

**CITY OF
COLLEGE STATION**

**FIRM REFERENCE MARK
UPGRADE PROJECT
JUNE 2012**



JOE ORR, INC.

SURVEYORS & ENGINEERS

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TX Surveying Firm no. 160544-00 / Engineering Firm no. F-433



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Survey Report - City of College Station FIRM Reference Marks Upgrade Project

Friday, August 24, 2012

City of College Station
attn: Alan Gibbs, P.E.

Background

Joe Orr, Inc. was contracted by the City of College Station to locate the remaining elevation reference marks (RMs) identified on the series “C” and “D” FEMA Flood Insurance Rate Maps (FIRMs), and to determine NAVD1988-based elevations on them. The elevations listed for the reference marks in the Flood Insurance Study were based on NGVD1929 datum, but the newly-released FIRMs (series “E”) are referenced to the North American Vertical Datum of 1988 (NAVD1988).

Although the RMs are no longer identified on the new FIRMs, the elevation upgrade was desired to provide flood plain managers, engineers and surveyors with these benchmarks to supplement the City GPS monuments, and also to allow the conversion of previous elevation certificates and flood plain calculations to the new datum.

The new FIRMs include the location of the City of College Station 2010 GPS primary rod monuments (MONs) as well as benchmarks (BMs) listed in the National Geodetic Survey (NGS) database. In addition to locating the RMs, the referenced BMs in the College Station area were included.

Method

In 2011, Joe Orr, Inc. established NGVD1988 elevations on the remaining City of College Station GPS monuments which were set in 1994. The elevations were determined by averaging multiple GPS (RTK) observations, adjusted to the NGVD1988 elevations determined by CDS Muery Services when they established the eleven new deep rod, primary GPS monuments in 2010.

The NGVD1988 reference elevations for this Reference Marks Upgrade Project were also the elevations from Muery on the primary GPS monuments. Depending on the distance from GPS monuments, either of two methods was used to determine the reference mark elevations: averaging multiple GPS (RTK) observations, or differential leveling runs with a Leica Sprinter 150 digital level from a GPS monument.

Results

Individual data sheets were created for each recovered reference mark, but the following list is a summary of all marks which were investigated:

Point ID number	2012 Determined NAVD1988 elevation	Previously Published NGVD1929 elev. & change	Comments
BM0023	not found	305.56	Probably destroyed by utility construction. Set as T313 in 1935
BM0024	not found	308.28	Probably destroyed by utility construction. Set as U313 in 1935
BM0025	not found	335.68	Probably destroyed by utility construction. Set as V313 in 1935
BM0026	291.84	291.94 (-0.10)	Found where described, but slightly damaged. Set as W313 in 1935
BM0027	not found	351.86	This BM was destroyed when Albritton Tower was constructed
BM0028	360.91	360.93 (-0.02)	Found as described (NGS sheet has NAVD88 elev. of 361.0)
BM0030	not found	318.46	Probably destroyed by construction of John Kimbrough Drive
BM0031	not found	311.62	Apparently replaced by BM0032 in 1972
BM0032	312.21	313.2 (0.0)	Found as described (NGS sheet notes that elev. should be 312.14)
BM0033	310.72	310.85 (-0.13)	Found as described (NGS sheet has NAVD88 elev. of 311.5)
BM0134	not found	288.59	Probably destroyed by utility construction. Set as S313 in 1935
RM29	294.09	296.11 (-2.02)	Spike found is possibly not RM29, or power pole has sunk 2 ft.
RM30	not found	340.81	This RM was destroyed during railroad/highway construction
RM31	292.24	292.70 (-0.46)	Found as described, new elevation by level run, checked w/GPS
RM32	not searched	263.94	Destroyed when Texas Ave. was widened in 1990's
RM41	not found	269.00	Probably destroyed when Highway 30 curve was lengthened
RM43	not found	208.88	This RM may exist, but location is brushy and description is poor
RM46	275.97	276.02 (-0.05)	Found at center of headwall, not NW corner as described
RM47	273.88	274.18 (-0.30)	Found at north corner of culvert, but shown on FIRM at east corner
RM48	290.97	291.07 (-0.10)	Found where described and shown on FIRM
RM49	278.95	279.02 (-0.07)	Found at east corner of intersection, but shown on FIRM at south
RM50	235.74	235.82 (-0.08)	Found where described, good condition. Set as BJ-5 in 1973
RM51	not found	285.78	No power pole w/spike found where described (poles were replaced)
RM52	not found	296.15	The power poles in this area have been replaced since the 1980's
RM53	280.01	280.04 (-0.03)	Found where described, but slightly damaged. Set as 26SC in 1958
RM54	244.20	244.37 (-0.17)	Found as described. Mark set for City of CS sewer project in 1987
RM55	not found	250.71	This RM may exist, but location is brushy and description is poor
RM56	not found	209.16	No double oak tree w/spike was found at location described
RM57	not found	249.17	The highway bridge over Alum Creek was removed in recent years
RM58	not found	196.70	No powerline, nor power pole w/spike, found at location described
RM59	not found	193.92	This RM may exist, but location is brushy and description is poor
27SC	258.60	259	Not on FIRM. Set as 27SC by US Coast & Geodetic Survey in 1958

Summary

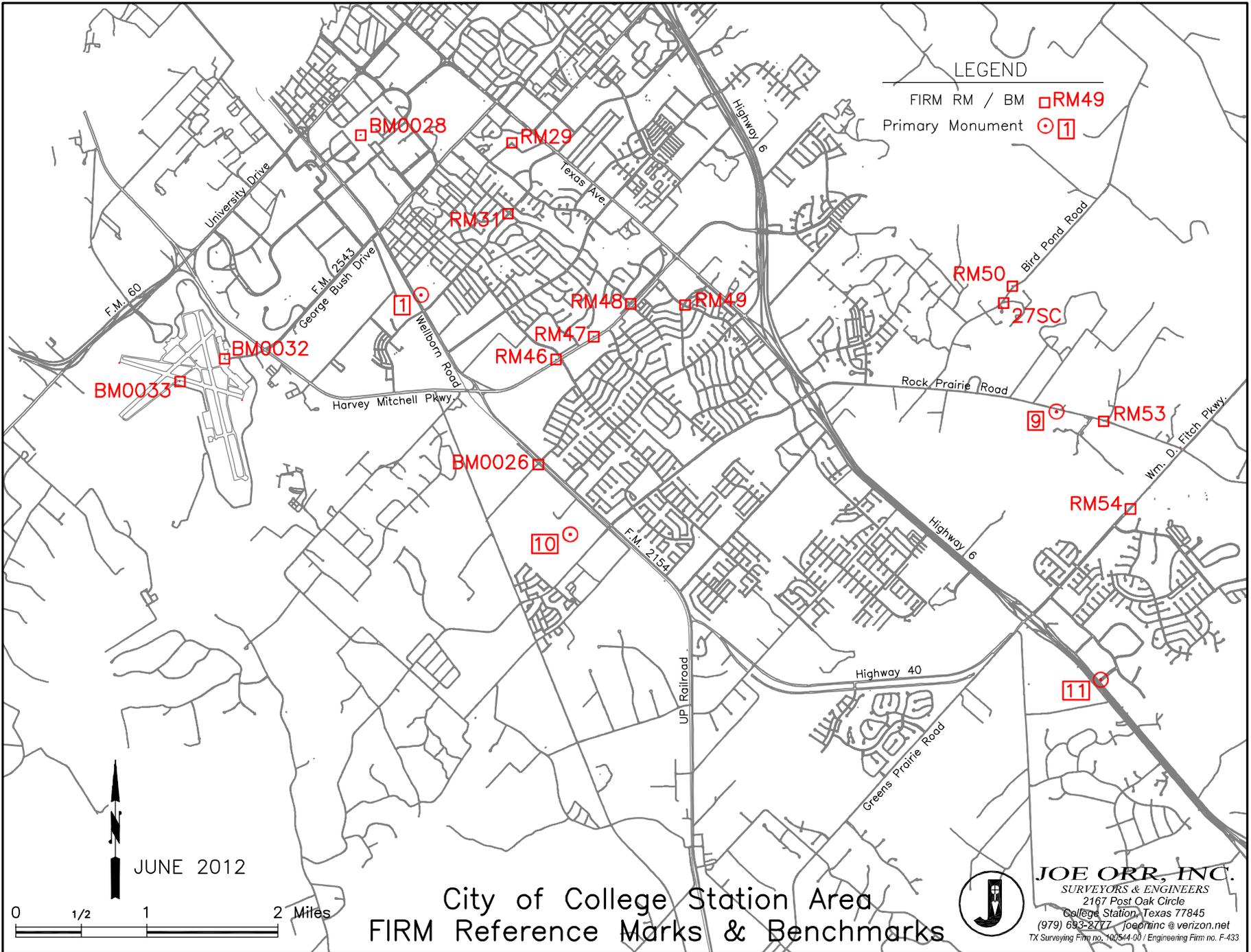
Only a handful of the FEMA reference marks could be confirmed as exactly the ones described in the Flood Insurance Study list. Others were described and/or shown at slightly different locations than what was found, which could be attributed to the original descriptions being vague or new points set nearby. Square cut marks in concrete and railroad spikes in power poles are common benchmark methods and it is possible that some of the ones found were not the actual FEMA marks but ones set by later surveyors for unrelated projects.

It was found that the corners of the headwall at RM46 were within 0.04 ft. of being the same elevation as the mark found at the center of the headwall. At RM47, the headwall corner on the southeast side of F.M. 2818, where the mark is shown to be on the FIRM, is only 0.03 ft. lower than the mark found. Therefore, even if the found marks are not the ones originally set for FEMA, they are very close to the same elevation.

The vertical stability of these reference marks is susceptible to slight variations caused by seasonal soil conditions, and these elevations should not be relied upon for critical elevation work. NGS has not established high-order elevation monuments in Brazos County. The eleven deep rod, primary GPS monuments set by CDS/Muery Services in 2010 are the basis of this project upgrade, and they should be used for critical NAVD1988 elevation determination. Muery used GPS observations from TXDOT CORS stations to determine NAD83(CORS) positions and NAVD88 elevations on these eleven deep rod monuments.

The large difference (0.8 ft.) between the NGS published NAVD elevation on BM0033 and the elevation determined by this upgrade survey is apparently the result of their recalculations based on the new GEOID12 model. Care should be exercised when comparing the results of this survey to elevations determined from VERCON shifts and other methods utilizing recalculated survey observations.

Henry Mayo, RPLS



LEGEND

- FIRM RM / BM □ RM49
- Primary Monument ⊙ 1

JUNE 2012



City of College Station Area
FIRM Reference Marks & Benchmarks



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<u>Station Name:</u> <i>BM0026</i> stamped as W313	
<u>General Location:</u> <u>FIRM Panel:</u>	Old Wellborn Rd. at Cain Rd. 305E (current FIRM)
<u>Established by:</u> <u>Date Established:</u>	U.S. Coast & Geodetic Survey 1935
<u>Upgrade Survey by:</u> <u>Upgrade Method:</u>	Joe Orr, Inc. conventional levelling (digital) from GPS mon. CS94-120
<u>Upgraded Elevation:</u> NAVD1988 Datum (Feet)	<i>291.84</i>
<u>Surveyed Location:</u> (map-grade accuracy)	
<u>Northing (State Plane Grid):</u>	10196834.7 feet
<u>Easting (State Plane Grid):</u>	3559267.2 feet
<u>Latitude:</u>	N 30° 34' 41.822"
<u>Longitude:</u>	W 96° 19' 11.301"
<u>Datum:</u>	NAD83(CORS) TX Central zone
<u>Point Location Description:</u>	Brass disc in 8 in. square concrete, up 1 in. on private property (mini warehouses) at the south corner of Cain Rd. and Old Wellborn Rd. Monument is 3.0 ft. SE and 6.1 ft. SW of chain-link fences along property lines.
<u>Note:</u>	Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.
<u>Nearest City of College Station Monuments:</u>	
2010 Mon 10 (primary)	SE 0.6 miles
CS94-117	S 1.0 miles

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<u>Station Name:</u> BM0028 NGS Designation "A and M College"	
<u>General Location:</u>	near Sul Ross statue at A&M
<u>FIRM Panel:</u>	305E (current FIRM)
<u>Established by:</u>	U.S. Coast & Geodetic Survey
<u>Date Established:</u>	1935
<u>Upgrade Survey by:</u>	Joe Orr, Inc.
<u>Upgrade Method:</u>	GPS (RTK) averaging of multiple observations
<u>Upgraded Elevation:</u>	360.91
NAVD1988 Datum (Feet)	
<u>Surveyed Location:</u> (map-grade accuracy)	
Northing (State Plane Grid): 10210102.3 feet	
Easting (State Plane Grid): 3552115.0 feet	
Latitude: N 30° 36' 55.615"	
Longitude: W 96° 20' 27.626"	
<u>Datum:</u> NAD83(CORS) TX Central zone	
<u>Point Location Description:</u>	
Brass disc in concrete, within a 12 in. iron ring set flush in concrete sidewalk, 500 ft. northeast of Houston Street, along a projection of Old Main Drive. (1900' NE of railroad)	
Monument is 57 ft. east of Sul Ross statue and 86 ft. south of center top of concrete steps on the southwest side of the Texas A&M University Academic Building (built 1912).	
<u>Note:</u>	
Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.	
<u>Nearest City of College Station Monuments:</u>	
2010 Mon 1 (primary)	SE 1.3 miles
CS94-110	NW 0.7 miles

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<u>Station Name:</u> BM0032 stamped as P 933 RESET1972	
<u>General Location:</u>	Easterwood Airport, old hangar
<u>FIRM Panel:</u>	305E (not on current FIRMs)
<u>Established by:</u>	U.S. Coast & Geodetic Survey
<u>Date Established:</u>	1972 (replaced BM0031)
<u>Upgrade Survey by:</u>	Joe Orr, Inc.
<u>Upgrade Method:</u>	GPS (RTK) averaging of multiple observations
<u>Upgraded Elevation:</u> NAVD1988 Datum (Feet)	312.21
<u>Surveyed Location:</u> (map-grade accuracy)	
<u>Northing (State Plane Grid):</u>	10201088.9 feet
<u>Easting (State Plane Grid):</u>	3546623.5 feet
<u>Latitude:</u>	N 30° 35' 28.398"
<u>Longitude:</u>	W 96° 21' 34.120"
<u>Datum:</u>	NAD83(CORS) TX Central zone
<u>Point Location Description:</u>	Brass disc in top, south edge of concrete drain grate inlet box, located on the west side of the old hangar (built 1940s) at Easterwood airport Monument is 60 ft.± NW of the south corner of the old hangar building and 365 ft.± NW of the airport control tower (built in 1970s)
<u>Note:</u>	Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.
<u>Nearest City of College Station Monuments:</u>	
2010 Mon 1 (primary)	NE 1.6 miles
CS94-165	NW 0.8 miles

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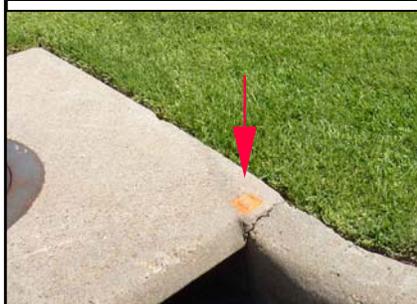


<u>Station Name:</u> BM0033 stamped as ARP 2	
<u>General Location:</u> Easterwood Airport primary mon. <u>FIRM Panel:</u> 305E (on current FIRM)	
<u>Established by:</u> U.S. Coast & Geodetic Survey <u>Date Established:</u> 1963	
<u>Upgrade Survey by:</u> Joe Orr, Inc. <u>Upgrade Method:</u> conventional levelling (digital) from monument BM0032	
<u>Upgraded Elevation:</u> NAVD1988 Datum (Feet)	310.72
<u>Surveyed Location:</u> (map-grade accuracy) <u>Northing (State Plane Grid):</u> 10200180.4 feet <u>Easting (State Plane Grid):</u> 3544825.5 feet <u>Latitude:</u> N 30° 35' 20.045" <u>Longitude:</u> W 96° 21' 55.049" <u>Datum:</u> NAD83(CORS) TX Central zone	
<u>Point Location Description:</u> Brass disc in concrete, flush with ground, approximately 2000 ft. southwest of the airport control tower (built in 1970s) Monument is 125 ft. southwest of the centerline of runway 10-28, and 87 ft. southeast of the centerline of a taxiway for runway 4-22. Note: Airport secondary monuments were found in good condition, but the following elevations are approximate, being determined only by single, 1-minute RTK observations: BM1143 (A): 309.14 / BM1144 (B): 316.81	
<u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.	
<u>Nearest City of College Station Monuments:</u> 2010 Mon 1 (primary) NE 2.0 miles CS94-165 NW 0.6 miles	

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reference BM:
Square mark
cut in E corner
storm inlet box
18 ft. SW of
PP / RM29
Elev.= 294.48

<u>Station Name:</u> RM 29	
<u>General Location:</u> 1623 Park Place, at bend	<u>FIRM Panel:</u> 144 (not on current FIRMs)
<u>Established by:</u> FEMA contractors	
<u>Date Established:</u> late 1970s	
<u>Upgrade Survey by:</u> Joe Orr, Inc.	
<u>Upgrade Method:</u> GPS (RTK) averaging of multiple observations (on ref BM)	
<u>Upgraded Elevation:</u> NAVD1988 Datum (Feet)	294.09
<u>Surveyed Location:</u> (map-grade accuracy)	
Northing (State Plane Grid): 10209790.3 feet	
Easting (State Plane Grid): 3558198.7 feet	
Latitude: N 30° 36' 50.362"	
Longitude: W 96° 19' 18.173"	
<u>Datum:</u> NAD83(CORS) TX Central zone	
<u>Point Location Description:</u> Top of head on railroad spike driven into the south side of a power pole, 2 in. below grade, in front of the house at 1623 Park Place	
<u>Elevation Note:</u> The elevation determined for this railroad spike is 2.0 ft. lower than the supplied elevation for this Ref. Mark by FEMA. It is possible that the spike found is not RM29, but no other spike was found.	
<u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.	
<u>Nearest City of College Station Monuments:</u>	
2010 Mon 1 (primary)	SW 1.4 miles
CS94-120	S 0.8 miles

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<u>Station Name:</u> RM 31	
<u>General Location:</u>	Holleman Drive at Glade Street
<u>FIRM Panel:</u>	144 (not on current FIRMs)
<u>Established by:</u>	FEMA Contractors
<u>Date Established:</u>	late 1970s
<u>Upgrade Survey by:</u>	Joe Orr, Inc.
<u>Upgrade Method:</u>	conventional levelling (digital) from GPS mon. CS94-120
<u>Upgraded Elevation:</u> NAVD1988 Datum (Feet)	292.24
<u>Surveyed Location:</u> (map-grade accuracy)	
<u>Northing (State Plane Grid):</u>	10206935.6 feet
<u>Easting (State Plane Grid):</u>	3558046.2 feet
<u>Latitude:</u>	N 30° 36' 22.177"
<u>Longitude:</u>	W 96° 19' 21.095"
<u>Datum:</u>	NAD83(CORS) TX Central zone
<u>Point Location Description:</u>	Square mark cut into the front, east corner of the storm drain inlet box on the northwest side of Holleman Drive, 48' southwest of the centerline of Glade Street.
<u>Note:</u>	Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.
<u>Nearest City of College Station Monuments:</u>	
2010 Mon 1 (primary)	SW 0.9 miles
CS94-120	SE 1425 feet

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<u>Station Name:</u> RM 46 (r12)		relocated nearby
<u>General Location:</u> F.M. 2818, SW of Welsh Ave.		
<u>FIRM Panel:</u> 182 (not on current FIRMs)		
<u>Established by:</u> unknown		
<u>Date Established:</u> unknown		
<u>Upgrade Survey by:</u> Joe Orr, Inc.		
<u>Upgrade Method:</u> conventional levelling (digital) from GPS mon. CS94-120		
<u>Upgraded Elevation:</u> NAVD1988 Datum (Feet)		275.97
<u>Surveyed Location:</u> (map-grade accuracy)		
Northing (State Plane Grid): 10201062.9 feet		
Easting (State Plane Grid): 3559977.3 feet		
Latitude: N 30° 35' 23.394"		
Longitude: W 96° 19' 01.437"		
<u>Datum:</u> NAD83(CORS) TX Central zone		
<u>Point Location Description:</u> Square mark cut into the northwest edge of the concrete headwall, over the middle wall, on the northwest end (upstream) of the box culvert under F.M. 2818, 170' southwest of the centerline of Welsh Avenue.		
<u>Relocation Note:</u> No mark was found at the northwest corner, as originally described.		
<u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.		
<u>Nearest City of College Station Monuments:</u>		
2010 Mon 1 (primary)	NW 1.1 miles	
CS94-220	NW 0.9 miles	

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Station Name:

RM 47

General Location: F.M. 2818, NE of Nueces Dr.
FIRM Panel: 182 (not on current FIRMs)

Established by: FEMA Contractors
Date Established: late 1970s

Upgrade Survey by: Joe Orr, Inc.
Upgrade Method: conventional levelling (digital)
from GPS mon. CS94-120

Upgraded Elevation: ***273.88***
NAVD1988 Datum (Feet)

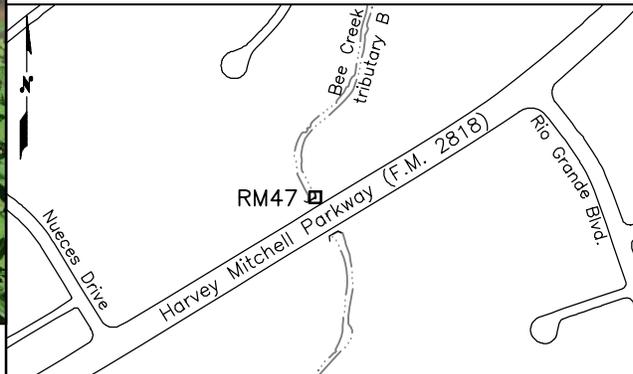
Surveyed Location: (map-grade accuracy)
Northing (State Plane Grid): 10201982.6 feet
Easting (State Plane Grid): 3561500.0 feet
Latitude: N 30° 35' 31.948"
Longitude: W 96° 18' 43.646"
Datum: NAD83(CORS) TX Central zone

Point Location Description:
Square mark cut into the northeast end of the concrete headwall, on the northwest end (downstream) of the box culvert under F.M. 2818, between Nueces Drive and Rio Grand Boulevard.

