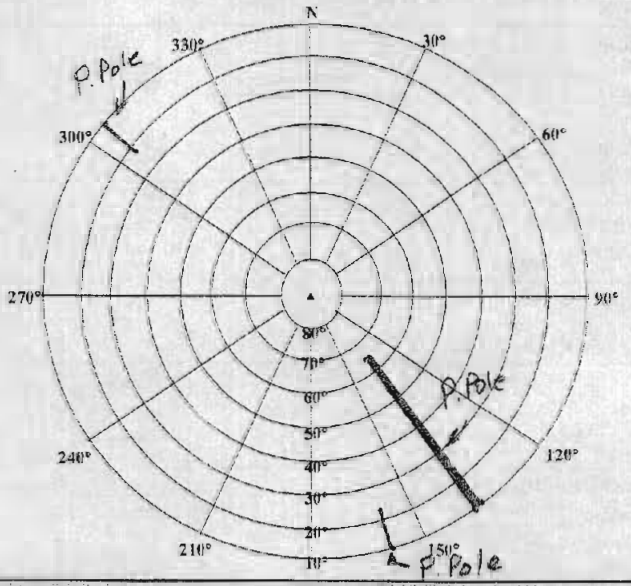
328° 23° = Power Pole

110° 64° } Power Pole
114° 64° }

148° 22° = Power Pole

✱ Mon. 107

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	M242-118-1

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	Mon. 242	M242	118	4-28-10
	Location	Station PID	Session #	Obs. Agency code
	COLLEGE STATION		1	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 39' 23.5"	096° 16' 29.11"	+007.5	Bobby Martinez

Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TACKER - KI 2; JOE MONTEZ - MON 107
	(Actual): Local 7:30 AM	
Stop Time	(Scheduled): Local	
	(Actual): Local 8:30 AM	

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi
Receiver S/N:
Receiver P/N:

Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane
Antenna S/N:
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____

Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
3	1.552	5.09	1.552	5.09
8	1.552	5.09	1.552	5.09
11	1.552	5.09	1.552	5.09
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: Bottom Notch of Ground Plane

HI entered into receiver or controller: 5.09 Feet

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet meters

Obstructions > 10 Degrees above Horizon? ___(Y or N)
Obstruction Survey Performed?
Yes___ No___ Performed Previously___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

M242-118-1

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes____ No___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

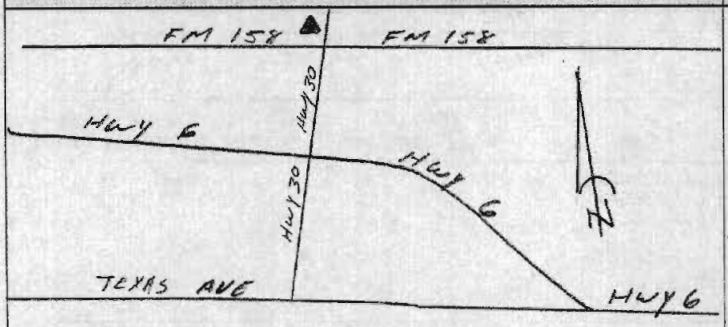
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked _____ meters _____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

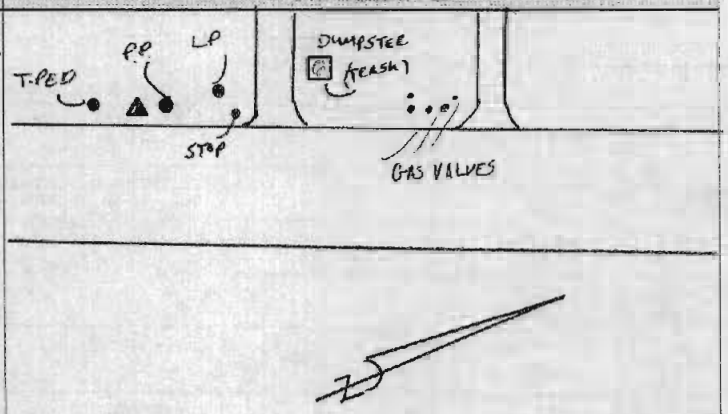
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-28-10

Route Sketch



Detail Sketch



To Reach Description

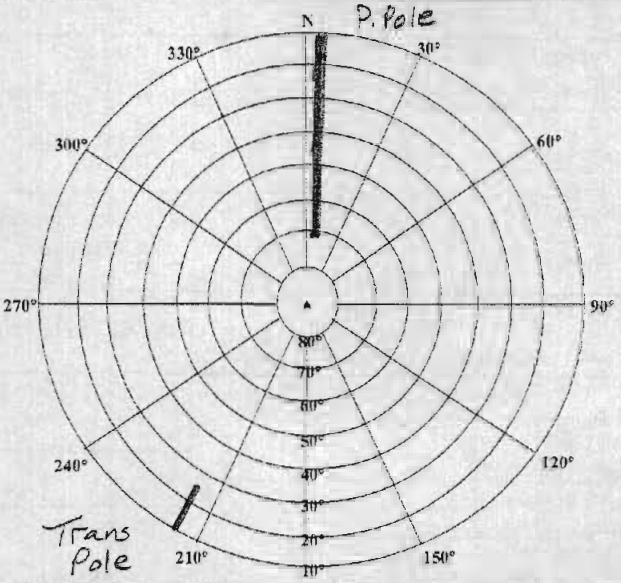
* Mon 242

215° 25 - Trans Pole

6° 72° } P.Pole

12° 72° }

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 M,G,W,F,M=00206

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
3/4" Mark it Rod w/punch inside Access Cover	Mon 1	Mon1	118	4-28-10
	Location: Brazos Co. / Lonnie Ln.	Station PID	Session # 2	Obs. Agency code: CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 35' 51.19" N	96° 20' 02.55" W	+0066.8 m	C. Tarver

Start Time	(Scheduled): Local	9:15
	(Actual): Local	9:15
Stop Time	(Scheduled): Local	10:15
	(Actual): Local	10:18

Other stations observed in this session: Mon. 10, Mon. 9, Mon. 11

Receiver MFR & Model: Trimble 4000 SSi
Receiver S/N: 3615A15357
Receiver P/N: 24840-21
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane
Antenna S/N: 022001996S
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A X or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
11	1.715	5.625	1.715	5.625
8	1.716	5.63	1.716	5.63
3	1.713	5.62	1.713	5.62
Mean of Measurements	1.715	5.625	1.715	5.625

Photos of Station: Yes ____ No X
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: Bottom Notch of Ground Plane

HI entered into receiver or controller: 5.625 Feet

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ____ After? ____

Antenna Oriented North? Yes X No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___ Feet meters

Obstructions > 10 Degrees above Horizon? N (Y or N)
Obstruction Survey Performed?
Yes ___ No X Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

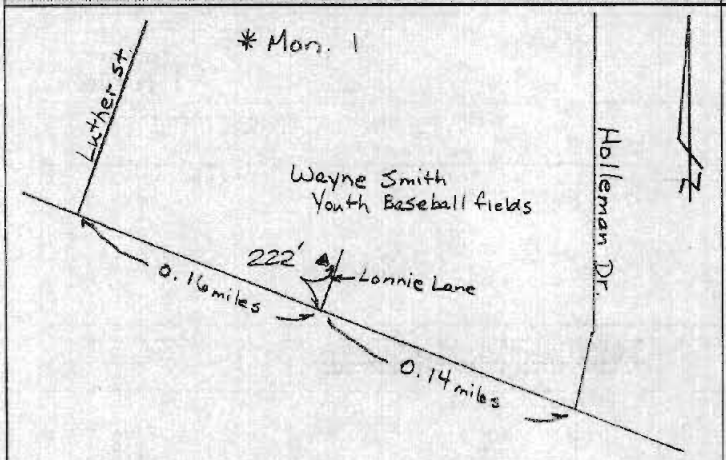
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked _____ meters _____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

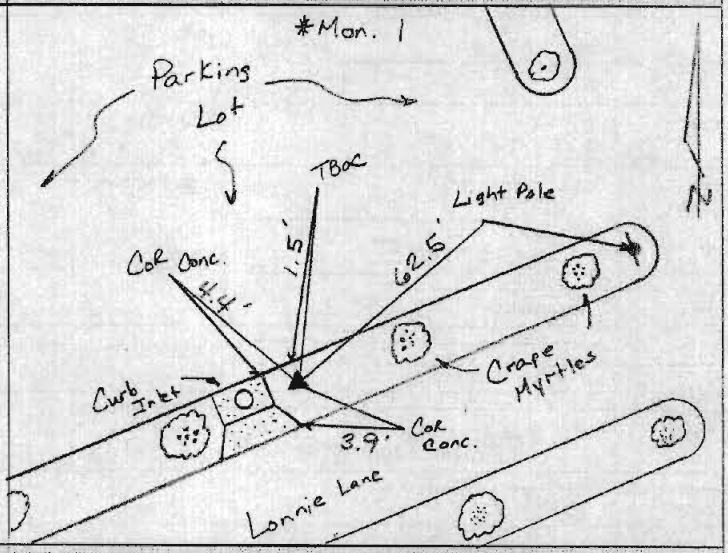
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-28-10

Route Sketch

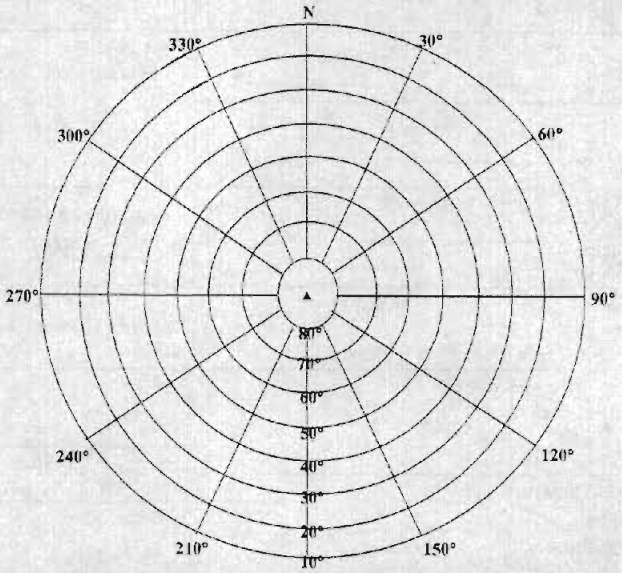


Detail Sketch



To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	CS101182

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Set Alum Deep Rod w/ punch inside Access Cover	CS #10	CS10	118	4/28/10
	Location	Station PID	Session #	Obs. Agency code
		Alum Rod	2	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 34' 13.57 N	096° 18' 57.77 W	+0068.9 M	J. Montez

Start Time	(Scheduled): Local	9:15
	(Actual): Local	9:13
Stop Time	(Scheduled): Local	10:18
	(Actual): Local	

Other stations observed in this session: mon1 mon9 mon11

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi
Receiver S/N: 3533A12012
Receiver P/N:
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane
Antenna S/N: 02200 30199
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: Leica S/N: ____
Tribrach: —
Manufacturer: Leica S/N: ____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
3	1.688	5.54	1.688	5.54
11	1.688	5.54	1.688	5.54
7	1.688	5.54	1.688	5.54
Mean of Measurements	1.688	5.54	1.688	5.54

Photos of Station: Yes ____ No ____
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: Bottom Notch of Ground Plane

HI entered into receiver or controller: 5.54 Feet

Antenna Cable Length: 15 (Meters)
Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ✓
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ____ inches ✓ Feet meters

Obstructions > 10 Degrees above Horizon? ✓ (Y or N)
Obstruction Survey Performed?
Yes ✓ No ____ Performed Previously ____

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):
Total Length of Rod used = 15.0'

Log Checked By: ____

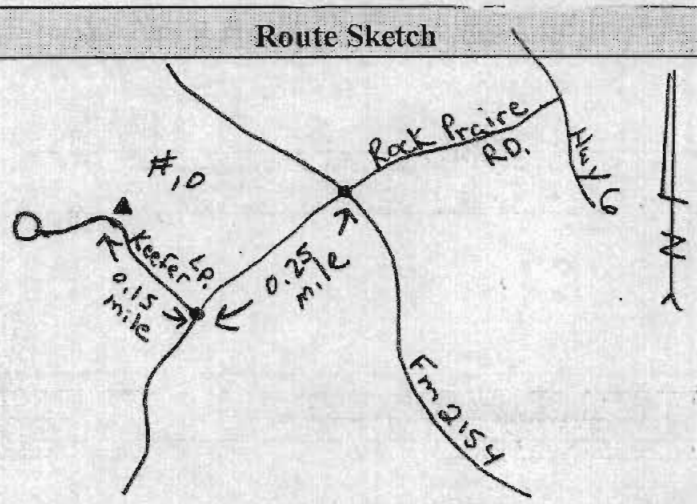
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

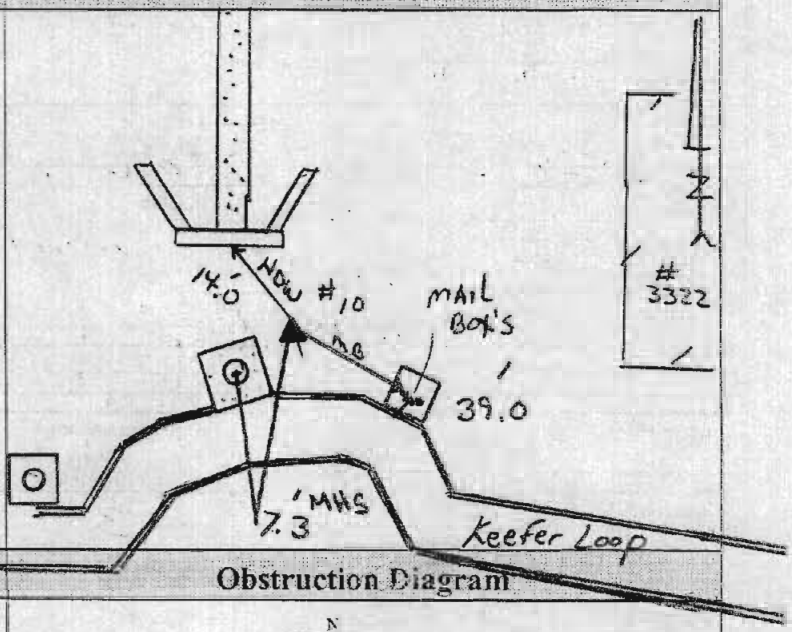
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
CS #10	109158	4/28/10

Route Sketch



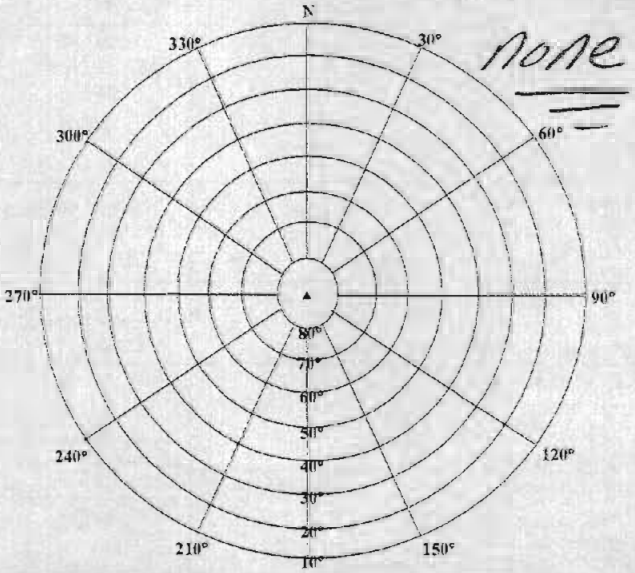
Detail Sketch



To Reach Description

From Inter. of Rock Praire Rd & Fm 2154 Travel west on Rock Praire Rd. For Approx 0.25 mile. Then take a right on Keefer Loop and Travel For Approx 0.15 mile monument is located on the right side By Conc. Drain.

Obstruction Diagram



none

Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MON9-118-Z

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON 9	MON 9	118	4-28-10
	Location	Station PID	Session #	Obs. Agency code
	COLLEGE STATION		2	CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 34' 55.43"	096° 15' 11.67"	+0058.7	Bobby Montez

Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TACKER - MON 1; JOE MONTEZ - MON 10; AJ ESCOBAR - MON 11
	(Actual): Local 9:07 AM	
Stop Time	(Scheduled): Local	
	(Actual): Local 10:18 AM	

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N:
Receiver P/N:
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N:
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
4	1.649	5.41	1.649	5 41
9	1.649	5 41	1.649	5 41
12	1.649	5.41	1.649	5 41
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.41 Feet

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____
Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet meters
Obstructions > 10 Degrees above Horizon? ____ (Y or N)
Obstruction Survey Performed?
Yes____ No____ Performed Previously____
Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

MON9-118-Z

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes____ No____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

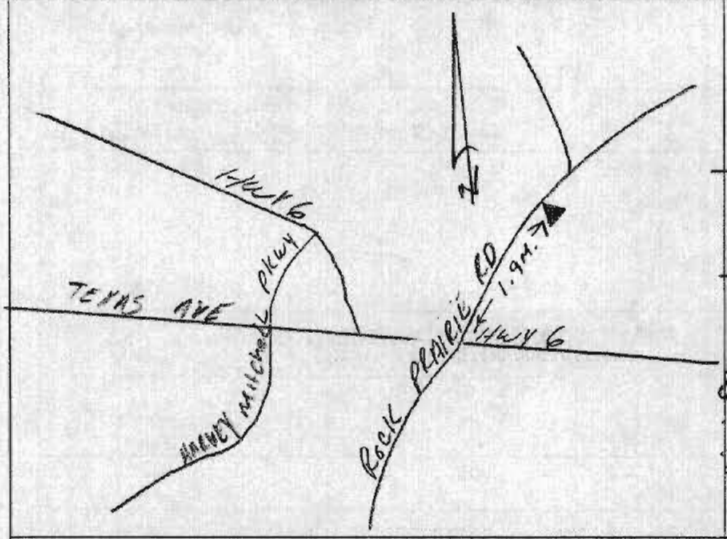
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked _____ meters _____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

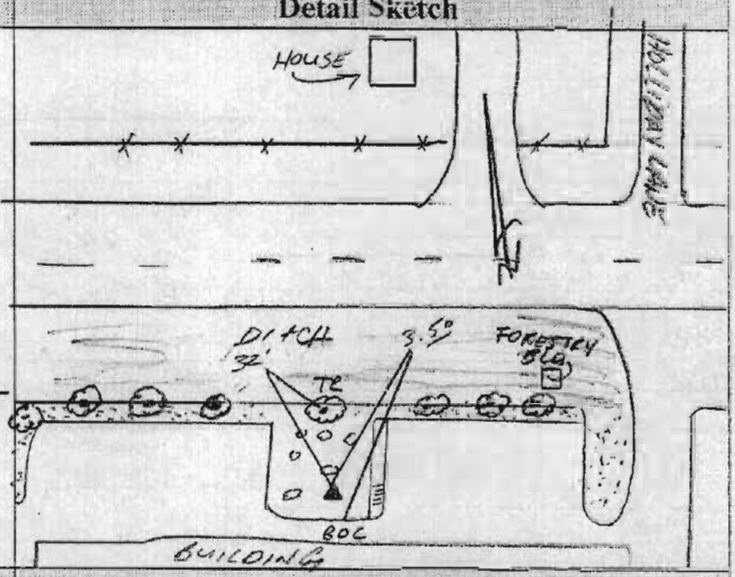
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-28-10

Route Sketch



Detail Sketch



To Reach Description

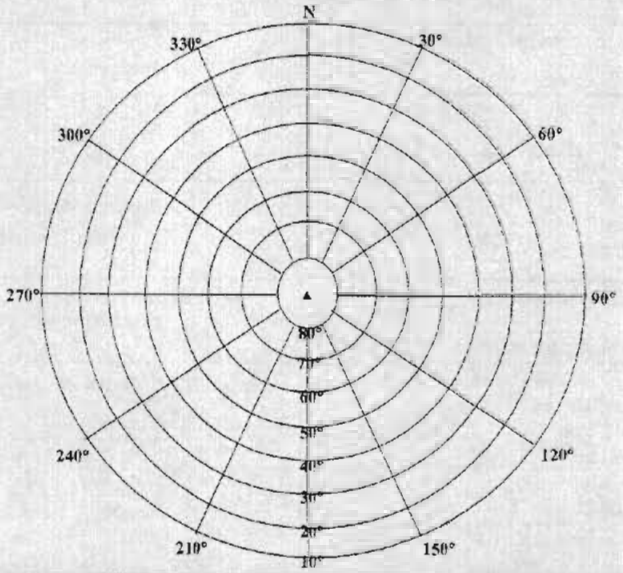
GO EAST ON HWY 6, EXIT ON ROCK PRAIRIE RD., MAKE A LEFT ON ROCK PRAIRIE RD. AND GO APPROX. 1.9 MILES, MON 9 IS ON RIGHT SIDE AT FORESTRY BUILDING.

ADDRESS 7090 (ROCK PRAIRIE)

32' FT TO 3 IN TR.

3.50 FT TO BACK OF CURB

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =01200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	OM11-118-2

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
MON #11	Mon #11	OM11	118	04-28-10
	Location	Station PID	Session #	Obs. Agency code
	College Station		2	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 33 .1321 N	096° 14.9303 W	0061.0M	AKeehan

Start Time	(Scheduled): Local	9:15
	(Actual): Local	9:18
Stop Time	(Scheduled): Local	10:18
	(Actual): Local	10:19

Other stations observed in this session: MON #2, MON #10, MON #9

Receiver MFR & Model: Trimble 4000 SSi

Receiver S/N: 3515A15357
Receiver P/N:

Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane

Antenna S/N: 2201 26287
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: _____ S/N: _____

Tribrach:
Manufacurer: _____ S/N: _____
Calibration Date:

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt:

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet meters

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
2	1.646	5.405	1.646	5.405
6	1.644	5.40	1.644	5.40
10	1.646	5.405	1.646	5.405
Mean of Measurements	1.645	5.40	1.645	5.40

Antenna Measurement Method: Bottom Notch of Ground Plane

HI entered into receiver or controller: 5.40 Feet

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

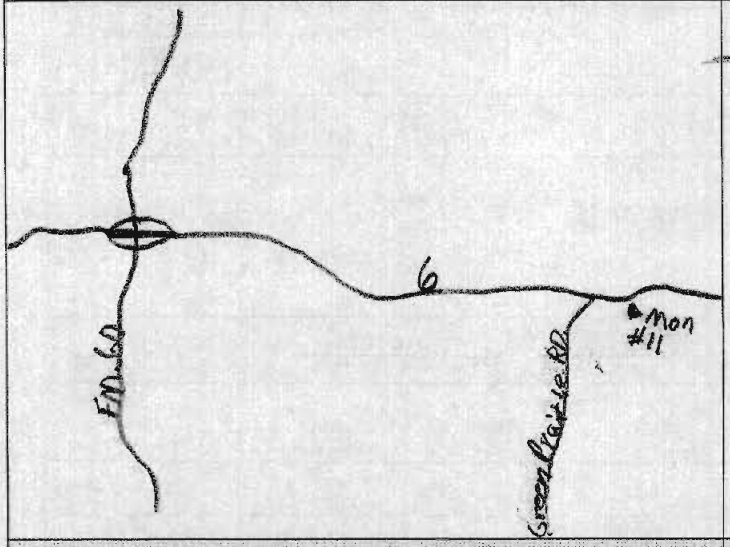
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

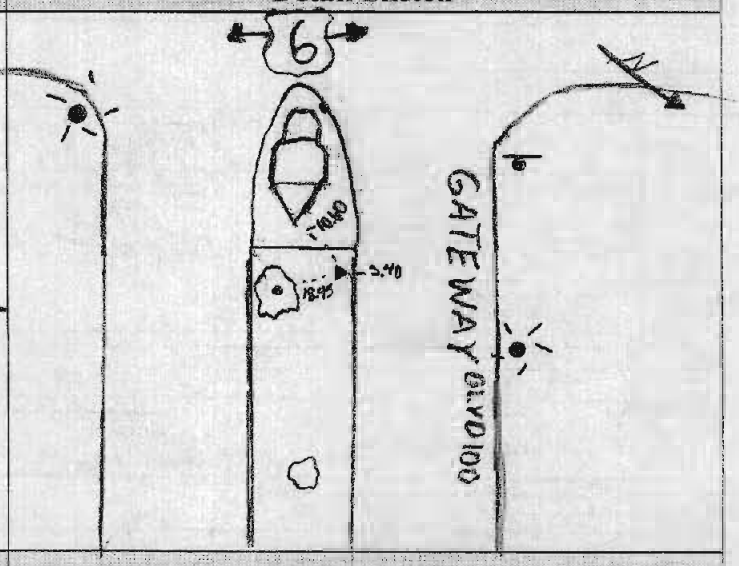
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	04-28-10

Route Sketch

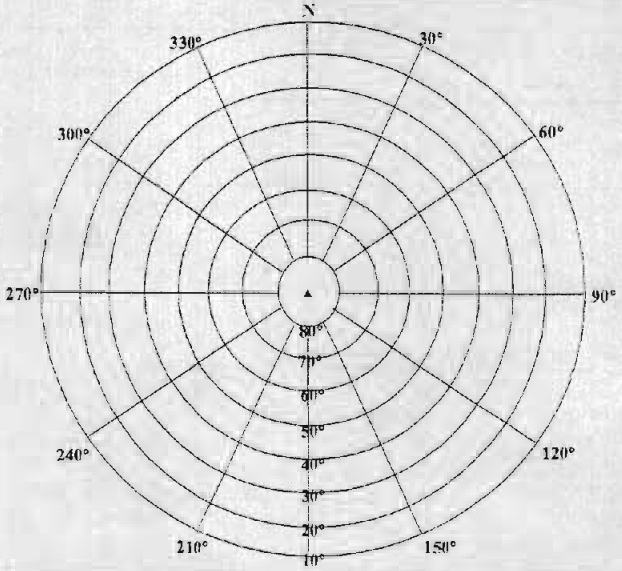


Detail Sketch



To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
5/8" IR w/YC	KI 1	KI01	118	4-28-10
Geo Metrics GPS Inc.	**Location**	**Station PID**	**Session #**	**Obs. Agency code**
	Brazos Co. / SH. 30		3	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 36' 49.50" N	96°11'36.52" W	+0032.4	C. Tarver

Start Time	(Scheduled): Local	11:00
	(Actual): Local	11:00
Stop Time	(Scheduled): Local	12:26
	(Actual): Local	12:26

Other stations observed in this session: Mon. 6, KI 5, Mon. 5

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N: 3615A15357
Receiver P/N: 24840-21
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N: 022001965
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A X or F ____
Manufacturer: ____ S/N: ____
Tribrach:
Manufacturer: ____ S/N: ____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
6	1.652	5.42	1.652	5.42
2	1.650	5.415	1.650	5.415
10	1.652	5.42	1.652	5.42
Mean of Measurements	1.651	5.418	1.651	5.418

Photos of Station: Yes ____ No X
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.418 Feet

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ____ After? ____

Antenna Oriented North? Yes X No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___
Feet ___ meters

Obstructions > 10 Degrees above Horizon? Y (Y or N)
Obstruction Survey Performed?
Yes X No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

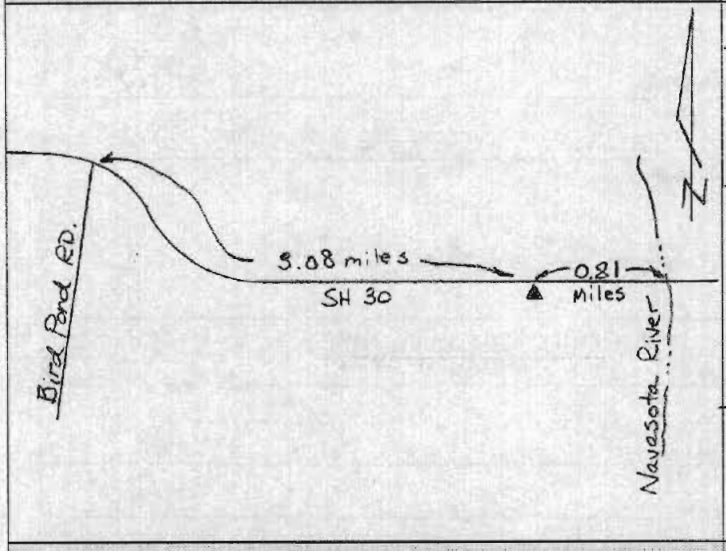
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

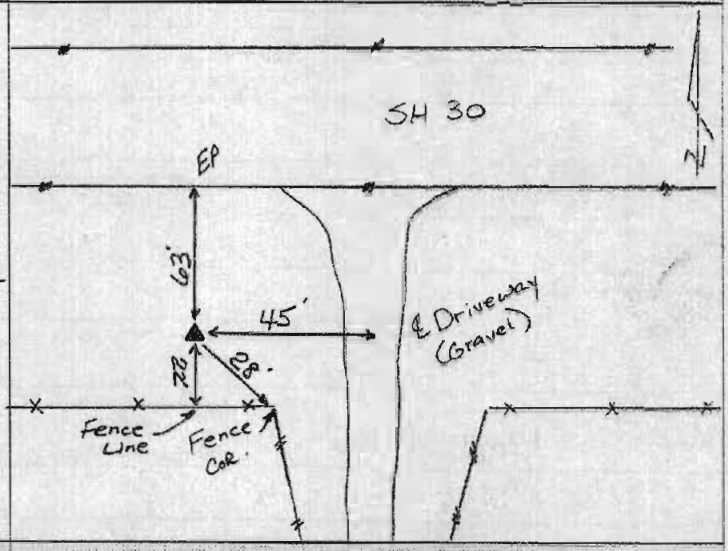
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey KI 1	109158	4-28-10

Route Sketch



Detail Sketch

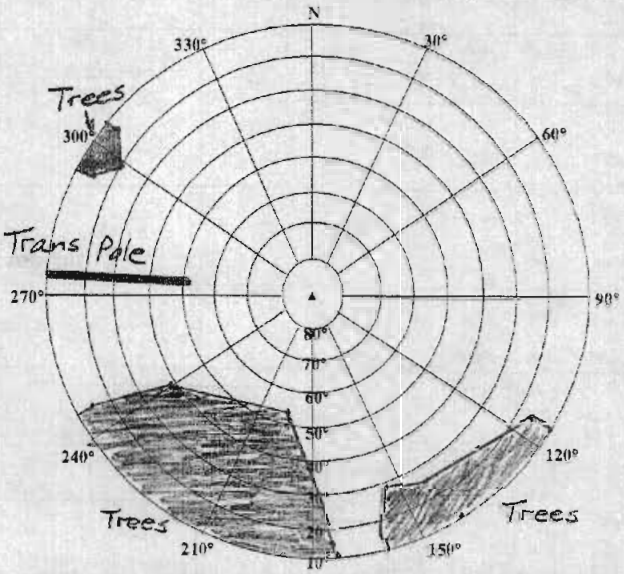


To Reach Description

* Mon. KI 1

116°	15°		280° 52°	Trans Pole
145°	26°	Trees		
156°	28°		292° 15°	
153°	15°		298° 20°	Trees
			305° 15°	
170°	15°			
205° 52°		Trees		
240° 38°				
248° 15°				

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry
N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200
N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	CS061183

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Alum Deep Rod w/ punch inside Access Cover	CS #6	CS06	118	4/28/10
	Location College Station	**Station PID** AlumRod	**Session #** 3	**Obs. Agency code** CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 33' 21.32 N	096° 11' 09.41 W	+0030.5 m	J. Montez

Start Time	(Scheduled): Local	11:00
	(Actual): Local	10:58
Stop Time	(Scheduled): Local	12:26
	(Actual): Local	

Other stations observed in this session: KI1 KI5 mon5

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver S/N: 3533A12012 Receiver P/N:	2	1.529	5.02	1.529	5.02
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	10	1.529	5.02	1.529	5.02
Antenna S/N: 02200 30199 Antenna P/N:	6	1.529	5.02	1.529	5.02
Adjustable or Fixed Ht. Tripod: A ✓ or F ___ Manufacturer: Leica S/N: ___	Mean of Measurements	1.529	5.02	1.529	5.02
Tribrach: Manufacturer: Leica S/N: ___ Calibration Date:					

Photos of Station: Yes ___ No ✓
Roll Number ___
Picture Number(s) ___

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.02 Feet

Antenna Cable Length: 15 (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ___ if No. Explain:

Power Source
Camcorder Batteries ___
External 12 Volt ✓
Commercial AC 110 Volt: ___

Barometer MFR/Model: ___
Serial Number: ___
Units of Reading: millibars ___ inches ___ Feet ___ meters ✓

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ✓ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

CS061183

5-Digit Weather Code

Before: ___ Middle: ___ After: ___

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc): Total Length of Rod used = 19.50'

Log Checked By: ___

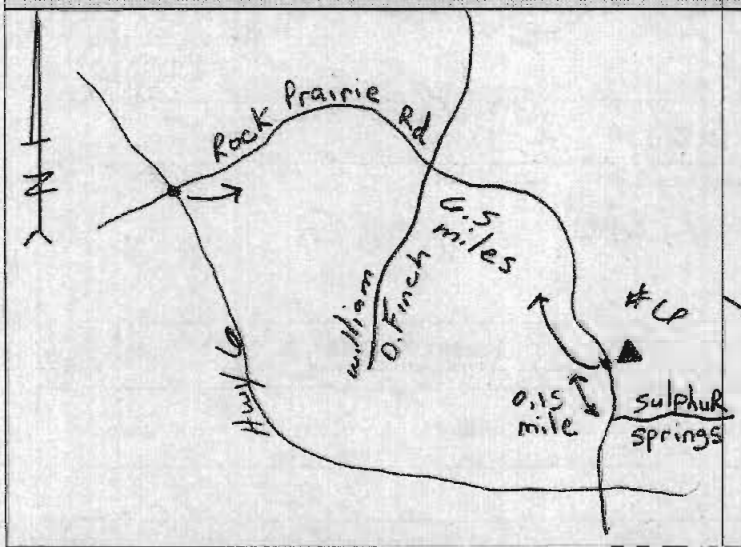
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

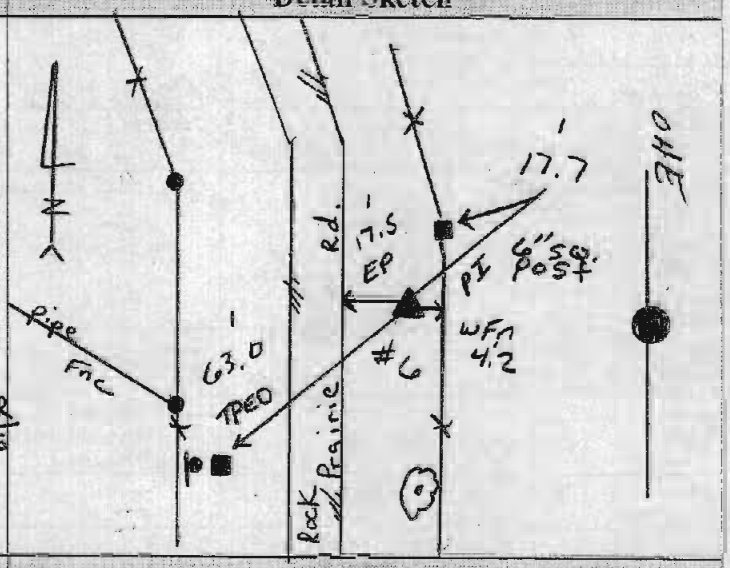
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
CS#6	109158	4/28/10

Route Sketch



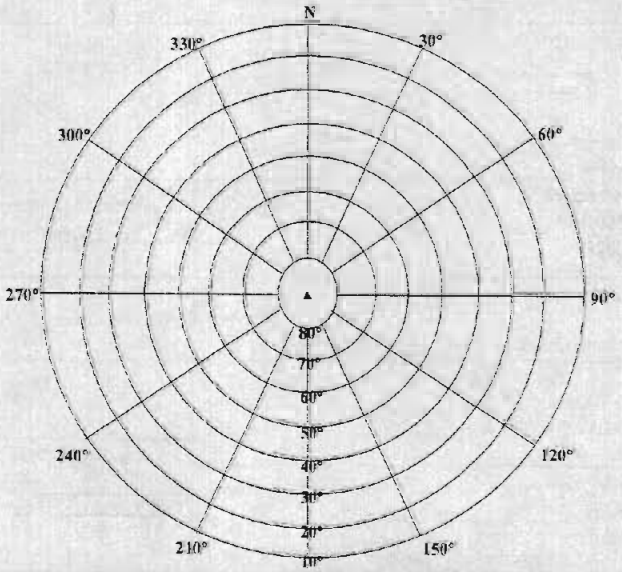
Detail Sketch



To Reach Description

From the Intrs. of Hwy 6 & Rock Prairie Rd Travel East on Rock Prairie Rd for Approx 6.5 miles. Monument is located on the left side L.O.W.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,G,W,Cl,C=00000 N,F,N,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M=00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MKI5-118-3

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	KI 5	MKI5	118	4-28-10
	Location	Station PID	Session #	Obs. Agency code
	College STATION		3	CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 29' 42.06"	096° 11' 09.95"	+00462	Bobby Martinez

Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TARVER KI1; JOE MONTEZ MON6; AJ ESCOBAR MON5
	(Actual): Local 10:32 AM	
Stop Time	(Scheduled): Local	
	(Actual): Local 12:26 PM	

Receiver MFR & Model: **Trimble 4000 SSi**

Receiver S/N:
Receiver P/N:

Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**

Antenna S/N:
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____

Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
2	1.643	5.39	1.643	5.39
7	1.643	5.39	1.643	5.39
11	1.643	5.39	1.643	5.39
Mean of Measurements				

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.39 Feet

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt:

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___ Feet ___ meters

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

MKI5-118-3

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

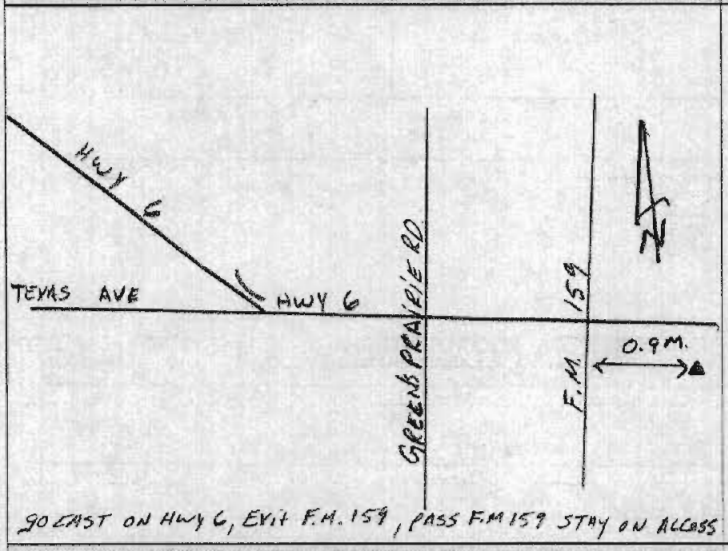
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

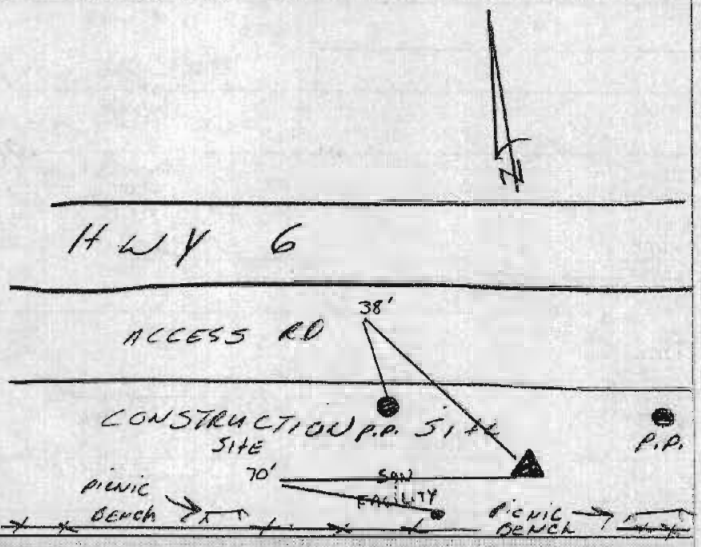
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-28-10

Route Sketch



Detail Sketch

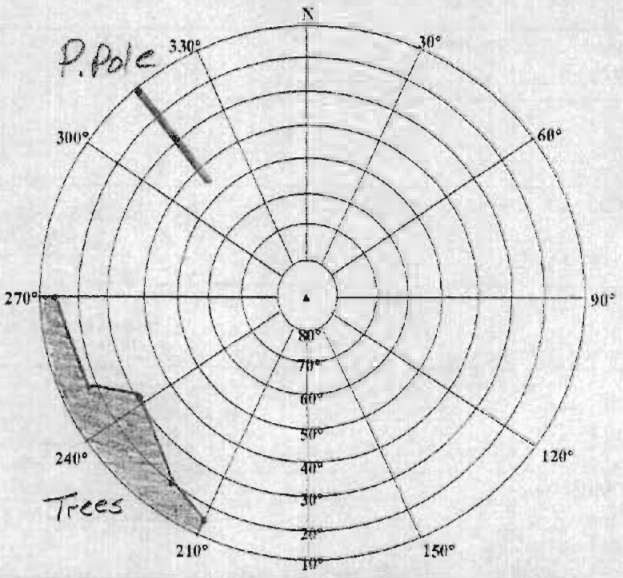


To Reach Description

* KI 5

210°	15°	38' FT TO P.P.
225°	20°	70' FT TO SQN FACILITY
242°	32°	Trees
250°	18°	
270°	15°	
315°	45°	= P. Pole

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M=00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MON5-118-3

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
MON #5	Mon #5	MON5	118	04-28-10
	Location	Station PID	Session #	Obs. Agency code
	College Station		3	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 30.3897W	096° 11.8629W	0032.0m	[illegible]

Start Time	(Scheduled): Local	11:00 A.M
	(Actual): Local	10:54 AM
Stop Time	(Scheduled): Local	12:26
	(Actual): Local	

Other stations observed in this session: KI1 - MON #6 - KI5

Antenna Measurements

Receiver MFR & Model:	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Trimble 4000 SSi	2	1.661	5.455	1.661	5.455
Receiver S/N: 3515A15357	10	1.662	5.46	1.662	5.46
Receiver P/N:	6	1.661	5.455	1.661	5.455
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	Mean of Measurements	1.661	5.45	1.661	5.45
Antenna S/N: 220126287					
Antenna P/N:					

Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: _____ S/N: _____

Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.45 Feet

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet meters

Obstructions > 10 Degrees above Horizon? ____(Y or N)
Obstruction Survey Performed?
Yes ____ No ____ Performed Previously ____

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

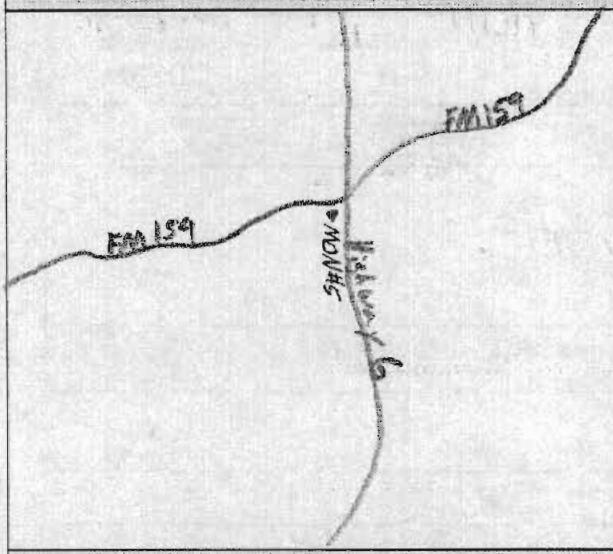
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

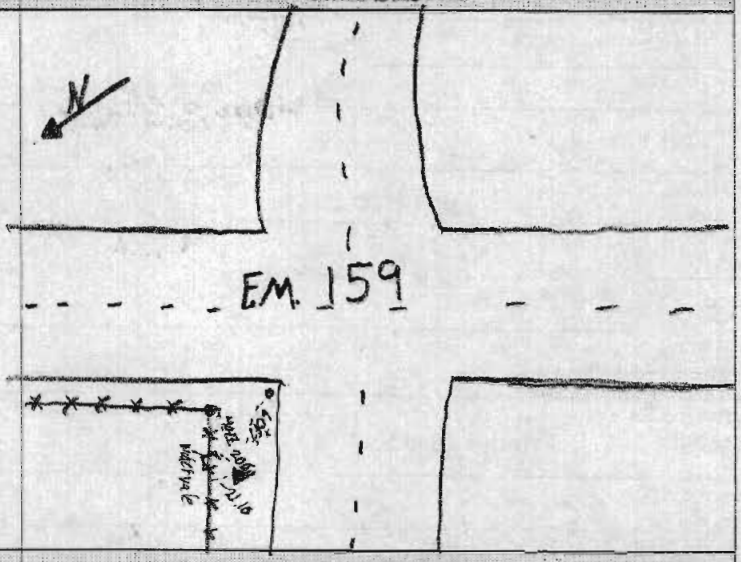
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	**109158**	

Route Sketch

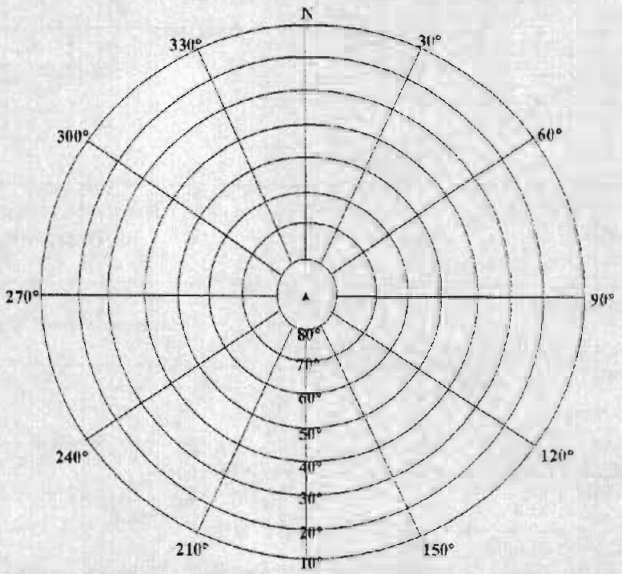


Detail Sketch



To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
5/8" IR w/YC	KI 2	KI02	118	
Geo Metrics GPS Inc.	**Location**	**Station PID**	**Session #**	**Obs. Agency code**
	Brazos Co./FM 60		4	CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 33' 35.26" N	96° 25' 14.12" W	+0041.6	C. Tarver

Start Time	(Scheduled): Local	5:22
	(Actual): Local	5:22
Stop Time	(Scheduled): Local	6:22
	(Actual): Local	6:22

Other stations observed in this session: Mon. 107, Mon. 101, Mon. 2

Receiver MFR & Model: **Trimble 4000 SSi**

Receiver S/N: 3615A15357
Receiver P/N: 24840-21

Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane

Antenna S/N: 0220019965
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A X or F ____
Manufacturer: _____ S/N: _____

Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date: _____

Photos of Station: Yes ____ No X
Roll Number _____
Picture Number(s) _____

Antenna Cable Length: _____ (Meters)

Antenna Plumb Check: Before? ____ After? ____

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? N (Y or N)
Obstruction Survey Performed?
Yes ___ No X Performed Previously ___

Other (explain):

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
12	1.673	5.49	1.673	5.49
8	1.673	5.49	1.673	5.49
4	1.671	5.48	1.671	5.48
Mean of Measurements	1.672	5.487	1.672	5.487

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.487 Feet

Antenna Oriented North? Yes X No ___ if No, Explain:

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

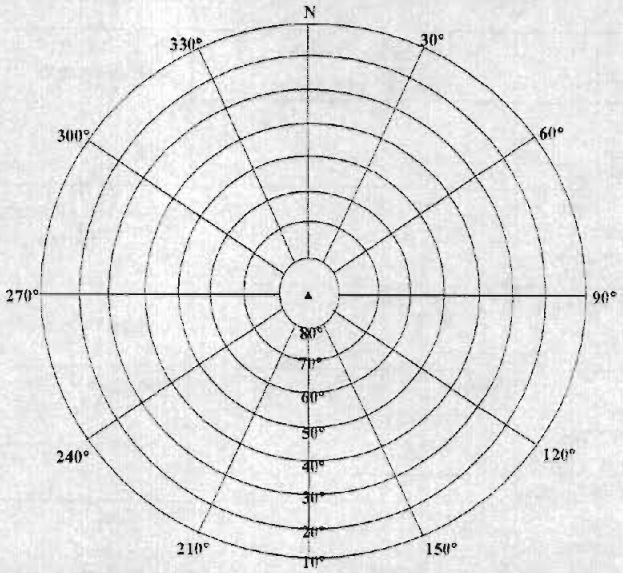
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	m1071184

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
FnD Alum disk in conc stamp mon107 1994	mon 107	m107	118	4/28/10
	Location	**Station PID**	**Session #**	**Obs. Agency code**
	Bryan TX	Alum Disk	4	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 38' 06.90 N	096° 22' 46.39 W	+0075.3m	J. Montez

Start Time	(Scheduled): Local	5:22
	(Actual): Local	5:20
Stop Time	(Scheduled): Local	6:22
	(Actual): Local	

Other stations observed in this session: KI2 mon101 mon2

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N: 3533A12012
Receiver P/N:

Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N: 02260301 99
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: Leica S/N: ____

Tribrach:
Manufacturer: Leica S/N: ____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
3	1.595	5.235	1.595	5.235
11	1.595	5.23	1.595	5.23
7	1.595	5.23	1.595	5.23
Mean of Measurements	1.595	5.23	1.595	5.23

Photos of Station: Yes ____ No ____
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.23 Feet

Antenna Cable Length: 15 (Meters)

Antenna Plumb Check: Before? Y After? Y

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ✓
Commercial AC 110 Volt: ____

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___ Feet ___ meters

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ✓ No ___ Performed Previously ___

Other (explain):

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

m1071184

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

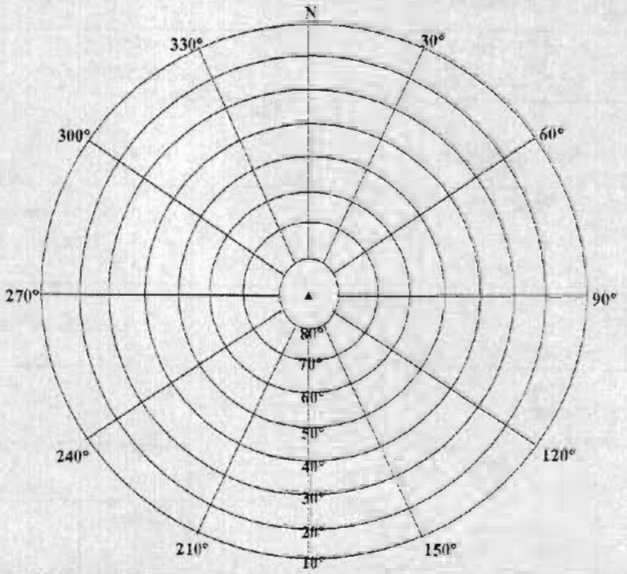
Station Name:	Project Number	Date (Local)
MON #107	109158	4/28/10

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	M101-118-4

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	Mon. 101	M101	118	4-28-10
	Location	Station PID	Session #	Obs. Agency code
	COLLEGE STATION		4	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 33' 00.13"	096° 23' 14.26"	+0060.8	Bobby Montez

Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TARVER KIZ; AJ ESCOBAR MON2; JOE MONTEZ MON 107
	(Actual): Local 5:12 PM	
Stop Time	(Scheduled): Local	
	(Actual): Local 6:22 PM	

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**

Receiver S/N:
Receiver P/N:

Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**

Antenna S/N:
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____

Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
1	1.523	5.00	1.523	5.00
4	1.523	5.00	1.523	5.00
9	1.523	5.00	1.523	5.00
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.00 Feet

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet meters

Obstructions > 10 Degrees above Horizon? ___(Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

M101-118-4

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

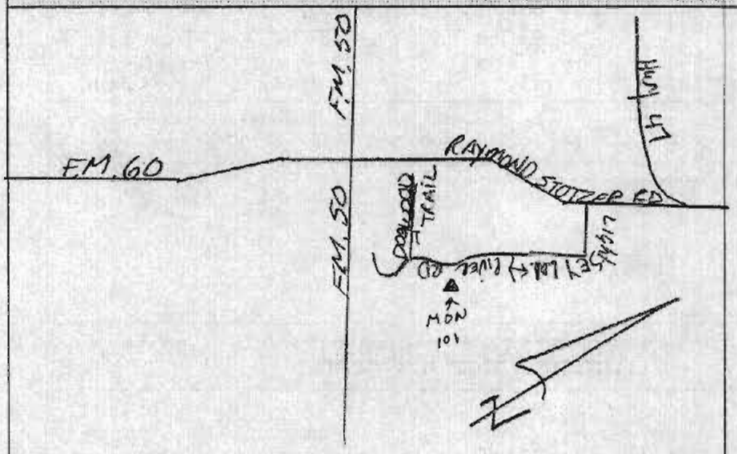
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

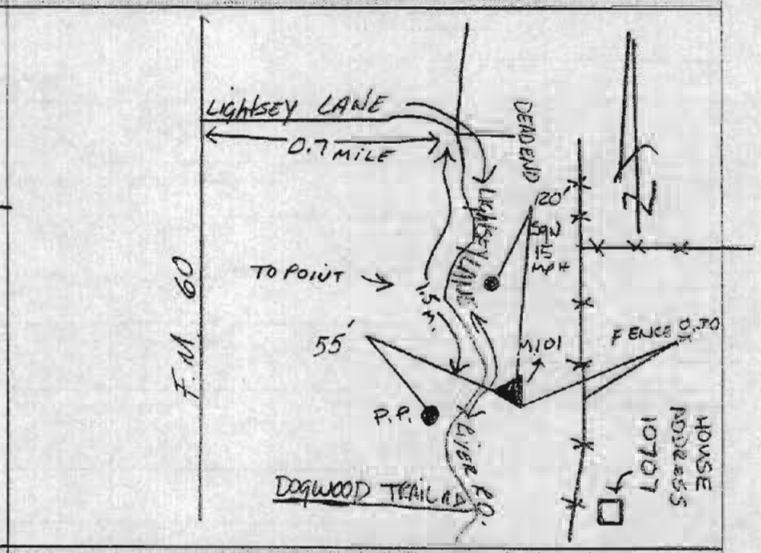
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-28-10

Route Sketch



Detail Sketch



To Reach Description

* Mon. 101

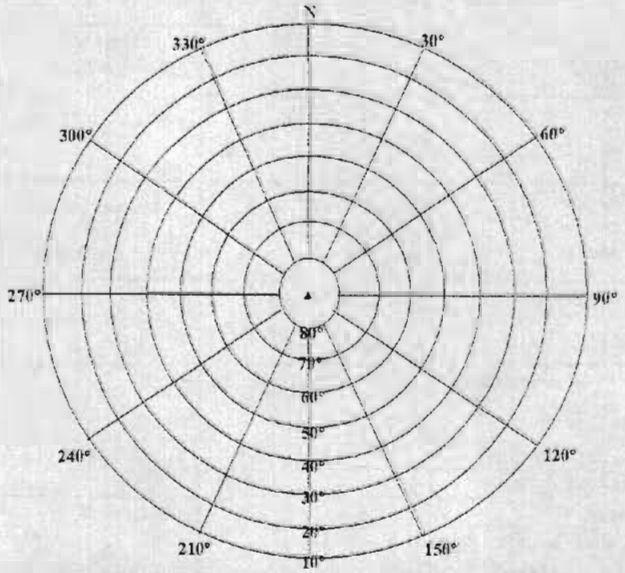
* No Obstructions

55' FT to PP

0.30 tenths to FENCE

120' FT to SGN 15MPH

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MON2-1184

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON#2	MON2	118	04-28-10
	Location	Station PID	Session #	Obs. Agency code
	College Station		4	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 33.7518 N	096° 24.7134	00551M	[illegible]

Start Time	(Scheduled): Local 5:22 PM	Other stations observed in this session: KI2 - MON#107 - MON#101
	(Actual): Local 5:23 PM	
Stop Time	(Scheduled): Local 6:22	
	(Actual): Local 6:23	

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver S/N: 3515A15357 Receiver P/N:	10	1.690	5.55	1.690	5.55
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	6	1.690	5.55	1.690	5.55
Antenna S/N: 2201262857 Antenna P/N:	2	1.691	5.555	1.691	5.555
Adjustable or Fixed Ht. Tripod: A ✓ or F ____ Manufacturer: _____ S/N: _____	Mean of Measurements	1.690	5.55	1690	5.55
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date:					

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

Hi entered into receiver or controller: 5.55 Feet

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt:

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet ___ meters

Obstructions > 10 Degrees above Horizon? ___(Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

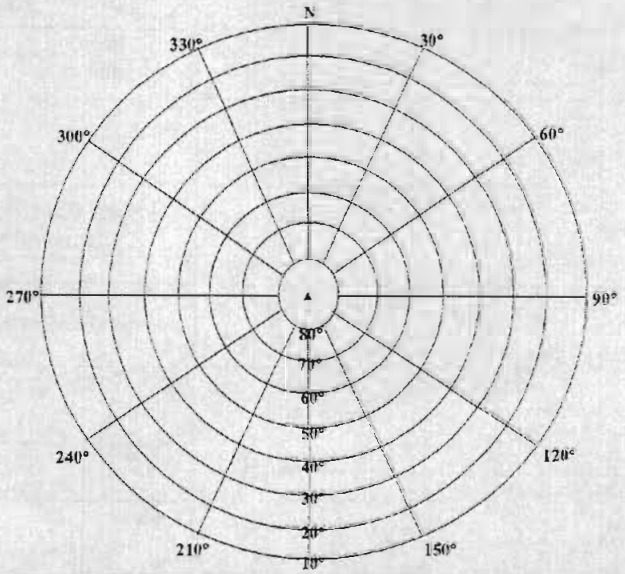
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M=00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
3/4" Mark it Rod w/punch	Mon 1	Mon 1	119	4-29-10
inside access cover	Location: Brazos Co. / Lonnie Ln.	Station PID	Session # 1	Obs. Agency code: CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 35' 51.13" N	96° 20' 02.56" W	+0069.0	C. Tarver

Start Time	(Scheduled): Local	7:26
	(Actual): Local	7:26
Stop Time	(Scheduled): Local	8:26
	(Actual): Local	8:26

Other stations observed in this session: Mon. 7, Mon. 242, Mon. 8

Receiver MFR & Model: **Trimble 4000 SSi**

Receiver S/N: 3615A15357
Receiver P/N: 24840-21

Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**

Antenna S/N: 02200199 65
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A X or F ____
Manufacturer: ____ S/N: ____

Tribrach:
Manufacturer: ____ S/N: ____
Calibration Date:

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
11	1.638	5.375	1.638	5.375
7	1.638	5.375	1.638	5.375
3	1.636	5.37	1.636	5.37
Mean of Measurements	1.637	5.373	1.637	5.373

Photos of Station: Yes ____ No X
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.373 **Feet**

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ____ After? ____

Antenna Oriented North? Yes X No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___
Feet ___ meters

Obstructions > 10 Degrees above Horizon? N (Y or N)
Obstruction Survey Performed?
Yes ___ No X Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

5-Digit Weather Code

Before: ____ Middle: ____ After: ____

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

Note: Entries are Required in all Unshaded areas except weather data.

Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

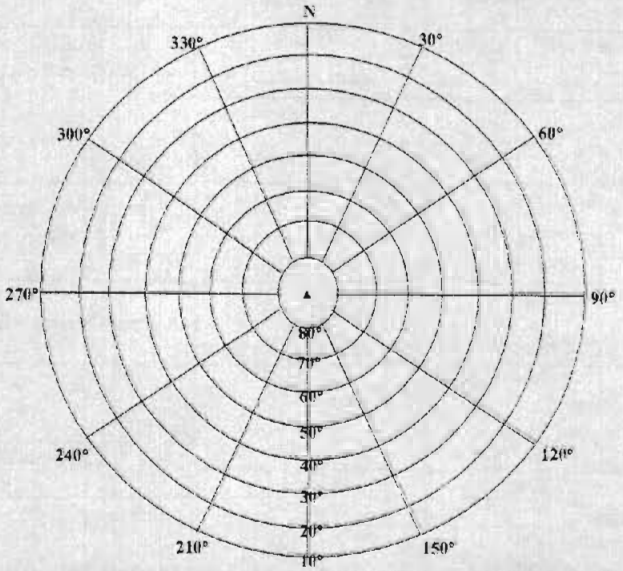
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,G,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	CS071191

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Alum Deep Rod To Refusal w/punch inside Access Cover	mon #7	CS07	119	4/29/10
Location		**Station PID**	**Session #**	**Obs. Agency code**
		Alum Rod	1	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 37' 13.60N	096° 12' 09.64W	+0043.4m	J. Masters

Start Time	(Scheduled): Local	7:26
	(Actual): Local	7:24
Stop Time	(Scheduled): Local	8:26
	(Actual): Local	

Other stations observed in this session: mon 1 mon 242 mon 8

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N: 3533A12012
Receiver P/N:

Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N: 02200 30199
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: Leica S/N: ____

Tribrach:
Manufacturer: Leica S/N: ____
Calibration Date:

Photos of Station: Yes ____ No ____
Roll Number ____
Picture Number(s) ____

Antenna Cable Length: 15 (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Power Source
Camcorder Batteries ____
External 12 Volt ✓
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___
Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? ✓ (Y or N)
Obstruction Survey Performed?
Yes ✓ No ___ Performed Previously ___

Other (explain):

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
7	1.602	5.26	1.602	5.26
3	1.602	5.26	1.602	5.26
11	1.602	5.26	1.602	5.26
Mean of Measurements	1.602	5.26	1.602	5.26

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.26 Feet

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

CS071191

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

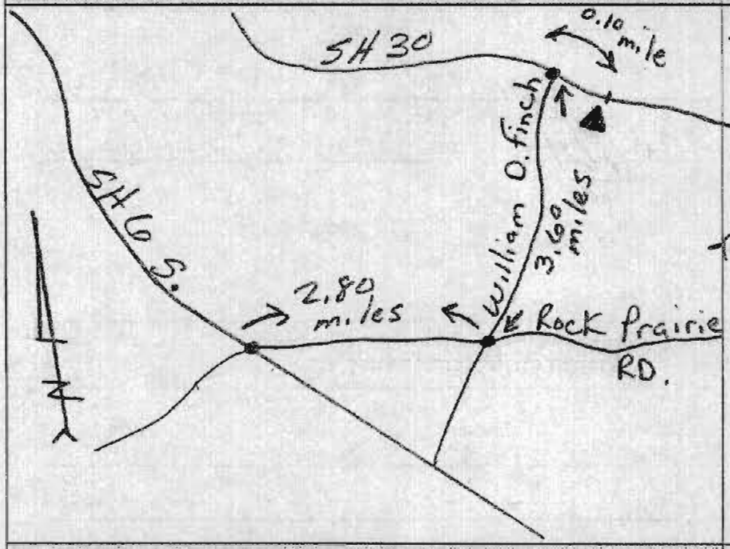
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

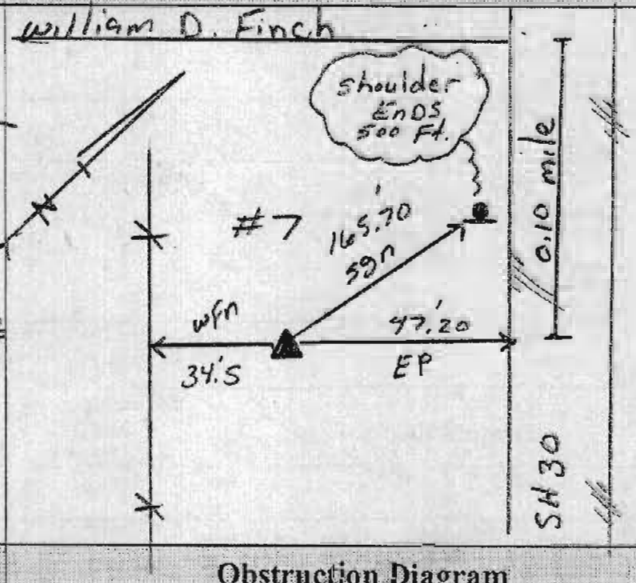
GPS Observation Log – Page 2

Station Name:	Project Number:	Date (Local):
mon # 7	109158	4/29/10

Route Sketch



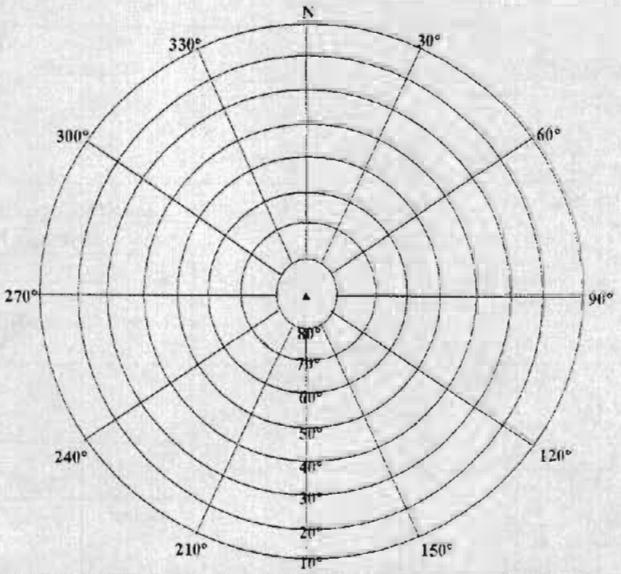
Detail Sketch



To Reach Description

Travel South on SH 6 & Exit on Rock Prairie Rd. Then take a left on Rock Prairie Rd and Travel 2.80 miles To William D. Finch. Take a left and go for Aprox 3.60 miles To SH 30 turn right and go for 0.10 miles points is on the right side of R.o.W

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	M242-119-1

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON 242	M242	119	4-29-10
	Location	Station PID	Session #	Obs. Agency code
	COLLEGE STATION		1	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 39' 23.24"	096° 16' 29.09"	+0071.5	Bobby Matthews

Start Time	(Scheduled): Local	
	(Actual): Local	7:20 AM
Stop Time	(Scheduled): Local	
	(Actual): Local	8:26 AM

Other stations observed in this session
CHAD TARVER MON-1 AJ ESCOBAR MON-8
JOE MONTEZ MON-7

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi
Receiver S/N:
Receiver P/N:
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane
Antenna S/N:
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
4	1.593	5.22	1.593	5.22
8	1.593	5.22	1.593	5.22
12	1.593	5.22	1.593	5.22
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: Bottom Notch of Ground Plane

HI entered into receiver or controller: 5.22 Feet

Antenna Cable Length: _____(Meters)
Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

M242-119-1

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

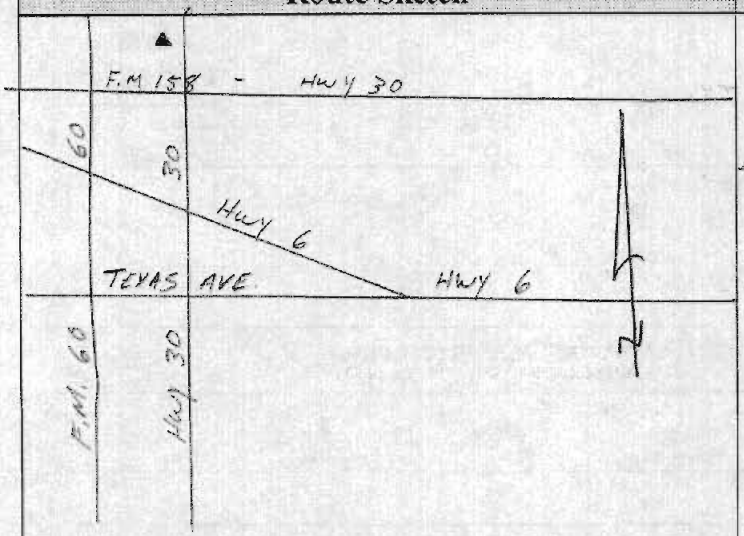
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

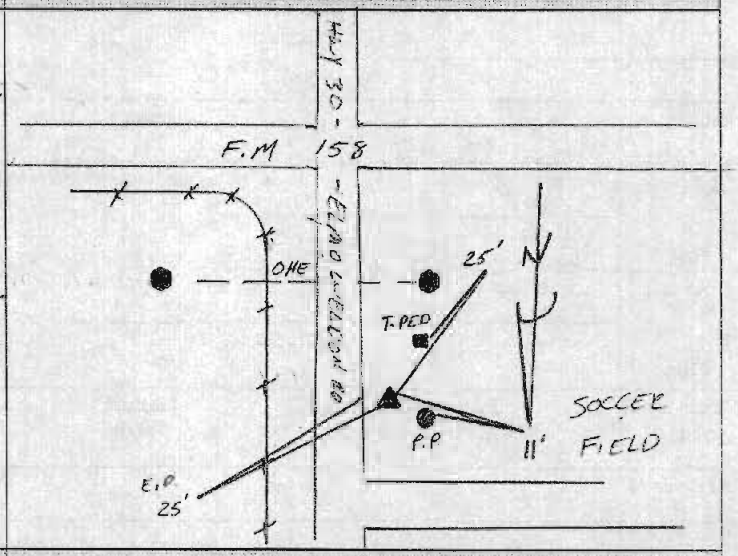
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-29-10

Route Sketch



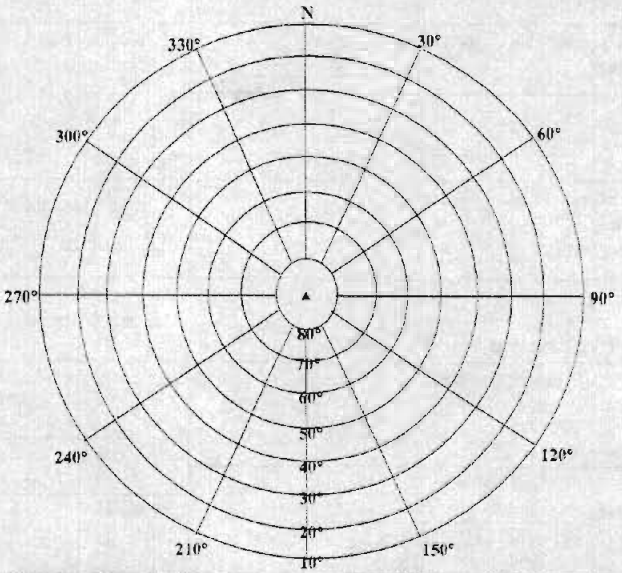
Detail Sketch



To Reach Description

HEAD EAST ON TEXAS AVE. MAKE A LEFT ON ON Hwy 30. GO STRAIGHT AND PASS Hwy 6, CONTINUE GOING STRAIGHT AND PASS F.M. 158, POINT IS ON RIGHT SIDE ABOUT 500 FT.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:		Project Number		Data File Name (see below)
College Station 2010 Control Survey		109158		MON8-119-1
Station Description	Station Name: MON #8	4 Character ID: MON8	Julian Day: 119	Date (Local): 04-29-10
	Location: College Station	Station PID	Session #: 1	Obs. Agency code: CDSMS
Latitude: 30° 38.9614 N	Longitude: 096° 17.6751	Ellipsoid Ht.(m): +[illegible]536M		Observer name: [illegible]

Start Time	(Scheduled): Local	7:26
	(Actual): Local	7:20
Stop Time	(Scheduled): Local	
	(Actual): Local	8:27

Other stations observed in this session: MON #1 - MON #7 - MON #242

Receiver MFR & Model: **Trimble 4000 SSi**

Receiver S/N: 3515A15357
Receiver P/N:

Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**

Antenna S/N: 220126287
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: ________ S/N: ________

Tribrach:
Manufacturer: ________ S/N: ________
Calibration Date:

Photos of Station: Yes ____ No ____
Roll Number ________
Picture Number(s) ________

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ✓ After? ____

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
10	1.620	5.32	1.620	5.32
2	1.620	5.32	1.620	5.32
6	1.618	5.315	1.618	5.315
Mean of Measurements	1.620	5.32	1.620	5.32

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.32 Feet

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries ________
External 12 Volt ________
Commercial AC 110 Volt: ________

Barometer MFR/Model: ________
Serial Number: ________
Units of Reading: millibars ___ inches ___ Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

5-Digit Weather Code

Before: ________ Middle: ________ After: ________

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ________

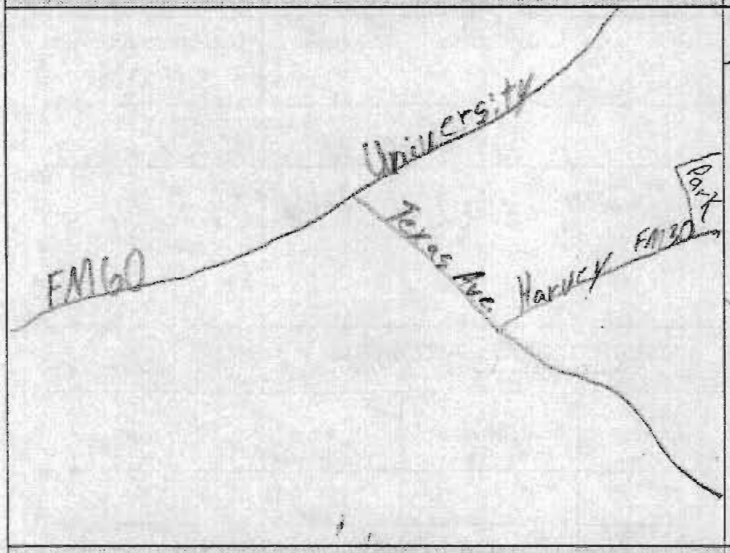
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

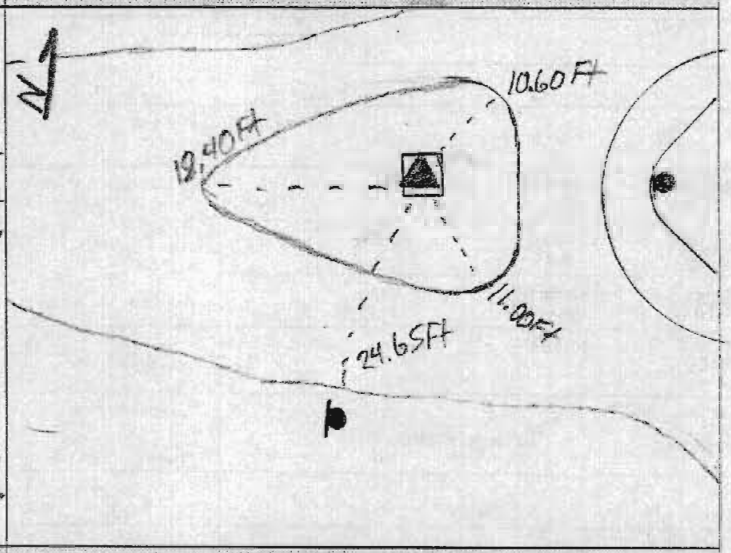
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	**109158**	04-29-10

Route Sketch



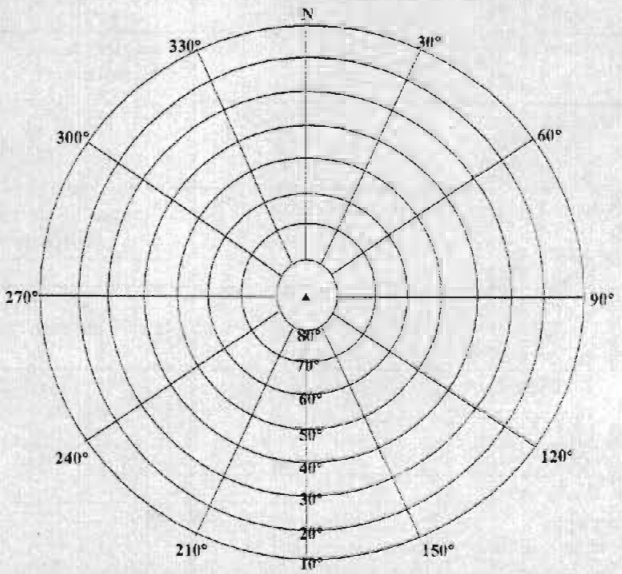
Detail Sketch



To Reach Description

Get on FM 60 (also known as University) Turn right on Texas Ave. go 1.1 miles. Turn left on Harvey (also known as FM 30. go 2.3 miles to main gate of Veterans on the right. MON #8 is 0.1 miles in park.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
3" Alum Cap in Conc.	Mon 135	M135	119	4-29-10
Stamped College Station Mon. 135 (1994)	Location: Brazos Co. / Woodlake Dr	Station PID	Session # 2	Obs. Agency code CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 31' 21.11" N	96° 16' 04.22" W	+0058.6	C. Tarver

Start Time	(Scheduled): Local	9:11
	(Actual): Local	9:11
Stop Time	(Scheduled): Local	10:11
	(Actual): Local	10:11

Other stations observed in this session: Mon. 4, KI 5, Mon. 5

Receiver MFR & Model: Trimble 4000 SSi

Receiver S/N: 3615A15357
Receiver P/N: 24840-21

Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane

Antenna S/N: 02200199G5
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A X or F ____
Manufacturer: ____ S/N: ____

Tribrach:
Manufaeturer: ____ S/N: ____
Calibration Date:

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
1	1.716	5.63	1.716	5.63
9	1.717	5.63	1.717	5.63
6	1.715	5.625	1.715	5.625
Mean of Measurements	1.716	5.628	1.716	5.628

Photos of Station: Yes ____ No X
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: Bottom Notch of Ground Plane

HI entered into receiver or controller: 5.628 Feet

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ____ After? ____

Antenna Oriented North? Yes X No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___
Feet meters

Obstructions > 10 Degrees above Horizon? Y (Y or N)
Obstruction Survey Performed?
Yes X No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

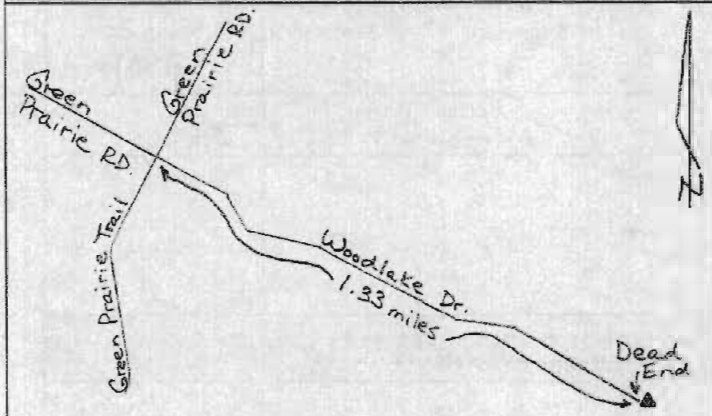
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

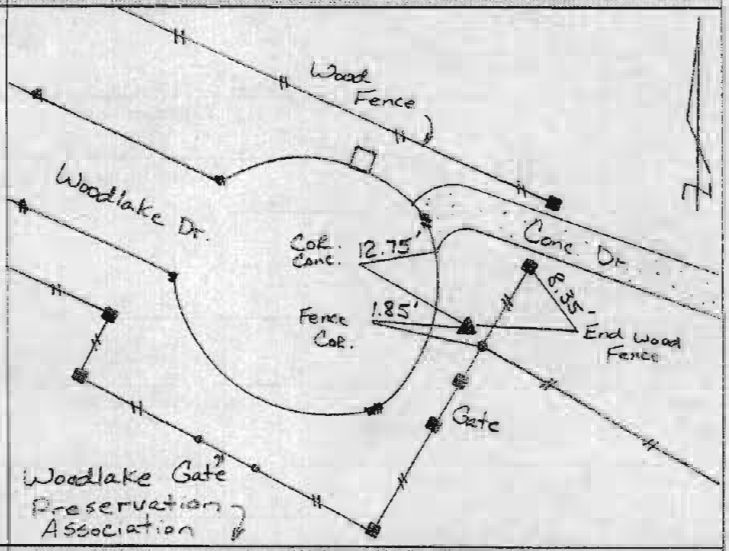
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-29-10

Route Sketch



Detail Sketch

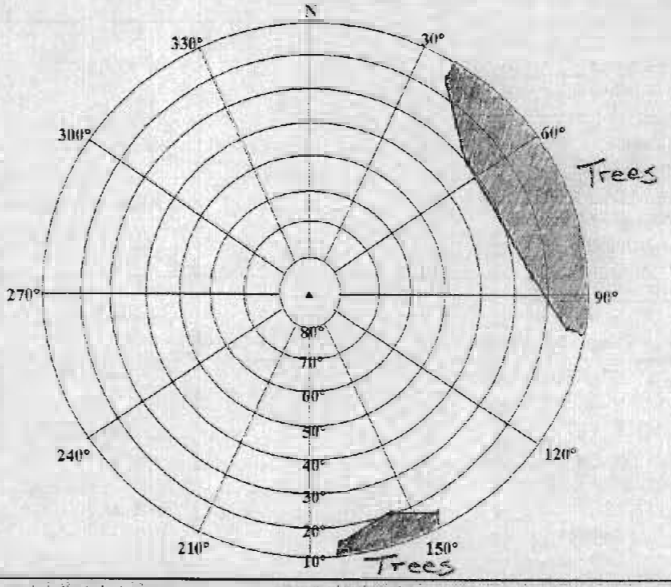


To Reach Description

* Mon 135

40°	15°		145°	15°	
55°	30°	Trees	155°	20°	Trees
85°	24°		170°	15°	
100°	15°				

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M=00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	CS041192

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Alum Deep Rod to Refusal inside Access Cover	QL5945 7802 = CS 4	CS04	119	4/29/10
Location		**Station PID**	**Session #**	**Obs. Agency code**
		Alum Rod	2	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 30' 23.64" N	096° 17' 47.48" W	+0063.8 M	J. Montez

Start Time	(Scheduled): Local	9:11
	(Actual): Local	9:10
Stop Time	(Scheduled): Local	10:11
	(Actual): Local	

Other stations observed in this session: mon135 KIS mon5

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi
Receiver S/N: 3533A12012
Receiver P/N:

Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane
Antenna S/N: 0220030199
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: Leica S/N: ____

Tribrach:
Manufacturer: Leica S/N: —
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
10	1.603	5.26	1.603	5.26
6	1.603	5.26	1.603	5.26
2	1.603	5.26	1.603	5.26
Mean of Measurements	1.603	5.26	1.603	5.26

Photos of Station: Yes ____ No ✓
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.26 Feet

Antenna Cable Length: 15 (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ✓
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ____ inches ____ Feet ✓ meters ____

Obstructions > 10 Degrees above Horizon? ✓ (Y or N)
Obstruction Survey Performed?
Yes ✓ No ____ Performed Previously ____

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

CS041192

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

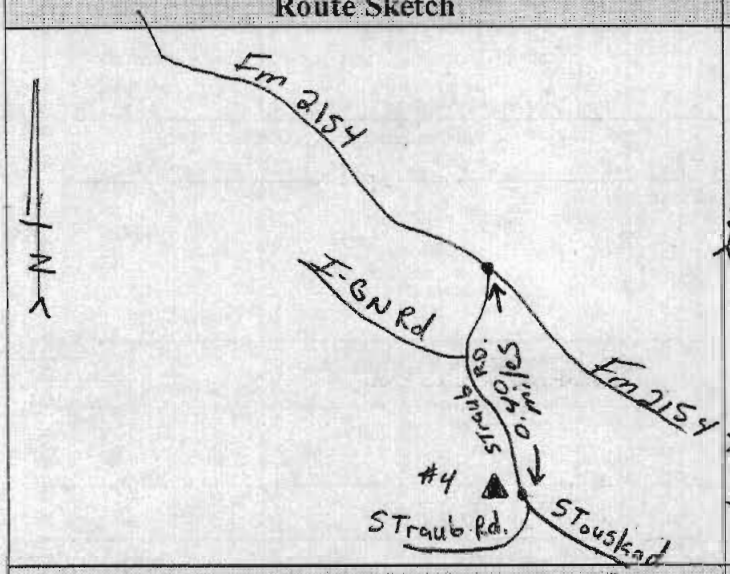
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

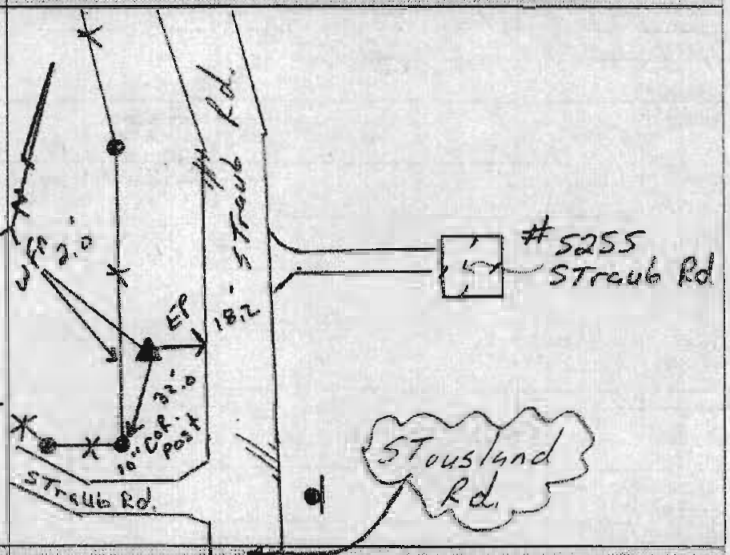
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
mon #4	109158	4/29/10

Route Sketch



Detail Sketch



To Reach Description

*QU5945 7802 = CS 4

52° 15°

55° 20° } Trees

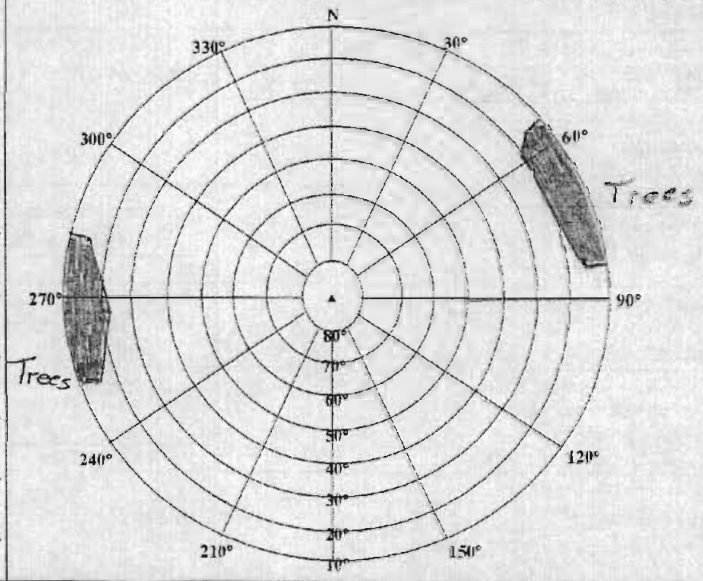
80° 15°

255° 15°

268° 22° } Trees

284° 15°

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MKI5-119-2

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	KI5	MKI5	119	4-29-10
	Location: COLLEGE STATION	Station PID	Session #: 2	Obs. Agency code: CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 29' 42.01"	096° 11' 09.98"	-0052.9	Bobby Martinez