Location Note: FIRM 182 shows this reference mark on the southeast side of F.M. 2818

Note:
Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.

Nearest City of College Station Monuments:
2010 Mon 1 (primary) NW 1.4 miles
CS94-120 NW 0.9 miles



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	<p align="center"><u>Station Name:</u> RM 48</p> <p><u>General Location:</u> F.M. 2818 at Southwood Drive <u>FIRM Panel:</u> 182 (not on current FIRMs)</p>
	<p><u>Established by:</u> FEMA Contractors <u>Date Established:</u> late 1970s</p> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. <u>Upgrade Method:</u> GPS (RTK) averaging of multiple observations</p>
	<p><u>Upgraded Elevation:</u> 290.97 NAVD1988 Datum (Feet)</p> <p><u>Surveyed Location:</u> (map-grade accuracy) Northing (State Plane Grid): 10203304.8 feet Easting (State Plane Grid): 3562992.4 feet Latitude: N 30° 35' 44.493" Longitude: W 96° 18' 26.033" <u>Datum:</u> NAD83(CORS) TX Central zone</p>
<p><u>Point Location Description:</u> Square mark cut into the top, west corner of the sloped culvert headwall, on the northeast side of Southwood Drive, between Harvey Mitchell Parkway main lanes and its northwest frontage road</p>	<p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 1 (primary) W 1.6 miles CS94-120 NW 0.9 miles</p>

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<u>Station Name:</u> RM 49	
<u>General Location:</u>	Brothers Blvd. at Longmire Dr.
<u>FIRM Panel:</u>	182 (not on current FIRMs)
<u>Established by:</u>	FEMA Contractors
<u>Date Established:</u>	late 1970s
<u>Upgrade Survey by:</u>	Joe Orr, Inc.
<u>Upgrade Method:</u>	GPS (RTK) averaging of multiple observations
<u>Upgraded Elevation:</u>	278.95
NAVD1988 Datum (Feet)	
<u>Surveyed Location:</u> (map-grade accuracy)	
Northing (State Plane Grid): 10203261.2 feet	
Easting (State Plane Grid): 3565175.5 feet	
Latitude: N 30° 35' 43.278"	
Longitude: W 96° 18' 01.087"	
<u>Datum:</u> NAD83(CORS) TX Central zone	
<u>Point Location Description:</u> Square mark cut into the top of curb, in the radius on the northeast side of Longmire Dr. and the southeast side of Brothers Boulevard	
<u>Location Note:</u> FIRM 182 shows this reference mark at the south corner of this intersection.	
<u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.	
<u>Nearest City of College Station Monuments:</u>	
2010 Mon 10 (primary)	SW 2.0 miles
CS94-129	NE 0.8 miles

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<u>Station Name:</u> RM 50 stamped as BJ-5	
<u>General Location:</u>	NE of 1975 Bird Pond Road
<u>FIRM Panel:</u>	205 (not on current FIRMs)
<u>Established by:</u>	U.S. Army Corp of Engineers
<u>Date Established:</u>	1973
<u>Upgrade Survey by:</u>	Joe Orr, Inc.
<u>Upgrade Method:</u>	terrestrial survey methods from GPS mon. CS94-130
<u>Upgraded Elevation:</u>	235.74
NAVD1988 Datum (Feet)	
<u>Surveyed Location:</u> (map-grade accuracy)	
Northing (State Plane Grid): 10204017.7 feet	
Easting (State Plane Grid): 3578374.7 feet	
Latitude: N 30° 35' 46.001"	
Longitude: W 96° 15' 29.841"	
<u>Datum:</u> NAD83(CORS) TX Central zone	
<u>Point Location Description:</u> Brass disk in concrete, 2 in. deep, 46.5' NW from \odot of Bird Pond Road, 205 ft. NE from \odot of private drive at 1975 Bird Pond Road Monument is 2.0 ft. SE of small angle-iron guard post, 6.0 ft. SE of 12 in. treated fence angle post and 2.7 ft. S of 20 in. Oak (\odot).	
<u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.	
<u>Nearest City of College Station Monuments:</u>	
2010 Mon 9 (primary)	SE 1.0 miles
CS94-148	SE 0.7 miles

Disclaimer: No expressed or implied warranties are made for the accuracy, completeness, reliability, usability, or suitability of the point data. The City of College Station and Joe Orr, Inc. assume no responsibility for incorrect results or damages resulting from the use of data.



**CITY OF COLLEGE STATION
FIRM REFERENCE MARK UPGRADE PROJECT
JUNE 2012**



<u>Station Name:</u> RM 53 stamped as 26SC	
<u>General Location:</u>	Rock Prairie Rd. at Olden Ln.
<u>FIRM Panel:</u>	205 (not on current FIRMs)
<u>Established by:</u>	U.S. Coast & Geodetic Survey
<u>Date Established:</u>	1958
<u>Upgrade Survey by:</u>	Joe Orr, Inc.
<u>Upgrade Method:</u>	conventional levelling (digital) from GPS mon. CS-9
<u>Upgraded Elevation:</u>	280.01
NAVD1988 Datum (Feet)	
<u>Surveyed Location:</u> (map-grade accuracy)	
Northing (State Plane Grid): 10198574.6 feet	
Easting (State Plane Grid): 3582051.8 feet	
Latitude: N 30° 34' 50.824"	
Longitude: W 96° 14' 50.081"	
<u>Datum:</u> NAD83(CORS) TX Central zone	
<u>Point Location Description:</u> Aluminum disk (damaged) in flush concrete, 32 ft. S from \bar{C} of Rock Prairie Road, approx. 100 ft. W from Olden Lane (private) Monument is 2.0 ft. N of barbed-wire fence and 14.5 ft. E of a concrete power pole.	
<u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.	
<u>Nearest City of College Station Monuments:</u>	
2010 Mon 9 (primary)	W 1942 feet
CS94-148	NW 0.5 miles

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CITY OF COLLEGE STATION
 FIRM REFERENCE MARK UPGRADE PROJECT
 JUNE 2012



Station Name:

RM 54

General Location: Wm. D. Fitch at Lick Creek
FIRM Panel: 205 (not on current FIRMs)

Established by: Riewe & Wischmeyer, Inc.
Date Established: January 1987

Upgrade Survey by: Joe Orr, Inc.
Upgrade Method: GPS (RTK) averaging
 of multiple observations

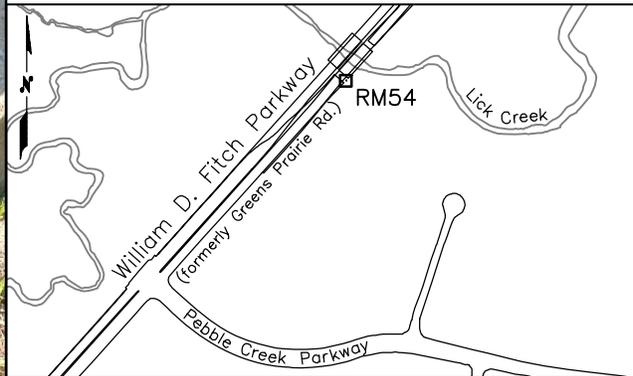
Upgraded Elevation: **244.20**
 NAVD1988 Datum (Feet)

Surveyed Location: (map-grade accuracy)
Northing (State Plane Grid): 10195045.9 feet
Easting (State Plane Grid): 3583127.5 feet
Latitude: N 30° 34' 15.527"
Longitude: W 96° 14' 39.267"
Datum: NAD83(CORS) TX Central zone

Point Location Description:
 Square mark cut into the concrete abutment, 3 in. from south corner, on the southeast bridge over Lick Creek, on Wm. D. Fitch Pkwy. Mark is 940 ft. northeast from the centerline of Pebble Creek Parkway.

Note:
 Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.

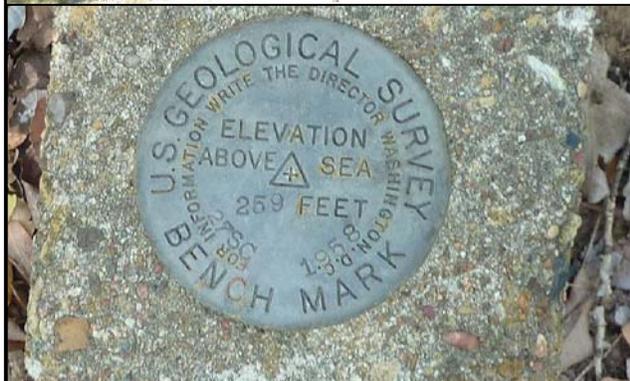
Nearest City of College Station Monuments:
 2010 Mon 9 (primary) NW 0.9 miles
 CS94-256 SE 0.5 miles



Disclaimer: No expressed or implied warranties are made for the accuracy, completeness, reliability, usability, or suitability of the point data. The City of College Station and Joe Orr, Inc. assume no responsibility for incorrect results or damages resulting from the use of data.



**CITY OF COLLEGE STATION
FIRM REFERENCE MARK UPGRADE PROJECT
JUNE 2012**



<u>Station Name:</u> 27SC	
<u>General Location:</u> Bird Pond Rd. at East Placid Dr. <u>FIRM Panel:</u> not identified on FIRMs	
<u>Established by:</u> U.S. Coast & Geodetic Survey <u>Date Established:</u> 1958	
<u>Upgrade Survey by:</u> Joe Orr, Inc. <u>Upgrade Method:</u> conventional levelling (digital) from GPS mon. CS-9	
<u>Upgraded Elevation:</u> NAVD1988 Datum (Feet)	258.60
<u>Surveyed Location:</u> (map-grade accuracy) Northing (State Plane Grid): 10203338.5 feet Easting (State Plane Grid): 3578019.5 feet Latitude: N 30° 35' 39.411" Longitude: W 96° 15' 34.188" <u>Datum:</u> NAD83(CORS) TX Central zone	
<u>Point Location Description:</u> Aluminum disk in concrete, 8 in. tall, 60 ft. SE from C of Bird Pond Road, and 40 ft. S from C of East Placid Dr. (gravel) This Benchmark is 766 ft. S of RM50 and is used as a property corner.	
<u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary GPS monument, by reliable survey methods and not rely solely on the data presented herein.	
<u>Nearest City of College Station Monuments:</u> 2010 Mon 9 (primary) SE 0.9 miles CS94-148 SE 0.7 miles	

Disclaimer: No expressed or implied warranties are made for the accuracy, completeness, reliability, usability, or suitability of the point data. The City of College Station and Joe Orr, Inc. assume no responsibility for incorrect results or damages resulting from the use of data.

Flood Insurance Study - Reference Mark List
(College Station area)

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

<u>Reference Mark</u>	<u>FIRM Panel</u>	<u>Elevation (Feet NGVD)</u>	<u>Description of Location</u>
RM 19	133	344.45	Square cut in top of curb at northeast corner of intersection of Sandy Point Road and 25th Street.
RM 20	133	305.85	Square cut in sidewalk at the southwest corner of a bridge located east of Old Reliance Road bridge over Carters Creek Tributary B.
RM 21	134	307.69	Square cut in southeast corner of a headwall located at the Villa Maria Road bridge over Briar Creek.
RM 22	134	308.32	Square cut in east headwall of State Route 6 Bypass bridge over Carters Creek Tributary B.
RM 23	141	304.56	Square cut in a culvert side wall located at the northeast corner of the intersection of College Avenue and Dellwood Street.
RM 24	141	297.40	Square cut in top of curb at the northwest corner of Texas Avenue bridge over Tributary D.
RM 25	141	314.72	Square cut in top of north curb of Texas Avenue near the intersection of Dunn Street and Texas Avenue.
RM 26	142	292.10	Square cut in southwest corner of the Broadmoore Street bridge over Briar Creek.
RM 27	142	299.91	Square cut in top of curb at the southeast corner of the intersection of Inwood Drive and Texas Avenue.
RM 28	142	279.05	Square cut in top of curb in front of house 824 on Vine Street.
RM 29	144	296.11	Railroad spike set in a power pole at the north side of a right angle turn of Park Place approximately 2,000 feet north of Glade Street.

Flood Insurance Study - Reference Mark List
(College Station area)

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

<u>Reference Mark</u>	<u>FIRM Panel</u>	<u>Elevation (Feet NGVD)</u>	<u>Description of Location</u>
RM 30	144	340.81	Square cut in the southwest corner of the base of railroad signal at northeast corner of intersection of Jersey Street and Southern Pacific Railroad.
RM 31	144	292.70	Square cut in the corner of inlet located at the intersection of Holleman Drive and Glade Street.
RM 32	144	263.94	Square cut in the culvert headwall at the southeast corner of the intersection of Texas Avenue and Brothers Boulevard.
RM 33	155	263.56	Chiseled square on top of culvert, approximately 200 feet east of Wickson Creek bridge on Old Reliance Road.
RM 34	155	257.78	Chiseled square on the northeast corner of the east concrete guard rail of FM 1179 bridge over Wickson Creek.
RM 35	155	292.32	60d spike located 38 feet south and 42 feet west of the intersection of Grassbur Road and Cobb Road.
RM 36	155	263.18	Railroad spike set in power pole approximately 147.5 feet west of curve in Grassbur Road, approximately 0.6 miles south of the intersection of Grassbur Road and Vick's Lane.
RM 37	155	230.60	Chiseled square on northwest corner of north headwall of a cattle guard located approximately 0.7 mile east of the intersection of Elmo Wheedon Road and Wickson Creek and approximately 71 feet south of the road.
RM 38	155	230.60	Railroad spike set in power pole approximately 35 feet west of Elmo Wheedon Road; approximately 0.3 mile north, thence 1.2 miles southeast, thence 0.5 mile from the intersection of Elmo Wheedon and Grassbur Roads.

Flood Insurance Study - Reference Mark List
(College Station area)

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued'

<u>Reference Mark</u>	<u>FIRM Panel</u>	<u>Elevation (Feet NGVD)</u>	<u>Description of Location</u>
RM 39	160	211.98	From Kurton, go southwest on State Route 21 approximately 0.35 mile, thence southeast along a paved road approximately 5.65 miles to end of pavement, thence straight on gravel road approximately 2.25 miles to standard disk on the right.
RM 40	163	226.07	Chiseled square on the southwest corner of concrete bridge headwall of Bird Pond Road over Carters Creek.
RM 41	165	269.00	From the intersection of State Route 30 and FM 244, proceed west on State Route 30 approximately 10.0 miles; Monument is approximately 59 feet north of the centerline of State Route 30 and approximately 3 feet south of a fence line.
RM 42	165	212.27	From the intersection of State Route 30 and State Route 158 at Harvey, proceed east on State Route 30 approximately 0.95 mile, thence north on paved road approximately 2.0 miles to T intersection; take right fork approximately 2.8 miles to monument on right.
RM 43	165	208.88	From the intersection of State Route 30 and State Route 158 at Harvey, proceed east on State Route 30 approximately 6.5 miles to monument on right at curve.
RM 44	170	264.80	From the intersection of State Route 30 and FM 244, proceed west on State Route 30 approximately 5.8 miles; monument is approximately 51 feet south of the centerline of State Route 30, and approximately 135 feet east of a fence corner.
RM 45	182	340.81	Square cut in the southwest corner of the base of railroad signal at northeast corner of intersection of Jersey Street and Southern Pacific Railroad.

Flood Insurance Study - Reference Mark List
(College Station area)

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

<u>Reference Mark</u>	<u>FIRM Panel</u>	<u>Elevation (Feet NGVD)</u>	<u>Description of Location</u>
RM 46	182	276.02	Square cut in the northwest corner of the top of a concrete headwall located at the north side of the bridge over Tributary B on FM 2818, approximately 0.75 mile east of Wellborn Road.
RM 47	182	274.18	Square cut in the northeast corner of a concrete headwall located at the north side of the bridge over Tributary B on FM 2818, approximately 1.0 mile east of Wellborn Road.
RM 48	182	291.07	Square cut in the top of a culvert headwall at the northeast corner of the intersection of FM 2818 and Southwood Drive.
RM 49	182	279.02	Square cut in the top of the curb at the southeast corner of the intersection of Brothers Boulevard and Longwire Drive.
RM 50	205	235.82	A concrete monument located approximately 0.9 mile north along Bird Pond Road from the intersection of Rock Prairie Road. Marker is located approximately 45 feet northwest of the centerline of the road.
RM 51	205	285.78	Railroad spike set in a power pole located on the south side of State Route 6 at Lick Creek.
RM 52	205	296.15	From the intersection of State Route 6 and Rock Prairie Road, proceed east approximately 0.9 mile to the intersection of Rock Prairie Road and Bird Pond Road; railroad spike is in power pole located approximately 34.0 feet east of Bird Pond Road.
RM 53	205	280.04	From State Route 6 and Greens Prairie Road, go approximately 2.5 miles on Greens Prairie Road to the intersection of Rock Prairie Road, thence west approximately 0.6 mile to monument on left side of road.

Flood Insurance Study - Reference Mark List
(College Station area)

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

<u>Reference Mark</u>	<u>FIRM Panel</u>	<u>Elevation (Feet NGVD)</u>	<u>Description of Location</u>
RM 54	205	244.37	Chiseled square on the south east abutment wall of Greens Prairie Road bridge over Lick Creek.
RM 55	205	250.71	From State Route 6 and FM 159, go north on Rock Prairie Road approximately 6.6 miles to monument on south side of road.
RM 56	205	209.16	Railroad spike in a 24 inch twin post oak on the south side of Rock Prairie road, approximately 4.8 miles west from the intersection of State Route 6 and Peach Creek Road.
RM 57	205	249.17	Chiseled square on the southeast side of State Route 6 bridge abutment over Alum Creek.
RM 58	210	196.70	Railroad spike in a power pole on the right side of Peach Creek Road, approximately 3.1 miles north of State Route 6.
RM 59	210	193.92	From the intersection of State Route 6 and Peach Creek Road, go east approximately 3.6 miles to a T intersection; take right fork for approximately 0.2 mile to a Y intersection; take left fork for approximately 1.45 miles to monument on the left.
RM 60	220	262.90	From the intersection of State Route 6 and State Route 30, proceed southeast on State Route 6 approximately 14.3 miles, thence northeast along a gravel road approximately 0.40 mile to site of monument located 109 feet north of the centerline of the dirt road on top of a small hill.
RM 61	220	178.97	From the intersection of State Route 6 and State Route 30, proceed southeast on State Route 6 approximately 14.3 miles, thence northeast along a gravel road approximately 1.25 miles to Dim Field Road, then approximately 800 feet to monument on right.