Start Time	(Scheduled): Local	
	(Actual): Local	9:05 AM
Stop Time	(Scheduled): Local	
	(Actual): Local	10:11 AM

Other stations observed in this session: CHAD TARVER MON-135; AJ ESCOBAR MON 5; JOE MONTEZ MON-4

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N:
Receiver P/N:
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N:
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
4	1.701	5.58	1.701	5.58
7	1.701	5.58	1.701	5.58
11	1.701	5.58	1.701	5.58
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.58 Feet

Antenna Cable Length: _____(Meters)
Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____
Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet ___ meters ___
Obstructions > 10 Degrees above Horizon? ___(Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___
Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaaa=4-Char ID, ddd=julian day, s=session,
MKI5-119-2

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked _____ meters _____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

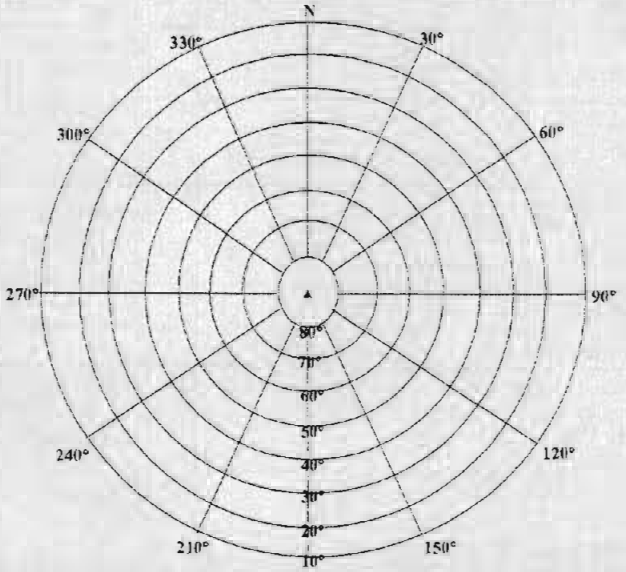
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-29-10

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MONS-119-2

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON #5	MONS	119	04-29-10
	Location	Station PID	Session #	Obs. Agency code
	College Station		2	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30 30. 3889 N	096 11.8627 W	0038.8m	Meeker

Start Time	(Scheduled): Local	9:11 AM.
	(Actual): Local	9:00 AM.
Stop Time	(Scheduled): Local	10:11 AM
	(Actual): Local	

Other stations observed in this session: mon# 135 - mon# 4 - KI5

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N: 3515415357
Receiver P/N:
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N: 22012628T
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ___ or F ___
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
2	1.627	5.345	1.627	5.345
6	1.626	5.34	1.626	5.34
10	1.627	5.345	1.627	5.345
Mean of Measurements	1.627	5.34	1.627	5.34

Photos of Station: Yes ___ No ___
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.34 **Feet**

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt:

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet meters

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

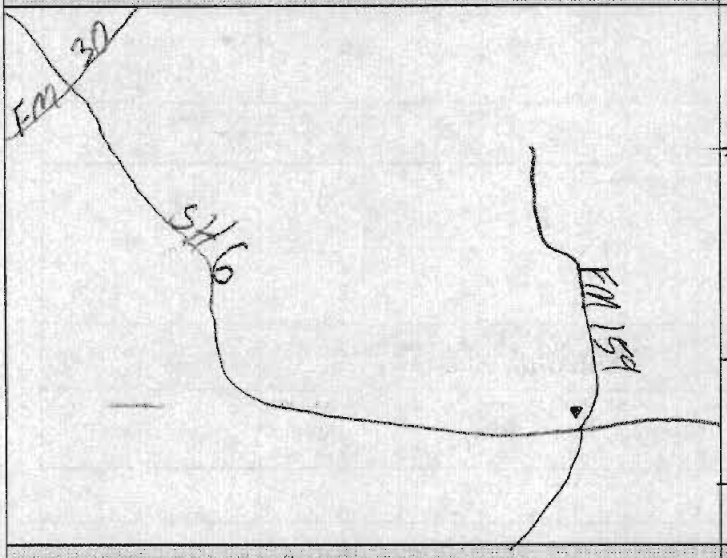
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

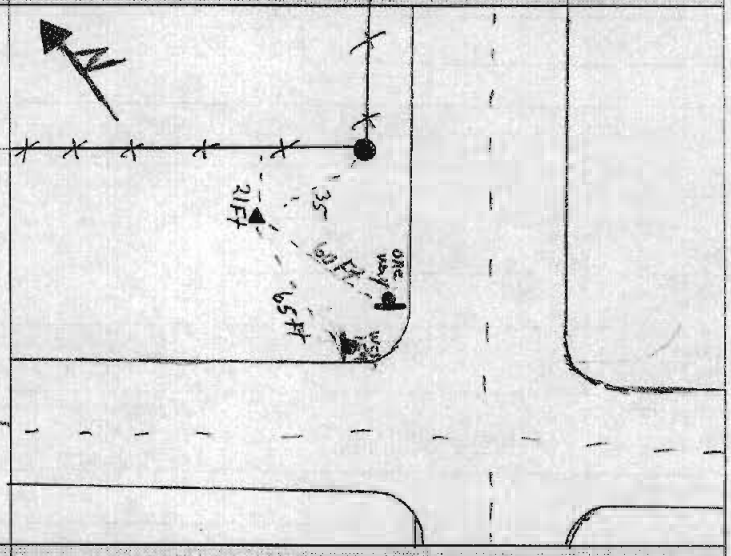
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch



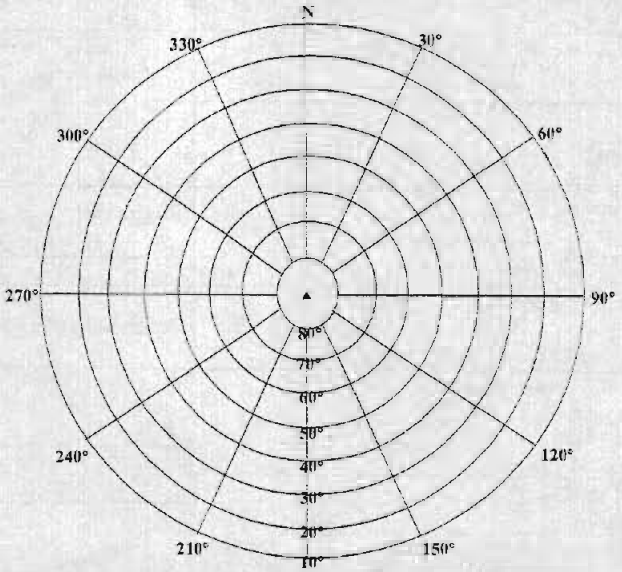
Detail Sketch



To Reach Description

From FM. 30 go South 11.2 miles to FM 159 Exit 159 then go East For 0.1 miles and mon #5 is on the left side of Road.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
5/8" IR w/YC	KI 8	KI08	119	4-29-10
Geo Metrics GPS Inc	Location: Brazos Co. / Valley Cir & Blue Ridge Dr.	Station PID	Session # 3	Obs. Agency code CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 32' 15.85" N	96° 20' 46.78" W	+0053.9	C. Tarver

Start Time	(Scheduled): Local	11:00
	(Actual): Local	11:00
Stop Time	(Scheduled): Local	12:00
	(Actual): Local	12:00

Other stations observed in this session: Mon. 3, Mon. 101, Mon. 2

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N: 3615A15357
Receiver P/N: 24840-21
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N: 0220019965
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A X or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
4	1.758	5.765	1.758	5.765
12	1.760	5.775	1.760	5.775
8	1.760	5.775	1.760	5.775
Mean of Measurements	1.759	5.772	1.759	5.772

Photos of Station: Yes ____ No X
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.772 Feet

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? _____ After? _____

Antenna Oriented North? Yes X No ____ If No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt:

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___ Feet ___ meters

Obstructions > 10 Degrees above Horizon? Y (Y or N)
Obstruction Survey Performed?
Yes X No ____ Performed Previously ____

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

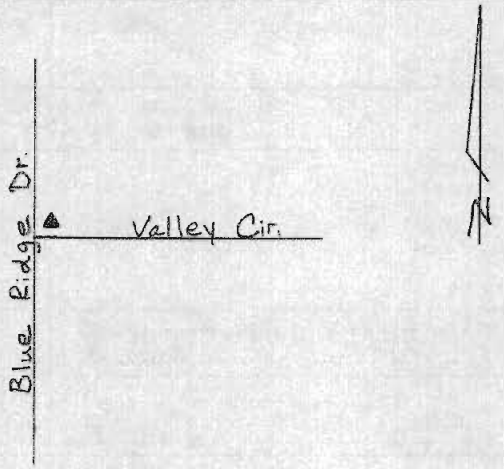
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

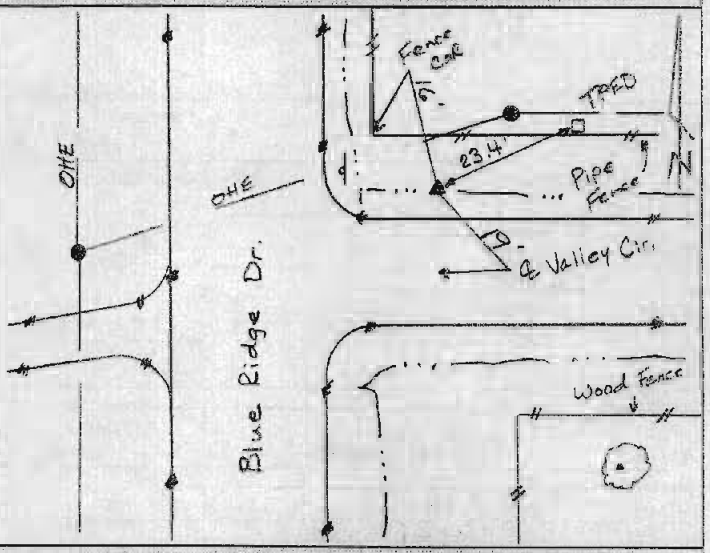
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-29-10

Route Sketch



Detail Sketch

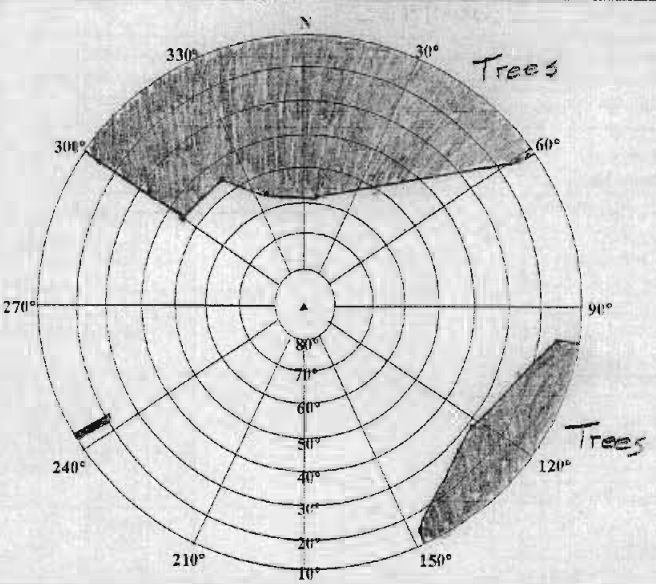


To Reach Description

* KI 8

300°	15°		105°	15°	
300°	45°		125°	28°	Trees
325°	45°	Trees	148°	15°	
340°	55°				
12°	58°		244°	20°	= P Pole
62°	15°				

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	CS03 1193

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Alum Deep Rod w/ punch inside Access Cover	mon #3	CS03	119	4/29/10
	Location	Station PID: Alum Rod	Session #: 3	Obs. Agency code: CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 31' 24.74" N	096° 20' 49.44" W	+00 38.9 m	S. Monter

Start Time	(Scheduled): Local	11:00
	(Actual): Local	10:59
Stop Time	(Scheduled): Local	12:00
	(Actual): Local	

Other stations observed in this session: KI8 mon101 mon2

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi
Receiver S/N: 3533A12012
Receiver P/N:

Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane
Antenna S/N: 02200030199
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ✓ or F ___
Manufacturer: Leica S/N: —

Tribrach:
Manufacturer: Leica S/N: —
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
11	1.591	5.22	1.591	5.22
7	1.591	5.22	1.591	5.22
3	1.591	5.22	1.591	5.22 ✓
Mean of Measurements	1.591	5.22	1.591	5.22

Photos of Station: Yes ___ No ✓
Roll Number ___
Picture Number(s) ___

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.22 Feet

Antenna Cable Length: 15 (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries ___
External 12 Volt ✓
Commercial AC 110 Volt: ___

Barometer MFR/Model: ___
Serial Number: ___
Units of Reading: millibars ___ inches ___ Feet ✓ meters

Obstructions > 10 Degrees above Horizon? ✓ (Y or N)
Obstruction Survey Performed?
Yes ✓ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session

CS031193

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ___

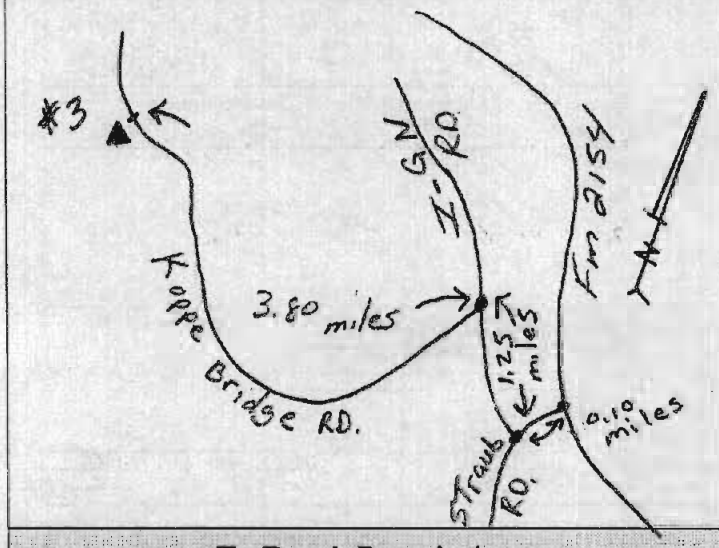
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

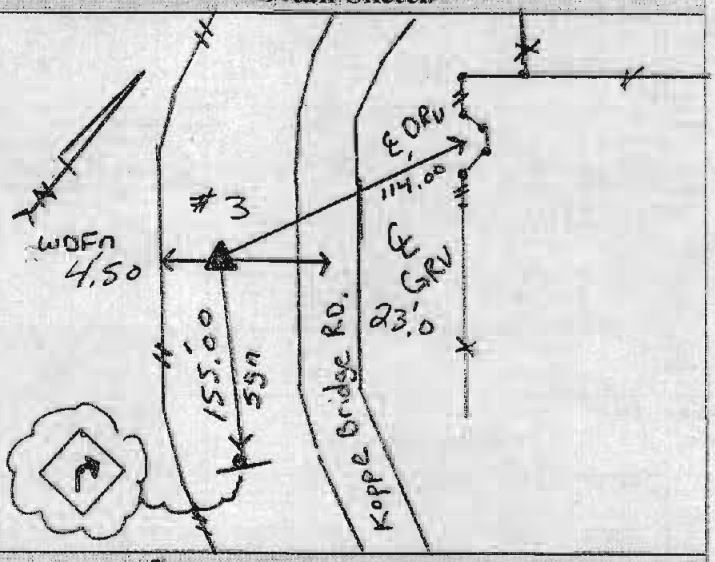
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
mon #3	109158	4/29/10

Route Sketch



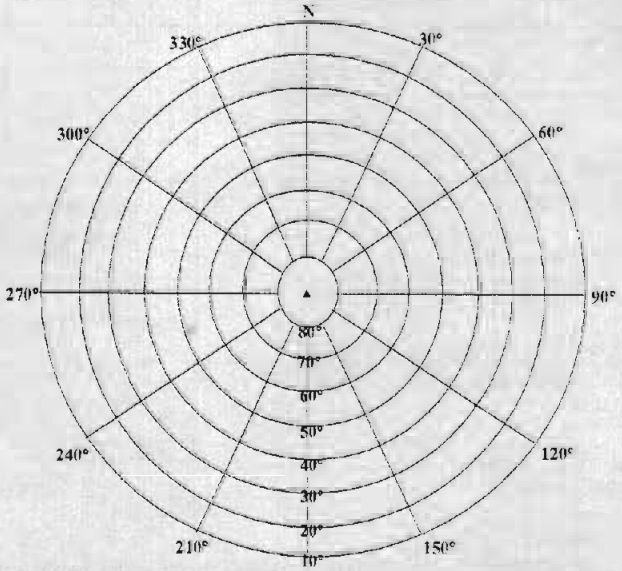
Detail Sketch



To Reach Description

From "T" Inters. of Fm 2154 & Straub Rd go 0.10 mile west on Straub Rd turn right on I-GN Rd and Travel for Approx 1.25 miles. Then Turn left on Koppe Bridge Rd and Travel For Approx 3.80 miles monument is on the left side of Road.

none Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi. - 15 Mi.)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 mph - 15 MPh)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,F,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	M101-119-3

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON 101	M101	119	4-29-10
	Location: COLLEGE STATION	Station PID	Session #: 3	Obs. Agency code: CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 33' 00.06"	096° 23' 14.24"	+0058.6	Bobby Martinez

Start Time	(Scheduled): Local	Other stations observed in this session: CHAO TARVER KI8; AJ ESCOBAR MON-2; JOE MONTEZ MON-3
	(Actual): Local 10:54 AM	
Stop Time	(Scheduled): Local	
	(Actual): Local 12:00 PM	

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N:
Receiver P/N:
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N:
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
3	1.688	5.54	1.688	5.54
8	1.688	5.54	1.689	5.54
11	1.688	5.54	1.688	5.54
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.54 Feet

Antenna Cable Length: _____(Meters)
Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____
Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet ___ meters ___
Obstructions > 10 Degrees above Horizon? ____(Y or N)
Obstruction Survey Performed?
Yes ____ No ____ Performed Previously ____
Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,
M101-119-3

5-Digit Weather Code

Before: | Middle: | After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked _____ meters _____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

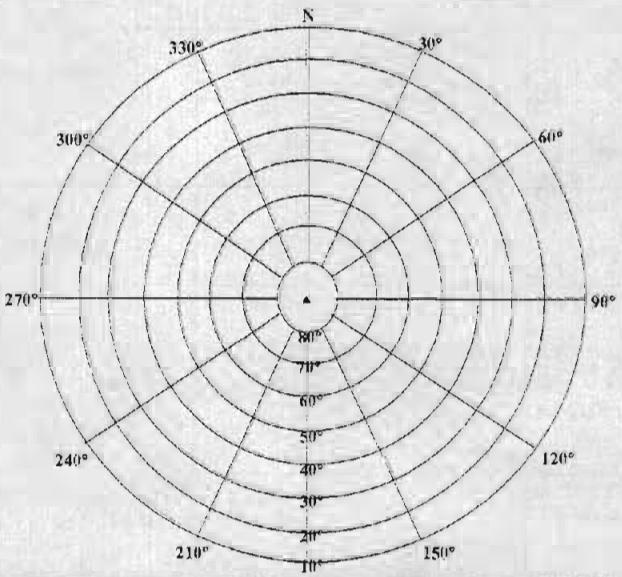
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-29-10

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M=00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MON2-119-3

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON #2	MON2	119	04-29-10
	Location	Station PID	Session #	Obs. Agency code
	College Station		3	CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 33.7512 N	096° 24.7129 W	0055.2	[illegible]

Start Time	(Scheduled): Local 11:00 AM	Other stations observed in this session: KI8 - MON#3 - MON#101
	(Actual): Local 10:55 AM	
Stop Time	(Scheduled): Local 12:00 P.M.	
	(Actual): Local 12:01 P.M.	

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver S/N: 3515A15357 Receiver P/N:	12	1.726	5.67	1.726	5.67
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	4	1.725	5.665	1.725	5.665
Antenna S/N: 22012628 7 Antenna P/N:	8	1.726	5.67	1.726	5.67
Adjustable or Fixed Ht. Tripod: A ✓ or F ____ Manufacturer: _____ S/N: _____	Mean of Measurements	1.726	5.67	1.726	5.67
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date:					

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.67 Feet

Antenna Cable Length: _____ (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt:

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet ___ meters

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

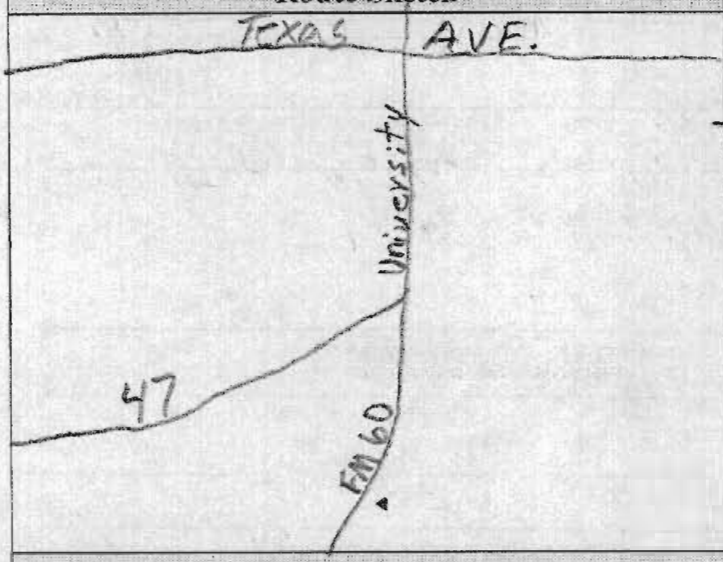
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

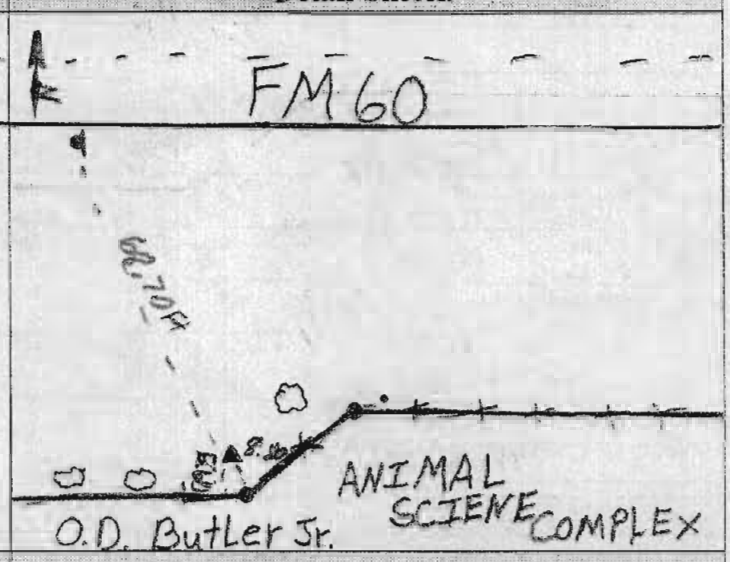
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch



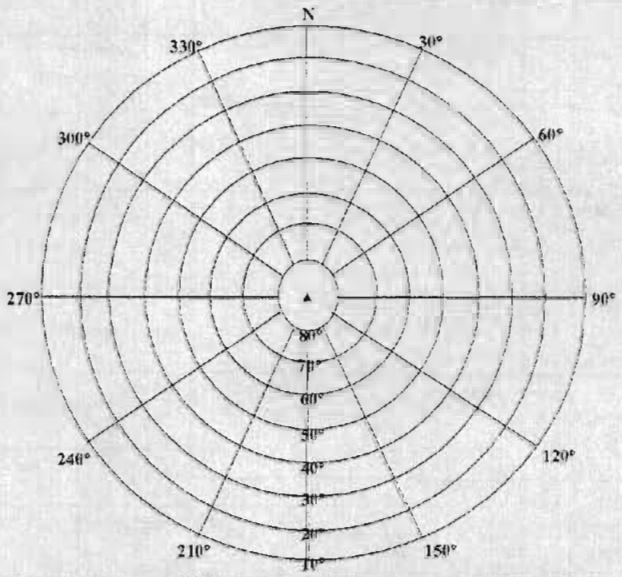
Detail Sketch



To Reach Description

From Texas Ave. turn Left on to University (as known as FM. 60) and go West 6.5 miles and Monument is on the Left side of F.M. 60 West.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi – 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% – 70%)	Moderate (5 Mph – 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M=00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
5/8" IR w/YC	KI 1	KI01	119	4-29-10
Geo Metrics GPS Inc.	Location: Brazos Co. / SH 30	Station PID	Session # 4	Obs. Agency code: CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 36' 49.52" N	96° 11' 36.55" W	+0033.6	C. Tarver

Start Time	(Scheduled): Local	5:26
	(Actual): Local	5:26
Stop Time	(Scheduled): Local	6:26
	(Actual): Local	6:26

Other stations observed in this session: Mon. 7, Mon. 9, Mon. 6

Receiver MFR & Model:	Trimble 4000 SSi
Receiver S/N:	3615A15357
Receiver P/N:	24840-21
Antenna MFR & Model:	Trimble Compact L1/L2 with Ground Plane
Antenna S/N:	022001965
Antenna P/N:	
Adjustable or Fixed Ht. Tripod: A X or F	
Manufacturer:	S/N:
Tribrach: Manufacturer:	S/N:
Calibration Date:	

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
10	1.597	5.24	1.597	5.24
6	1.595	5.23	1.595	5.23
1	1.596	5.235	1.596	5.235
Mean of Measurements	1.596	5.235	1.596	5.235

Photos of Station: Yes ____ No X
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.235 Feet

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ____ After? ____

Antenna Oriented North? Yes X No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt:

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ____ inches ____ Feet ____ meters

Obstructions > 10 Degrees above Horizon? Y (Y or N)
Obstruction Survey Performed?
Yes X No ____ Performed Previously ____

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

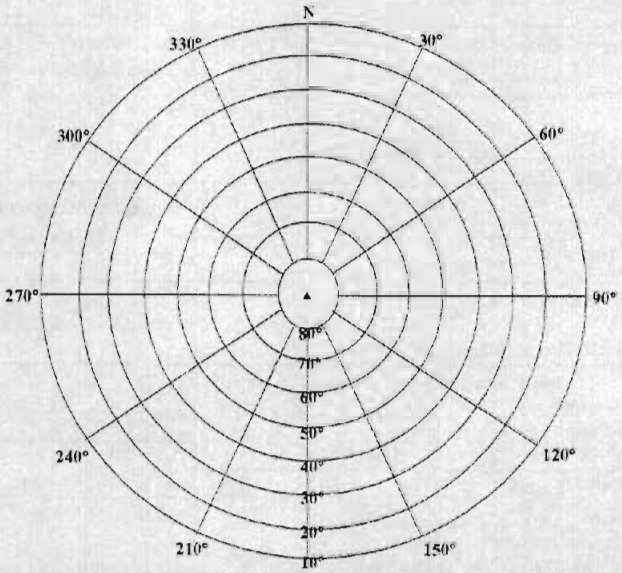
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	CS071194

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Alum Deep Rod w/ punch inside Access Cover	CS # 7	CS07	119	4/29/10
	Location	Station PID: Alum Rod	Session #: 4	Obs. Agency code: CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 37' 13.64" N	096° 12' 09.61" W	+00 42.0 m	S. Montez

Start Time	(Scheduled): Local	5:26
	(Actual): Local	5:25
Stop Time	(Scheduled): Local	6:26
	(Actual): Local	

Other stations observed in this session: KI1 mon9 mon6

Receiver MFR & Model:	Trimble 4000 SSi
Receiver S/N: 3533A12012	
Receiver P/N:	
Antenna MFR & Model:	Trimble Compact L1/L2 with Ground Plane
Antenna S/N: 02200030199	
Antenna P/N:	
Adjustable or Fixed Ht. Tripod: A ✓ or F ___	
Manufacturer: Leica S/N: —	
Tribrach: Manufacturer: Leica S/N: —	
Calibration Date:	
Photos of Station: Yes ___ No ✓	
Roll Number ___	
Picture Number(s) ___	
Antenna Cable Length: 15 (Meters)	
Antenna Plumb Check: Before? ✓ After? ✓	
Power Source	
Camcorder Batteries ___	
External 12 Volt ✓	
Commercial AC 110 Volt:	
Barometer MFR/Model: ___	
Serial Number: ___	
Units of Reading: millibars ___ inches ___ Feet ✓ meters	
Obstructions > 10 Degrees above Horizon? ✓ (Y or N)	
Obstruction Survey Performed?	
Yes ✓ No ___ Performed Previously ___	
Other (explain):	

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
7	1.652	5.42	1.652	5.42
11	1.652	5.42	1.652	5.42
3	1.652	5.42	1.652	5.42
Mean of Measurements	1.652	5.42	1.652	5.42

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.42 Feet

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

CS071194

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ___

Note: Entries are Required in all Unshaded areas except weather data.

Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

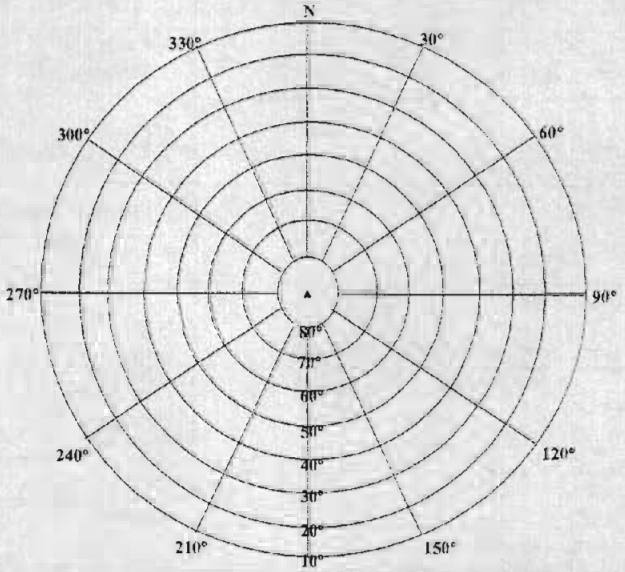
Station Name:	Project Number	Date (Local)
mon # 7	109158	4/29/10

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,G,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MON9-119-4

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON9	MON9	119	4-29-10
	Location	Station PID	Session #	Obs. Agency code
	COLLEGE STATION		4	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 34' 55.46"	096° 15' 11.70"	-0054.7	Bobby Mercer

Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TARVER - KI 1; AJ ESCOBAR - MON 6; JOE MONTEZ - MON 7
	(Actual): Local 5:23 PM	
Stop Time	(Scheduled): Local	
	(Actual): Local 6:26 PM	

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N:
Receiver P/N:
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N:
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
3	1.692	5.55	1.692	5.55
6	1.692	5.55	1.692	5.55
10	1.692	5.55	1.692	5.55
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.55 Feet

Antenna Cable Length: _____(Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After:								
Mean of Readings								

Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___ Feet ___ meters

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

MON9-119-4

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

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Engineering & Surveying

GPS Observation Log – Page 2

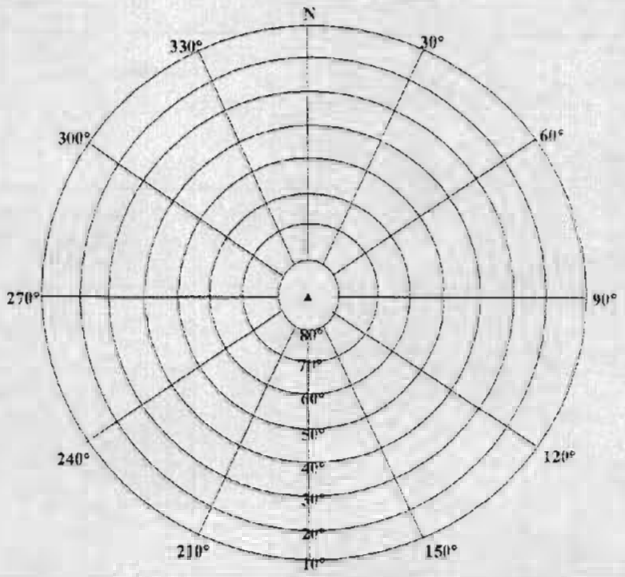
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-29-10

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,G,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name: College Station 2010 Control Survey		Project Number: 109158		Data File Name (see below): MON6-119-4
Station Description	Station Name: MON #6	4 Character ID: MON6	Julian Day: 119	Date (Local): 04-29-10
	Location: College Station	Station PID	Session #: 4	Obs. Agency code: CDSMS
Latitude: 30° 53.3552 N	Longitude: 096° 11.1573 W	Ellipsoid Ht.(m): 0031.6 m		Observer name: [illegible]

Start Time	(Scheduled): Local	5:26 PM
	(Actual): Local	5:20 PM
Stop Time	(Scheduled): Local	6:26
	(Actual): Local	6:26

Other stations observed in this session: KI1 - MON #7 - MON #9

Receiver MFR & Model: **Trimble 4000 SSi**

Receiver S/N:
Receiver P/N:

Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**

Antenna S/N:
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: ________ S/N: ________

Tribrach:
Manufacturer: ________ S/N: ________
Calibration Date:

Photos of Station: Yes ____ No ____
Roll Number ________
Picture Number(s) ________

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
1	1.598	5.25	1.598	5.25
5	1.600	5.255	1.600	5.255
8	1.598	5.25	1.598	5.25
Mean of Measurements	1.598	5.25	1.598	5.25

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.25 **Feet**

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries ________
External 12 Volt ________
Commercial AC 110 Volt: ________
Barometer MFR/Model: ________
Serial Number: ________
Units of Reading: millibars ___ inches ___
Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaaa=4-Char ID, ddd=julian day, s=session

5-Digit Weather Code

Before: ________ Middle: ________ After: ________

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ________

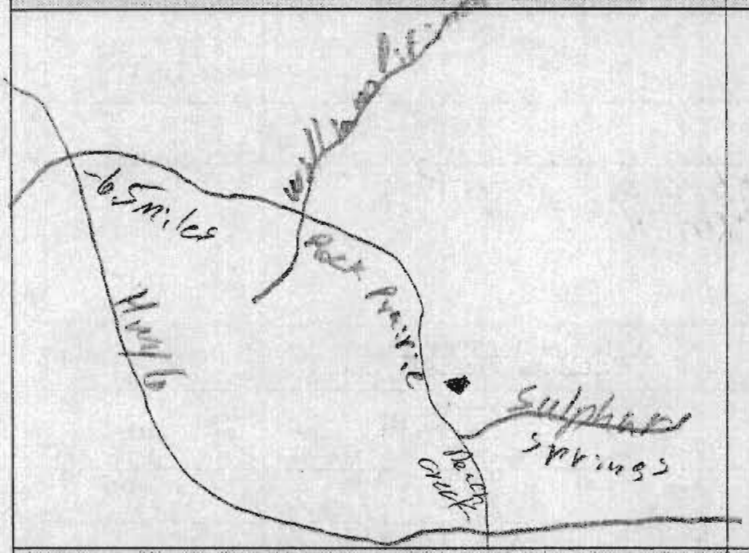
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

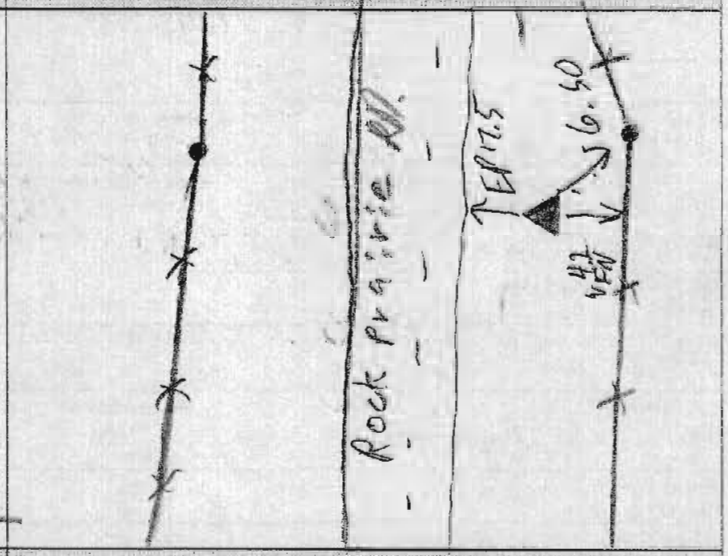
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch



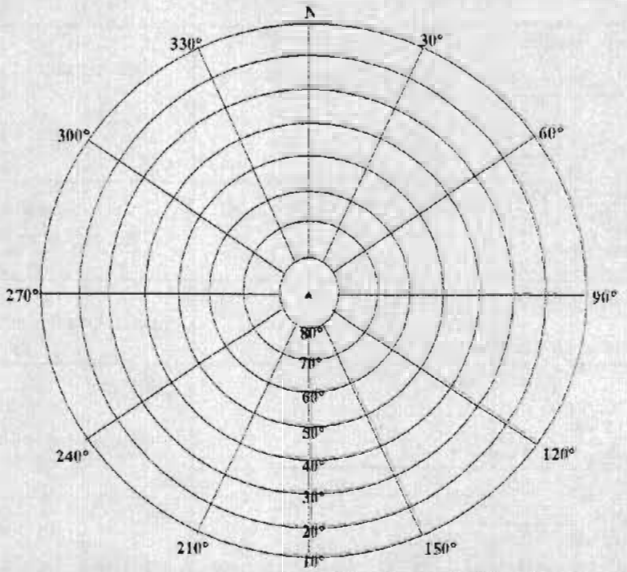
Detail Sketch



To Reach Description

From the Intersection of Hwy 6. Rock Prairie RD Travel East on Rock Prairie RD for Approx 6.5 miles Monument is Located on the Left side Road.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry
N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,N,F,M =00200
N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
3" Alum Cap in Conc.	Mon 135	M135	120	4-30-10
Stamped College Station Mon 135 (1994)	Location: Brazos Co. / Woodlake Dr.	Station PID	Session # 1	Obs. Agency code: CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 31' 21.09" N	96° 16' 04.27" W	+0061.7	C. Tarver

Start Time	(Scheduled): Local	6:40
	(Actual): Local	6:47
Stop Time	(Scheduled): Local	8:10
	(Actual): Local	8:10

Other stations observed in this session: Mon. 4, KI 5, Mon. 11

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N: 3615A15357
Receiver P/N: 24840-21
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N: 022001996S
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A X or F ____
Manufacturer: ____ S/N: ____
Tribrach:
Manufacturer: ____ S/N: ____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
2	1.695	5.56	1.695	5.56
10	1.696	5.565	1.696	5.565
6	1.695	5.56	1.695	5.56
Mean of Measurements	1.695	5.562	1.695	5.562

Photos of Station: Yes ____ No X
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.562 Feet

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ____ After? ____

Antenna Oriented North? Yes X No ____ If No, Explain:

Optional Weather Data

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___ Feet ___ meters ___

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Obstructions > 10 Degrees above Horizon? Y (Y or N)
Obstruction Survey Performed?
Yes X No ____ Performed Previously ____

Other (explain):

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session

5-Digit Weather Code
Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

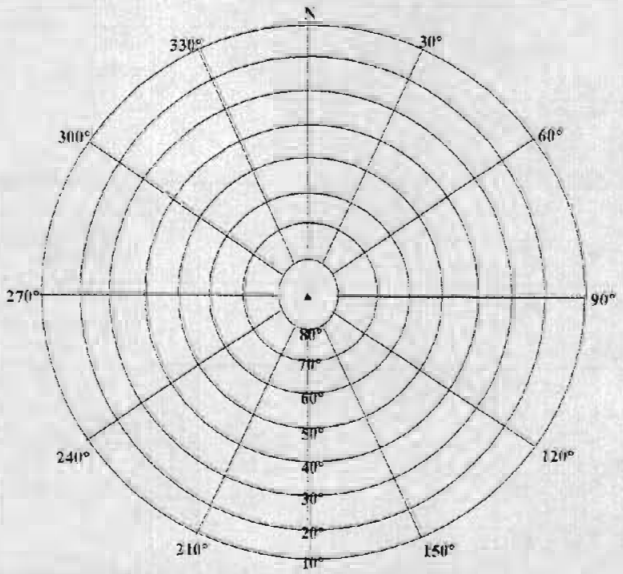
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi. - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,N =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl. = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name: College Station 2010 Control Survey	Project Number 109158	Data File Name (see below) CS041201

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Alum Deep Rod w/punch inside Access Cover	CS #4	CS04	120	4/30/10
	Location	Station PID	Session #	Obs. Agency code
		Alum RoD	1	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 30' 23.62" N	096° 17' 47.51" W	+0064.1 m	J. Moske

			Other stations observed in this session
Start Time	(Scheduled): Local	6:40	mon135 KIS mon11
	(Actual): Local	6:39	
Stop Time	(Scheduled): Local	8:10	
	(Actual): Local		

Antenna Measurements

	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver MFR & Model: Trimble 4000 SSi					
Receiver S/N: 3533A12012 Receiver P/N:	6	1.594	5.23	1.594	5.23
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	10	1.594	5.23	1.594	5.23
Antenna S/N: 0220030199 Antenna P/N:	2	1.594	5.23	1.594	5.23
Adjustable or Fixed Ht. Tripod: A ✓ or F ___ Manufacturer: Leica S/N: — Tribrach: Manufacturer: Leica S/N: — Calibration Date:	Mean of Measurements	1.594	5.23	1.594	5.23

Photos of Station: Yes ___ No ✓
Roll Number ___
Picture Number(s) ___

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.23 Feet

Antenna Cable Length: 15 (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries
External 12 Volt ✓
Commercial AC 110 Volt:
Barometer MFR/Model: ___
Serial Number: ___
Units of Reading: millibars ___ inches ___ Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? ✓ (Y or N)
Obstruction Survey Performed?
Yes ✓ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID. ddd=julian day, s=session.

CS041201

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc): Log Checked By: ___

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

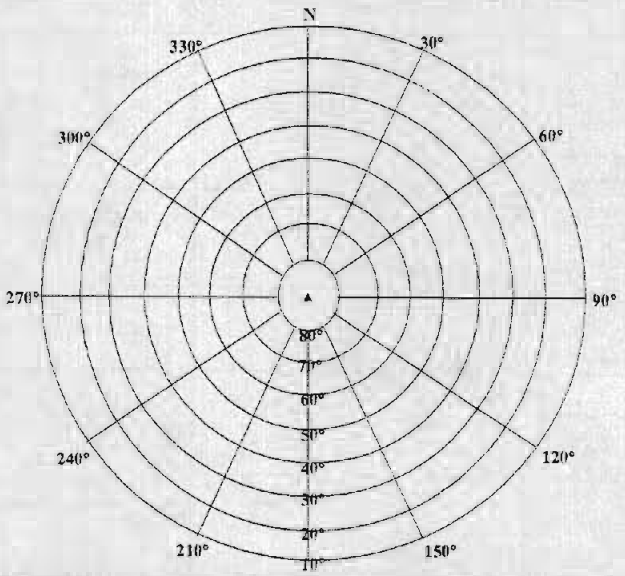
Station Name:	Project Number	Date (Local)
mon # 4	109158	4/30/10

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/Muery Services
Engineering & Surveying

GPS Observation Log – Page 1

Project Name: College Station 2010 Control Survey	Project Number 109158		Data File Name (see below) MKI5-120-1
Station Description	Station Name KI5	4 Character ID MKI5	Julian Day 120	Date (Local) 4-30-10
	Location COLLEGE STATION	Station PID	Session # 1	Obs. Agency code **CDSMS**

Latitude 30° 29' 41.99"	Longitude 096° 11' 09.99"	Ellipsoid Ht.(m) +0054.1	Observer name Bobby Martinez

Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TRAVER Mon-135; JOE MONTEZ Mon-4; ASLESCOBAR Mon-11
	(Actual): Local 6:37 AM	
Stop Time	(Scheduled): Local	
	(Actual): Local 8:10 AM	

Antenna Measurements

	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver MFR & Model: **Trimble 4000 SSi**					
Receiver S/N: Receiver P/N:	4	1.686	5.53	1.686	5.53
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**	6	1.686	5.53	1.686	5.53
Antenna S/N: Antenna P/N:	12	1.686	5.53	1.686	5.53
Adjustable or Fixed Ht. Tripod: A ____ or F ____ Manufacturer: ____ S/N: ____ Tribrach: Manufacturer: ____ S/N: ____ Calibration Date:	Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller 5.53 Feet

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___ Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

MKI5-120-1

5-Digit Weather Code

Before: ____ Middle: ____ After: ____

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

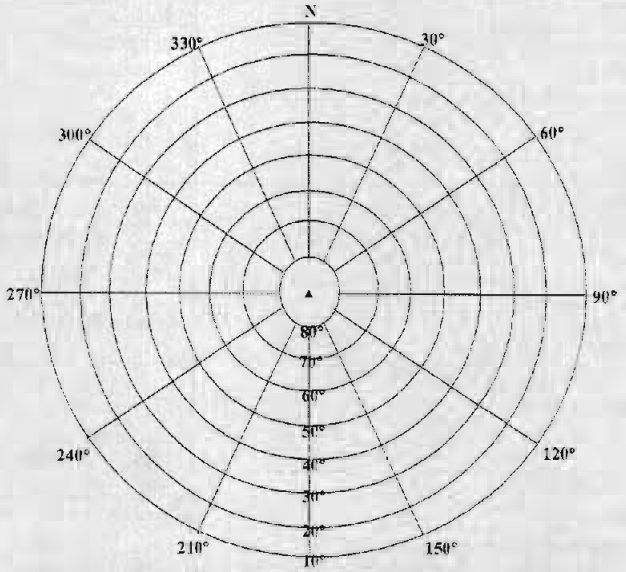
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-30-10

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/Muery Services
Engineering & Surveying

GPS Observation Log – Page 1

Project Name: College Station 2010 Control Survey	Project Number 109158	Data File Name (see below) OM11-120-1
Station Description	Station Name MON#11	4 Character ID OM11 / Julian Day 120 / Date (Local) 04-30-10
	Location College Station	Station PID / Session # 1 / Obs. Agency code CDSMS
Latitude 30° 33.1317N	Longitude 096° 14.9306	Ellipsoid Ht.(m) 0064.3 / Observer name [illegible]

Start Time	(Scheduled): Local 6:44 AM	Other stations observed in this session mon#135 - mon#14 - KI5
	(Actual): Local 6:38 AM	
Stop Time	(Scheduled): Local 8:10 AM	
	(Actual): Local	

Antenna Measurements

Receiver / Antenna	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver MFR & Model: Trimble 4000 SSi					
Receiver S/N: 3515A15357 Receiver P/N:	12	1.650	542	1.650	5.42
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	4	1.650	542	1.650	5.42
Antenna S/N: 220126287 Antenna P/N:	8	1.649	5.415	1.649	5.415
Adjustable or Fixed Ht. Tripod: A ✓ or F ____ Manufacturer: ____ S/N: ____ Tribrach: Manufacturer: ____ S/N: ____ Calibration Date:	Mean of Measurements	1.650	542	1.650	542

Photos of Station: Yes ____ No ____
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller 5.42 Feet

Antenna Cable Length: ____ (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt:
Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___ Feet meters

Obstructions > 10 Degrees above Horizon? ____ (Y or N)
Obstruction Survey Performed?
Yes ____ No ____ Performed Previously ____

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

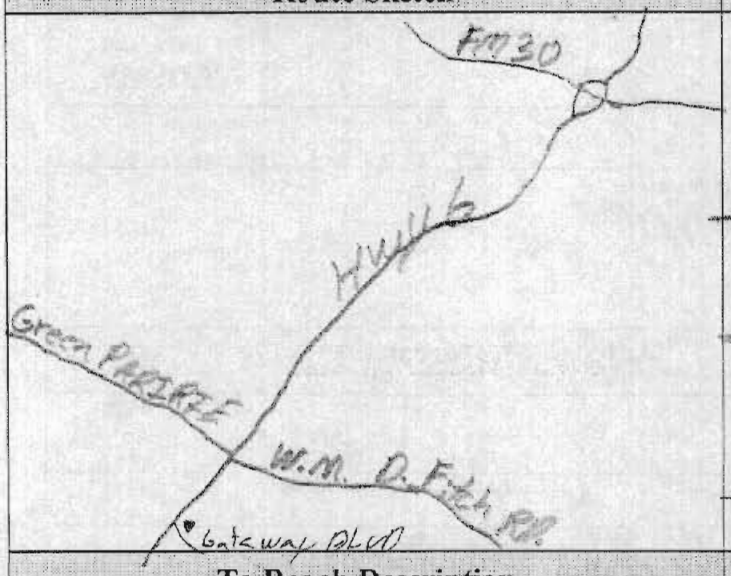
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

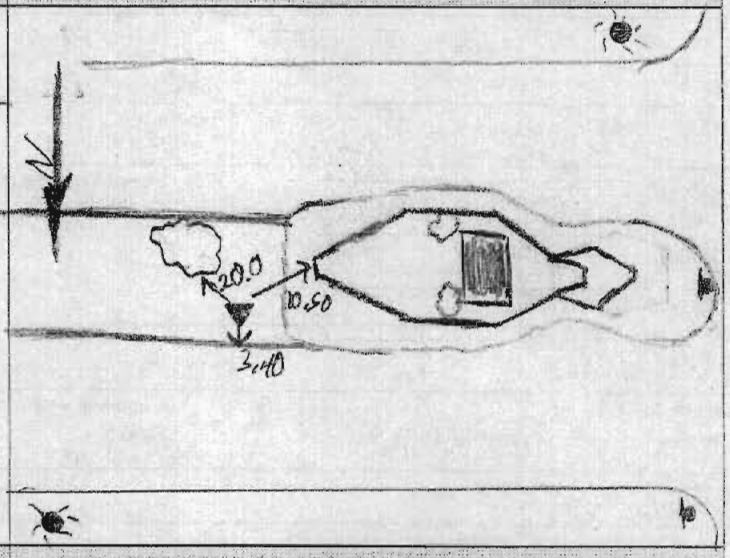
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	04-30-10

Route Sketch



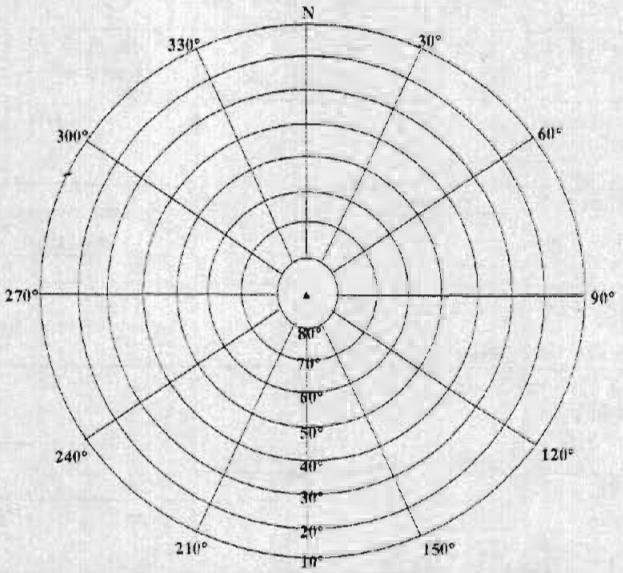
Detail Sketch



To Reach Description

From FM 30 go South on Hwy 6 for 7.5 miles, Exit on W.M.D Fitch RD. go 0.7 miles and make a turnaround. Monthly is on Gateway BLVD.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi. - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M=00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
5/8" IR w/Vc	KI8	KI08	120	4-30-10
GeoMetrics GPS Inc.	**Location**	**Station PID**	**Session #**	**Obs. Agency code**
	Brazos Co./Valley Cir & Blue Ridge Dr.		2	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 32' 15.82" N	96° 20' 46.81" W	+0056.1	C Tarver

Start Time	(Scheduled): Local	8:55
	(Actual): Local	9:00
Stop Time	(Scheduled): Local	9:55
	(Actual): Local	10:00

Other stations observed in this session: Mon 10, Mon. 3, Mon. 4

Antenna Measurements

Receiver MFR & Model: **Trimble 4000 SSi**

Receiver S/N: 3415A15357
Receiver P/N: 24840-21

Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**

Antenna S/N: 022001996S
Antenna P/N:

Adjustable or Fixed Ht. Tripod: A X or F ____
Manufacturer: ____ S/N: ____

Tribrach:
Manufacturer: ____ S/N: ____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
4	1.761	5.78	1.761	5.78
12	1.764	5.785	1.764	5.785
8	1.764	5.785	1.764	5.785
Mean of Measurements	1.763	5.783	1.763	5.783

Photos of Station: Yes ____ No X
Roll Number ____
Picture Number(s) ____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.783 Feet

Antenna Cable Length: ____(Meters)

Antenna Plumb Check: Before? ____ After? ____

Antenna Oriented North? Yes X No ____ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt: ____

Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___ Feet ___ meters

Obstructions > 10 Degrees above Horizon? Y (Y or N)
Obstruction Survey Performed?
Yes X No ____ Performed Previously ____

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: ____ Middle: ____ After: ____

Weather Taken At Antenna Height? Yes ____ No X If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

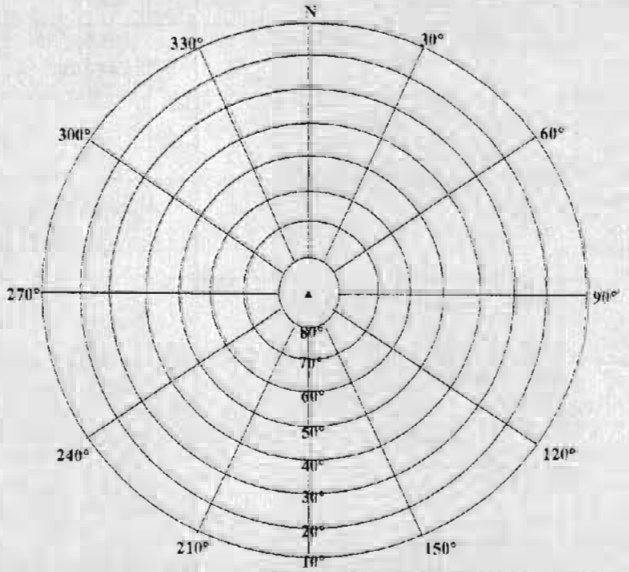
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	**109158**	

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi. - 15 Mi.)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,F,W,C,M=12001 N,G,W,F,M =01200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	CS10120Z

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
Alum Deep Rod w/ punch inside Access Cover	CS 10	CS10	120	4/30/10
Location	**College Station**	**Station PID**	**Session #**	**Obs. Agency code**
		Alum Rod	2	CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 34' 13.56" N	096° 18' 57.72" W	+0068.9 m	J. Montez

Start Time	(Scheduled): Local	8:55
	(Actual): Local	8:54
Stop Time	(Scheduled): Local	9.55
	(Actual): Local	10:00

Other stations observed in this session: KI8 mon3 mon4

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver S/N: 3533A12012	3	1.645	5.40	1.645	5.40
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	7	1.645	5.40	1.645	5.40
Antenna S/N: 02200301 99	11	1.645	5.40	1.645	5.40
Mean of Measurements		1.645	5.40	1.645	5.40

Receiver P/N:
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ✓ or F ___
Manufacturer: Leica S/N: —
Tribrach: Manufacturer: Leica S/N: —
Calibration Date:

Photos of Station: Yes ✓ No ___
Roll Number ___
Picture Number(s) ___

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.40 Feet

Antenna Cable Length: 15 (Meters)

Antenna Plumb Check: Before? Y After? Y

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries ___
External 12 Volt ✓
Commercial AC 110 Volt: ___

Barometer MFR/Model: ___
Serial Number: ___
Units of Reading: millibars ___ inches ___ Feet ___ meters ✓

Obstructions > 10 Degrees above Horizon? ✓ (Y or N)
Obstruction Survey Performed?
Yes ✓ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: Middle: After:

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ___

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

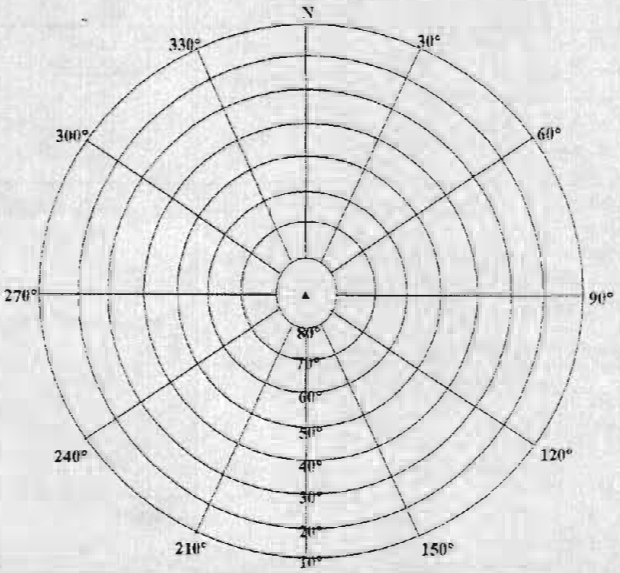
Station Name:	Project Number	Date (Local)
mon #10	109158	4/30/10

Route Sketch

Detail Sketch

To Reach Description

None Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MON3-120-2

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON3	MON3	120	4-30-10
	Location	Station PID	Session #	Obs. Agency code
	COLLEGE STATION		2	CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30°31'24.71"	096°20'49.42"	+0042.9	Bobby Montez

Start Time	(Scheduled): Local	Other stations observed in this session: AJ ESCOBAR - MON4; CHAD TARVER - KI8; JOE MONTEZ - MON10
	(Actual): Local 8:47 AM	
Stop Time	(Scheduled): Local	
	(Actual): Local 10:00 AM	

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi
Receiver S/N:
Receiver P/N:
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane
Antenna S/N:
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
4	1.707	5.60	1.707	5.60
8	1.707	5.60	1.707	5.60
12	1.707	5.60	1.707	5.60
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: Bottom Notch of Ground Plane

HI entered into receiver or controller: 5.63 Feet

Antenna Cable Length: ____ (Meters)
Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ If No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____
Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___ Feet ___ meters
Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___
Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.
MON3-120-2

5-Digit Weather Code ____
Before: Middle: After:
Weather Taken At Antenna Height? Yes ____ No ____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

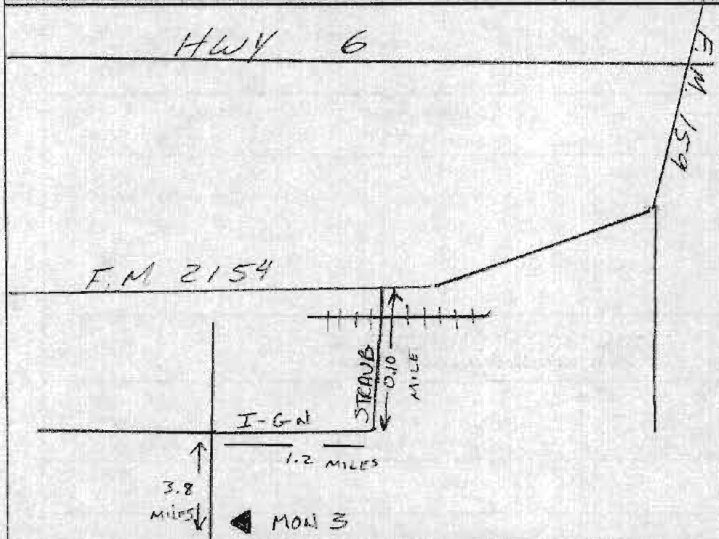
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/Muery Services
Engineering & Surveying

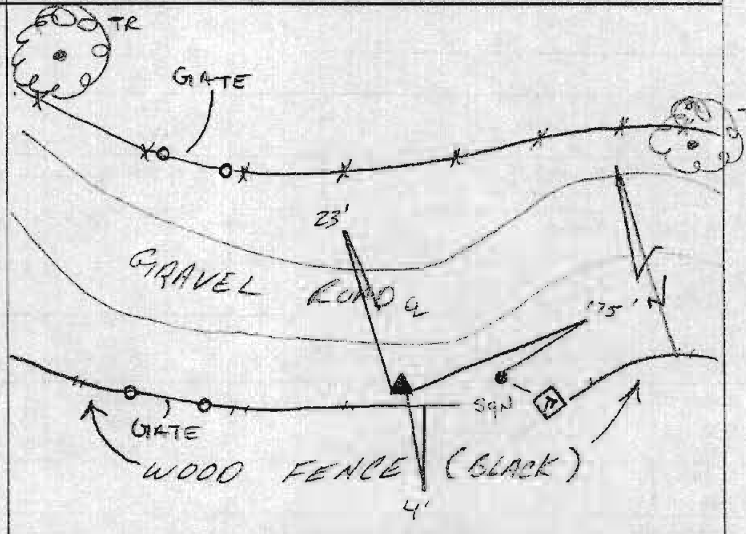
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-30-10

Route Sketch



Detail Sketch



To Reach Description

23' TO ℄ OF GRAVEL RD

4' TO BLACK WOODEN FENCE

175' +/- TO CURVE SGN

LOOKING SOUTH FROM MON 3 THERE'S A

Light BROWN Brick House About 500 FT

Looking SOUTHWEST There's A white house

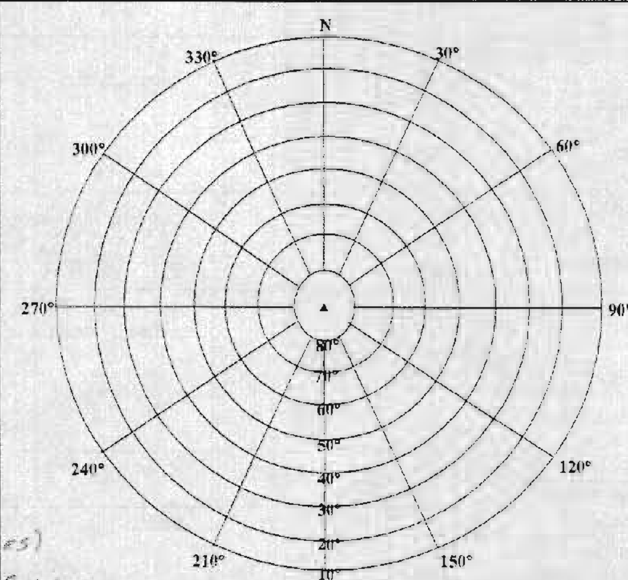
also A RED BARN.