Dist	PID...	H V	Vert_Source	Latitude.....	Longitude.....	Stab	C	Designation
....	BM0027	.	u	29/ADJ UNCH	N303646.....	W0962041.....	C...	G 349.638
....	BM0052	.	u	29/ADJ UNCH	N304035.....	W0962219.....	C... X A	314
....	BM0028	.	u	29/ADJ UNCH	N303655.92...	W0962027.60...	C... G A	AND M COLLEGE
....	BM0053	.	u	29/ADJ UNCH	N304149.....	W0962309.....	D... X B	314
....	BM0037	1	u	29/ADJ UNCH	N304003.46308	W0962203.70760	D... X BRYAN	
....	BM0847	.	2	29/COMPUTED	N304020.....	W0962221..... Z BRYAN	BM
....	DG9804	A	h	88/GPS OBS.	N304108.98748	W0962213.91973	BRYAN CORS ARP
....	BM0038	.	u	29/ADJ UNCH	N304004.....	W0962203.....	D... G BRYAN	RM 2
....	BM0039	.	u	29/ADJ UNCH	N304004.....	W0962203.....	D... N BRYAN	RM 3
....	BM0054	.	u	29/ADJ UNCH	N304311.....	W0962530.....	C... N C	314
....	BM1143	0	.	88/GPS OBS.	N303511.67889	W0962126.64032	C... G CLL	AP STA A
....	BM1144	0	.	88/GPS OBS.	N303528.12833	W0962222.53595	C... G CLL	AP STA B
....	BM0033	0	.	88/GPS OBS.	N303520.04551	W0962155.04928	C... G CLL	ARP 2
....	BM0055	.	u	29/ADJ UNCH	N304407.....	W0962648.....	C... N D	314
....	BM0290	.	u	29/ADJ UNCH	N304846.....	W0963126.....	C... X H	314
....	BM0960	2	3	29/LEVELING	N304754.25072	W0961656.29730 N KURTEN	
....	BM0128	.	u	29/ADJ UNCH	N302555.32...	W0960714.94...	C... N N	313
....	BM0131	1	u	29/ADJ UNCH	N302654.84723	W0960957.48252	C... G NELLEVA	
....	BM0130	.	3	29/RESET...	N302658.....	W0961008.....	C... G NELLEVA	AZ MK
....	BM0129	.	u	29/ADJ UNCH	N302644.....	W0960901.....	C... N P	313
....	BM0031	.	u	29/ADJ UNCH	N303530.....	W0962131.....	D... N P	933
....	BM0032	.	3	29/RESET...	N303530.....	W0962131.....	D... G P	933 RESET 1972
....	BM0132	.	u	29/ADJ UNCH	N302753.....	W0961156.....	C... N Q	313
....	BM0040	.	2	29/COMPUTED	N304034.....	W0962324.....	C... X Q	900
....	BM0041	.	3	29/RESET...	N304034.....	W0962324.....	C... N Q	900 RESET 1959
....	BM0133	.	u	29/ADJ UNCH	N302824.40...	W0961337.64...	C... N R	313
....	BM0035	.	u	29/ADJ UNCH	N303916.....	W0962231.....	D... N R	900
....	BM0030	.	u	29/ADJ UNCH	N303611.....	W0962111.....	D... N S	1181

|....|BM0134|. u|29/ADJ UNCH|N302908.....|W0961528.....|C...|N|S 313
 |....|BM0043|. u|29/ADJ UNCH|N304013.....|W0962412.....|C...|N|S 900
 |....|BM0048|0 .|88/GPS OBS.|N303817.38806|W0962831.49059|C...|G|SMETANA
 |....|BM0047|. u|29/ADJ UNCH|N303816.....|W0962804.....|C...|G|SMETANA AZ MK
 |....|BM0049|. u|29/ADJ UNCH|N303818.....|W0962831.....|C...|G|SMETANA RM 1
 |....|BM0050|. u|29/ADJ UNCH|N303818.....|W0962831.....|D...|G|SMETANA RM 2
 |....|BM0984|1 3|29/LEVELING|N302658.06768|W0961424.20391|....|G|STEELE
 |....|BM0023|. u|29/ADJ UNCH|N303009.....|W0961704.....|C...|N|T 313
 |....|BM0042|. u|29/ADJ UNCH|N303946.....|W0962506.....|C...|N|T 900
 |....|BM0024|. u|29/ADJ UNCH|N303138.....|W0961801.....|C...|G|U 313
 |....|BM0044|. u|29/ADJ UNCH|N303911.....|W0962552.....|C...|N|U 900
 |....|BM0025|. u|29/ADJ UNCH|N303321.....|W0961804.....|C...|G|V 313
 |....|BM0045|. u|29/ADJ UNCH|N303914.....|W0962704.....|D...|X|V 900
 |....|BM0026|. u|29/ADJ UNCH|N303442.....|W0961909.....|C...|G|W 313
 |....|BM0046|. 2|29/COMPUTED|N303903.....|W0962802.....|C...|X|W 900
 |....|BM0029|. u|29/ADJ UNCH|N303640.....|W0962039.....|D...|X|X 313
 |....|BM0051|. u|29/ADJ UNCH|N303818.....|W0962831.....|C...|N|X 900
 |....|BM0034|. u|29/ADJ UNCH|N303823.....|W0962216.....|C...|G|Y 313
 |....|BM0036|. u|29/ADJ UNCH|N304002.....|W0962224.....|C...|N|Z 313

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```

PROGRAM = datasheet95, VERSION = 7.89.2
1      National Geodetic Survey, Retrieval Date = AUGUST 3, 2012
BM0023 *****
BM0023 DESIGNATION - T 313
BM0023 PID - BM0023
BM0023 STATE/COUNTY- TX/BRAZOS
BM0023 COUNTRY - US
BM0023 USGS QUAD - WELLBORN (1980)
BM0023
BM0023 *CURRENT SURVEY CONTROL
BM0023
BM0023* NAD 83(1986) POSITION- 30 30 09. (N) 096 17 04. (W) SCALED
BM0023* NAVD 88 ORTHO HEIGHT - 93.16 (+/-2cm) 305.6 (feet) VERTCON
BM0023
BM0023 GEOID HEIGHT - -26.94 (meters) GEOID12
BM0023 VERT ORDER - SECOND CLASS 0 (See Below)
BM0023
BM0023.The horizontal coordinates were scaled from a topographic map and have
BM0023.an estimated accuracy of +/- 6 seconds.
BM0023.
BM0023.The NAVD 88 height was computed by applying the VERTCON shift value to
BM0023.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
BM0023
BM0023.The vertical order pertains to the NGVD 29 superseded value.
BM0023
BM0023; North East Units Estimated Accuracy
BM0023;SPC TX C - 3,099,730. 1,088,560. MT (+/- 180 meters Scaled)
BM0023
BM0023 SUPERSEDED SURVEY CONTROL
BM0023
BM0023 NGVD 29 (??/??/92) 93.136 (m) 305.56 (f) ADJ UNCH 2 0
BM0023
BM0023.Superseded values are not recommended for survey control.
BM0023
BM0023.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
BM0023.See file dsdata.txt to determine how the superseded data were derived.
BM0023
BM0023_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU606776(NAD 83)
BM0023
BM0023_MARKER: DB = BENCH MARK DISK
BM0023_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
BM0023_SP_SET: SET IN TOP OF CONCRETE MONUMENT
BM0023_STAMPING: T 313 1935
BM0023_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
BM0023+STABILITY: SURFACE MOTION
BM0023
BM0023 HISTORY - Date Condition Report By
BM0023 HISTORY - 1935 MONUMENTED CGS
BM0023 HISTORY - 1944 GOOD CGS
BM0023 HISTORY - 1961 MARK NOT FOUND USGS
BM0023
BM0023 STATION DESCRIPTION
BM0023
BM0023'DESCRIBED BY COAST AND GEODETIC SURVEY 1944
BM0023'2.6 MI SE FROM WELLBORN.

```

BM0023'2.6 MILES SOUTHEAST ALONG THE TEXAS AND NEW ORLEANS RAILROAD FROM THE
 BM0023'STATION AT WELLBORN, BRAZOS COUNTY, 21 YARDS NORTHEAST OF MILEPOST 86,
 BM0023'13 YARDS NORTHEAST OF THE CENTERLINE OF THE TRACK, 10 YARDS SOUTHWEST
 BM0023'OF THE CENTERLINE OF MILLICAN ROAD, AND 5 FEET SOUTHWEST OF THE
 BM0023'RIGHT-OF-WAY FENCE. A STANDARD DISK, STAMPED T 313 1935 AND SET IN
 BM0023'THE TOP OF A CONCRETE POST.

BM0023

BM0023 STATION RECOVERY (1961)

BM0023

BM0023'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1961

BM0023'MARK NOT FOUND.

1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012

BM0024 *****

BM0024 DESIGNATION - U 313

BM0024 PID - BM0024

BM0024 STATE/COUNTY- TX/BRAZOS

BM0024 COUNTRY - US

BM0024 USGS QUAD - WELLBORN (1980)

BM0024

BM0024 *CURRENT SURVEY CONTROL

BM0024

BM0024* NAD 83(1986) POSITION- 30 31 38. (N) 096 18 01. (W) SCALED

BM0024* NAVD 88 ORTHO HEIGHT - 93.99 (+/-2cm) 308.4 (feet) VERTCON

BM0024

BM0024 GEOID HEIGHT - -26.88 (meters) GEOID12

BM0024 VERT ORDER - SECOND CLASS 0 (See Below)

BM0024

BM0024.The horizontal coordinates were scaled from a topographic map and have
 BM0024.an estimated accuracy of +/- 6 seconds.

BM0024.

BM0024.The NAVD 88 height was computed by applying the VERTCON shift value to
 BM0024.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)

BM0024

BM0024.The vertical order pertains to the NGVD 29 superseded value.

BM0024

BM0024; North East Units Estimated Accuracy

BM0024;SPC TX C - 3,102,410. 1,086,940. MT (+/- 180 meters Scaled)

BM0024

BM0024 SUPERSEDED SURVEY CONTROL

BM0024

BM0024 NGVD 29 (??/??/92) 93.964 (m) 308.28 (f) ADJ UNCH 2 0

BM0024

BM0024.Superseded values are not recommended for survey control.

BM0024

BM0024.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

BM0024.[See file dsdata.txt](#) to determine how the superseded data were derived.

BM0024

BM0024_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU590803(NAD 83)

BM0024

BM0024_MARKER: DB = BENCH MARK DISK

BM0024_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

BM0024_SP_SET: SET IN TOP OF CONCRETE MONUMENT

BM0024_STAMPING: U 313 1935

BM0024_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

BM0024+STABILITY: SURFACE MOTION

BM0024

BM0024 HISTORY - Date Condition Report By

BM0024 HISTORY - 1935 MONUMENTED CGS

BM0024 HISTORY - 1944 GOOD CGS

BM0024 HISTORY - 1950 GOOD CGS

BM0024

BM0024 STATION DESCRIPTION

BM0024

BM0024'DESCRIBED BY COAST AND GEODETIC SURVEY 1944
 BM0024'0.5 MI SE FROM WELLBORN.
 BM0024'0.5 MILE SOUTHEAST ALONG THE TEXAS AND NEW ORLEANS RAILROAD FROM THE
 BM0024'STATION AT WELLBORN, BRAZOS COUNTY, ABOUT 200 YARDS NORTHWEST OF
 BM0024'MILEPOST 88, OPPOSITE A FARMHOUSE, 17 YARDS NORTHEAST OF THE
 BM0024'CENTERLINE OF THE TRACK, AND 10 YARDS WEST OF THE CENTERLINE OF
 BM0024'WILLICAN ROAD. A STANDARD DISK, STAMPED U 313 1935 AND SET IN THE TOP
 BM0024'OF A CONCRETE POST.

BM0024

STATION RECOVERY (1950)

BM0024

BM0024'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1950

BM0024'RECOVERED IN GOOD CONDITION.

1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012

BM0025 *****

BM0025 DESIGNATION - V 313

BM0025 PID - BM0025

BM0025 STATE/COUNTY- TX/BRAZOS

BM0025 COUNTRY - US

BM0025 USGS QUAD - WELLBORN (1980)

BM0025

BM0025 *CURRENT SURVEY CONTROL

BM0025

BM0025* NAD 83(1986) POSITION- 30 33 21. (N) 096 18 04. (W) SCALED

BM0025* NAVD 88 ORTHO HEIGHT - 102.34 (+/-2cm) 335.8 (feet) VERTCON

BM0025

BM0025 GEOID HEIGHT - -26.83 (meters) GEOID12

BM0025 VERT ORDER - SECOND CLASS 0 (See Below)

BM0025

BM0025.The horizontal coordinates were scaled from a topographic map and have
 BM0025.an estimated accuracy of +/- 6 seconds.

BM0025.

BM0025.The NAVD 88 height was computed by applying the VERTCON shift value to
 BM0025.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)

BM0025

BM0025.The vertical order pertains to the NGVD 29 superseded value.

BM0025

BM0025; North East Units Estimated Accuracy

BM0025;SPC TX C - 3,105,580. 1,086,750. MT (+/- 180 meters Scaled)

BM0025

BM0025 SUPERSEDED SURVEY CONTROL

BM0025

BM0025 NGVD 29 (??/??/92) 102.314 (m) 335.68 (f) ADJ UNCH 2 0

BM0025

BM0025.Superseded values are not recommended for survey control.

BM0025

BM0025.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

BM0025.[See file dsdata.txt](#) to determine how the superseded data were derived.

BM0025

BM0025_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU588834(NAD 83)

BM0025

BM0025_MARKER: DB = BENCH MARK DISK

BM0025_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

BM0025_SP_SET: SET IN TOP OF CONCRETE MONUMENT

BM0025_STAMPING: V 313 1935

BM0025_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

BM0025+STABILITY: SURFACE MOTION

BM0025

BM0025 HISTORY - Date Condition Report By

BM0025 HISTORY - 1935 MONUMENTED CGS

BM0025 HISTORY - 1939 GOOD CGS

BM0025 HISTORY - 1944 GOOD CGS

BM0025

BM0025 STATION DESCRIPTION
 BM0025
 BM0025'DESCRIBED BY COAST AND GEODETIC SURVEY 1939
 BM0025'1.5 MI NW FROM WELLBORN.
 BM0025'1.5 MILES NORTHWEST ALONG THE TEXAS AND NEW ORLEANS RAILROAD FROM THE
 BM0025'STATION AT WELLBORN, BRAZOS COUNTY, ABOUT 125 YARDS NORTHWEST OF
 BM0025'MILEPOST 90, NEAR THE TOP OF A SMALL HILL, 15 YARDS SOUTHWEST OF THE
 BM0025'CENTERLINE OF THE TRACK, AND 9 YARDS NORTHEAST OF THE CENTERLINE OF
 BM0025'MILLICAN ROAD. A STANDARD DISK, STAMPED V 313 1935 AND SET IN THE TOP
 BM0025'OF A CONCRETE POST.
 BM0025
 BM0025 STATION RECOVERY (1944)
 BM0025
 BM0025'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1944
 BM0025'RECOVERED IN GOOD CONDITION.
 1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012
 BM0026 *****
 BM0026 DESIGNATION - W 313
 BM0026 PID - BM0026
 BM0026 STATE/COUNTY- TX/BRAZOS
 BM0026 COUNTRY - US
 BM0026 USGS QUAD - WELLBORN (1980)
 BM0026
 BM0026 *CURRENT SURVEY CONTROL
 BM0026
 BM0026* NAD 83(1986) POSITION- 30 34 42. (N) 096 19 09. (W) SCALED
 BM0026* NAVD 88 ORTHO HEIGHT - 89.01 (+/-2cm) 292.0 (feet) VERTCON
 BM0026
 BM0026 GEOID HEIGHT - -26.77 (meters) GEOID12
 BM0026 VERT ORDER - SECOND CLASS 0 (See Below)
 BM0026
 BM0026.The horizontal coordinates were scaled from a topographic map and have
 BM0026.an estimated accuracy of +/- 6 seconds.
 BM0026.
 BM0026.The NAVD 88 height was computed by applying the VERTCON shift value to
 BM0026.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 BM0026
 BM0026.The vertical order pertains to the NGVD 29 superseded value.
 BM0026
 BM0026;
 BM0026;SPC TX C - 3,108,010. 1,084,930. MT (+/- 180 meters Scaled)
 BM0026
 BM0026 SUPERSEDED SURVEY CONTROL
 BM0026
 BM0026 NGVD 29 (??/??/92) 88.983 (m) 291.94 (f) ADJ UNCH 2 0
 BM0026
 BM0026.Superseded values are not recommended for survey control.
 BM0026
 BM0026.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BM0026.[See file dsdata.txt](#) to determine how the superseded data were derived.
 BM0026
 BM0026_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU570859(NAD 83)
 BM0026
 BM0026_MARKER: DB = BENCH MARK DISK
 BM0026_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BM0026_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 BM0026_STAMPING: W 313 1935
 BM0026_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BM0026+STABILITY: SURFACE MOTION
 BM0026_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BM0026+SATELLITE: SATELLITE OBSERVATIONS - February 01, 2004
 BM0026
 BM0026 HISTORY - Date Condition Report By

BM0026 HISTORY - 1935 MONUMENTED CGS
 BM0026 HISTORY - 1939 GOOD CGS
 BM0026 HISTORY - 1944 GOOD CGS
 BM0026 HISTORY - 20040201 GOOD GEOCAC

BM0026
 BM0026 STATION DESCRIPTION
 BM0026

BM0026'DESCRIBED BY COAST AND GEODETIC SURVEY 1939
 BM0026'2.6 MI SE FROM COLLEGE STATION.
 BM0026'2.6 MILES SOUTHEAST ALONG THE TEXAS AND NEW ORLEANS RAILROAD FROM THE
 BM0026'STATION AT COLLEGE STATION, BRAZOS COUNTY, ABOUT 110 YARDS NORTHWEST
 BM0026'OF MILEPOST 92, 34 YARDS WEST OF THE CENTERLINE OF THE TRACK, 11 YARDS
 BM0026'WEST OF THE CENTERLINE OF MILLICAN ROAD, AND 6 YARDS SOUTH OF THE
 BM0026'CENTER OF THE JUNCTION OF A ROAD LEADING WEST. A STANDARD DISK,
 BM0026'STAMPED W 313 1935 AND SET IN THE TOP OF A CONCRETE POST.

BM0026
 BM0026 STATION RECOVERY (1944)
 BM0026

BM0026'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1944
 BM0026'RECOVERED IN GOOD CONDITION.

BM0026
 BM0026 STATION RECOVERY (2004)
 BM0026

BM0026'RECOVERY NOTE BY GEOCACHING 2004 (DMW)
 BM0026'MILLICAN ROAD IS NOW NAMED OLD WELLBORN ROAD. THE ROAD LEADING WEST IS
 BM0026'NOW NAMED CAIN ROAD.

1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012

BM0134 *****

BM0134 DESIGNATION - S 313
 BM0134 PID - **BM0134**
 BM0134 STATE/COUNTY- TX/BRAZOS
 BM0134 COUNTRY - US
 BM0134 USGS QUAD - CLAY (1980)

BM0134
 BM0134 *CURRENT SURVEY CONTROL
 BM0134

BM0134* NAD 83(1986) POSITION- 30 29 08. (N) 096 15 28. (W) SCALED
 BM0134* [NAVD 88](#) ORTHO HEIGHT - 87.99 (+/-2cm) 288.7 (feet) VERTCON

BM0134
 BM0134 GEOID HEIGHT - -26.99 (meters) GEOID12
 BM0134 VERT ORDER - SECOND CLASS 0 (See Below)
 BM0134

BM0134.The horizontal coordinates were scaled from a topographic map and have
 BM0134.an estimated accuracy of +/- 6 seconds.

BM0134.
 BM0134.The NAVD 88 height was computed by applying the VERTCON shift value to
 BM0134.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)

BM0134
 BM0134.The vertical order pertains to the NGVD 29 superseded value.

BM0134
 BM0134;
 BM0134;SPC TX C - 3,097,950. 1,091,190. MT (+/- 180 meters Scaled)

BM0134
 BM0134 SUPERSEDED SURVEY CONTROL
 BM0134

BM0134 NGVD 29 (??/??/92) 87.962 (m) 288.59 (f) ADJ UNCH 2 0
 BM0134

BM0134.Superseded values are not recommended for survey control.
 BM0134

BM0134.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BM0134.[See file dsdata.txt](#) to determine how the superseded data were derived.

BM0134
 BM0134_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU632757(NAD 83)

BM0134

BM0134_MARKER: DB = BENCH MARK DISK

BM0134_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

BM0134_SP_SET: SET IN TOP OF CONCRETE MONUMENT

BM0134_STAMPING: S 313 1935

BM0134_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

BM0134+STABILITY: SURFACE MOTION

BM0134

BM0134	HISTORY	- Date	Condition	Report By
BM0134	HISTORY	- 1935	MONUMENTED	CGS
BM0134	HISTORY	- 1939	GOOD	CGS
BM0134	HISTORY	- 1944	GOOD	CGS
BM0134	HISTORY	- 19910714	MARK NOT FOUND	USPSQD

BM0134

BM0134

STATION DESCRIPTION

BM0134

BM0134'DESCRIBED BY COAST AND GEODETIC SURVEY 1939

BM0134'4.6 MI SE FROM WELLBORN.

BM0134'4.6 MILES SOUTHEAST ALONG THE TEXAS AND NEW ORLEANS RAILROAD FROM THE
 BM0134'STATION AT WELLBORN, BRAZOS COUNTY, 19 YARDS NORTHEAST OF MILEPOST 84,
 BM0134'15 YARDS NORTHWEST OF THE CENTER OF A ROAD CROSSING, 14 YARDS
 BM0134'SOUTHWEST OF THE CENTERLINE OF MILLICAN ROAD, AND 11 YARDS NORTHEAST
 BM0134'OF THE CENTERLINE OF THE TRACK. A STANDARD DISK, STAMPED S 313 1935
 BM0134'AND SET IN THE TOP OF A CONCRETE POST.

BM0134

BM0134

STATION RECOVERY (1944)

BM0134

BM0134'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1944

BM0134'RECOVERED IN GOOD CONDITION.

BM0134

BM0134

STATION RECOVERY (1991)

BM0134

BM0134'RECOVERY NOTE BY US POWER SQUADRON 1991 (RAL)

BM0134'MARK NOT FOUND.

*** retrieval complete.

Elapsed Time = 00:00:02

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

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PROGRAM = datasheet95, VERSION = 7.89.2
1      National Geodetic Survey, Retrieval Date = AUGUST 3, 2012
BM0027 *****
BM0027 DESIGNATION - 349.638
BM0027 PID - BM0027
BM0027 STATE/COUNTY- TX/BRAZOS
BM0027 COUNTRY - US
BM0027 USGS QUAD - WELLBORN (1980)
BM0027
BM0027 *CURRENT SURVEY CONTROL
BM0027
BM0027* NAD 83(1986) POSITION- 30 36 46. (N) 096 20 41. (W) SCALED
BM0027* NAVD 88 ORTHO HEIGHT - 107.28 (+/-2cm) 352.0 (feet) VERTCON
BM0027
BM0027 GEOID HEIGHT - -26.69 (meters) GEOID12
BM0027 VERT ORDER - SECOND CLASS 0 (See Below)
BM0027
BM0027.The horizontal coordinates were scaled from a topographic map and have
BM0027.an estimated accuracy of +/- 6 seconds.
BM0027.
BM0027.The NAVD 88 height was computed by applying the VERTCON shift value to
BM0027.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
BM0027
BM0027.The vertical order pertains to the NGVD 29 superseded value.
BM0027
BM0027; North East Units Estimated Accuracy
BM0027;SPC TX C - 3,111,740. 1,082,340. MT (+/- 180 meters Scaled)
BM0027
BM0027 SUPERSEDED SURVEY CONTROL
BM0027
BM0027 NGVD 29 (??/??/92) 107.248 (m) 351.86 (f) ADJ UNCH 2 0
BM0027
BM0027.Superseded values are not recommended for survey control.
BM0027
BM0027.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
BM0027.See file dsdata.txt to determine how the superseded data were derived.
BM0027
BM0027_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU545896(NAD 83)
BM0027
BM0027_MARKER: DD = SURVEY DISK
BM0027_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
BM0027_SP_SET: SET IN TOP OF CONCRETE MONUMENT
BM0027_STAMPING: 349.638
BM0027_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
BM0027+STABILITY: SURFACE MOTION
BM0027
BM0027 HISTORY - Date Condition Report By
BM0027 HISTORY - UNK MONUMENTED LOCENG
BM0027 HISTORY - 1935 GOOD CGS
BM0027 HISTORY - 1963 GOOD CGS
BM0027
BM0027 STATION DESCRIPTION
BM0027
BM0027'DESCRIBED BY COAST AND GEODETIC SURVEY 1935
BM0027'IN COLLEGE STATION.

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BM0027'AT COLLEGE STATION, BRAZOS COUNTY, ABOUT 200 YARDS EAST OF THE
 BM0027'CENTERLINE OF THE TEXAS AND NEW ORLEANS RAILROAD TRACK, AT THE WEST
 BM0027'ENTRANCE TO THE CAMPUS OF THE TEXAS A. AND M. COLLEGE, NEAR THE WEST
 BM0027'END OF THE PARKWAY BETWEEN DRIVES, AND 3 FEET WEST OF A WORLD WAR
 BM0027'MONUMENT. A TEXAS A. AND M. COLLEGE STANDARD DISK, STAMPED 349.638
 BM0027'AND SET IN THE TOP OF A CONCRETE POST.

BM0027

BM0027 STATION RECOVERY (1963)

BM0027

BM0027'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1963

BM0027'RECOVERED IN GOOD CONDITION.

1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012

BM0028 *****

BM0028 DESIGNATION - A AND M COLLEGE

BM0028 PID - **BM0028**

BM0028 STATE/COUNTY- TX/BRAZOS

BM0028 COUNTRY - US

BM0028 USGS QUAD - WELLBORN (1980)

BM0028

BM0028 *CURRENT SURVEY CONTROL

BM0028

BM0028* NAD 83(1986) POSITION- 30 36 55.92 (N) 096 20 27.60 (W) HD_HELD1

BM0028* NAVD 88 ORTHO HEIGHT - 110.04 (+/-2cm) 361.0 (feet) VERTCON

BM0028

BM0028 GEOID HEIGHT - -26.69 (meters) GEOID12

BM0028 VERT ORDER - SECOND CLASS 0 (See Below)

BM0028

BM0028.The horizontal coordinates were established by differentially corrected
 BM0028.hand held GPS obs and have an estimated accuracy of +/- 3 meters.

BM0028.

BM0028.The NAVD 88 height was computed by applying the VERTCON shift value to
 BM0028.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)

BM0028

BM0028.The vertical order pertains to the NGVD 29 superseded value.

BM0028

BM0028; North East Units Estimated Accuracy

BM0028;SPC TX C - 3,112,054.8 1,082,687.2 MT (+/- 3 meters HH1 GPS)

BM0028

BM0028 SUPERSEDED SURVEY CONTROL

BM0028

BM0028 NGVD 29 (??/??/92) 110.012 (m) 360.93 (f) ADJ UNCH 2 0

BM0028

BM0028.Superseded values are not recommended for survey control.

BM0028

BM0028.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

BM0028.[See file dsdata.txt](#) to determine how the superseded data were derived.

BM0028

BM0028_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU5490190008(NAD 83)

BM0028

BM0028_MARKER: DB = BENCH MARK DISK

BM0028_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

BM0028_SP_SET: SET IN TOP OF CONCRETE MONUMENT

BM0028_STAMPING: A AND M COLLEGE 1935

BM0028_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

BM0028+STABILITY: SURFACE MOTION

BM0028_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR

BM0028+SATELLITE: SATELLITE OBSERVATIONS - April 11, 2010

BM0028

BM0028 HISTORY - Date Condition Report By

BM0028 HISTORY - 1935 MONUMENTED CGS

BM0028 HISTORY - 1963 GOOD CGS

BM0028 HISTORY - 1979 GOOD NGS

BM0028 HISTORY - 19940820 GOOD USPSQD

BM0028 HISTORY - 20021006 GOOD INDIV
 BM0028 HISTORY - 20100411 GOOD GEOCAC

BM0028

BM0028 STATION DESCRIPTION

BM0028

BM0028'DESCRIBED BY COAST AND GEODETIC SURVEY 1963

BM0028'IN COLLEGE STATION.

BM0028'AT COLLEGE STATION, BRAZOS COUNTY, ON THE CAMPUS OF THE TEXAS A. AND

BM0028'M. COLLEGE, 60 YARDS NORTH OF THE CIVIL ENGINEERING BUILDING, 22 YARDS

BM0028'WEST OF THE ACADEMIC BUILDING, 16 YARDS SOUTHEAST OF THE LAWRENCE

BM0028'SULLIVAN ROSS STATUE, AND AT THE WEST EDGE OF A NORTH-AND-SOUTH

BM0028'SIDEWALK. A STANDARD DISK, STAMPED A. AND M. COLLEGE 1935 AND SET IN

BM0028'THE TOP OF A CONCRETE POST. NOTE-- WITH THESE EXCEPTIONS, THE

BM0028'SIDEWALKS HAVE BEEN REALIGNED AND THEY COVER A LARGER AREA AROUND THE

BM0028'MARK, AND THE MARK NOW SETS IN THE SIDEWALK AREA AND IS COVERED BY A

BM0028'20 INCH STEEL COVER.

BM0028

BM0028 STATION RECOVERY (1979)

BM0028

BM0028'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1979

BM0028'RECOVERED IN GOOD CONDITION.

BM0028

BM0028 STATION RECOVERY (1994)

BM0028

BM0028'RECOVERY NOTE BY US POWER SQUADRON 1994

BM0028'RECOVERED IN GOOD CONDITION.

BM0028

BM0028 STATION RECOVERY (2002)

BM0028

BM0028'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2002 (FG)

BM0028'RECOVERED IN GOOD CONDITION.

BM0028

BM0028 STATION RECOVERY (2010)

BM0028

BM0028'RECOVERY NOTE BY GEOCACHING 2010 (LPC)

BM0028'RECOVERED IN GOOD CONDITION.

1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012

BM0030 *****

BM0030 DESIGNATION - S 1181

BM0030 PID - BM0030

BM0030 STATE/COUNTY- TX/BRAZOS

BM0030 COUNTRY - US

BM0030 USGS QUAD - WELLBORN (1980)

BM0030

BM0030 *CURRENT SURVEY CONTROL

BM0030

BM0030* NAD 83(1986) POSITION- 30 36 11. (N) 096 21 11. (W) SCALED

BM0030* NAVD 88 ORTHO HEIGHT - 97.10 (+/-2cm) 318.6 (feet) VERTCON

BM0030

BM0030 GEOID HEIGHT - -26.70 (meters) GEOID12

BM0030 VERT ORDER - SECOND CLASS 0 (See Below)

BM0030

BM0030.The horizontal coordinates were scaled from a topographic map and have
 BM0030.an estimated accuracy of +/- 6 seconds.

BM0030.

BM0030.The NAVD 88 height was computed by applying the VERTCON shift value to
 BM0030.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)

BM0030

BM0030.The vertical order pertains to the NGVD 29 superseded value.

BM0030

BM0030; North East Units Estimated Accuracy

BM0030;SPC TX C - 3,110,630. 1,081,580. MT (+/- 180 meters Scaled)

BM0030

BM0030 SUPERSEDED SURVEY CONTROL
 BM0030
 BM0030 NGVD 29 (??/??/92) 97.067 (m) 318.46 (f) ADJ UNCH 2 0
 BM0030
 BM0030.Superseded values are not recommended for survey control.
 BM0030
 BM0030.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BM0030.[See file dsdata.txt](#) to determine how the superseded data were derived.
 BM0030
 BM0030_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU537885(NAD 83)
 BM0030
 BM0030_MARKER: DB = BENCH MARK DISK
 BM0030_SETTING: 30 = SET IN A LIGHT STRUCTURE
 BM0030_SP_SET: SEWER DUCT
 BM0030_STAMPING: S 1181 1963
 BM0030_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
 BM0030
 BM0030 HISTORY - Date Condition Report By
 BM0030 HISTORY - 1963 MONUMENTED CGS
 BM0030 HISTORY - 1975 GOOD NGS
 BM0030 HISTORY - 1979 GOOD NGS
 BM0030 HISTORY - 19940820 MARK NOT FOUND USPSQD
 BM0030
 BM0030 STATION DESCRIPTION
 BM0030
 BM0030'DESCRIBED BY COAST AND GEODETIC SURVEY 1963
 BM0030'1.0 MI W FROM COLLEGE STATION.
 BM0030'FROM THE POST OFFICE IN COLLEGE STATION, GO SOUTHWEST ALONG FARM ROAD
 BM0030'60 FOR 1 MILE TO TEXAS A AND M COLLEGE POULTRY CENTER AT T ROAD
 BM0030'INTERSECTION. TURN LEFT AND GO .35 MILES TO T ROAD INTERSECTION. TURN
 BM0030'RIGHT AND GO .05 MILE. 274 FEET SOUTHEAST OF THE CENTERLINE OF THE
 BM0030'ROAD. A STANDARD DISK STAMPED S 1181 1963 AND SET IN THE TOP OF AND
 BM0030'NE CORNER OF A CONCRETE SEWER DUCT, PROJECTING 30 INCHES ABOVE THE
 BM0030'GROUND.
 BM0030
 BM0030 STATION RECOVERY (1975)
 BM0030
 BM0030'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1975
 BM0030'RECOVERED IN GOOD CONDITION.
 BM0030
 BM0030 STATION RECOVERY (1979)
 BM0030
 BM0030'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1979
 BM0030'RECOVERED IN GOOD CONDITION.
 BM0030
 BM0030 STATION RECOVERY (1994)
 BM0030
 BM0030'RECOVERY NOTE BY US POWER SQUADRON 1994
 BM0030'MARK NOT FOUND.
 1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012
 BM0031 *****
 BM0031 DESIGNATION - P 933
 BM0031 PID - **BM0031**
 BM0031 STATE/COUNTY- TX/BRAZOS
 BM0031 COUNTRY - US
 BM0031 USGS QUAD - WELLBORN (1980)
 BM0031
 BM0031 *CURRENT SURVEY CONTROL
 BM0031
 BM0031* NAD 83(1986) POSITION- 30 35 30. (N) 096 21 31. (W) SCALED
 BM0031* [NAVD 88](#) ORTHO HEIGHT - 95.02 (+/-2cm) 311.7 (feet) VERTCON
 BM0031
 BM0031 GEOID HEIGHT - -26.71 (meters) GEOID12

BM0031 VERT ORDER - SECOND CLASS 0 (See Below)
 BM0031
 BM0031.This mark is at Easterwood Fld (CLL) Airport (CLL)
 BM0031
 BM0031.The horizontal coordinates were scaled from a topographic map and have
 BM0031.an estimated accuracy of +/- 6 seconds.
 BM0031.
 BM0031.The NAVD 88 height was computed by applying the VERTCON shift value to
 BM0031.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 BM0031
 BM0031.The vertical order pertains to the NGVD 29 superseded value.
 BM0031
 BM0031;
 BM0031;SPC TX C - 3,109,350. 1,081,090. MT (+/- 180 meters Scaled)
 BM0031
 BM0031 SUPERSEDED SURVEY CONTROL
 BM0031
 BM0031 NGVD 29 (??/??/92) 94.983 (m) 311.62 (f) ADJ UNCH 2 0
 BM0031
 BM0031.Superseded values are not recommended for survey control.
 BM0031
 BM0031.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BM0031.[See file dsdata.txt](#) to determine how the superseded data were derived.
 BM0031
 BM0031_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU532873(NAD 83)
 BM0031
 BM0031_MARKER: DB = BENCH MARK DISK
 BM0031_SETTING: 30 = SET IN A LIGHT STRUCTURE
 BM0031_SP_SET: CONCRETE RIM
 BM0031_STAMPING: P 933 1953
 BM0031_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
 BM0031
 BM0031 HISTORY - Date Condition Report By
 BM0031 HISTORY - 1953 MONUMENTED CGS
 BM0031 HISTORY - 1963 GOOD CGS
 BM0031 HISTORY - 19940820 MARK NOT FOUND USPSQD
 BM0031
 BM0031 STATION DESCRIPTION
 BM0031
 BM0031'DESCRIBED BY COAST AND GEODETIC SURVEY 1963
 BM0031'2.0 MI SW FROM COLLEGE STATION.
 BM0031'1.4 MILES SOUTHWEST ON FARM ROAD 60, FROM THE CROSSING OF THE SOUTHERN
 BM0031'PACIFIC RAILROAD AND FARM ROAD 60 AT COLLEGE STATION, TEXAS. TURN LEFT
 BM0031'SE FOR 0.8 MILE TO MAIN HANGAR AT EASTERWOOD FIELD. BENCH MARK
 BM0031'LOCATED IN CENTER OF S EDGE OF CONCRETE RIM OF SQUARE DRAIN. 124 FEET
 BM0031'S OF SW LEG OF THE CONTROL TOWER AND 60 FEET NW OF THE SW CORNER OF
 BM0031'THE HANGAR. A STANDARD DISK, STAMPED P 933 1953.
 BM0031
 BM0031 STATION RECOVERY (1994)
 BM0031
 BM0031'RECOVERY NOTE BY US POWER SQUADRON 1994
 BM0031'MARK NOT FOUND.
 1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012
 BM0032 *****
 BM0032 DESIGNATION - P 933 RESET 1972
 BM0032 PID - **BM0032**
 BM0032 STATE/COUNTY- TX/BRAZOS
 BM0032 COUNTRY - US
 BM0032 USGS QUAD - WELLBORN (1980)
 BM0032
 BM0032 *CURRENT SURVEY CONTROL
 BM0032
 BM0032* NAD 83(1986) POSITION- 30 35 30. (N) 096 21 31. (W) SCALED

BM0032* [NAVD 88](#) ORTHO HEIGHT - 95.48 (+/-2cm) 313.3 (feet) VERTCON
 BM0032

BM0032 GEOID HEIGHT - -26.71 (meters) GEOID12
 BM0032 VERT ORDER - THIRD (See Below)
 BM0032

BM0032.This mark is at Easterwood Fld (CLL) Airport (CLL)
 BM0032

BM0032.The horizontal coordinates were scaled from a topographic map and have
 BM0032.an estimated accuracy of +/- 6 seconds.
 BM0032.

BM0032.The NAVD 88 height was computed by applying the VERTCON shift value to
 BM0032.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 BM0032

BM0032.The vertical order pertains to the NGVD 29 superseded value.
 BM0032

BM0032;	North	East	Units	Estimated Accuracy
BM0032;SPC TX C	- 3,109,350.	1,081,090.	MT	(+/- 180 meters Scaled)

BM0032
 BM0032 SUPERSEDED SURVEY CONTROL
 BM0032

BM0032	NGVD 29 (01/29/03)	95.45 (m)	313.2 (f)	RESET	3
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BM0032
 BM0032.Superseded values are not recommended for survey control.
 BM0032

BM0032.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BM0032.[See file dsdata.txt](#) to determine how the superseded data were derived.
 BM0032

BM0032_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU532873(NAD 83)
 BM0032

BM0032_MARKER: DB = BENCH MARK DISK
 BM0032_SETTING: 30 = SET IN A LIGHT STRUCTURE
 BM0032_SP_SET: CONCRETE RM
 BM0032_STAMPING: P 933 RESET 1972
 BM0032_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
 BM0032_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BM0032+SATELLITE: SATELLITE OBSERVATIONS - October 06, 2002
 BM0032

BM0032	HISTORY	- Date	Condition	Report By
BM0032	HISTORY	- 1972	MONUMENTED	NGS
BM0032	HISTORY	- 1975	GOOD	NGS
BM0032	HISTORY	- 1979	GOOD	NGS
BM0032	HISTORY	- 20021006	GOOD	INDIV

BM0032
 BM0032 STATION DESCRIPTION
 BM0032

BM0032'DESCRIBED BY NATIONAL GEODETIC SURVEY 1975
 BM0032'2.0 MI SW FROM COLLEGE STATION.
 BM0032'AT EASTERWOOD FIELD AIRPORT, THE MARK IS LOCATED IN THE CENTER OF S
 BM0032'EDGE OF CONCRETE RIM OF A SQUARE DRAIN IN THE APRON 60 FEET NW OF THE
 BM0032'SW CORNER OF A HANGER. 124 FEET S OF THE SW LEG OF THE CONTROL TOWER.
 BM0032'NOTE-- A NEW CONTROL IS TO BE BUILT AND THE MARK WILL BE ABOUT 400
 BM0032'FEET NW OF THE NEW CONTROL TOWER.
 BM0032

BM0032 STATION RECOVERY (1979)
 BM0032

BM0032'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1979
 BM0032'FROM THE CROSSING OF FARM ROAD 60 AND THE SOUTHERN PACIFIC RAILROAD
 BM0032'AT COLLEGE STATION, GO SOUTHWEST ON FARM ROAD 60 1.4 MILES TO FARM
 BM0032'ROAD 2818. TURN LEFT AND GO ABOUT 1 MILE TO FARM ROAD 2347. TURN
 BM0032'RIGHT AND GO 0.3 MILE TO THE MAIN HANGAR AT EASTERWOOD FIELD. BENCH
 BM0032'MARK LOCATED IN THE CENTER OF S EDGE OF CONCRETE RIM OF SQUARE DRAIN.
 BM0032'60 FEET NW OF SW CORNER OF MAIN HANGAR. A STANDARD DISK STAMPED P 933
 BM0032'RESET 1972. THE PRESENTLY CARRIED ELEVATION OF 313.143 FT. IS WRONG

BM0032'BY 1 FT. AND SHOULD BE ABOUT 312.143 FT.

BM0032

BM0032 STATION RECOVERY (2002)

BM0032

BM0032'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2002 (FG)

BM0032'RECOVERED IN GOOD CONDITION.

1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012

BM0033 *****

BM0033 PACS - This is a Primary Airport Control Station.

BM0033 DESIGNATION - CLL ARP 2

BM0033 PID - **BM0033**

BM0033 STATE/COUNTY- TX/BRAZOS

BM0033 COUNTRY - US

BM0033 USGS QUAD - WELLBORN (1980)

BM0033

BM0033 *CURRENT SURVEY CONTROL

BM0033

BM0033* NAD 83(2011) POSITION- 30 35 20.04551(N) 096 21 55.04928(W) ADJUSTED

BM0033* NAD 83(2011) ELLIP HT- 68.142 (meters) (06/27/12) ADJUSTED

BM0033* NAD 83(2011) EPOCH - 2010.00

BM0033* [NAVD 88](#) ORTHO HEIGHT - 94.96 (meters) 311.5 (feet) GPS OBS

BM0033

BM0033 NAVD 88 orthometric height was determined with geoid model GEOID93

BM0033 GEOID HEIGHT - -27.08 (meters) GEOID93

BM0033 GEOID HEIGHT - -26.71 (meters) GEOID12

BM0033 NAD 83(2011) X - -609,256.155 (meters) COMP

BM0033 NAD 83(2011) Y - -5,461,505.667 (meters) COMP