FROM STRAUB RD go (0.10 miles) until you

get to I-GN RD. MAKE right then go (1.2 miles)

to [illegible] stop sgn, Then LEFT on [illegible] go 3.8 miles.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry
N,G,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200
N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MONH-120-2

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MONH4	MONH	120	04-30-10
	Location	Station PID	Session #	Obs. Agency code
	College Station		2	CDSMS

Latitude	Longitude	Elllipsoid Ht.(m)	Observer name
30° 30. 3936'	096° 17. 7911	0061.7m	ASeaman

Start Time	(Scheduled): Local	8:55
	(Actual): Local	8:52
Stop Time	(Scheduled): Local	9:55
	(Actual): Local	

Other stations observed in this session: KI8-MONH10-MONH3

Antenna Measurements

Receiver MFR & Model: Trimble 4000 SSi	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Receiver S/N: 3515R15357 Receiver P/N:	8	1.650	5.42	1.650	5.42
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	3	1.650	5.42	1.650	5.42
Antenna S/N: 2201262287 Antenna P/N:	11	1.652	5.425	1.652	5.425
Adjustable or Fixed Ht. Tripod: A ___ or F ___ Manufacturer: ___ S/N: ___	Mean of Measurements	1.650	5.42	1.650	5.42
Tribrach: Manufacturer: ___ S/N: ___ Calibration Date:					

Photos of Station: Yes ___ No ___
Roll Number ___
Picture Number(s) ___

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.42 Feet

Antenna Cable Length: ___ (Meters)

Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries ___
External 12 Volt ___
Commercial AC 110 Volt: ___

Barometer MFR/Model: ___
Serial Number: ___
Units of Reading: millibars ___ inches ___
Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___

Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (m)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

5-Digit Weather Code
Before: ___ Middle: ___ After: ___

Weather Taken At Antenna Height? Yes ___ No ___ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: ___

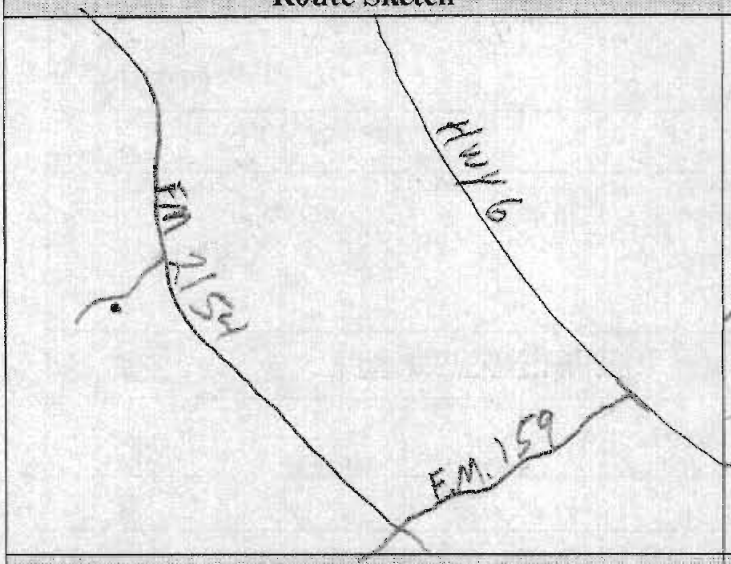
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ___ meters ___ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

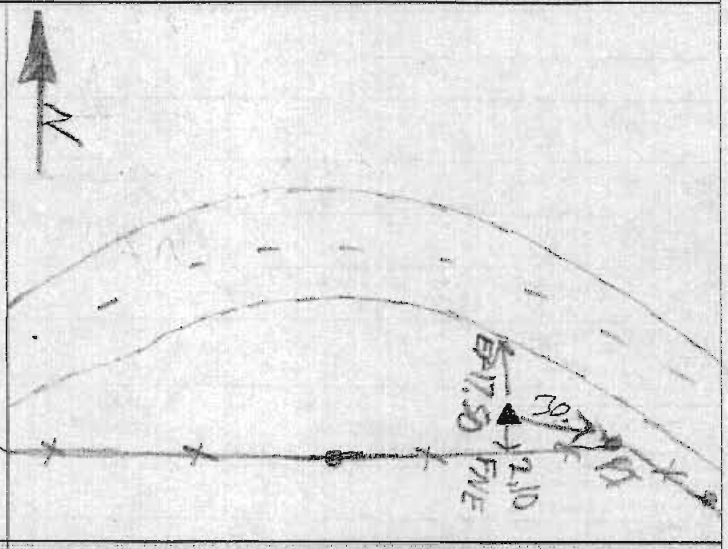
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch



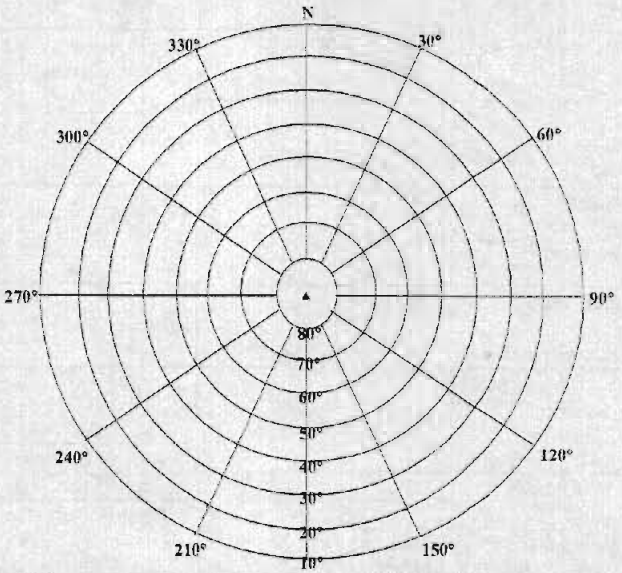
Detail Sketch



To Reach Description

Get on 159 west and go 2.6 miles to FM 2154 North. Turn right on 2154 and go 8.3 miles turn left on Straub RD and go 0.4 miles mon #4 is on right side of Road.

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	M242-120-3

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON 242	M242	120	4-30-10
	Location: COLLEGE STATION	Station PID	Session #: 3	Obs. Agency code: CDSMS

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 39' 23.28"	096° 16' 29.06	+0069.3	[illegible]

Start Time	(Scheduled): Local	Other stations observed in this session: AJ ESCOBAR – MON 8
	(Actual): Local 10:37 AM	
Stop Time	(Scheduled): Local	
	(Actual): Local 11:25 AM	

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N:
Receiver P/N:
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N:
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ____ or F ____
Manufacturer: _____ S/N: _____
Tribrach:
Manufacturer: _____ S/N: _____
Calibration Date:

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
3	1.570	5.15	1.570	5.15
9	1.570	5.15	1.570	5.15
11	1.570	5.15	1.570	5.15
Mean of Measurements				

Photos of Station: Yes ____ No ____
Roll Number _____
Picture Number(s) _____

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.15 Feet

Antenna Cable Length: _____(Meters)
Antenna Plumb Check: Before? ✓ After? ✓

Antenna Oriented North? Yes ✓ No ____ if No, Explain:

Power Source
Camcorder Batteries _____
External 12 Volt _____
Commercial AC 110 Volt: _____
Barometer MFR/Model: _____
Serial Number: _____
Units of Reading: millibars ___ inches ___
Feet ___ meters ___

Obstructions > 10 Degrees above Horizon? ____(Y or N)
Obstruction Survey Performed?
Yes____ No____ Performed Previously____
Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session.

M242-120-3

5-Digit Weather Code

Before: | Middle: | After:

Weather Taken At Antenna Height? Yes____ No____ If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked _____ meters _____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 2

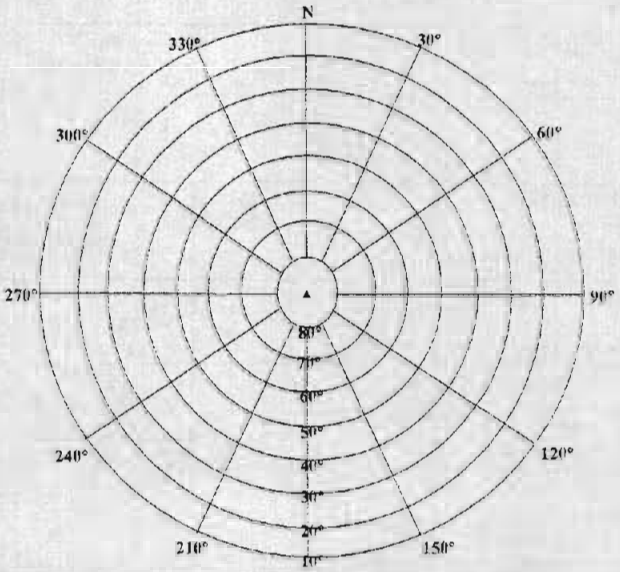
Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	4-30-10

Route Sketch

Detail Sketch

To Reach Description

Obstruction Diagram



Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

Condition = Entry

N,O,W,Cl,C=00000 N,F,W,Cl,T=01001 Pr,P,W,C,M=12001 N,G,W,F,M=00200

N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

CDS/MUERY SERVICES
Engineering & Surveying

GPS Observation Log – Page 1

Project Name:	Project Number	Data File Name (see below)
College Station 2010 Control Survey	109158	MON8-120-3

Station Description	Station Name	4 Character ID	Julian Day	Date (Local)
	MON #8	MON8	120	04-30-10
	Location	**Station PID**	**Session #**	**Obs. Agency code**
	College Station		3	**CDSMS**

Latitude	Longitude	Ellipsoid Ht.(m)	Observer name
30° 38.4620 N	096° 17.6746	0052.6m	[illegible signature]

			Other stations observed in this session
Start Time	(Scheduled): Local	10:40	MON # 242
	(Actual): Local	10:35	
Stop Time	(Scheduled): Local	11:24	
	(Actual): Local		

Receiver MFR & Model: **Trimble 4000 SSi**
Receiver S/N: 3515A15357
Receiver P/N:
Antenna MFR & Model: **Trimble Compact L1/L2 with Ground Plane**
Antenna S/N: 0220126287
Antenna P/N:
Adjustable or Fixed Ht. Tripod: A ✓ or F ____
Manufacturer: ____ S/N: ____
Tribrach:
Manufacturer: ____ S/N: ____
Calibration Date:
Photos of Station: Yes ____ No ____
Roll Number ____
Picture Number(s) ____
Antenna Cable Length: ____ (Meters)
Antenna Plumb Check: Before? ✓ After? ✓

Antenna Measurements

Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
2	1.617	5.31	1.617	5.31
5	1.615	5.305	1.615	5.305
9	1.617	5.31	1.617	5.31
Mean of Measurements	1.617	5.31	1.617	5.31

Antenna Measurement Method: **Bottom Notch of Ground Plane**

HI entered into receiver or controller: 5.31 Feet

Antenna Oriented North? Yes ✓ No ___ if No, Explain:

Power Source
Camcorder Batteries ____
External 12 Volt ____
Commercial AC 110 Volt: ____
Barometer MFR/Model: ____
Serial Number: ____
Units of Reading: millibars ___ inches ___ Feet meters
Obstructions > 10 Degrees above Horizon? ___ (Y or N)
Obstruction Survey Performed?
Yes ___ No ___ Performed Previously ___
Other (explain):

Optional Weather Data

	Time (Local)	Temperature Dry (F)	(C)	Temperature Wet (F)	(C)	Relative Humidity %	Pressure (in)Hg	(Mb)
Before								
Middle								
After								
Mean of Readings								

Data Filename Format: aaaaddds
aaa=4-Char ID, ddd=julian day, s=session,

5-Digit Weather Code

Before: ____ Middle: ____ After: ____
Weather Taken At Antenna Height? Yes ____ No ___ If not explain:

Remarks (Comments on Problems, etc): Log Checked By: ____

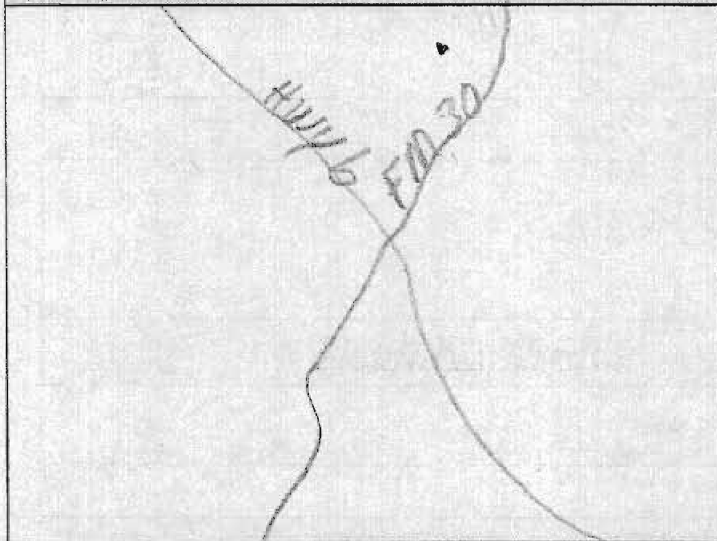
Note: Entries are Required in all Unshaded areas except weather data. Truck is Parked ____ meters ____ (direction) from antenna.

CDS/MUERY SERVICES
Engineering & Surveying

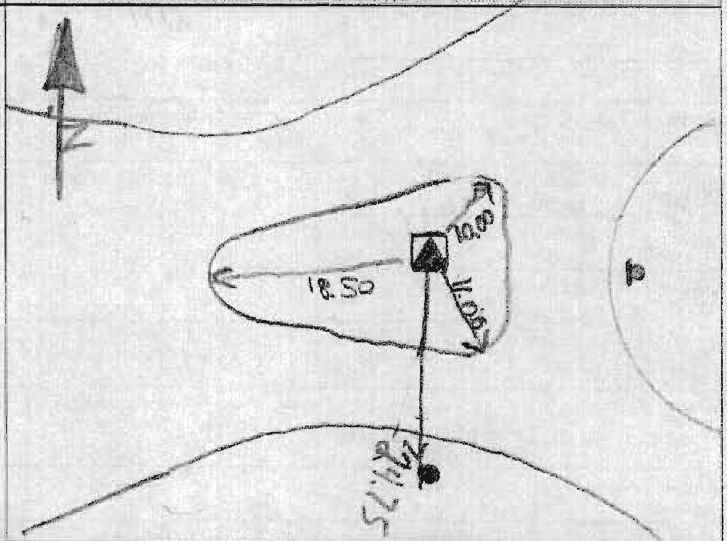
GPS Observation Log – Page 2

Station Name:	Project Number	Date (Local)
College Station 2010 Control Survey	109158	

Route Sketch



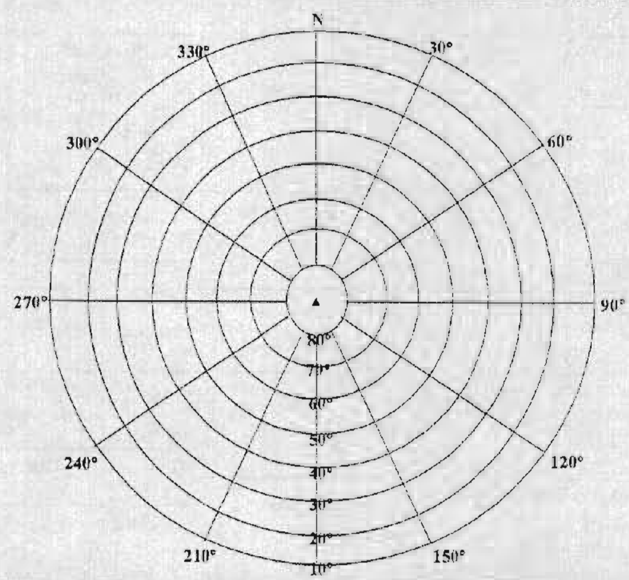
Detail Sketch



To Reach Description

To Reach get on FM 30
and go 2.9 miles.
the Mon#8 is in a
Park

Obstruction Diagram



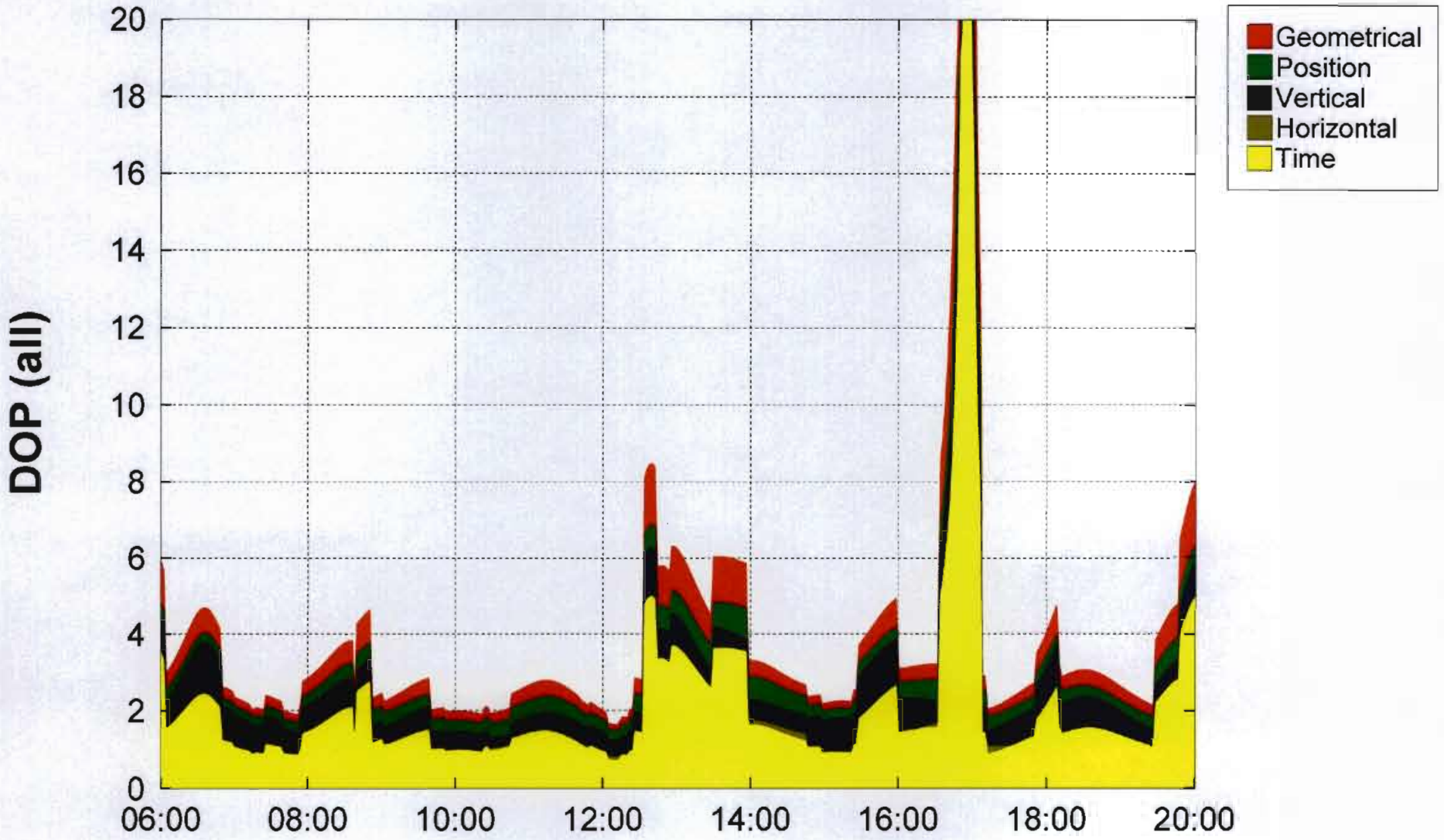
Instructions: Identify obstructions by azimuth (magnetic) and elevation angle (above horizon) as seen from station mark. Indicate distance and direction to nearby metallic structures and reflective surfaces (potential multi-path sources).

Weather Code Information

Code	Problem	Visibility	Temperature	Cloud Cover	Wind
0	No Problems	Good (Over 15 Miles)	Normal (0° C To 27° C) (32° F To 80° F)	Clear Below (20%)	Calm (Under 5 Mph)
1	Problem Encountered	Fair (7 Mi - 15 Mi)	Hot (Over 27° C) (Over 80° F)	Partly Cloudy (20% - 70%)	Moderate (5 Mph - 15 Mph)
2	Not Used	Poor (Under 7 Miles)	Cold (Below 0° C) (Below 32° F)	Overcast (Over 70%)	Strong (Over 15 Mph)

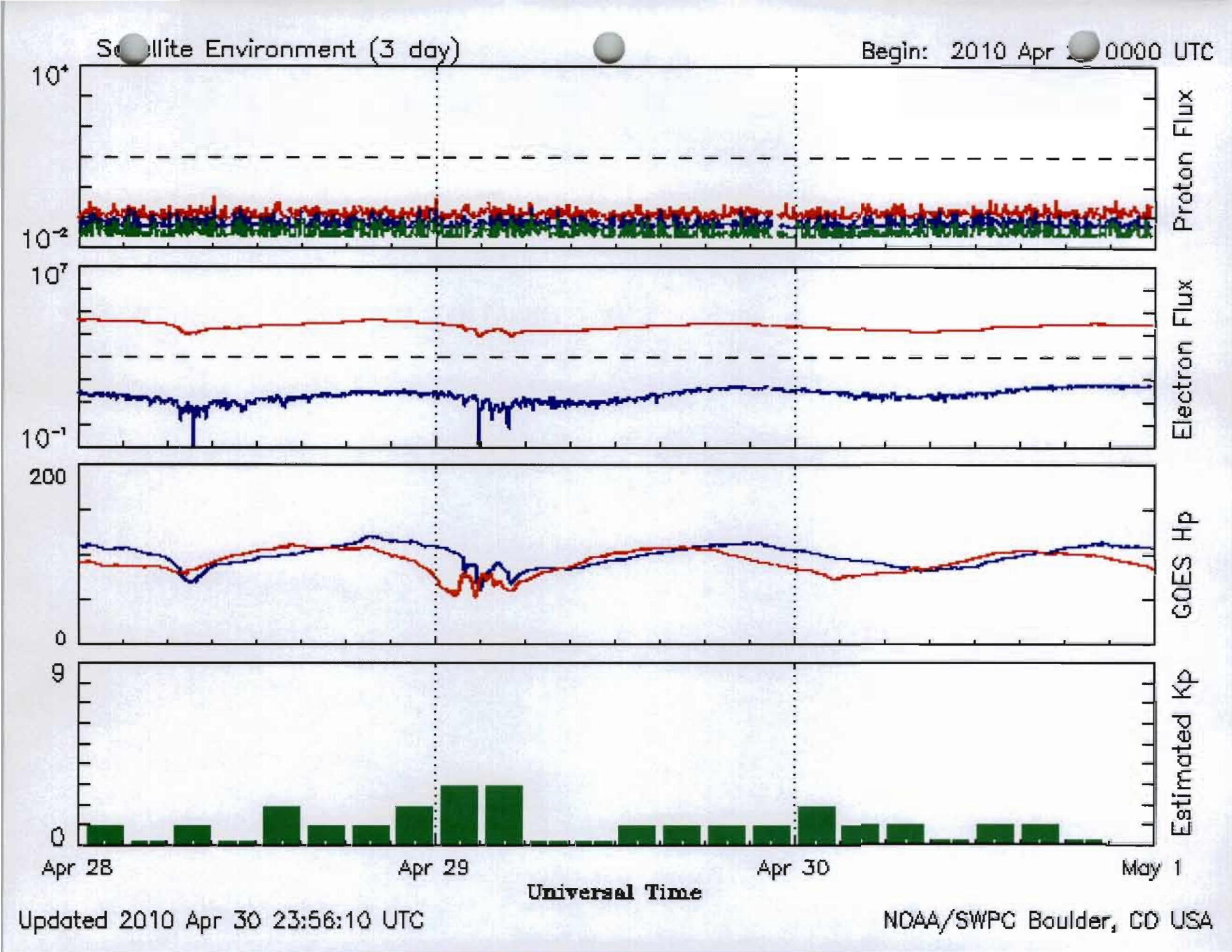
Condition = Entry
N,O,W,Cl,C=00000 N,F,W,Cl,C=01000 Pr,P,W,C,M=12001 N,G,W,F,M =00200
N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

DOP (all)



Station College Station,TX North 30° 34' West 96° 17' Height 65m
Time 4/28/2010 06:00 - 4/28/2010 20:00 (GMT-5.0h)

Elevation cutoff 15° Obstacles 0%
Satellites 29 GPS 29 [042610.alm]


Satellite Environment (3 day)
Begin: 2010 Apr 27 0000 UTC
10⁴
10⁻²
Proton Flux
10⁷
10⁻¹
Electron Flux
200
0
GOES Hp
9
0
Estimated Kp
Apr 28
Apr 29
Apr 30
May 1
Universal Time
Updated 2010 Apr 30 23:56:10 UTC
NOAA/SWPC Boulder, CO USA