BM0033 NAD 83(2011) Z - 3,226,777.358 (meters) COMP

BM0033 LAPLACE CORR - -1.15 (seconds) DEFLECO9

BM0033

BM0033 FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)

BM0033 Type Horiz Ellip Dist(km)

BM0033 -----

BM0033 NETWORK 1.91 2.02

BM0033 -----

BM0033 MEDIAN LOCAL ACCURACY AND DIST (009 points) 1.28 1.90 33.87

BM0033 -----

BM0033 NOTE: Click [here](#) for information on individual local accuracy

BM0033 values and other accuracy information.

BM0033

BM0033

BM0033.This mark is at Easterwood Fld (CLL) Airport (CLL)

BM0033

BM0033.The horizontal coordinates were established by GPS observations

BM0033.and adjusted by the National Geodetic Survey in June 2012.

BM0033

BM0033.NAD 83(2011) refers to NAD 83 coordinates where the reference

BM0033.frame has been affixed to the stable North American tectonic plate. See

BM0033.www.ngs.noaa.gov/web/surveys/NA2011 for more information.

BM0033

BM0033.The horizontal coordinates are valid at the epoch date displayed above

BM0033.which is a decimal equivalence of Year/Month/Day.

BM0033

BM0033.The orthometric height was determined by GPS observations and a

BM0033.high-resolution geoid model.

BM0033

BM0033.GPS derived orthometric heights for airport stations designated as

BM0033.PACS or SACS are published to 2 decimal places. This maintains

BM0033.centimeter relative accuracy between the PACS and SACS. It does

BM0033.not indicate centimeter accuracy relative to other marks which are

BM0033.part of the NAVD 88 network.

BM0033

BM0033.[Photographs](#) are available for this station.

BM0033

BM0033.The X, Y, and Z were computed from the position and the ellipsoidal ht.

BM0033

BM0033.The Laplace correction was computed from DEFLEC09 derived deflections.

BM0033

BM0033.The ellipsoidal height was determined by GPS observations

BM0033.and is referenced to NAD 83.

BM0033

BM0033. The following values were computed from the NAD 83(2011) position.

BM0033

BM0033;	North	East	Units	Scale Factor	Converg.
BM0033;SPC TX C	- 3,109,021.202	1,080,464.976	MT	0.99990749	+2 02 37.6
BM0033;SPC TX C	-10,200,180.39	3,544,825.51	sFT	0.99990749	+2 02 37.6
BM0033;UTM 14	- 3,387,000.587	752,641.029	MT	1.00038746	+1 20 29.2

BM0033

BM0033! - Elev Factor x Scale Factor = Combined Factor

BM0033!SPC TX C - 0.99998930 x 0.99990749 = 0.99989679

BM0033!UTM 14 - 0.99998930 x 1.00038746 = 1.00037675

BM0033

BM0033:	Primary Azimuth Mark	Grid Az
BM0033:SPC TX C	- CLL AP STA A	106 45 12.0
BM0033:UTM 14	- CLL AP STA A	107 27 20.4

BM0033

BM0033	PID	Reference Object	Distance	Geod. Az
BM0033			ddmmss.s	
BM0033	BM1143	CLL AP STA A	APPROX. 0.8 KM	1084749.6
BM0033	BM1144	CLL AP STA B	APPROX. 0.8 KM	2884630.6

BM0033

BM0033

SUPERSEDED SURVEY CONTROL

BM0033

BM0033	NAD 83(2007)-	30 35 20.04556(N)	096 21 55.04996(W)	AD() 0
BM0033	ELLIP H (02/10/07)	68.155 (m)		GP()
BM0033	ELLIP H (10/24/00)	68.178 (m)		GP() 4 2
BM0033	NAD 83(1993)-	30 35 20.04540(N)	096 21 55.04974(W)	AD() B
BM0033	ELLIP H (02/20/96)	68.221 (m)		GP() 1 1
BM0033	NAD 83(1993)-	30 35 20.04568(N)	096 21 55.04562(W)	AD() 2
BM0033	NAD 83(1986)-	30 35 20.06086(N)	096 21 55.02752(W)	AD() 2
BM0033	NGVD 29 (??/??/92)	94.746 (m)	310.85 (f)	ADJ UNCH 2 0

BM0033

BM0033.Superseded values are not recommended for survey control.

BM0033

BM0033.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

BM0033.[See file dsdata.txt](#) to determine how the superseded data were derived.

BM0033

BM0033_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU5264187000(NAD 83)

BM0033

BM0033_MARKER: DT = TOPOGRAPHIC STATION DISK

BM0033_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND

BM0033_SP_SET: CONCRETE POST

BM0033_STAMPING: ARP 2 1963

BM0033_MARK LOGO: CGS

BM0033_MAGNETIC: N = NO MAGNETIC MATERIAL

BM0033_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

BM0033+STABILITY: SURFACE MOTION

BM0033_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

BM0033+SATELLITE: SATELLITE OBSERVATIONS - June 22, 2005

BM0033

BM0033	HISTORY	- Date	Condition	Report By
BM0033	HISTORY	- 1963	MONUMENTED	CGS
BM0033	HISTORY	- 1982	GOOD	USGS
BM0033	HISTORY	- 19910615	GOOD	NGS

BM0033 HISTORY - 19921029 GOOD NOS
 BM0033 HISTORY - 19950227 GOOD NGS
 BM0033 HISTORY - 20030312 GOOD NGS
 BM0033 HISTORY - 20050622 GOOD JCLS

BM0033

BM0033 STATION DESCRIPTION

BM0033

BM0033'DESCRIBED BY COAST AND GEODETIC SURVEY 1963

BM0033'2.0 MI SW FROM COLLEGE STATION.

BM0033'2 MILES SOUTHWEST OF COLLEGE STATION ON THE PROPERTY OF EASTERWOOD

BM0033'AIRPORT AND AT THE GEOMETRIC CENTER OF THE AIRPORT. MIDWAY BETWEEN

BM0033'THE ENDS OF THE EAST-WEST RUNWAY AND SOUTH OF THE RUNWAY. 146.0 FEET

BM0033'N OF A FENCE CORNER. 45.8 FEET SE OF RUNWAY LIGHT NO. 33. 49.9 FEET

BM0033'S OF THE S EDGE OF THE RUNWAY. A STANDARD TOPO DISK, STAMPED ARP 2

BM0033'1963, SET IN THE TOP OF A 10 INCH CONCRETE POST PROJECTING 1 INCH

BM0033'ABOVE THE GROUND.

BM0033

BM0033 STATION RECOVERY (1982)

BM0033

BM0033'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1982

BM0033'NEW DESC: 2 MILES SOUTHWEST OF COLLEGE STATION ON THE PROPERTY OF

BM0033'EASTERWOOD FIELD AIRPORT AT THE GEOMETRIC CENTER OF THE AIRPORT. IT

BM0033'IS AT THE MID POINT OF RUNWAY 10/28 AND SOUTH OF THE RUNWAY, 146 FEET

BM0033'NORTH OF A FENCE CORNER, 87.0 FEET SOUTHEAST OF THE CENTERLINE

BM0033'EXTENDED OF THE TAXIWAY TO THE SOUTHWEST, 49.9 FEET SOUTH OF THE

BM0033'SOUTH EDGE OF THE RUNWAY AND 45.8 FEET SOUTH OF A RUNWAY LIGHT. A

BM0033'STANDARD TOPOGRAPHICAL DISK STAMPED 'ARP 2 1963', SET IN THE TOP OF A

BM0033'10 INCH CONCRETE POST WHICH IS FLUSH WITH THE SURFACE OF THE GROUND.

BM0033

BM0033 STATION RECOVERY (1991)

BM0033

BM0033'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991

BM0033'THE STATION IS LOCATED AT THE CENTER OF EASTERWOOD FIELD SOUTH OF

BM0033'RUNWAY 10/28. IT IS 146 FT (44.5 M) NORTH OF A FENCE CORNER, 87.0 FT

BM0033'(26.5 M) SOUTHEAST OF THE CENTERLINE EXTENDED OF THE TAXIWAY TO THE

BM0033'SOUTHWEST, 49.9 FT (15.2 M) SOUTH OF THE SOUTH EDGE OF THE RUNWAY AND

BM0033'45.8 FT (14.0 M) SOUTH OF A RUNWAY LIGHT. A STANDARD TOPOGRAPHIC DISK

BM0033'STAMPED ARP 2 1963 SET IN THE TOP OF A CONCRETE POST WHICH IS FLUSH

BM0033'WITH THE GROUNDS SURFACE.

BM0033

BM0033 STATION RECOVERY (1992)

BM0033

BM0033'RECOVERY NOTE BY NATIONAL OCEAN SERVICE 1992

BM0033'RECOVERED IN GOOD CONDITION.

BM0033

BM0033 STATION RECOVERY (1995)

BM0033

BM0033'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (AJL)

BM0033'THE STATION IS LOCATED ON THE SOUTHWEST SIDE OF COLLEGE STATION AT

BM0033'EASTERWOOD FIELD, IN GRASS ADJACENT TO A ROW OF TREES, IN THE SOUTH

BM0033'QUADRANT OF THE JUNCTION OF RUNWAY 10-28 AND THE PARALLEL TAXI FOR

BM0033'RUNWAY 4-22, AND AT MIDFIELD. OWNERSHIP--TEXAS A AND M UNIVERSITY,

BM0033'MCKENZIE TERMINAL BUILDING NUMBER 7, COLLEGE STATION, TX 77845.

BM0033'CONTACT JIM ALLEN, OPERATIONS SUPERVISOR, OR RICHARD ARNOLD, ASSOCIATE

BM0033'DIRECTOR AT 409-845-4811 TWO DAYS IN ADVANCE TO ARRANGE FOR AN ESCORT

BM0033'TO THIS STATION. TO REACH FROM THE UNDERPASS AT THE JUNCTION OF STATE

BM0033'HIGHWAY 60 AND FARM ROAD 2818 ON THE SOUTHWEST SIDE OF COLLEGE

BM0033'STATION, GO SOUTHEAST ON FARM ROAD 2818 FOR 1.45 KM (0.90 MI) TO A

BM0033'PAVED CROSSROAD (FARM ROAD 2347) . TURN RIGHT, WEST-SOUTHWEST, ON

BM0033'FARM ROAD 2347 FOR 0.41 KM (0.25 MI) TO A PAVED ROAD LEFT JUST BEFORE

BM0033'A GATE AT GENERAL AVIATION. TURN LEFT, SOUTH, ON THE PAVED ROAD FOR

BM0033'0.10 KM (0.05 MI) TO THE AIRPORT TERMINAL. AN ESCORT WILL TAKE YOU

BM0033'FROM HERE. ENTER GATE AT THE SOUTH SIDE OF THE GENERAL AVIATION

BM0033'TERMINAL AND PROCEED SOUTHWEST TO RAMP TAXIWAY (A) . TURN RIGHT,
 BM0033'NORTHWEST, FOR 0.08 KM (0.05 MI) TO EAST-WEST TAXIWAY (B) . TURN LEFT
 BM0033'ON TAXIWAY FOR 0.5 KM (0.30 MI) CROSSING RUNWAY 16-34, TO
 BM0033'SOUTHWEST-NORTHEAST TAXIWAY (E) . TURN LEFT, SOUTHWEST, AND PROCEED
 BM0033'0.3 KM (0.20 MI) ALONG TAXIWAY, CROSSING RUNWAY 10-28, TO THE STATION
 BM0033'ON THE LEFT. THE STATION IS SET IN THE TOP OF A 25-CM SQUARE CONCRETE
 BM0033'POST SET FLUSH WITH THE GROUND. IT IS 74.6 M (244.8 FT) NORTH OF A
 BM0033'FENCE CORNER, 64.3 M (211.0 FT) NORTH-NORTHEAST OF THE FENCE, 38.0 M
 BM0033'(124.7 FT) SOUTH-SOUTHWEST OF THE CENTER OF RUNWAY 10-28, 26.5 M (86.9
 BM0033'FT) SOUTHEAST OF THE EXTENDED CENTER OF THE PARALLEL TAXI FOR RUNWAY
 BM0033'4-22, 17.3 M (56.8 FT) SOUTHWEST OF A RUNWAY LIGHT, 15.2 M (49.9 FT)
 BM0033'SOUTH-SOUTHWEST OF THE SOUTH EDGE OF THE RUNWAY, AND 0.3 M (1.0 FT)
 BM0033'NORTH OF A WITNESS POST. DESCRIBED BY D.G AUG

BM0033

BM0033 STATION RECOVERY (2003)

BM0033

BM0033'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2003

BM0033'RECOVERED IN GOOD CONDITION.

BM0033

BM0033 STATION RECOVERY (2005)

BM0033

BM0033'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2005 (FJO)

BM0033'RECOVERED IN GOOD CONDITION.

1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012

BM1143 *****

BM1143 SACS - This is a Secondary Airport Control Station.

BM1143 DESIGNATION - CLL AP STA A

BM1143 PID - **BM1143**

BM1143 STATE/COUNTY- TX/BRAZOS

BM1143 COUNTRY - US

BM1143 USGS QUAD - WELLBORN (1980)

BM1143

BM1143 *CURRENT SURVEY CONTROL

BM1143

BM1143* NAD 83(2011) POSITION- 30 35 11.67889(N) 096 21 26.64032(W) ADJUSTED

BM1143* NAD 83(2011) ELLIP HT- 67.647 (meters) (06/27/12) ADJUSTED

BM1143* NAD 83(2011) EPOCH - 2010.00

BM1143* [NAVD 88](#) ORTHO HEIGHT - 94.48 (meters) 310.0 (feet) GPS OBS

BM1143

BM1143 NAD 83(2011) X - -608,518.404 (meters) COMP

BM1143 NAD 83(2011) Y - -5,461,719.407 (meters) COMP

BM1143 NAD 83(2011) Z - 3,226,555.304 (meters) COMP

BM1143 LAPLACE CORR - -1.16 (seconds) DEFLEC09

BM1143 GEOID HEIGHT - -26.72 (meters) GEOID12

BM1143

BM1143 FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)

BM1143 Type Horiz Ellip Dist(km)

BM1143 -----

BM1143 NETWORK 2.14 2.49

BM1143 -----

BM1143 MEDIAN LOCAL ACCURACY AND DIST (001 points) 0.94 1.45 0.80

BM1143 -----

BM1143 NOTE: Click [here](#) for information on individual local accuracy

BM1143 values and other accuracy information.

BM1143

BM1143

BM1143.This mark is at Easterwood Fld (CLL) Airport (CLL)

BM1143

BM1143.The horizontal coordinates were established by GPS observations

BM1143.and adjusted by the National Geodetic Survey in June 2012.

BM1143

BM1143.NAD 83(2011) refers to NAD 83 coordinates where the reference

BM1143.frame has been affixed to the stable North American tectonic plate. See

BM1143.www.ngs.noaa.gov/web/surveys/NA2011 for more information.

BM1143

BM1143.The horizontal coordinates are valid at the epoch date displayed above BM1143.which is a decimal equivalence of Year/Month/Day.

BM1143

BM1143.The orthometric height was determined by GPS observations and a BM1143.high-resolution geoid model.

BM1143

BM1143.GPS derived orthometric heights for airport stations designated as BM1143.PACS or SACS are published to 2 decimal places. This maintains BM1143.centimeter relative accuracy between the PACS and SACS. It does BM1143.not indicate centimeter accuracy relative to other marks which are BM1143.part of the NAVD 88 network.

BM1143

BM1143.The X, Y, and Z were computed from the position and the ellipsoidal ht.

BM1143

BM1143.The Laplace correction was computed from DEFLEC09 derived deflections.

BM1143

BM1143.The ellipsoidal height was determined by GPS observations

BM1143.and is referenced to NAD 83.

BM1143

BM1143. The following values were computed from the NAD 83(2011) position.

BM1143

BM1143;	North	East	Units	Scale Factor	Converg.
BM1143;SPC TX C	- 3,108,790.756	1,081,230.503	MT	0.99990778	+2 02 52.2
BM1143;SPC TX C	-10,199,424.34	3,547,337.08	sFT	0.99990778	+2 02 52.2
BM1143;UTM 14	- 3,386,760.658	753,404.042	MT	1.00039223	+1 20 43.4
BM1143!	- Elev Factor	x Scale Factor	=	Combined Factor	
BM1143!SPC TX C	- 0.99998938	x 0.99990778	=	0.99989716	
BM1143!UTM 14	- 0.99998938	x 1.00039223	=	1.00038160	

BM1143

BM1143:	Primary Azimuth Mark	Grid Az
BM1143:SPC TX C	- CLL AP STA B	286 44 33.0
BM1143:UTM 14	- CLL AP STA B	287 26 41.8

BM1143

BM1143	PID	Reference Object	Distance	Geod. Az
BM1143				ddmmss.s
BM1143	BM1144	CLL AP STA B	APPROX. 1.6 KM	2884725.2
BM1143	BM0033	CLL ARP 2	APPROX. 0.8 KM	2884804.1

BM1143

BM1143 SUPERSEDED SURVEY CONTROL

BM1143

BM1143	NAD 83(2007)-	30 35 11.67894(N)	096 21 26.64100(W)	AD() 0
BM1143	ELLIP H (02/10/07)	67.661 (m)		GP()
BM1143	ELLIP H (02/27/01)	67.684 (m)		GP() 4 2
BM1143	NAD 83(1993)-	30 35 11.67878(N)	096 21 26.64077(W)	AD() 1
BM1143	ELLIP H (08/20/96)	67.727 (m)		GP() 4 2
BM1143	NAD 83(1993)-	30 35 11.67925(N)	096 21 26.63737(W)	AD() 2
BM1143	NAD 83(1986)-	30 35 11.69431(N)	096 21 26.61921(W)	AD() 2
BM1143	NGVD 29 (12/03/93)	94.22 (m)	309.1 (f)	LEVELING 3

BM1143

BM1143.Superseded values are not recommended for survey control.

BM1143

BM1143.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

BM1143.[See file dsdata.txt](#) to determine how the superseded data were derived.

BM1143

BM1143_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU5340486760(NAD 83)

BM1143

BM1143_MARKER: DT = TOPOGRAPHIC STATION DISK

BM1143_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND

BM1143_SP_SET: CONCRETE POST
 BM1143_STAMPING: AP 1963 STA A
 BM1143_MARK LOGO: CGS
 BM1143_MAGNETIC: N = NO MAGNETIC MATERIAL
 BM1143_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BM1143+STABILITY: SURFACE MOTION
 BM1143_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BM1143+SATELLITE: SATELLITE OBSERVATIONS - February 27, 1995

BM1143	HISTORY	- Date	Condition	Report By
BM1143	HISTORY	- 1963	MONUMENTED	CGS
BM1143	HISTORY	- 19910615	GOOD	NGS
BM1143	HISTORY	- 19921029	GOOD	
BM1143	HISTORY	- 19940820	MARK NOT FOUND	USPSQD
BM1143	HISTORY	- 19950227	GOOD	NGS

BM1143

BM1143 STATION DESCRIPTION

BM1143

BM1143'DESCRIBED BY COAST AND GEODETIC SURVEY 1963
 BM1143'THE STATION IS LOCATED 2.0 MI (3.2 KM) SOUTHWEST OF COLLEGE STATION,
 BM1143'TEXAS ON THE PROPERTY OF EASTERWOOD AIRPORT NEAR THE RUNWAY 28 END.
 BM1143'PERMISSION MUST BE OBTAINED FROM AIRPORT MANGER AND TOWER CHIEF BEFORE
 BM1143'ACCESSING STATION IN THE CONTROLLED MOVEMENT AREAS OF THIS AIRPORT.
 BM1143'POINT OF CONTACT RICHARD ARNOLD EASTERWOOD AIRPORT, MCKENZIE TERMINAL
 BM1143'BLVD. 7, COLLEGE STATION, TX. 77845-1583, PHONE (409)845-4811.
 BM1143'THE STATION IS A STANDARD TOPO DISK SET IN THE TOP OF A 10 INCH
 BM1143'CONCRETE POST WHICH IS FLUSH WITH THE GROUND, AND STAMPED---AP 1963
 BM1143'STA A---. THE STATION IS 173.2 FT (52.8 M) SOUTHEAST OF RUNWAY LIGHT
 BM1143'61, 50.01 FT (15.24 M) SOUTH OF THE SOUTH EDGE OF RUNWAY 28,AND 46.9
 BM1143'FT (14.3 M) SOUTHWEST OF THRESHOLD LIGHT 63.
 BM1143'DESC. BY ALG

BM1143

BM1143 STATION RECOVERY (1991)

BM1143

BM1143'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
 BM1143'THE STATION IS LOCATED NEAR RUNWAY END 28, 173.2 FT (52.8 M) SOUTHEAST
 BM1143'OF RUNWAY LIGHT 61, 50.01 FT (15.24 M) SOUTH OF THE SOUTH EDGE OF THE
 BM1143'RUNWAY, 46.9 FT (14.3 M) SOUTHWEST OF THRESHOLD LIGHT 63. A STANDARD
 BM1143'TOPO DISK STAMPED AP 1963 STA A SET IN THE TOP OF A 10 INCH CONCRETE
 BM1143'POST WHICH PROJECTS 1 INCH ABOVE THE GROUND LEVEL.

BM1143

BM1143 STATION RECOVERY (1992)

BM1143

BM1143'RECOVERED 1992
 BM1143'RECOVERED IN GOOD CONDITION.

BM1143

BM1143 STATION RECOVERY (1994)

BM1143

BM1143'RECOVERY NOTE BY US POWER SQUADRON 1994
 BM1143'MARK NOT FOUND.

BM1143

BM1143 STATION RECOVERY (1995)

BM1143

BM1143'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (AJL)
 BM1143'THE STATION IS LOCATED ON THE SOUTHWEST SIDE OF COLLEGE STATION AT
 BM1143'EASTERWOOD FIELD, IN GRASS ALONG THE SOUTH SIDE OF AND IN LINE WITH
 BM1143'RUNWAY END 28, AND NEAR THE CENTER OF THE EAST SIDE OF THE AIRFIELD.
 BM1143'OWNERSHIP--TEXAS A AND M UNIVERSITY, MCKENZIE TERMINAL BUILDING NUMBER
 BM1143'7, COLLEGE STATION, TX 77845. CONTACT JIM ALLEN, OPERATIONS
 BM1143'SUPERVISOR, OR RICHARD ARNOLD, ASSOCIATE DIRECTOR AT 409-845-4811 TWO
 BM1143'DAYS IN ADVANCE TO ARRANGE FOR AN ESCORT TO THIS STATION. TO REACH
 BM1143'FROM THE UNDERPASS AT THE JUNCTION OF STATE HIGHWAY 60 AND FARM ROAD
 BM1143'2818 ON THE SOUTHWEST SIDE OF COLLEGE STATION, GO SOUTHEAST ON FARM

BM1143'ROAD 2818 FOR 1.45 KM (0.90 MI) TO A PAVED CROSSROAD (FARM ROAD 2347) BM1143'. TURN RIGHT, WEST-SOUTHWEST, ON FARM ROAD 2347 FOR 0.41 KM (0.25 MI) BM1143'TO A PAVED ROAD LEFT JUST BEFORE A GATE AT GENERAL AVIATION. TURN BM1143'LEFT, SOUTH, ON THE PAVED ROAD FOR 0.10 KM (0.05 MI) TO THE AIRPORT BM1143'TERMINAL. AN ESCORT WILL TAKE YOU FROM HERE. ENTER THE GATE AT THE BM1143'SOUTH SIDE OF THE GENERAL AVIATION BUILDING AND PROCEED SOUTHWEST TO BM1143'RAMP TAXIWAY (A) . TURN LEFT, SOUTHEAST, AND PROCEED 0.3 KM (0.20 MI) BM1143'ALONG TAXIWAY, CROSSING THE END OF RUNWAY 28, TO THE STATION. THE BM1143'STATION IS SET IN THE TOP OF A 25-CM SQUARE CONCRETE POST SET FLUSH BM1143'WITH THE GROUND. IT IS 38.1 M (125.0 FT) SOUTH-SOUTHWEST OF THE BM1143'CENTER OF RUNWAY END 28, 15.4 M (50.5 FT) SOUTH-SOUTHWEST OF THE BM1143'SOUTHEAST CORNER OF THE RUNWAY, 15.3 M (50.2 FT) WEST OF THE REIL BM1143'LIGHT, 12.7 M (41.7 FT) SOUTHWEST OF THE SOUTHERN MOST THRESHOLD BM1143'LIGHT, AND 0.3 M (1.0 FT) NORTH OF A WITNESS POST. DESCRIBED BY D.G BM1143'AUG NOTE THIS STATION IS SELECT AS A SACS STATION.

1 National Geodetic Survey, Retrieval Date = AUGUST 3, 2012
 BM1144 *****
 BM1144 SACS - This is a Secondary Airport Control Station.
 BM1144 DESIGNATION - CLL AP STA B
 BM1144 PID - **BM1144**
 BM1144 STATE/COUNTY- TX/BRAZOS
 BM1144 COUNTRY - US
 BM1144 USGS QUAD - WELLBORN (1980)
 BM1144
 BM1144 *CURRENT SURVEY CONTROL
 BM1144
 BM1144* NAD 83(2011) POSITION- 30 35 28.12833(N) 096 22 22.53595(W) ADJUSTED
 BM1144* NAD 83(2011) ELLIP HT- 70.011 (meters) (06/27/12) ADJUSTED
 BM1144* NAD 83(2011) EPOCH - 2010.00
 BM1144* [NAVD 88](#) ORTHO HEIGHT - 96.82 (meters) 317.7 (feet) GPS OBS
 BM1144
 BM1144 NAVD 88 orthometric height was determined with geoid model GEOID93
 BM1144 GEOID HEIGHT - -27.07 (meters) GEOID93
 BM1144 GEOID HEIGHT - -26.70 (meters) GEOID12
 BM1144 NAD 83(2011) X - -609,970.064 (meters) COMP
 BM1144 NAD 83(2011) Y - -5,461,300.141 (meters) COMP
 BM1144 NAD 83(2011) Z - 3,226,992.582 (meters) COMP
 BM1144 LAPLACE CORR - -1.10 (seconds) DEFLEC09
 BM1144
 BM1144 FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BM1144 Type Horiz Ellip Dist(km)
 BM1144 -----
 BM1144 NETWORK 2.02 2.25
 BM1144 -----
 BM1144 MEDIAN LOCAL ACCURACY AND DIST (001 points) 0.67 1.00 0.77
 BM1144 -----
 BM1144 NOTE: Click [here](#) for information on individual local accuracy
 BM1144 values and other accuracy information.
 BM1144
 BM1144
 BM1144.This mark is at Easterwood Fld (CLL) Airport (CLL)
 BM1144
 BM1144.The horizontal coordinates were established by GPS observations
 BM1144.and adjusted by the National Geodetic Survey in June 2012.
 BM1144
 BM1144.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BM1144.frame has been affixed to the stable North American tectonic plate. See
 BM1144.www.ngs.noaa.gov/web/surveys/NA2011 for more information.
 BM1144
 BM1144.The horizontal coordinates are valid at the epoch date displayed above
 BM1144.which is a decimal equivalence of Year/Month/Day.
 BM1144
 BM1144.The orthometric height was determined by GPS observations and a

BM1144.high-resolution geoid model.

BM1144

BM1144.GPS derived orthometric heights for airport stations designated as BM1144.PACS or SACS are published to 2 decimal places. This maintains BM1144.centimeter relative accuracy between the PACS and SACS. It does BM1144.not indicate centimeter accuracy relative to other marks which are BM1144.part of the NAVD 88 network.

BM1144

BM1144.The X, Y, and Z were computed from the position and the ellipsoidal ht.

BM1144

BM1144.The Laplace correction was computed from DEFLEC09 derived deflections.

BM1144

BM1144.The ellipsoidal height was determined by GPS observations

BM1144.and is referenced to NAD 83.

BM1144

BM1144. The following values were computed from the NAD 83(2011) position.

BM1144

BM1144;	North	East	Units	Scale	Factor	Converg.
BM1144;SPC TX C	- 3,109,243.844	1,079,724.347	MT	0.99990721	+2 02	23.4
BM1144;SPC TX C	-10,200,910.84	3,542,395.63	sFT	0.99990721	+2 02	23.4
BM1144;UTM 14	- 3,387,232.400	751,902.832	MT	1.00038287	+1 20	15.5

BM1144

BM1144! - Elev Factor x Scale Factor = Combined Factor

BM1144!SPC TX C - 0.99998901 x 0.99990721 = 0.99989622

BM1144!UTM 14 - 0.99998901 x 1.00038287 = 1.00037187

BM1144

BM1144:	Primary Azimuth Mark	Grid Az
BM1144:SPC TX C	- CLL AP STA A	106 44 33.4
BM1144:UTM 14	- CLL AP STA A	107 26 41.3

BM1144

BM1144	PID	Reference Object	Distance	Geod. Az
BM1144				ddmmss.s
BM1144	BM1143	CLL AP STA A	APPROX. 1.6 KM	1084656.8
BM1144	BM0033	CLL ARP 2	APPROX. 0.8 KM	1084616.6

BM1144

BM1144

SUPERSEDED SURVEY CONTROL

BM1144

BM1144	NAD 83(2007)-	30 35	28.12838(N)	096 22	22.53663(W)	AD()	0
BM1144	ELLIP H (02/10/07)		70.025 (m)			GP()	
BM1144	ELLIP H (02/27/01)		70.048 (m)			GP()	4 2
BM1144	NAD 83(1993)-	30 35	28.12821(N)	096 22	22.53641(W)	AD()	1
BM1144	ELLIP H (08/20/96)		70.091 (m)			GP()	4 2
BM1144	NAD 83(1993)-	30 35	28.12861(N)	096 22	22.53290(W)	AD()	2
BM1144	NAD 83(1986)-	30 35	28.14388(N)	096 22	22.51466(W)	AD()	2
BM1144	NGVD 29 (12/03/93)		96.56 (m)		316.8 (f)	LEVELING	3

BM1144

BM1144.Superseded values are not recommended for survey control.

BM1144

BM1144.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

BM1144.[See file dsdata.txt](#) to determine how the superseded data were derived.

BM1144

BM1144_U.S. NATIONAL GRID SPATIAL ADDRESS: 14RQU5190287232(NAD 83)

BM1144

BM1144_MARKER: DT = TOPOGRAPHIC STATION DISK

BM1144_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND

BM1144_SP_SET: CONCRETE POST

BM1144_STAMPING: AP 1963 STA B

BM1144_MARK LOGO: CGS

BM1144_MAGNETIC: N = NO MAGNETIC MATERIAL

BM1144_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

BM1144+STABILITY: SURFACE MOTION

BM1144_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BM1144+SATELLITE: SATELLITE OBSERVATIONS - February 27, 1995

BM1144

BM1144	HISTORY	- Date	Condition	Report By
BM1144	HISTORY	- 1963	MONUMENTED	CGS
BM1144	HISTORY	- 19910615	GOOD	NGS
BM1144	HISTORY	- 19921029	GOOD	
BM1144	HISTORY	- 19940820	MARK NOT FOUND	USPSQD
BM1144	HISTORY	- 19950227	GOOD	NGS

BM1144

STATION DESCRIPTION

BM1144

BM1144'DESCRIBED BY COAST AND GEODETIC SURVEY 1963
 BM1144'THE STATION IS LOCATED 2.0 MI (3.2 KM) SOUTHWEST OF COLLEGE STATION,
 BM1144'TEXAS ON THE PROPERTY OF EASTERWOOD AIRPORT NEAR THE RUNWAY 10 END.
 BM1144'PERMISSION MUST BE OBTAINED FROM AIRPORT MANGER AND TOWER CHIEF BEFORE
 BM1144'ACCESSING STATION IN THE CONTROLLED MOVEMENT AREAS OF THIS AIRPORT.
 BM1144'POINT OF CONTACT RICHARD ARNOLD EASTERWOOD AIRPORT, MCKENZIE TERMINAL
 BM1144'BLVD. 7, COLLEGE STATION, TX. 77845-1583, PHONE (409)845-4811.
 BM1144'THE STATION IS A STANDARD TOPO DISK SET IN THE TOP OF A 10 INCH
 BM1144'CONCRETE POST WHICH IS FLUSH WITH THE GROUND, AND STAMPED---AP 1963
 BM1144'STA B---. THE STATION IS 178.8 FT (54.5 M) SOUTHWEST OF RUNWAY LIGHT
 BM1144'9, 50.05 FT (15.26 M) SOUTH OF THE SOUTH EDGE OF RUNWAY 10,AND 46.95
 BM1144'FT (14.31 M) SOUTHWEST OF THRESHOLD LIGHT 7.

BM1144'DESC. BY ALG

BM1144

STATION RECOVERY (1991)

BM1144

BM1144'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
 BM1144'THE STATION IS LOCATED NEAR THE WEST END OF RUNWAY 10, 178.8 FT (54.5
 BM1144'M) SOUTHWEST OF RUNWAY LIGHT 9, 50.05 FT (15.26 M) SOUTH OF THE SOUTH
 BM1144'EDGE OF THE RUNWAY, 46.95 FT (14.31 M) SOUTHEAST OF THRESHOLD LIGHT 7.
 BM1144'A STANDARD TOPO DISK STAMPED AP 1963 STA B SET IN THE TOP OF A 10 INCH
 BM1144'CONCRETE POST WHICH PROJECTS 1 INCH ABOVE GROUND LEVEL.

BM1144

STATION RECOVERY (1992)

BM1144

BM1144'RECOVERED 1992
 BM1144'RECOVERED IN GOOD CONDITION.

BM1144

STATION RECOVERY (1994)

BM1144

BM1144'RECOVERY NOTE BY US POWER SQUADRON 1994
 BM1144'MARK NOT FOUND.

BM1144

STATION RECOVERY (1995)

BM1144

BM1144'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (AJL)
 BM1144'THE STATION IS LOCATED ON THE SOUTHWEST SIDE OF COLLEGE STATION AT
 BM1144'EASTERWOOD FIELD, IN GRASS ALONG THE SOUTH SIDE OF AND IN LINE WITH
 BM1144'RUNWAY END 10, AND JUST NORTH OF THE CENTER OF THE WEST SIDE OF THE
 BM1144'AIRFIELD. OWNERSHIP--TEXAS A AND M UNIVERSITY, MCKENZIE TERMINAL
 BM1144'BUILDING NUMBER 7, COLLEGE STATION, TX 77845. CONTACT JIM ALLEN,
 BM1144'OPERATIONS SUPERVISOR, OR RICHARD ARNOLD, ASSOCIATE DIRECTOR AT
 BM1144'409-845-4811 TWO DAYS IN ADVANCE TO ARRANGE FOR AN ESCORT TO THIS
 BM1144'STATION. TO REACH FROM THE UNDERPASS AT THE JUNCTION OF STATE HIGHWAY
 BM1144'60 AND FARM ROAD 2818 ON THE SOUTHWEST SIDE OF COLLEGE STATION, GO
 BM1144'SOUTHEAST ON FARM ROAD 2818 FOR 1.45 KM (0.90 MI) TO A PAVED CROSSROAD
 BM1144'(FARM ROAD 2347) . TURN RIGHT, WEST-SOUTHWEST, ON FARM ROAD 2347 FOR
 BM1144'0.41 KM (0.25 MI) TO A PAVED ROAD LEFT JUST BEFORE A GATE AT GENERAL
 BM1144'AVIATION. TURN LEFT, SOUTH, ON THE PAVED ROAD FOR 0.10 KM (0.05 MI)
 BM1144'TO THE AIRPORT TERMINAL. AN ESCORT WILL TAKE YOU FROM HERE. ENTER
 BM1144'THE GATE AT THE SOUTH SIDE OF THE GENERAL AVIATION BUILDING AND

BM1144'PROCEED SOUTHWEST TO RAMP TAXIWAY (A) . TURN RIGHT, NORTHWEST, AND
 BM1144'CONTINUE TO EAST-WEST TAXIWAY (B) . TURN LEFT, WEST, AND PROCEED 1.4
 BM1144'KM (0.85 MI) ALONG TAXIWAY, CROSSING RUNWAYS 16-34 AND 4-22, AND
 BM1144'RUNWAY END 10, TO THE STATON. THE STATION IS SET IN THE TOP OF A
 BM1144'25-CM SQUARE CONCRETE POST SET FLUSH WITH THE GROUND. IT IS 56.5 M
 BM1144'(185.4 FT) NORTH-NORTHEAST OF THE PERIMETER FENCE, 38.1 M (125.0 FT)
 BM1144'SOUTH-SOUTHWEST OF THE CENTER OF RUNWAY END 10, 15.4 M (50.5 FT)
 BM1144'SOUTH-SOUTHWEST OF THE SOUTHWEST CORNER OF THE RUNWAY, 15.3 M (50.2
 BM1144'FT) WEST OF THE REIL LIGHT, 12.7 M (41.7 FT) SOUTH OF THE SOUTHERN
 BM1144'MOST THRESHOLD LIGHT, AND 0.4 M (1.3 FT) NORTH OF A WITNESS POST.
 BM1144'DESCRIBED BY D.G AUG NOTE THIS STATION IS SELECT AS A SACS STATION.

*** retrieval complete.
 Elapsed Time = 00:00:04

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-----
- This listing contains control for which complete digital          -
- data sheets where not provided. The complete data sheets were   -
- not provided for the reason listed below. The reason below is   -
- associated with a horizontal control Nonpub code shown under     -
- the heading 'H' and/or a vertical control Nonpub code shown under -
- the heading 'v'                                                 -
-                                                                    -
- The format of the records are as follows:                         -
-   Pid = Station Permanent Identifier)                            -
-   Name = Station Designation                                    -
-   Lat = Approx. Latitude (Degrees, Minutes, truncated Seconds) -
-   Lon = Approx. Longitude (Degrees, Minutes, truncated Seconds) -
-   O   = Horizontal Order                                       -
-   o   = Vertical Order                                         -
-   H   = Horizontal Nonpub Code                                  -
-   v   = Vertical Nonpub Code                                    -
-                                                                    -
-   H Nonpub HORIZONTAL CONTROL NONPUB REASON                    -
-   -----
-   A       CORS site is not active                               -
-   B       Station is a RBN antenna                              -
-   C       Not a publishable datum within the state             -
-   D       No descriptive text available                         -
-   L       CORS L1 Phase Center is not publishable              -
-   N       No geodetic control                                  -
-   O       Outside NGS publication area                         -
-   P       Purpose of position is not for network control       -
-   R       Restricted position                                   -
-   T       Station is a temporary point/bench mark             -
-   V       Station is a VOR antenna                             -
-   W       Weakly determined position                           -
-   X       Surface mark reported destroyed                      -
-   Y       Surface and underground mark reported destroyed      -
-                                                                    -
-   v Nonpub VERTICAL CONTROL NONPUB REASON                      -
-   -----
-   A       CORS site is not active                               -
-   D       No descriptive text available                         -
-   F       Bench mark not yet adjusted                          -
-   N       No geodetic control                                  -
-   L       CORS L1 Phase Center is not publishable              -
-   O       Outside NGS publication area                         -
-   R       Restricted elevation                                  -
-   S       Mark is in a subsidence area                         -
-   T       Station is a temporary point/bench mark             -

```

- X Surface mark reported destroyed -
- Y Surface and underground mark reported destroyed -
- Z Presumed destroyed -
- -
- -
- NOTE - Stations found in this listing may still have a valid -
- datasheet produced by use of other publishable values. -
- For example, an ADJUSTED height may be non-publishable -
- but a good GPS height might be found on the datasheet. -
- This listing does not imply that values found on the datasheet -
- are restricted. If it's on the datasheet, use it. -
- -

Pid	Name	Lat	Lon	Elev	O o Hv
>BM0029 X 313		30 36 40.	/096 20 39.	106.	2 XX
>BM0029 X 313		30 36 40.	/096 20 39.	106.	2 NN



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(979) 693-2777 joeorric@verizon.net
TX Surveying Firm no. 100544-00 / Engineering Firm no. F-433

Final Report - City of College Station 1994 GPS Control Monument Upgrade Project

Thursday, August 4, 2011

City of College Station
attn: Alan Gibbs, P.E.

Beginning in March 2009, Joe Orr, Inc. provided consultation to the City of College Station, regarding replacement and possible upgrading of the datum (horizontal and/or vertical) of the 1994 GPS control monument network. The City desired elevation benchmarks to use as physical references for the upcoming FEMA floodplain maps.

After including Bob Gaines of CDS/Muery Services, in the discussions, it was decided that the best solution would be to set a limited number of new, very stable monuments, and determine coordinates and elevations on them, using the most current datums. Joe Orr developed a sketch of eleven desirable monument locations, based on a maximum distance of 6 miles between each. This distance is based on the GPS “rule of thumb” maximum for insignificant atmospheric influence in baseline processing.

In late 2009, Muery began reconnaissance for monument sites and a few of the locations were adjusted, after review by Joe Orr, Inc. in early 2010. The eleven deep rod monuments were installed, and static GPS observation sets were recorded, during the last week of April 2010, by Muery. The final reported coordinates were based on NAD83(CORS) and NAVD88 elevation datums.

In January 2011, Joe Orr was contracted to determine coordinates and elevations, with GPS methods, on all of the existing 1994 monuments, based on the results of the new Muery “primary” monuments. As proposed, the locations would be determined by averaging at least three Real-Time Kinematic (RTK) GPS observations at each monument. More observations would be recorded, if the initial ones did not agree within accepted tolerance (about 0.1 ft). The first round of observations began on April 5th, with Israel Koite, of the City staff, and Kim Mayo of Joe Orr, and utilized the City’s Leica 530 GPS rover unit. The remaining observations were performed by Kim and Henry Mayo, with the final ones on May 13th. Two GPS rovers were utilized, each with fixed 2 meter poles and bipods. Henry used a Leica 1200 rover, with a cell-phone modem receiving corrections from the City of College Station GPS base (CORS). Kim used a Leica 530 rover, receiving corrections via a radio modem, from a Leica 530 base unit, set on one of the Muery primary monuments (usually the nearest one).

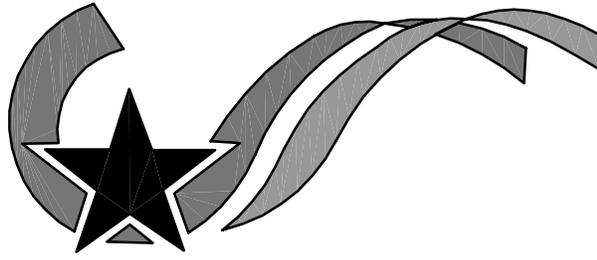
Digital photographs of the monuments were taken for the new data sheets. It was feared that the gusty winds, during April, would adversely affect the results, but the consistency of most observations sets were within expected tolerance. The wind actually caused more problems with the photographs than the GPS results, as evident in many photos where the sign would not stay in place on the lathe stake.

Initially, the RTK observations were processed to Texas State Plane, Central Zone, NAD83 coordinates, utilizing Geoid 09 for orthometric elevation determinations. By simply shifting the processed vectors of each observation set, to the Muery-determined N,E,Z of the base station location (City CORS, or other primary monument). The multiple point locations at each monument were manually averaged in 3d. Besides included primary monuments in each observation set, new coordinates for four of the 1994 monuments had been included in Muery's final report. During the fieldwork, it was not known which of the monuments had been updated by Muery, so this created a 'blind' test of Joe Orr's results.

The results were compared to Muery's and also to the original 1994 determined coordinates. The average horizontal results seemed good, but the elevations seemed to always fall below Muery's results, instead of the expected random high and low results. After consultation with Bob Gaines, Henry Mayo created a coordinate system model, in the Leica software, which resulted in much better matches to Muery's elevations. The reprocessing of the RTK observations also made a slight change (0.03 ft.) to most of the horizontal location, which also more closely matched Muery's coordinates.

The final data sheets were generated and delivered to the City on August 4, 2011. The NAD83(CORS) coordinates are about 2.5 feet 'off' of the NAD83(86) coordinates, when compared directly, and the NAVD88 elevations are generally 0.05 ft. to 0.10 ft. higher than the NVGD29 elevations. Relative to each other, the monument coordinates give insignificant differences in distance and bearing calculations. There is more ambiguity in scaling of the state plain coordinates to surface location, than there is in the datum difference. It needs to be noted that **all projects referenced to the 1994 "secondary" monuments, shall specify if the updated coordinates/elevations or the original ones are being used.** With only 2.5 feet of difference, it will not be obvious in most cases, but very important when infrastructure is being constructed from the coordinates given on plans.

Henry Mayo, RPLS



**CITY OF
COLLEGE STATION**

**GPS CONTROL MONUMENT
UPGRADE PROJECT
AUGUST 2011**



JOE ORR, INC.