Appendix E

Station Recovery Reports

And

GPS Station Visibility Diagrams

CDS/Muery Services
Engineering & Surveying

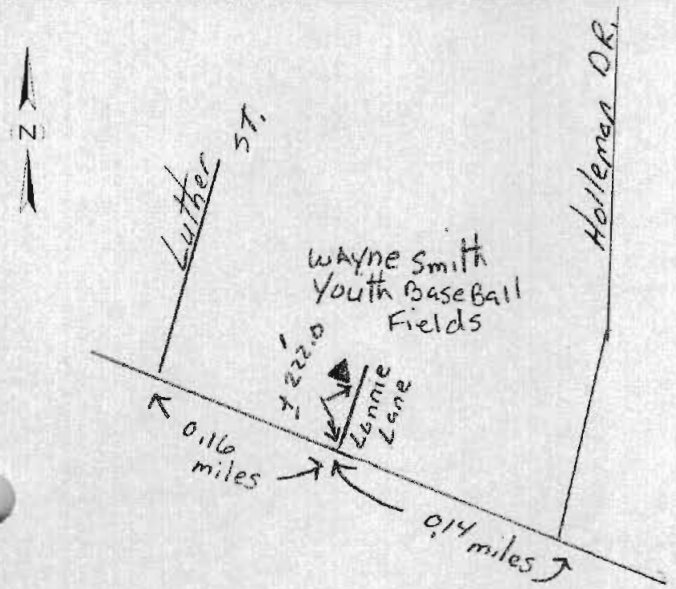
Monument Location Sheet

Project Name:	Project Number	Task No.
College Station	109158	

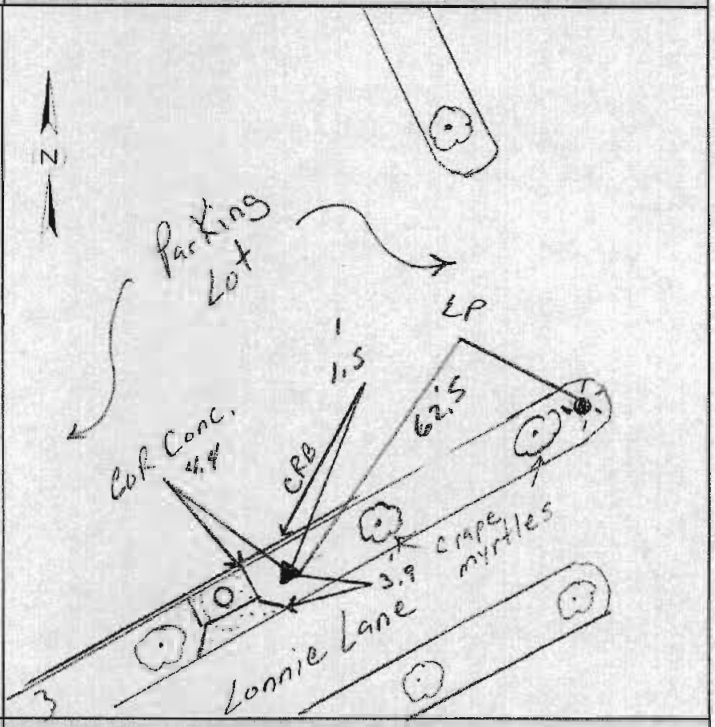
Station Description:	Station Name	New / Existing		Date (Local)
set Alum Deep Rod to Retusal inside Recess Cover	mon # 1	New V / Existing		4/26/10
	Location: City/County/State	Station PID	Session #	Obs. Agency code
		N/A	N/a	CDSMS

Approx. Latitude	Approx. Longitude	Approx Elev. (ft)	Party Chief Name
30.35.51.10 N	96.20.02.54W		J. Montez

Route Sketch



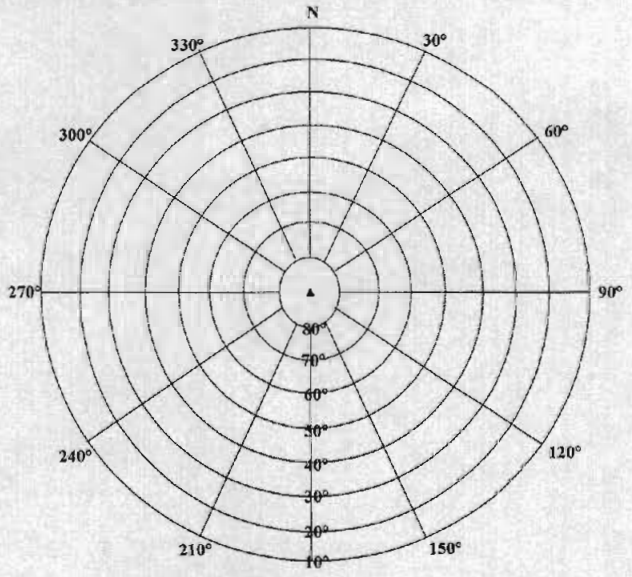
Detail Sketch



To Reach Description

Total Length of Rod Used = 18.0

None Obstruction Diagram



CDS/MUERY SERVICES
Engineering & Surveying

Monument Location Sheet

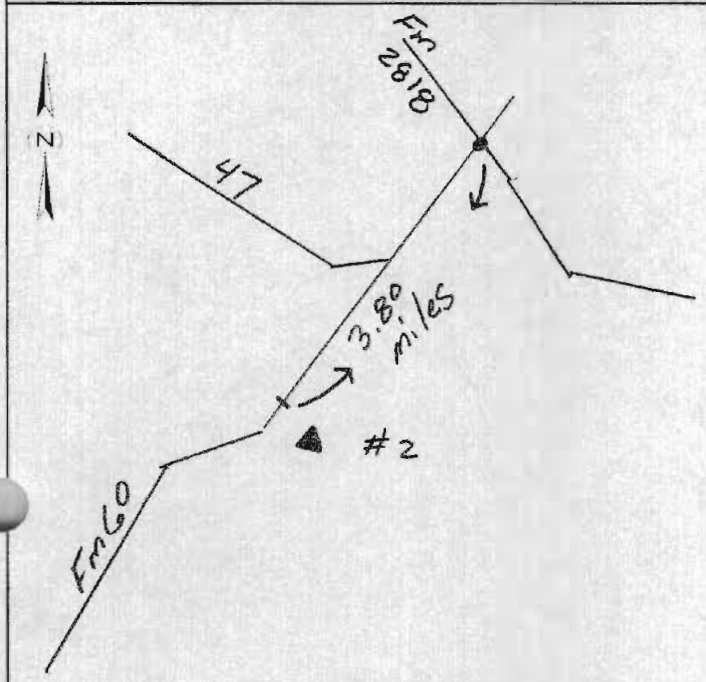
Project Name:		Project Number	Task No.
College Station		109158	

Station Description:	Station Name	New / Existing		Date (Local)
set Alum Deep Rod To Refusal inside Access Cover	mon # 2	New V / Existing		4/28/10

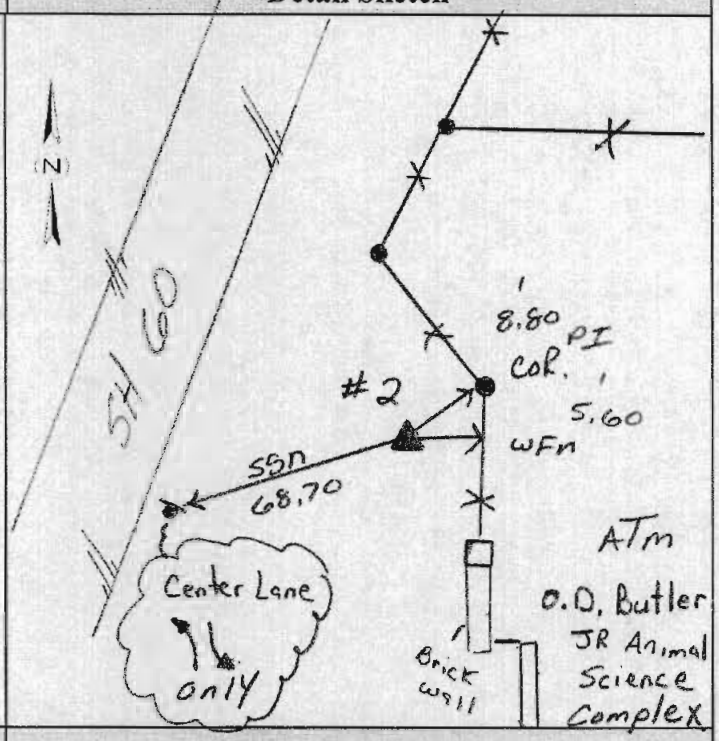
Location: City/County/State	Station PID	Session #	Obs. Agency code
	N/A	N/a	CDSMS

Approx. Latitude	Approx. Longitude	Approx Elev. (ft)	Party Chief Name
30.33.45.02 N	96.24.42.77 W		J. Montez

Route Sketch



Detail Sketch

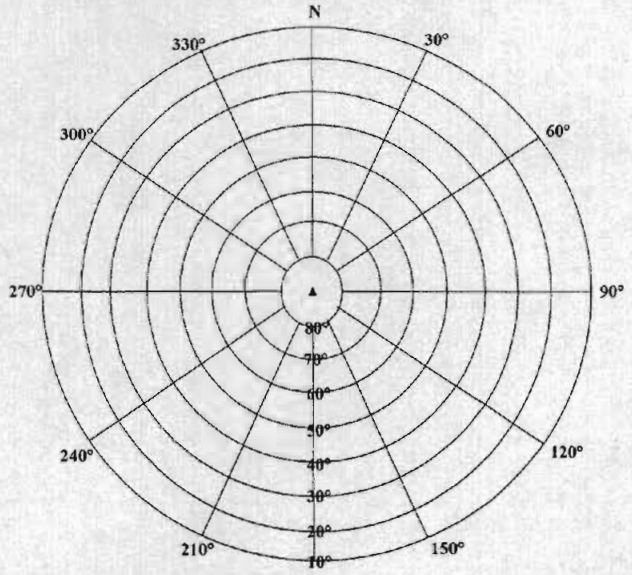


To Reach Description

Total Length of Rod Used = 21.0

From Intrs. of Fm 2818 & Fm 60 Travel South on Fm 60 for Approx. 3.80 miles monument is on the left side ± 170.00 Ft N.E of Animal Science Complex Entrance, at Fnc. Angle.

Obstruction Diagram



CDS/Muery Services
Engineering & Surveying

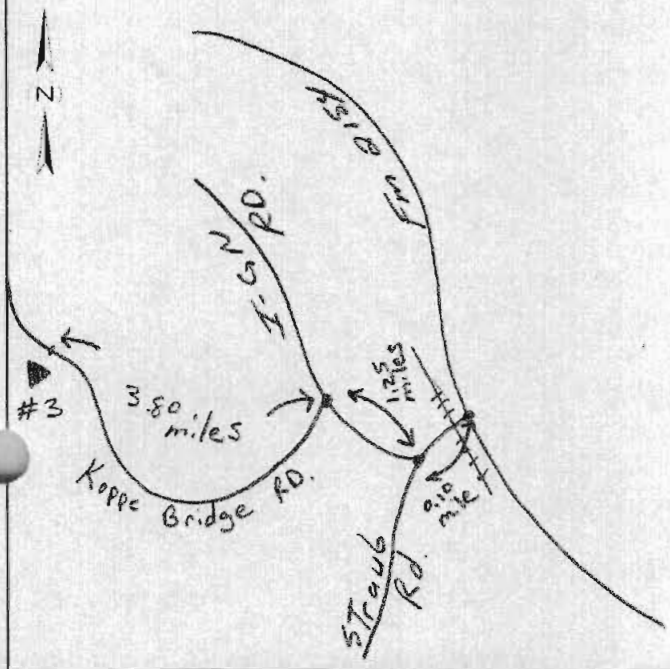
Monument Location Sheet

Project Name:	Project Number	Task No.
College Station	109158	

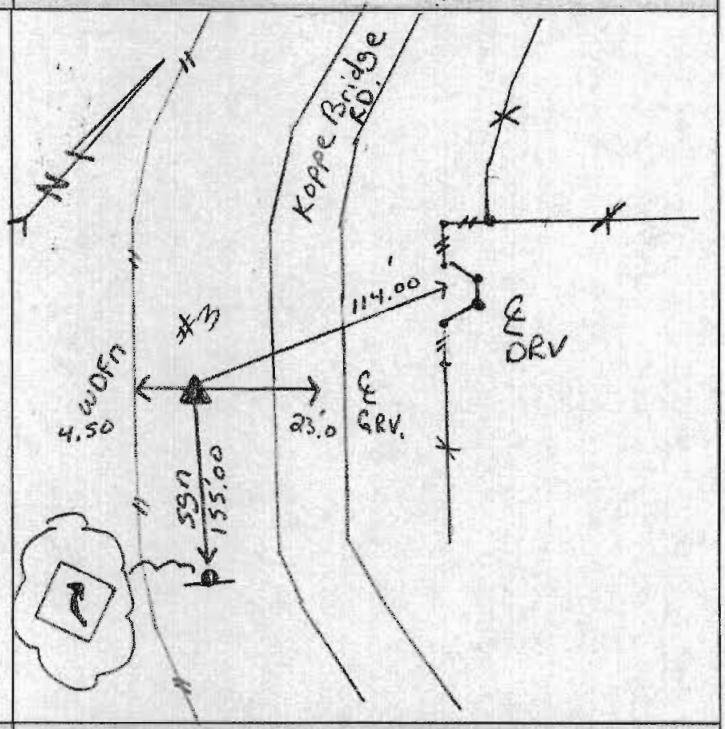
Station Description:	Station Name	New / Existing		Date (Local)
Set Alum. Deep Rod w/ punch inside Access Cover	Mon #3	New V / Existing		4/27/10
	Location: City/County/State	Station PID	Session #	Obs. Agency code
		N/A	N/a	CDSMS

Approx. Latitude	Approx. Longitude	Approx Elev. (ft)	Party Chief Name
30.31.24.70 N	96.20.49.44W		J. Montez

Route Sketch



Detail Sketch



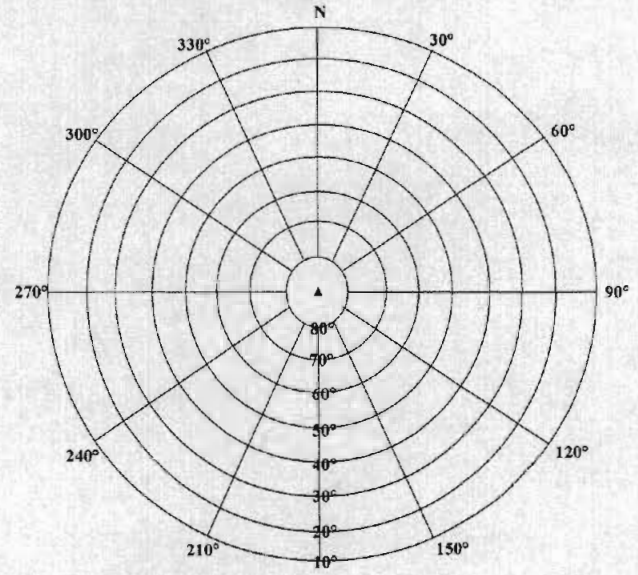
To Reach Description

Total Length of Rod Used = 29.0

From "T" Inters. of Fm 2154 & Straub Rd go 0.10 mile west on Straub Rd turn right on I-CR Rd and Travel for Approx 1.25 miles Then Turn left on Kappe Bridge Rd and Travel for Approx 3.80 miles monument is on the left side of Road

Obstruction Diagram

None

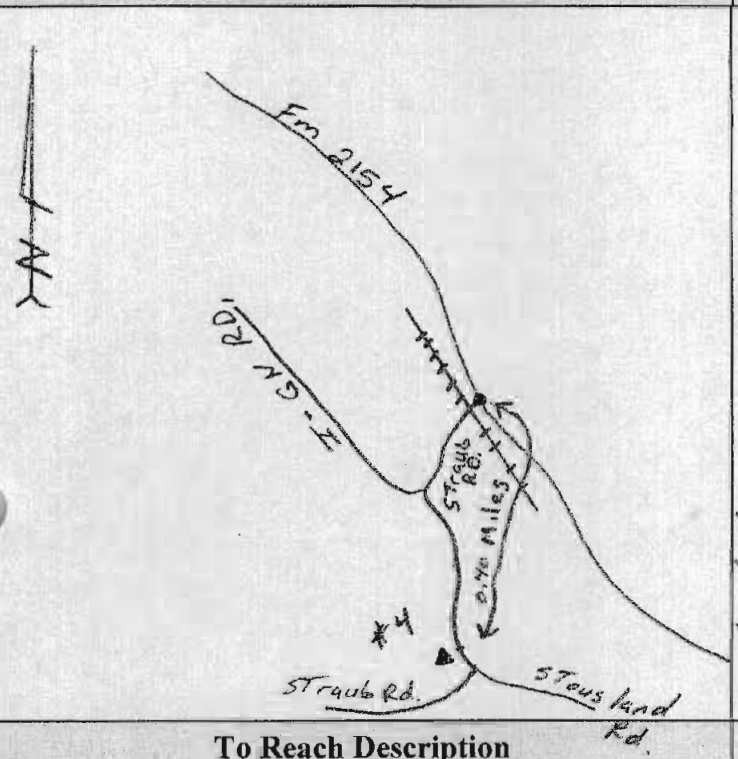


CDS/MUERY SERVICES
Engineering & Surveying

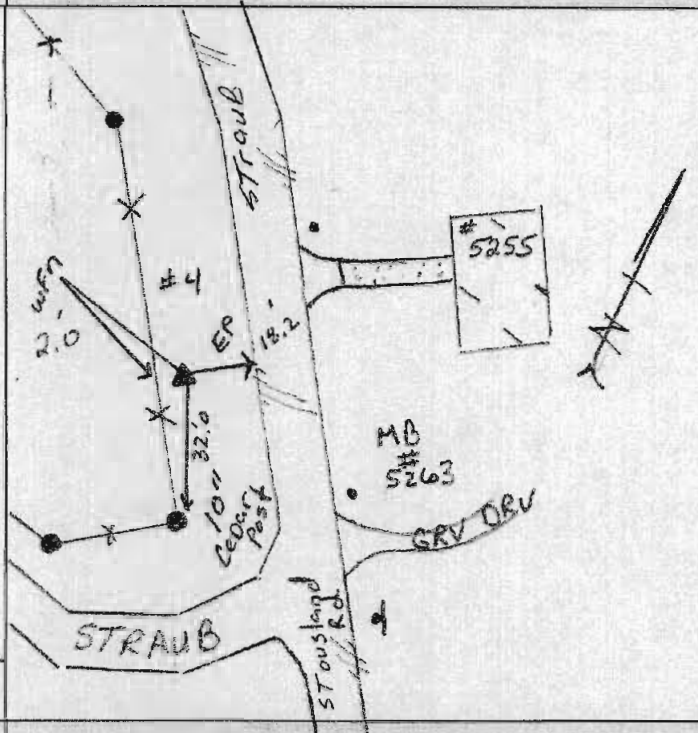
Monument Location Sheet

Project Name:		Project Number		Task No.
College Station		109158		
Station Description:	**Station Name**	**New / Existing**		**Date (Local)**
Set Alum. Deep Rod w/punch inside Access Cover	mon #4	New V Existing		4/27/10
	Location: City/County/State	**Station PID**	**Session #**	**Obs. Agency code**
		N/A	N/a	CDSMS
Approx. Latitude	**Approx. Longitude**	**Approx Elev. (ft)**	**Party Chief Name**	
30.30.23.62 N	96.17.47.46W		S. Montez	

Route Sketch



Detail Sketch

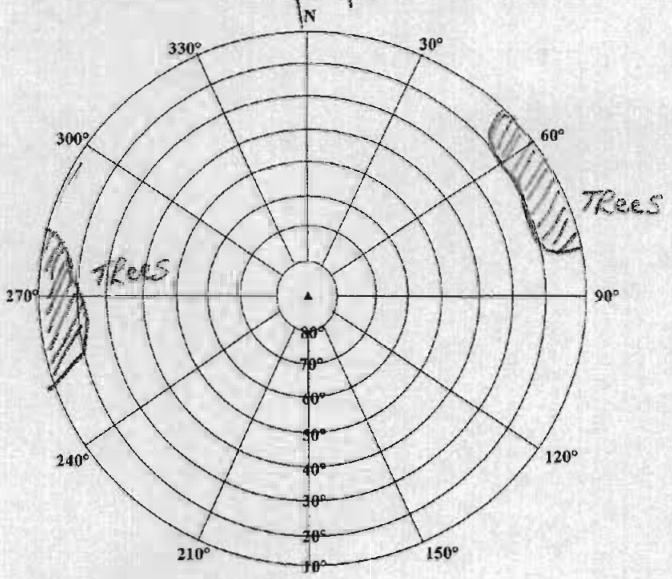


To Reach Description

Total Length of Rod Used = 6.0

Set Alum Deep Rod w/ punch To Letusa inside Access Cover ± 0.40 miles west of the "T" Intersection of Fm 2154 & Straub Rd. Point is located 18.2' S.W of the EP of Straub Rd, 2.0 N.E of wfn and 32.0 N.W of the 10" Cedar Post Cor.

Obstruction Diagram

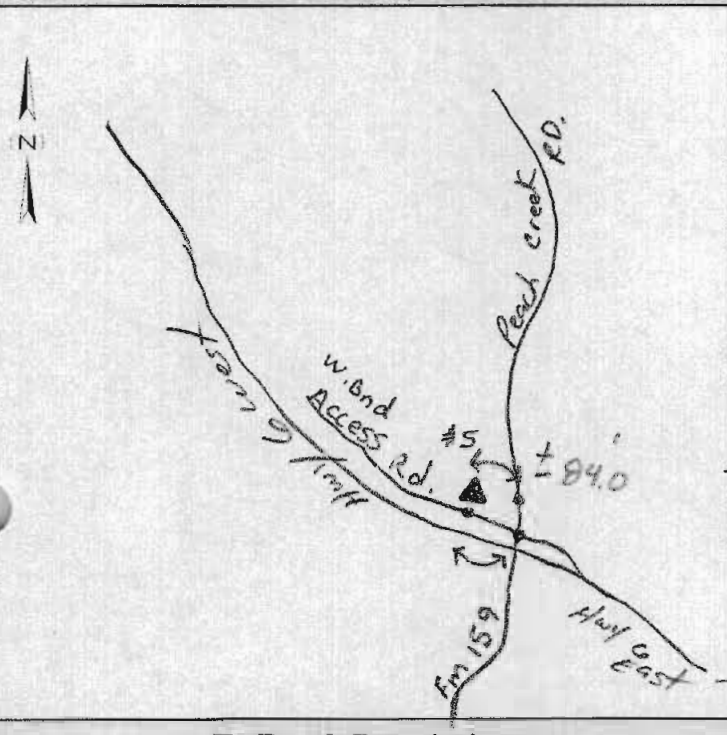


CDS/MUERY SERVICES
Engineering & Surveying

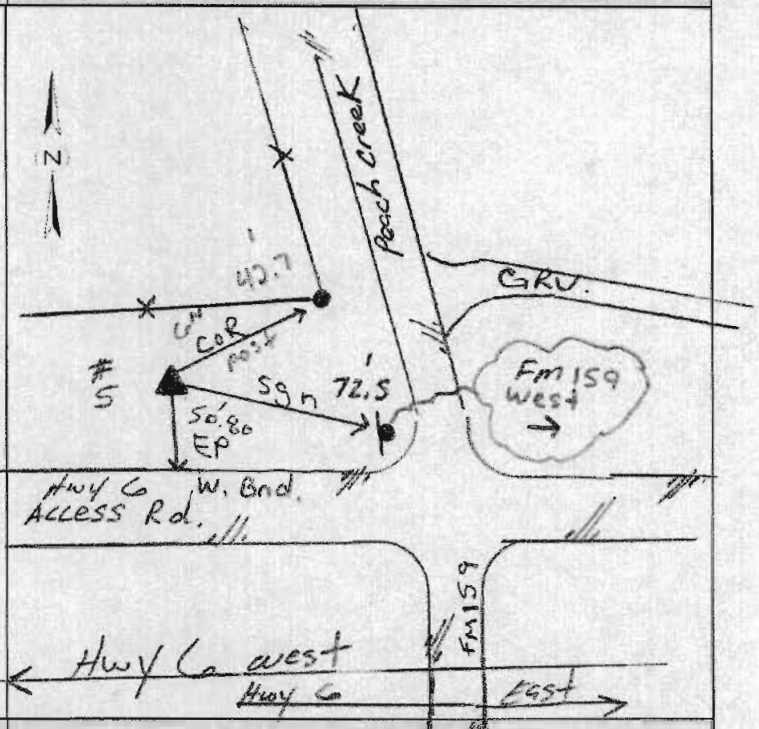
Monument Location Sheet

Project Name:		Project Number		Task No.
College Station		109158		
Station Description:	**Station Name**	**New / Existing**		**Date (Local)**
Set Alum. Deep Rod w/punch inside Access Cover	mon # 5	New V / Existing		4/27/10
	Location: City/County/State	**Station PID**	**Session #**	**Obs. Agency code**
		N/A	N/a	CDSMS
Approx. Latitude	**Approx. Longitude**	**Approx Elev. (ft)**	**Party Chief Name**	
30-30-23.32N	96-11-51.73W		J. Mantz	

Route Sketch



Detail Sketch

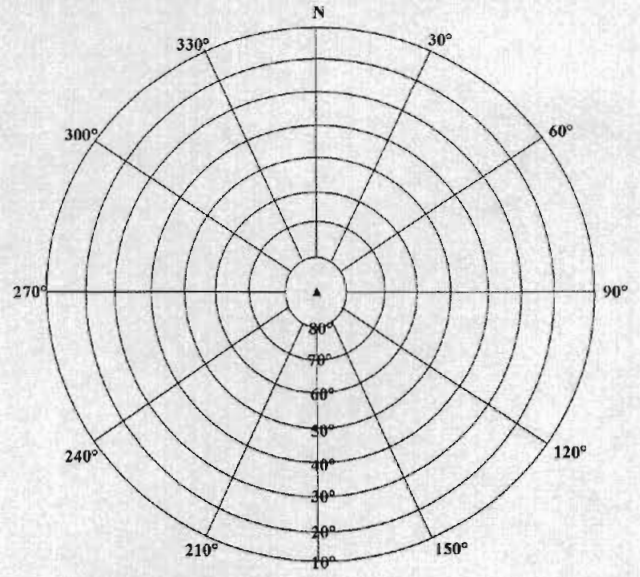


To Reach Description

Total Length of Rod Used = 20.0'

Monument is located on the North side R.o.w of SH 6 ± 84.0 N.W of Peach Creek Rd & SH 6 Access Rd

Obstruction Diagram



CDS/Muery Services
Engineering & Surveying

Monument Location Sheet

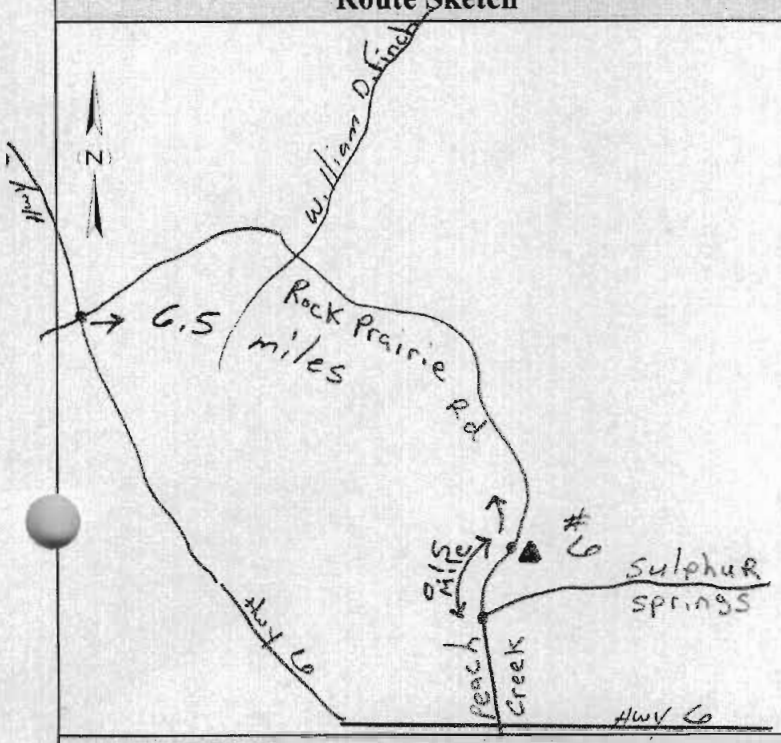
Project Name:	Project Number	Task No.
College Station	109158	

Station Description:	Station Name	New / Existing		Date (Local)
Set Alum Rod to Refusal inside Access Cover	mon #6	New V / Existing		4/27/10

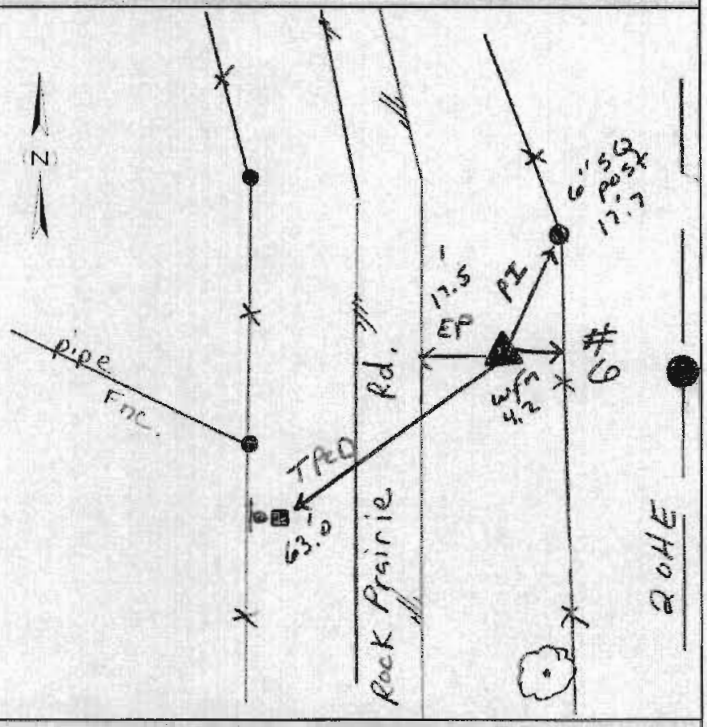
Location: City/County/State	Station PID	Session #	Obs. Agency code
	N/A	N/a	CDSMS

Approx. Latitude	Approx. Longitude	Approx Elev. (ft)	Party Chief Name
30.33.21.29 N	96.11.09.40W		J. Montez

Route Sketch



Detail Sketch



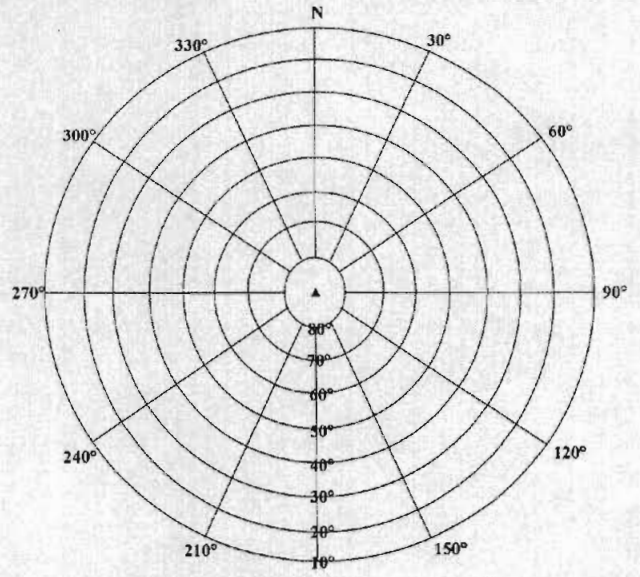
To Reach Description

none

Total Length of Rod Used = 19.50

From the Intersection of Hwy 6 & Rock Prairie Rd Travel East on Rock Prairie Rd for Approx 6.5 miles Monument is Located on the left side R.O.W.

Obstruction Diagram

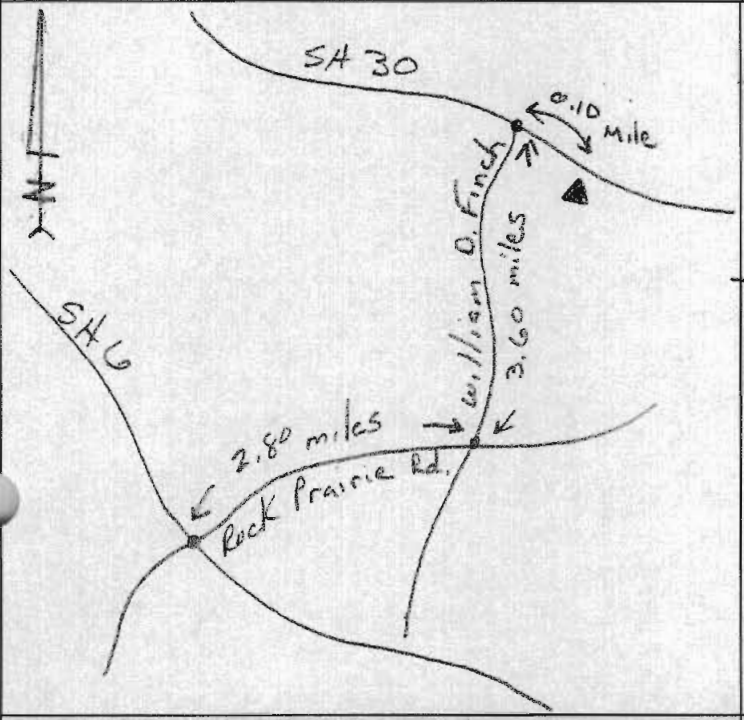


CDS/MUERY SERVICES
Engineering & Surveying

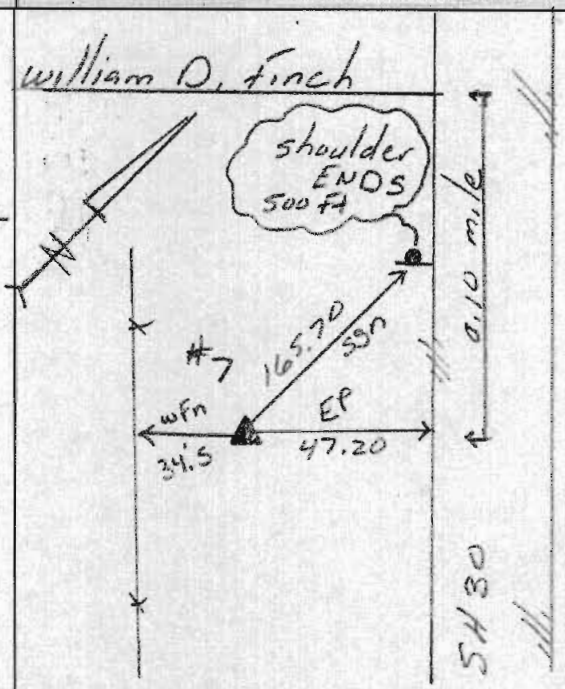
Monument Location Sheet

Project Name:		Project Number		Task No.
College Station		109158		
Station Description:	**Station Name**	**New / Existing**		**Date (Local)**
Set Alum Deep Rod To Refusal inside Access Cover	mon #7	New V / Existing		4/27/10
	Location: City/County/State	**Station PID**	**Session #**	**Obs. Agency code**
		N/A	N/a	CDSMS
Approx. Latitude	**Approx. Longitude**	**Approx Elev. (ft)**	**Party Chief Name**	
30.37.13.57 N	96.12.09.58 W		J. Monter	

Route Sketch



Detail Sketch

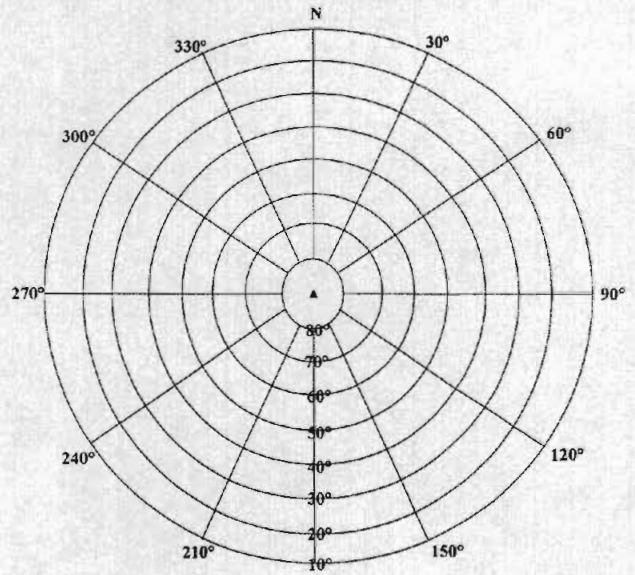


To Reach Description

Total Length of Rod Used = 24.0'

Set Alum Deep Rod inside Access Cover 0.10 mile S.E of the "T" Inter. of William D. Finch & SH 30

Obstruction Diagram



CDS/MUERY SERVICES
Engineering & Surveying

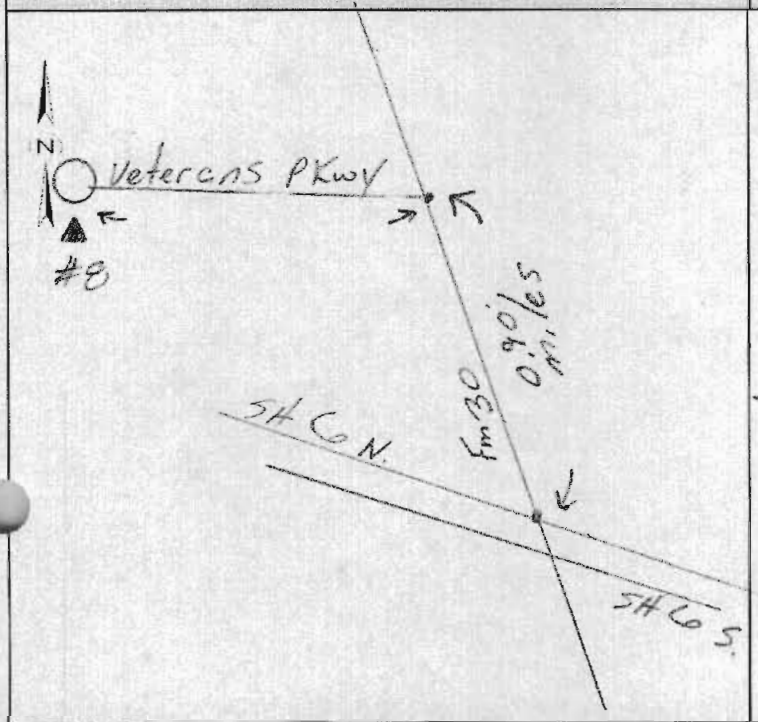
Monument Location Sheet

Project Name:	Project Number	Task No.
College Station	109158	

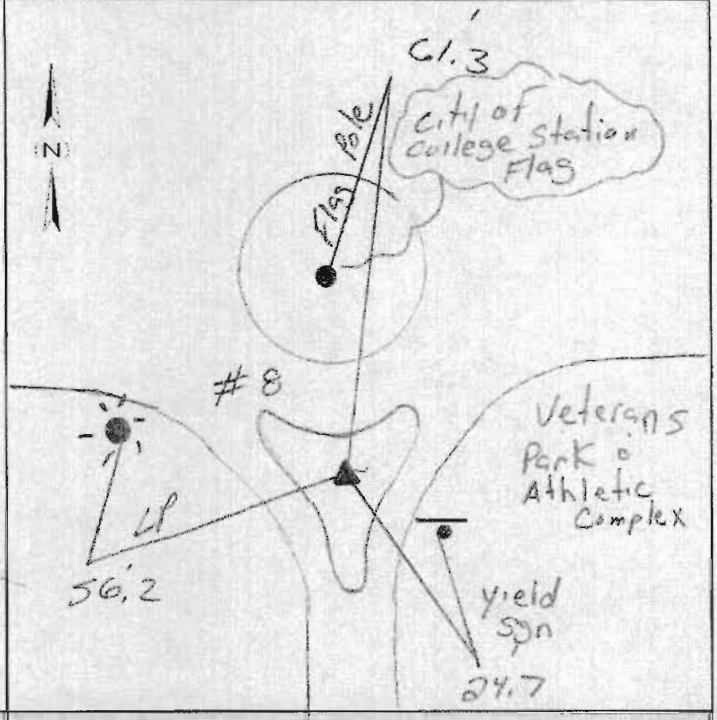
Station Description:	Station Name	New / Existing		Date (Local)
	mon #8	V /		4/26/10
	Location: City/County/State	Station PID	Session #	Obs. Agency code
		N/A	N/a	CDSMS

Approx. Latitude	Approx. Longitude	Approx Elev. (ft)	Party Chief Name
30.38.27.66 N	96.17.40.47 W		J. Montez

Route Sketch



Detail Sketch

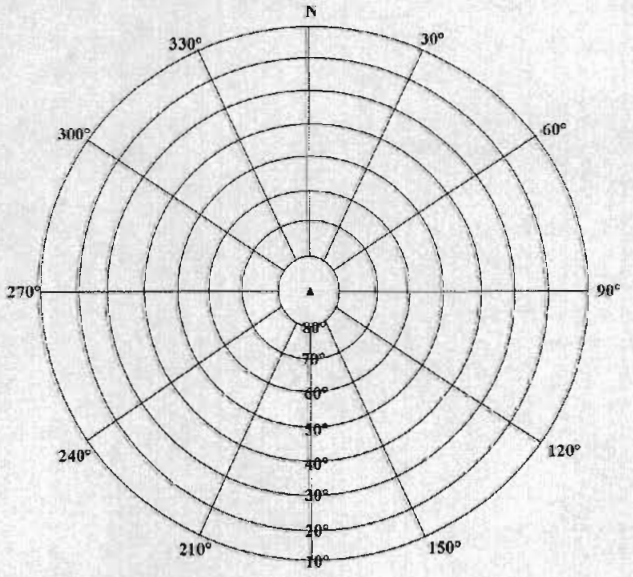


To Reach Description

none

Total Length of Rod Used = 36.0

Obstruction Diagram

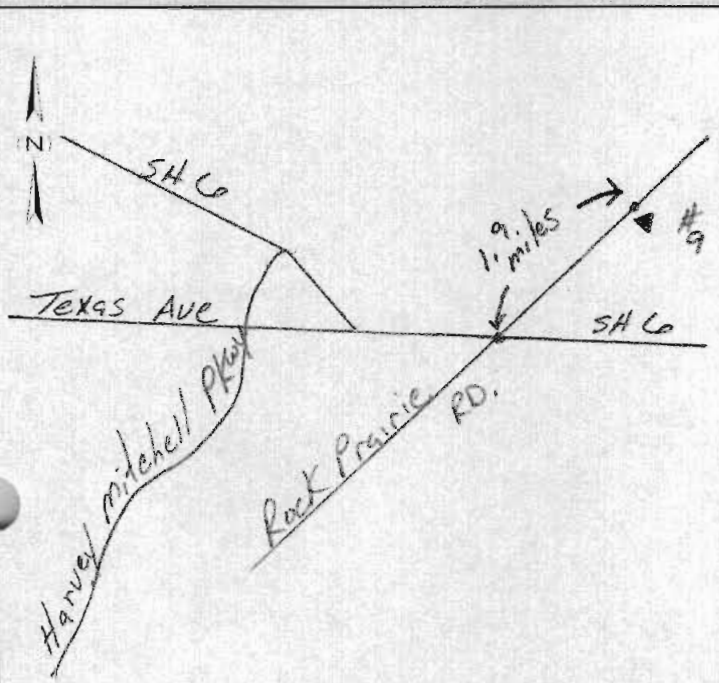


CDS/MUERY SERVICES
Engineering & Surveying

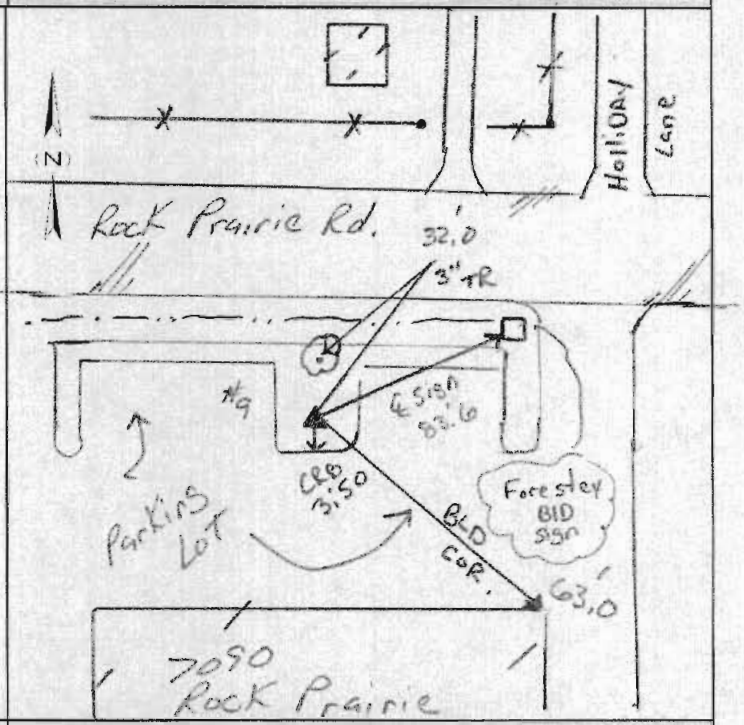
Monument Location Sheet

Project Name: College Station		Project Number 109158		Task No.
Station Description: Set Alum Deep Rod w/punch inside Access cover	Station Name mon #9	New V / Existing		Date (Local) 4/26/10
	Location: City/County/State	Station PID N/A	Session # N/a	Obs. Agency code CDSMS
Approx. Latitude 30.34.55.40 N	Approx. Longitude 96.15.11.66W	Approx Elev. (ft)		Party Chief Name J Montez

Route Sketch



Detail Sketch

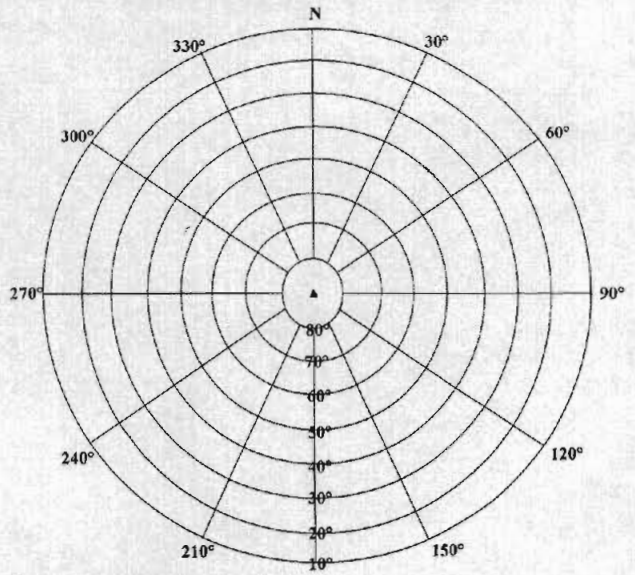


To Reach Description

Total Length of Rod Used = 15.0

Go East on Hwy 6, Exit on Rock Prairie RD. make a left on Rock Prairie Rd and go for Approx 1.9 miles Monument is on the right side of Forestal Building

none Obstruction Diagram



CDS/MUERY SERVICES
Engineering & Surveying

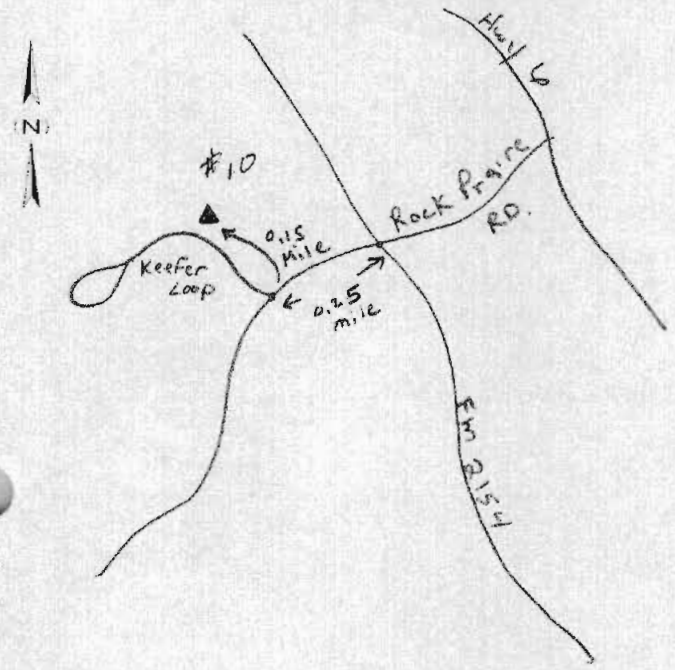
Monument Location Sheet

Project Name:	Project Number	Task No.
College Station	109158	

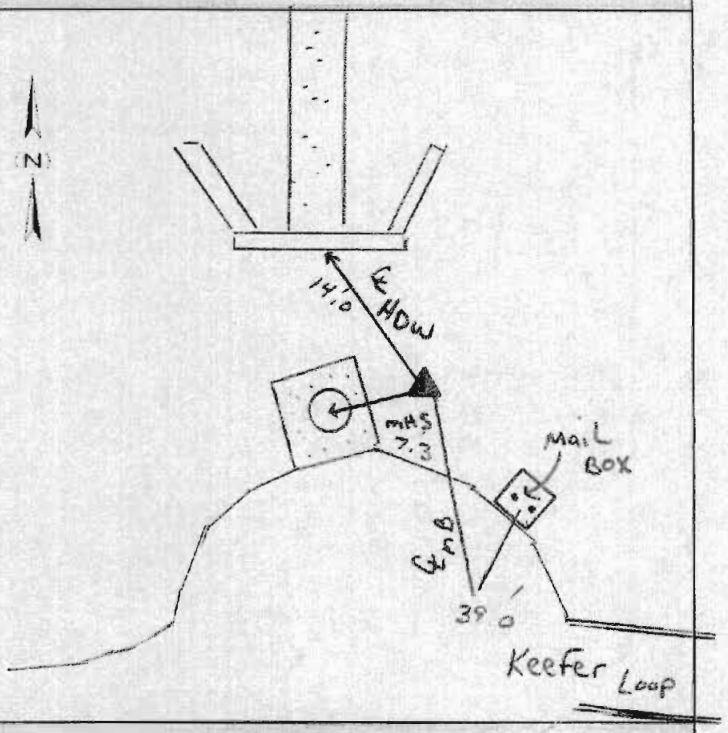
Station Description:	Station Name	New / Existing		Date (Local)
	mon #10	New V / Existing		4/27/10
	Location: City/County/State	Station PID	Session #	Obs. Agency code
		N/A	N/a	CDSMS

Approx. Latitude	Approx. Longitude	Approx Elev. (ft)	Party Chief Name/
30.34.13.55 N	96.18.57.74W		J. Montez

Route Sketch



Detail Sketch

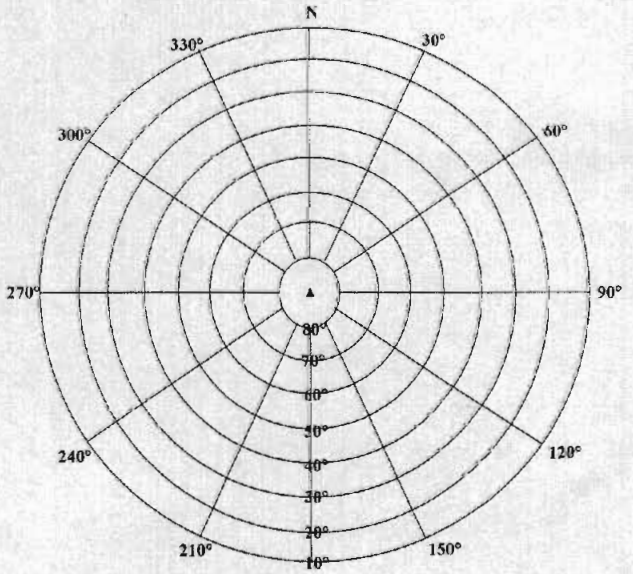


To Reach Description

Total Length of Rod Used = 15.0

From Inter. of Rock Praire Rd & Fm 2154, Travel west on Rock Praire Rd For Approx 0.25mile Then take right on Keefer Loop and Travel for Approx 0.15 mile monument is located on the right side Ref Conc. Drain.

Obstruction Diagram

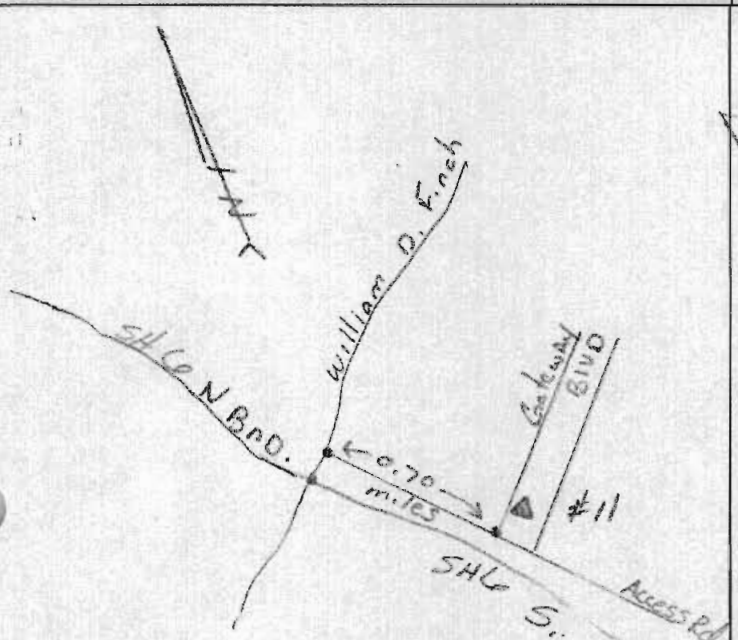


CDS/MUERY SERVICES
Engineering & Surveying

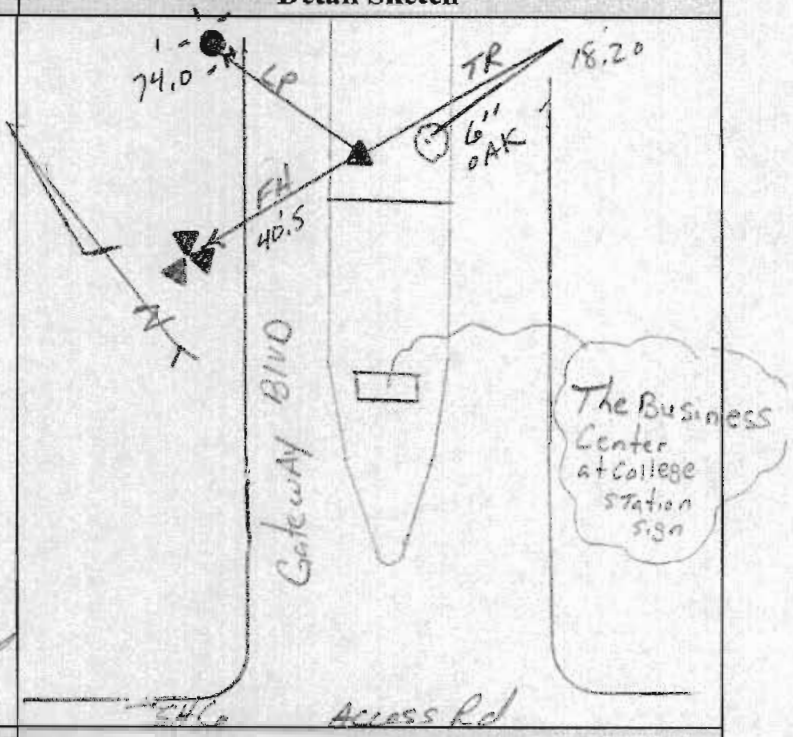
Monument Location Sheet

Project Name:		Project Number		Task No.
College Station		109158		
Station Description:	**Station Name**	**New / Existing**		**Date (Local)**
set Alum. Deep Rod w/punch inside Access Cover	Mon # 11	New V Existing ___		4/27/10
	Location: City/County/State	**Station PID**	**Session #**	**Obs. Agency code**
		N/A	N/a	CDSMS
Approx. Latitude 30·33·07.90 N	**Approx. Longitude** 96·14·55.80W	**Approx Elev. (ft)**	**Party Chief Name** J. Montez	

Route Sketch



Detail Sketch

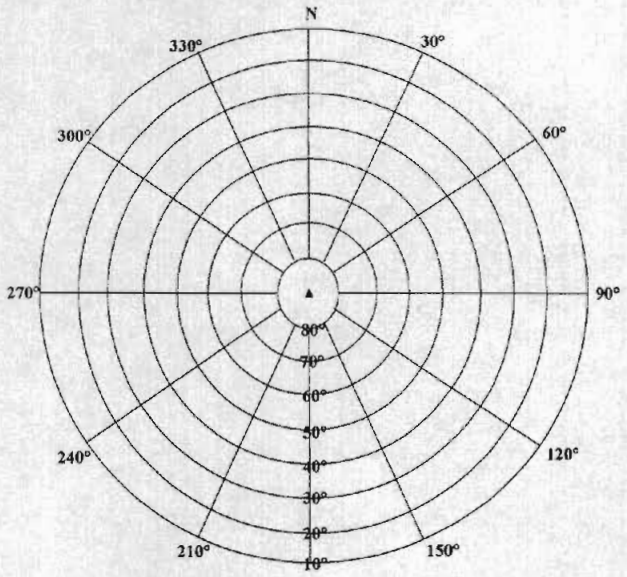


To Reach Description

Total Length of Rod Used = 9.0

Monument is located ± 0.70 miles S.E of the Inter. of SH 6 & William D. Finch Point is on the N.E side of SH 6

Obstruction Diagram



Appendix F

Personnel

Personnel

CDS/Muery Services

- Principal In Charge: Bill Ethridge
- Project Manager: Bob Gaines
- Survey Tech: Ric Limon
    - Chad Tarver
- Field Personnel Party Chief: Joe Montez
- Field Personnel Instrument Person: AJ Escobar
    - Bobby Matrinez

Appendix G

Equipment

GPS Survey Equipment

Trimble 4000 SSi GPS Receiver Serial Numbers

- 3615A15357
- 3518A10289
- 3609A14775
- 3615A15385

Trimble Compact L1/L2 Antenna with Ground plane Serial Numbers

- 220022983
- 220026287
- 220021404
- 220124914