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TX Surveying Firm no. 100544-00 / Engineering Firm no. F-433

CITY OF COLLEGE STATION 1994 MONUMENT UPGRADE - MEAN LOCATIONS OF RTK OBSERVATIONS OF APRIL/MAY 2011									
{ based on results of CDS/Muery Services 2010 deep rod monument project - NAD83(CORS) / NAVD88 }									
POINT	MEAN X	MEAN Y	MEAN ELEV	OBSV's	SPREAD HORIZ	SPREAD VERT	COMMENTS	TO SHIFTED 1994 MON's *	CULLED
CoCS(CORS)	3564901.9500	10207131.2100	283.10				HELD FIXED TO MUERY COORD'S		
1	3554539.3695	10203667.6396	308.89	3h / 3v	0.053	0.07	N89E-0.031h / +0.02v TO MUERY		0h / 0v
MON1	3554539.403	10203667.641	308.913				FROM MUERY DATA SHEETS		
2	3530514.4575	10190067.1945	275.75	4h / 4v	0.129	0.11	S57E-0.027h / -0.01v TO MUERY		0h / 0v
MON2	3530514.478	10190067.183	275.741				FROM MUERY DATA SHEETS		
3	3551408.1489	10176625.2234	222.31	6h / 6v	0.106	0.26	N30E-0.042h / +0.07v TO MUERY		0h / 0v
MON3	3551408.169	10176625.263	222.381				FROM MUERY DATA SHEETS		
4	3567536.9195	10171031.9790	286.54	4h / 4v	0.160	0.12	N27E-0.068h / +0.02v TO MUERY		0h / 0v
MON4	3567536.952	10171032.038	286.558				FROM MUERY DATA SHEETS		
5	3598634.4904	10172144.5189	202.68	5h / 5v	0.136	0.17	S3W-0.009h / +0.04v TO MUERY		0h / 0v
MON5	3598634.493	10172144.509	202.726				FROM MUERY DATA SHEETS		
6	3601664.7066	10190245.4549	199.29	6h / 3v	0.135	0.24 (0.54)	N14E-0.057h / -0.02v OFF MUERY		0h / 3v
MON6	3601664.723	10190245.511	199.261				FROM MUERY DATA SHEETS		
7	3595535.5092	10213503.4513	230.47	4h / 4v	0.117	0.20	N21E-0.031h / +0.04v TO MUERY		0h / 0v
MON7	3595535.521	10213503.475	230.518				FROM MUERY DATA SHEETS		
8	3566373.6137	10219921.9765	264.27	4h / 4v	0.157	0.08	S32E-0.031h / +0.02 TO MUERY		0h / 0v
MON8	3566373.632	10219921.949	264.288				FROM MUERY DATA SHEETS		
9	3580149.7413	10198966.9849	269.54	4h / 4v	0.067	0.14	S22E-0.073h / -0.02v TO MUERY		0h / 0v
MON9	3580149.790	10198966.934	269.520				FROM MUERY DATA SHEETS		
10	3560554.9529	10194022.8936	308.36	5h / 5v	0.082	0.11	S39W-0.005h / +0.02v TO MUERY		0h / 0v
MON10	3560554.954	10194022.889	308.385				FROM MUERY DATA SHEETS		
11	3581934.1080	10188165.4269	283.65	5h / 5v	0.053	0.12	N31W-0.015h / +0.01v TO MUERY		0h / 0v
MON11	3581934.102	10188165.438	283.664				FROM MUERY DATA SHEETS		
101	3538410.6485	10185797.0860	287.22	4h / 4v	0.147	0.15	N21E-0.004h / +0.10 TO MUERY	N20W-0.031h / +0.10v	0h / 0v
101 MUERY	3538410.647	10185797.086	287.32				FROM MUERY REPORT	N26W-0.028h / +0.00v	
102	3537150.2557	10190530.5745	298.10	4h / 4v	0.104	0.09		N34W-0.183h / -0.23v	0h / 0v
202	3537636.5713	10192585.5411	292.45	3h / 3v	0.111	0.18	UNDER TREE CANOPY	S28E-0.081h / +0.29v	0h / 0v
103	3536131.0684	10196124.3830	309.80	4h / 4v	0.101	0.21		N46W-0.031h / +0.11v	0h / 0v
203	3538693.2580	10199181.4831	311.15	4h / 4v	0.051	0.17		N1E-0.036h / +0.02v	0h / 0v
104							PAVED OVER		
204	3532324.9444	10200570.0444	278.70	4h / 4v	0.115	0.07		N47E-0.037h / -0.02v	0h / 0v
105	3531996.2760	10207654.8228	266.45	4h / 3v	0.088	0.14 (.31)	dropped elev. on #288- poor DOP	S42E-0.042h / +0.06v	0h / 1v
205	3533471.5272	10209526.5193	295.20	4h / 3v	0.162	0.14 (.14)	dropped elev. on #289- poor DOP	N80E-0.057h / +0.18v	0h / 1v
106	3537706.9644	10211333.3779	265.99	4h / 4v	0.098	0.09		N85E-0.054h / +0.10v	0h / 0v
206	3538332.4927	10211789.2030	272.86	4h / 4v	0.209	0.18	UNDER TREE CANOPY	N60E-0.086h / +0.26v	0h / 0v
107	3539745.7100	10216858.8536	341.67	4h / 4v	0.104	0.06	S50E-0.066h / -0.06v TO MUERY	S45E-0.076h / -0.04v	0h / 0v
107 MUERY	3539745.760	10216858.811	341.61				FROM MUERY REPORT	S20E-0.011h / +0.02v	
108							TAKEN OUT BY STREET CONSTRUCTION		
109							TAKEN OUT BY WALK(?) CONSTRUCTION		

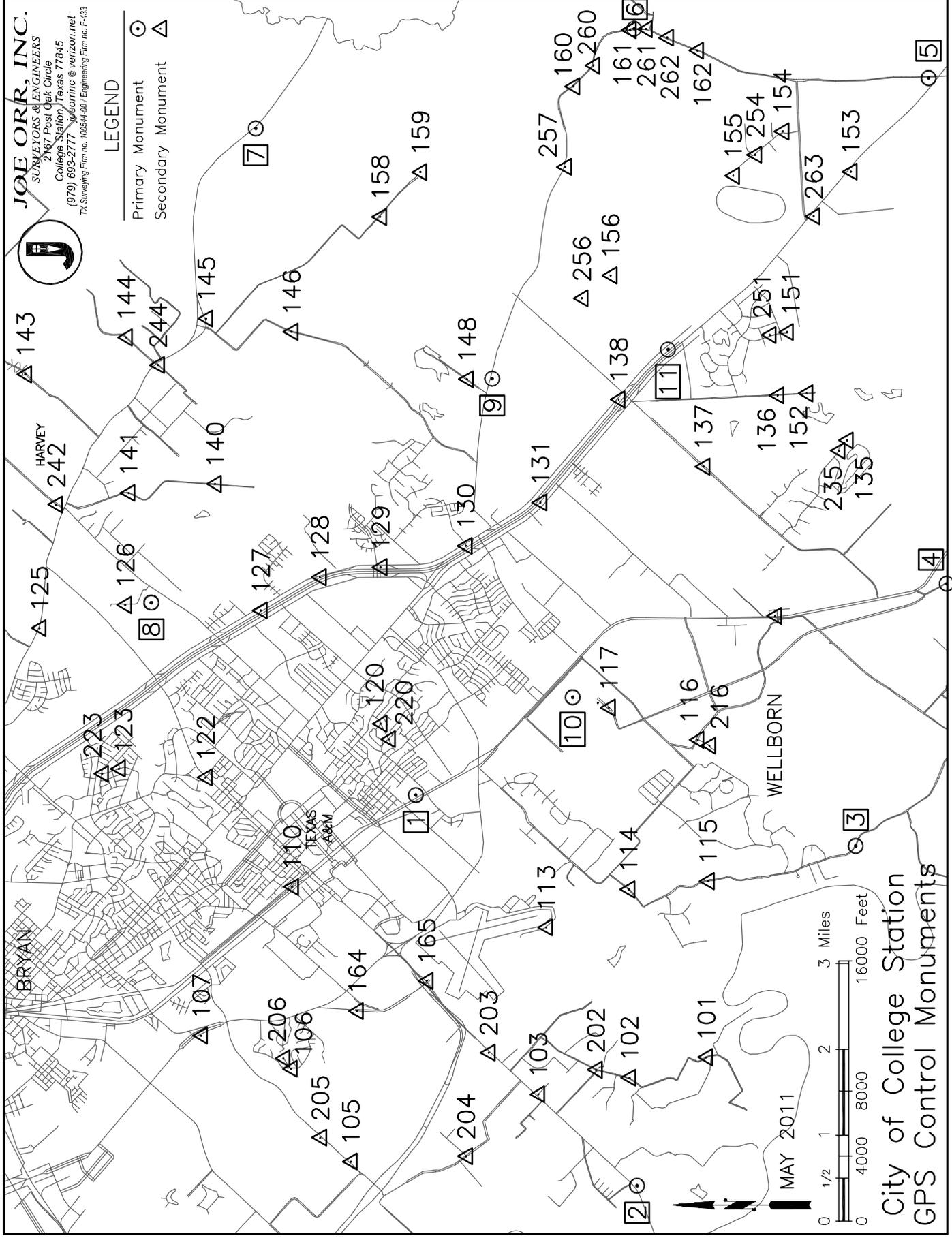
110	3548882.9806	10211269.2311	345.87	3h / 3v	0.079	0.11		S85W-0.042h / +0.10v	0h / 0v
111								TAKEN OUT BY STREET CONSTRUCTION	
112								TAKEN OUT BY STREET CONSTRUCTION	
113	3546395.9848	10195638.8015	290.26	3h / 3v	0.024	0.07		N5W-0.046h / +0.03v	0h / 0v
114	3548737.4710	10190585.7608	330.54	5h / 5v	0.080	0.15		N14W-0.034h / +0.10v	0h / 0v
115	3549241.6118	10185704.9678	309.62	4h / 4v	0.080	0.10		N88E-0.062h / +0.10v	0h / 0v
116	3557936.9982	10186336.8900	267.46	5h / 4v	0.108	0.11 (.15)	dropped elev.on #571- poor DOP	S80E-0.021h / -0.04v	0h / 1v
216	3557578.3222	10185615.3422	260.56	5h / 4v	0.087	0.23 (.23)	dropped elev.on #572- poor DOP	N66E-0.069h / -0.01v	0h / 1v
117	3559913.4576	10191793.1438	321.95	3h / 3v	0.035	0.04		S70E-0.072h / +0.02v	0h / 0v
118								TAKEN OUT BY STREET CONSTRUCTION	
218								TAKEN OUT BY STREET CONSTRUCTION	
119								TAKEN OUT BY STREET CONSTRUCTION	
120	3558925.2426	10205814.2813	301.41	3h / 3v	0.053	0.04		N60W-0.018h / +0.06v	0h / 0v
220	3557969.4856	10205296.9732	312.32	3h / 3v	0.029	0.06		N0E-0.020h / +0.08v	0h / 0v
121								DUG OUT BY WALK CONSTRUCTION	
122	3555622.6551	10216575.3101	329.62	3h / 3v	0.078	0.01	NOW UNDER COVER IN SIDEWALK	N64W-0.096h / +0.08v	0h / 0v
123	3556157.6984	10221906.4354	293.56	3h / 3v	0.071	0.13		S24W-0.089h / +0.11v	0h / 0v
223	3555847.5356	10222939.6244	311.89	3h / 3v	0.122	0.06		N2W-0.068h / -0.01v	0h / 0v
124								DUG OUT IN 2007	
125	3564804.4340	10226775.6693	289.85	3h / 2v	0.044	0.03 (.13)	dropped elev. on #520- poor DOP	S15E-0.068h / +0.25v	0h / 1v
126	3566228.0814	10221519.2212	286.21	3h / 3v	0.057	0.02		N49E-0.042h / +0.16v	0h / 0v
127	3565890.1669	10213187.1037	258.97	3h / 3v	0.069	0.07		S37W-0.037h / +0.24v	0h / 0v
128	3567933.1672	10209557.3201	265.71	3h / 3v	0.051	0.01		N54E-0.087h / +0.14v	0h / 0v
129	3568553.0775	10205822.9451	260.92	2h / 2v	0.044	0.03	checks within 0.1'(3d) with 2007 ties	S32W-0.102h / +0.14v	0h / 0v
130	3569863.0229	10200590.8018	303.62	3h / 3v	0.071	0.13		S88E-0.035h / +0.09v	0h / 0v
131	3572534.0548	10196004.1568	279.55	3h / 3v	0.047	0.05		N22W-0.038h / +0.01v	0h / 0v
132								DUG OUT BY HIGHWAY CONST.	
133								DISTURBED IN 1999, DUG OUT IN 2010	
134	3565553.0002	10181578.0876	323.53	3h / 3v	0.083	0.06		N90E-0.037h / +0.00v	0h / 0v
234								DUG OUT BY HIGHWAY CONST.	
135	3576349.9283	10177162.3383	278.22	5h / 5v	0.118	0.13	N69W-0.020h / +0.09v TO MUERY	N32W-0.070h / +0.11v	0h / 0v
135 MUERY	3576349.947	10177162.331	278.31				FROM MUERY REPORT	N40W-0.087h / +0.01v	
235	3575709.3813	10177662.5451	283.46	4h / 4v	0.167	0.16	UNDER TREE CANOPY	N14W-0.164h / +0.04v	0h / 0v
136	3579117.3789	10181430.6806	277.95	4h / 4v	0.072	0.06		N26E-0.065h / +0.09v	0h / 0v
137	3574741.1893	10185974.8638	333.09	4h / 4v	0.127	0.07		S1E-0.036h / +0.02v	0h / 0v
138	3578873.3646	10191189.1733	297.79	3h / 3v	0.052	0.01		S11W-0.031h / -0.10v	0h / 0v
139								DUG OUT IN 2001	
140	3573670.8321	10215999.9537	293.58	3h / 3v	0.035	0.08		N44E-0.061h / +0.04v	0h / 0v
141	3573117.2178	10221303.5805	324.39	3h / 3v	0.080	0.02	RELOCATED BY STRONG SURVEYING	N80E-0.052h / +0.19v	0h / 0v
142								COULD NOT FIND SINCE 2004	
242	3572403.1333	10225758.9480	321.35	3h / 3v	0.088	0.18	N88E-0.047h / +0.06v TO MUERY	S64E-0.133h / +0.01v	0h / 0v
242 MUERY	3572403.180	10225758.949	321.41				FROM MUERY REPORT	N51E-0.094h / -0.04v	
143	3580416.0147	10227651.3831	252.40	3h / 3v	0.046	0.06		N84E-0.131h / +0.22v	0h / 0v

JOE ORR, INC.
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 College Station, Texas 77845
 (979) 695-2777 joeorrinc@verizon.net
 TX Surveying Firm no. 70654-09 / Engineering Firm no. F-433



LEGEND

- Primary Monument
- Secondary Monument



City of College Station
 GPS Control Monuments



**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**



Point Location Description:

Aluminum cap in concrete, flush with ground. Located 0.9' west of the barbed-wire fence on the northeast side of River Road, 49' east of a wood power pole and 300' north of the $\text{\textcircled{C}}$ of Dogwood Trail at River Road.

Station Name:
CS94 - 101

Established by: George W. Muery Services, Inc.
Date Established: 1994

Upgrade Survey by: CDS/Muery Services
(in network w/ 2010 primary monuments)

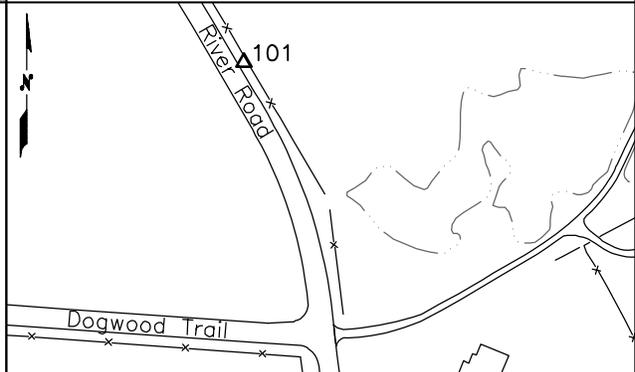
RTK Observation Quality for this point:
spread of horizontal observations: n/a
spread of vertical observations: n/a

Upgraded Location: U.S. Survey Feet
 Northing (State Plane Grid): 10185797.09
 Easting (State Plane Grid): 3538410.65
 Elevation: (1929 / 1988*) 287.22 / 287.32
 Latitude: N 30° 33' 00.01906"
 Longitude: W 96° 23' 14.23604"
 Geoid 09 Height (separation): -87.73
 Ellipsoid Height: 199.49
 Grid Scale Factor: 0.99991257
 Elevation Scale Factor: 0.99999048
 Combined Scale Factor: 0.99990305
 Convergence Angle: 2° 01' 57"

Upgrade Datums: NGVD1929/NAVD1988*—vertical
 NAD83(CORS) TX Central zone – horizontal
 *NGVD 1929 elevations were determined with
 baseline / network computations. NAVD 1988
 elevations were determined w/VERTCON factors.

Note:
 Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.

Nearest City of College Station Monuments:
 2010 Mon 2 NW 1.7 miles
 CS94 - 102 NW 0.9 miles



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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**



Point Location Description:
Aluminum cap in concrete, 1" above grade. Located 1.5' north of a fence corner post on the southeast side of River Road and the side of an oil well entrance road, 0.4 miles south of Lightsey Lane at River Rd.

Station Name:
CS94 - 102

Established by: George W. Muery Services, Inc.
Date Established: 1994

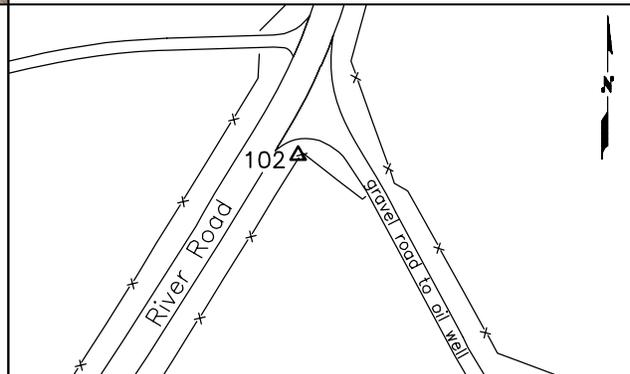
Upgrade Survey by: Joe Orr, Inc.
(using average of multiple RTK observations)
RTK Observation Quality for this point:
spread of 4 horizontal observations: 0.10 ft.
spread of 4 vertical observations: 0.09 ft.

Upgraded Location: U.S. Survey Feet
Northing (State Plane Grid): 10190530.57
Easting (State Plane Grid): 3537150.26
Elevation: (NAVD 1988) 298.10
Latitude: N 30° 33' 47.28687"
Longitude: W 96° 23' 26.72379"
Geoid 09 Height (separation): -87.64
Ellipsoid Height: 210.46
Grid Scale Factor: 0.99991081
Elevation Scale Factor: 0.99998993
Combined Scale Factor: 0.99990073
Convergence Angle: 2° 01' 51"

Upgrade Datums*: NAVD 1988 – vertical
NAD83(CORS) TX Central zone – horizontal
*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station

Note:
Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.

Nearest City of College Station Monuments:
2010 Mon 2 W 1.3 miles
CS94 - 202 N 13°18'52"E-2111.7 feet



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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**



Point Location Description:

Aluminum cap in concrete, flush with ground. Located 1.6' north of a fence corner post and 1.0' northwest of a concrete R.O.W. marker, in the southeast line of F.M. 60 and the southwest line of Oak Hill Circle.

Station Name:

CS94 - 103

Established by: George W. Muery Services, Inc.

Date Established: 1994

Upgrade Survey by: Joe Orr, Inc.
(using average of multiple RTK observations)

RTK Observation Quality for this point:

spread of 4 horizontal observations: 0.10 ft.

spread of 4 vertical observations: 0.21 ft.

Upgraded Location: U.S. Survey Feet

Northing (State Plane Grid): 10196124.38

Easting (State Plane Grid): 3536131.07

Elevation: (NAVD 1988) 309.80

Latitude: N 30° 34' 42.98043"

Longitude: W 96° 23' 36.10875"

Geoid 09 Height (separation): -87.55

Ellipsoid Height: 222.25

Grid Scale Factor: 0.99990879

Elevation Scale Factor: 0.99998936

Combined Scale Factor: 0.99989815

Convergence Angle: 2° 01' 46"

Upgrade Datums*: NAVD 1988 – vertical
NAD83(CORS) TX Central zone – horizontal

*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station

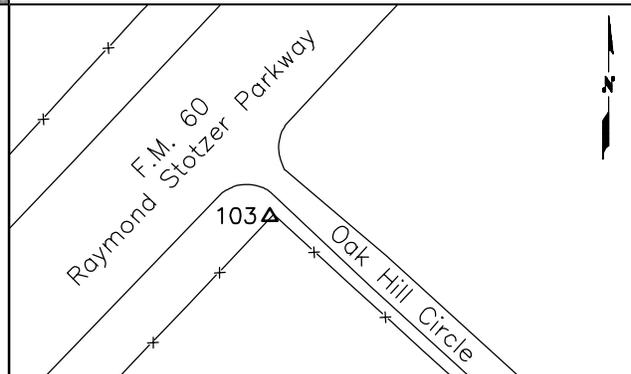
Note:

Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.

Nearest City of College Station Monuments:

2010 Mon 2 SW 1.6 miles

CS94 - 203 N 39°58'00"E-3988.8 feet



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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> <i>CS94 - 105</i></p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of of 4 horizontal observations: 0.09 ft. spread of of 3 vertical observations: 0.14 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10207654.82 Easting (State Plane Grid): 3531996.28 Elevation: (NAVD 1988) 266.45 Latitude: N 30° 36' 38.49149" Longitude: W 96° 24' 18.72584" Geoid 09 Height (separation): -87.34 Ellipsoid Height: 179.11 Grid Scale Factor: 0.99990484 Elevation Scale Factor: 0.99999143 Combined Scale Factor: 0.99989627 Convergence Angle: 2° 01' 24"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 2.9' southeast of a wood power pole on the southeast side of West Villa Maria Road, 870' northeast of Jones Road and 0.4 miles northeast of Highway 47 (Q).</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 2 S 3.3 miles CS94 – 205 N 38°14'41"E-2383.2 feet</p>

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 106</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.10 ft. spread of 4 vertical observations: 0.09 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10211333.38 Easting (State Plane Grid): 3537706.96 Elevation: (NAVD 1988) 265.99 Latitude: N 30° 37' 12.88083" Longitude: W 96° 23' 11.91932" Geoid 09 Height (separation): -87.34 Ellipsoid Height: 178.65 Grid Scale Factor: 0.99990373 Elevation Scale Factor: 0.99999145 Combined Scale Factor: 0.99989518 Convergence Angle: 2° 01' 58"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 0.7' north of Lorito Circle curb, 3.6' west of a storm drain inlet lid \odot, and 80' west of the \odot of Westwood Main Drive.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 2 SW 4.3 miles CS94 - 206 N 53°55'08"E-774.0 feet</p>

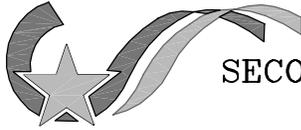
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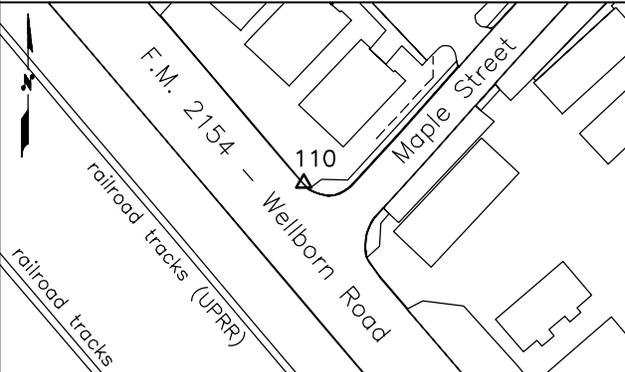
CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 107</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of horizontal observations: n/a spread of vertical observations: n/a</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10216858.81 Easting (State Plane Grid): 3539745.76 Elevation: (1929 / 1988*) 341.50 / 341.61 Latitude: N 30° 38' 06.82387" Longitude: W 96° 22' 46.35207" Geoid 09 Height (separation): -87.29 Ellipsoid Height: 254.22 Grid Scale Factor: 0.99990204 Elevation Scale Factor: 0.99998786 Combined Scale Factor: 0.99988990 Convergence Angle: 2° 02' 11"</p>
	<p><u>Upgrade Datums:</u> NGVD1929/NAVD1988*—vertical NAD83(CORS) TX Central zone – horizontal *NGVD 1929 elevations were determined with baseline / network computations. NAVD 1988 elevations were determined w/VERTCON factors.</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 E 5.1 miles CS94 – 206 SW 1.0 miles</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1'± northeast from edge of pavement of the parking lot at the Texas Hall of Fame, 10.5' west of a wood power pole, 12.4' east of a chain-link fence corner post, in the southwest line of F.M. 2818, near the north corner of the Texas Hall of Fame property.</p>	

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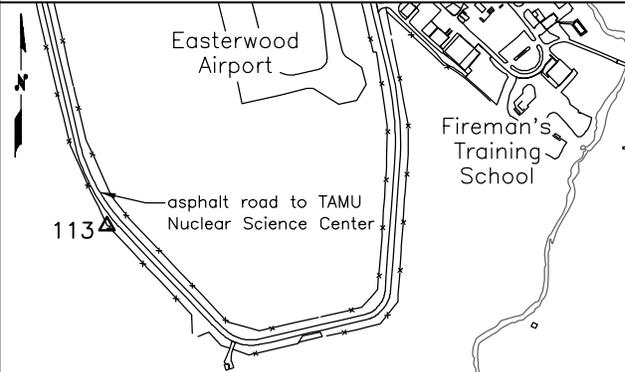
CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> <i>CS94 - 110</i></p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.08 ft. spread of 3 vertical observations: 0.11 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10211269.23</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3548882.98</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">345.87</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 37' 08.30455"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 21' 04.11408"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-87.45</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">258.42</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99990388</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99998763</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99989151</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 03' 04"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p>Note: Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 1</td><td style="text-align: right;">SE 1.8 miles</td></tr> <tr><td>CS94 – 164</td><td style="text-align: right;">SW 1.6 miles</td></tr> </table>	Northing (State Plane Grid):	10211269.23	Easting (State Plane Grid):	3548882.98	Elevation: (NAVD 1988)	345.87	Latitude:	N 30° 37' 08.30455"	Longitude:	W 96° 21' 04.11408"	Geoid 09 Height (separation):	-87.45	Ellipsoid Height:	258.42	Grid Scale Factor:	0.99990388	Elevation Scale Factor:	0.99998763	Combined Scale Factor:	0.99989151	Convergence Angle:	2° 03' 04"	2010 Mon 1	SE 1.8 miles	CS94 – 164	SW 1.6 miles
Northing (State Plane Grid):	10211269.23																										
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Convergence Angle:	2° 03' 04"																										
2010 Mon 1	SE 1.8 miles																										
CS94 – 164	SW 1.6 miles																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, 1-1/2" below grade. Located 4.5' northeast of Wellborn Road curb, 2.6' southwest of light pole w/conc. base (⊕), and 39' northwest of the ⊕ of Maple Street.</p>																										
																											

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> <i>CS94 - 113</i></p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.02 ft. spread of 3 vertical observations: 0.07 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10195638.80</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3546395.98</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">290.26</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 34' 34.56399"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 21' 38.94718"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-87.65</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">202.61</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99990909</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99999030</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99989939</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 02' 46"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <hr/> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 1</td><td style="text-align: right;">NE 2.2 miles</td></tr> <tr><td>CS94 - 114</td><td style="text-align: right;">SE 1.1 miles</td></tr> </table>	Northing (State Plane Grid):	10195638.80	Easting (State Plane Grid):	3546395.98	Elevation: (NAVD 1988)	290.26	Latitude:	N 30° 34' 34.56399"	Longitude:	W 96° 21' 38.94718"	Geoid 09 Height (separation):	-87.65	Ellipsoid Height:	202.61	Grid Scale Factor:	0.99990909	Elevation Scale Factor:	0.99999030	Combined Scale Factor:	0.99989939	Convergence Angle:	2° 02' 46"	2010 Mon 1	NE 2.2 miles	CS94 - 114	SE 1.1 miles
Northing (State Plane Grid):	10195638.80																										
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Combined Scale Factor:	0.99989939																										
Convergence Angle:	2° 02' 46"																										
2010 Mon 1	NE 2.2 miles																										
CS94 - 114	SE 1.1 miles																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.9' east of a fence angle post, 46' southwest of the centerline of the road around south end of Easterwood Airport runways, and 1.5 miles from F.M. 2347 (George Bush Drive).</p>																										
																											

Disclaimer: No expressed or implied warranties are made for the accuracy, completeness, reliability, usability, or suitability of the point data. The City of College Station, CDS/Muery Services, and Joe Orr, Inc. assume no responsibility for incorrect results or damages resulting from the use of data.



**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 114</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.08 ft. spread of 5 vertical observations: 0.15 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10190585.76 Easting (State Plane Grid): 3548737.47 Elevation: (NAVD 1988) 330.54 Latitude: N 30° 33' 43.74961" Longitude: W 96° 21' 14.24490" Geoid 09 Height (separation): -87.75 Ellipsoid Height: 242.79 Grid Scale Factor: 0.99991094 Elevation Scale Factor: 0.99998838 Combined Scale Factor: 0.99989932 Convergence Angle: 2° 02' 59"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 0.4' south of a woven wire fence on the northwest side of Hopes Creek Road, 28.8' southwest of a pipe fence corner post, and 1/4 mile southwest of Dowling Road.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 10 NE 2.3 miles CS94 – 115 S 0.9 miles</p>

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 115</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.08 ft. spread of 4 vertical observations: 0.10 ft.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 6.6' east of a white, plastic-rail fence on the west side of Hopes Creek Road, 19' north of a tee intersection in the fence, 4' south of an aerial powerline crossing, and 95'± north of the driveway (Ⓢ) to home at 12146 Hopes Creek Road.</p>	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10185704.97 Easting (State Plane Grid): 3549241.61 Elevation: (NAVD 1988) 309.62 Latitude: N 30° 32' 55.28893" Longitude: W 96° 21' 10.47923" Geoid 09 Height (separation): -87.83 Ellipsoid Height: 221.79 Grid Scale Factor: 0.99991275 Elevation Scale Factor: 0.99998938 Combined Scale Factor: 0.99990214 Convergence Angle: 2° 03' 01"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 3 SE 1.8 miles CS94 – 114 N 0.9 miles</p>

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011



Point Location Description:

Aluminum cap in concrete, flush with ground. Located 1.8' east of a fence corner post, at the intersection of the northwest R.O.W. line of Country Meadows Lane and the southwest R.O.W. line of South Dowling Road.

Station Name:

CS94 - 116

Established by: George W. Muery Services, Inc.

Date Established: 1994

Upgrade Survey by: Joe Orr, Inc.
 (using average of multiple RTK observations)

RTK Observation Quality for this point:

spread of 5 horizontal observations: 0.11 ft.

spread of 4 vertical observations: 0.11 ft.

Upgraded Location: U.S. Survey Feet

Northing (State Plane Grid): 10186336.89

Easting (State Plane Grid): 3557937.00

Elevation: (NAVD 1988) 267.46

Latitude: N 30° 32' 58.45018"

Longitude: W 96° 19' 30.83561"

Geoid 09 Height (separation): -87.91

Ellipsoid Height: 179.55

Grid Scale Factor: 0.99991263

Elevation Scale Factor: 0.99999141

Combined Scale Factor: 0.99990404

Convergence Angle: 2° 03' 52"

Upgrade Datums*: NAVD 1988 – vertical
 NAD83(CORS) TX Central zone – horizontal

*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station

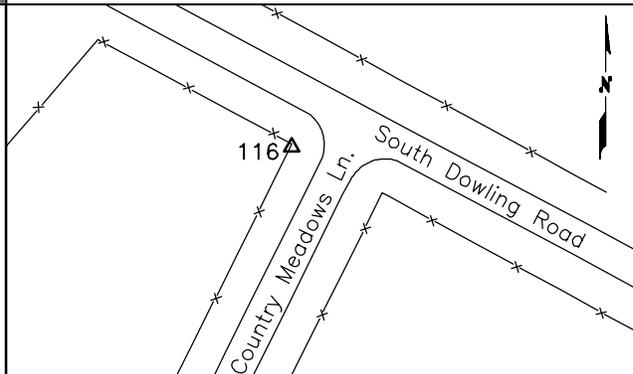
Note:

Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.

Nearest City of College Station Monuments:

2010 Mon 10 NE 1.5 miles

CS94 - 216 S 26°25'54"W-805.8 feet



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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> <i>CS94 - 117</i></p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.04 ft. spread of 3 vertical observations: 0.04 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10191793.14 Easting (State Plane Grid): 3559913.46 Elevation: (NAVD 1988) 321.95 Latitude: N 30° 33' 51.71906" Longitude: W 96° 19' 05.99385" Geoid 09 Height (separation): -87.85 Ellipsoid Height: 234.10 Grid Scale Factor: 0.99991064 Elevation Scale Factor: 0.99998879 Combined Scale Factor: 0.99989944 Convergence Angle: 2° 04' 05"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 14.8' south of electric meter pole for mobile home at 102 Ridge Run, 1.8' northwest of guy anchors, 68' southeast of the $\text{\textcircled{C}}$ of Rock Prairie Road West and 70'± southwest of the $\text{\textcircled{C}}$ of Ridge Bluff, between the north end of mobile homes at 102 and 104 Ridge Run.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 10 NE 0.4 miles CS94 – 116 SW 1.1 miles</p>

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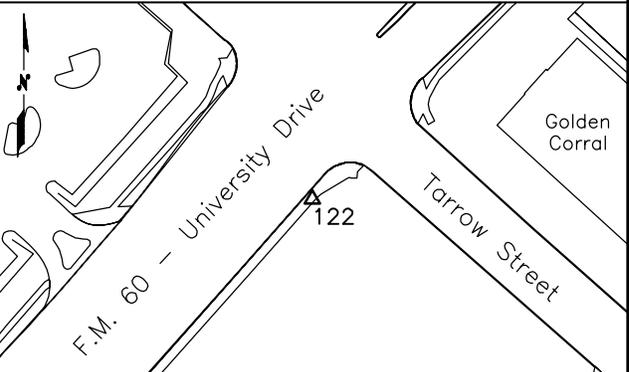
CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 120</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.05 ft. spread of 3 vertical observations: 0.04 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10205814.28 Easting (State Plane Grid): 3558925.24 Elevation: (NAVD 1988) 301.41 Latitude: N 30° 36' 10.77138" Longitude: W 96° 19' 11.50518" Geoid 09 Height (separation): -87.64 Ellipsoid Height: 213.77 Grid Scale Factor: 0.99990576 Elevation Scale Factor: 0.99998977 Combined Scale Factor: 0.99989553 Convergence Angle: 2° 04' 02"</p> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 1 SW 0.9 miles CS94 - 220 S 61°34'31"W-1086.8 feet</p>
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with sidewalk. Located 1.2' north of Haines Drive north curb, at corner of sidewalk and ramp, on the east side of Langford Street, across from the driveway at 1220 Haines Drive.</p>
	

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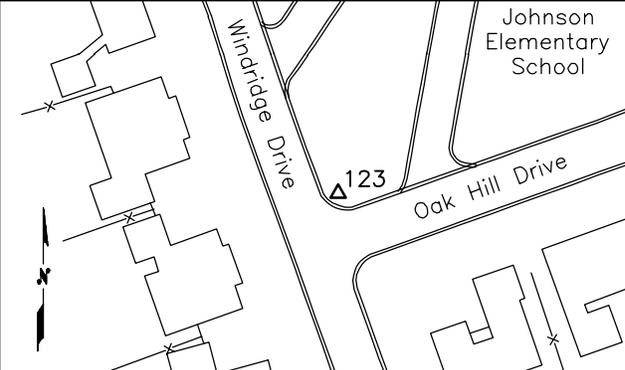
CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 122</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.08 ft. spread of 3 vertical observations: 0.01 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10216575.31 Easting (State Plane Grid): 3555622.66 Elevation: (NAVD 1988) 329.62 Latitude: N 30° 37' 58.39917" Longitude: W 96° 19' 44.84158" Geoid 09 Height (separation): -87.45 Ellipsoid Height: 242.17 Grid Scale Factor: 0.99990230 Elevation Scale Factor: 0.99998841 Combined Scale Factor: 0.99989071 Convergence Angle: 2° 03' 45"</p> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 NE 2.1 miles CS94 – 123 N 1.0 miles</p>
	<p><u>Point Location Description:</u> Aluminum cap in conc., under steel lid in walk. Located 4.2' southeast of curb on University Drive, 17' southwest of the traffic signal pole at the south corner of the intersection of Tarrow Street and University Drive.</p>
	

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 123</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.07 ft. spread of 3 vertical observations: 0.13 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10221906.44 Easting (State Plane Grid): 3556157.70 Elevation: (NAVD 1988) 293.56 Latitude: N 30° 38' 50.94493" Longitude: W 96° 19' 36.52357" Geoid 09 Height (separation): -87.39 Ellipsoid Height: 206.17 Grid Scale Factor: 0.99990070 Elevation Scale Factor: 0.99999013 Combined Scale Factor: 0.99989083 Convergence Angle: 2° 03' 49"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 26' east of the $\text{\textcircled{C}}$ of Windridge Drive, 27' north of the $\text{\textcircled{C}}$ of Oak Hill Drive, south of Johnson Elementary School in Bryan.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 1 SE 2.0 miles CS94 – 223 N 16°42'35"W–1078.7 feet</p> 

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> <i>CS94 - 125</i></p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.04 ft. spread of 2 vertical observations: 0.03 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10226775.67 Easting (State Plane Grid): 3564804.43 Elevation: (NAVD 1988) 289.85 Latitude: N 30° 39' 36.01919" Longitude: W 96° 17' 55.57430" Geoid 09 Height (separation): -87.42 Ellipsoid Height: 202.43 Grid Scale Factor: 0.99989938 Elevation Scale Factor: 0.99999031 Combined Scale Factor: 0.99988970 Convergence Angle: 2° 04' 41"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 8" below grade. Located 46' southeast of the middle gate (Ⓢ) and 1.5' north of the concrete footing under the chain-link fence around the BTU electrical substation on F.M. 158, 1/4 mile southeast of Copperfield Drive and 3/4 mile northwest of F.M. 60 (University Drive East).</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 SE 1.3 miles CS94 – 126 SE 1.0 miles</p>

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 126</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.06 ft. spread of 3 vertical observations: 0.02 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10221519.22 Easting (State Plane Grid): 3566228.08 Elevation: (NAVD 1988) 286.21 Latitude: N 30° 38' 43.51081" Longitude: W 96° 17' 41.46869" Geoid 09 Height (separation): -87.51 Ellipsoid Height: 198.70 Grid Scale Factor: 0.99990092 Elevation Scale Factor: 0.99999049 Combined Scale Factor: 0.99989141 Convergence Angle: 2° 04' 48"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 4.5' west of and 7.5' from curb end, on private asphalt street for former Texas Instruments factory, 0.3 miles from F.M. 60 (University Drive East), 80'± north of gates across street, at entrance to nature preserve.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 S 0.3 miles CS94 – 125 NW 1.0 miles</p>

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 127</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 2" below grade. Located on the northeast R.O.W. line of Highway 6, under a powerline, in front of Academy Sporting Goods, 49' south of a conc. power pole and 51' west of the south corner (curb) of Academy's parking lot.</p>	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.07 ft. spread of 3 vertical observations: 0.07 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10213187.10 Easting (State Plane Grid): 3565890.17 Elevation: (NAVD 1988) 258.97 Latitude: N 30° 37' 21.21027" Longitude: W 96° 17' 48.79518" Geoid 09 Height (separation): -87.62 Ellipsoid Height: 171.35 Grid Scale Factor: 0.99990346 Elevation Scale Factor: 0.99999180 Combined Scale Factor: 0.99989526 Convergence Angle: 2° 04' 44"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 N 1.3 miles CS94 – 128 SE 0.8 miles</p>

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 128</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.05 ft. spread of 3 vertical observations: 0.01 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10209557.32 Easting (State Plane Grid): 3567933.17 Elevation: (NAVD 1988) 265.71 Latitude: N 30° 36' 44.57000" Longitude: W 96° 17' 26.93662" Geoid 09 Height (separation): -87.69 Ellipsoid Height: 178.02 Grid Scale Factor: 0.99990464 Elevation Scale Factor: 0.99999148 Combined Scale Factor: 0.99989612 Convergence Angle: 2° 04' 56"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap, flush in concrete driveway apron. Located 0.6' west from edge of concrete and 1.8' north from top edge of sloped culvert headwall, on the east side of Highway 6 (frontage road) and south of the conc. driveway along the north side of the St. Thomas Aquinas church property. Point is 53.9' due west of a large wood power pole.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 N 2.0 miles CS94 - 129 S 9°25'31"E-3785.5 feet</p>

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 129</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 2 horizontal observations: 0.04 ft. spread of 2 vertical observations: 0.03 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10205822.95 Easting (State Plane Grid): 3568553.08 Elevation: (NAVD 1988) 260.92 Latitude: N 30° 36' 07.40634" Longitude: W 96° 17' 21.40014" Geoid 09 Height (separation): -87.75 Ellipsoid Height: 173.17 Grid Scale Factor: 0.99990588 Elevation Scale Factor: 0.99999171 Combined Scale Factor: 0.99989759 Convergence Angle: 2° 04' 59"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 21.5' west of and in line with the concrete sign base for 3001 Earl Rudder Freeway S (Highway 6), near the east R.O.W. line of Highway 6, 385' south of the centerline of Emerald Parkway.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 9 SE 2.6 miles CS94 - 128 N 9°25'31"W-3785.5 feet</p>

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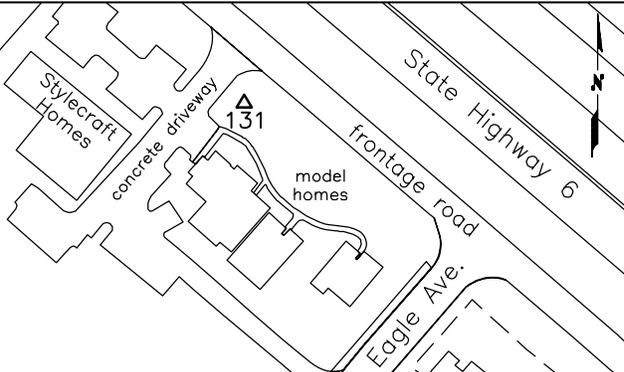
**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> <i>CS94 - 130</i></p>																						
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.07 ft. spread of 3 vertical observations: 0.13 ft.</p>																						
	<p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table border="0"> <tr><td>Northing (State Plane Grid):</td><td>10200590.80</td></tr> <tr><td>Easting (State Plane Grid):</td><td>3569863.02</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td>303.62</td></tr> <tr><td>Latitude:</td><td>N 30° 35' 15.17817"</td></tr> <tr><td>Longitude:</td><td>W 96° 17' 08.59814"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td>-87.83</td></tr> <tr><td>Ellipsoid Height:</td><td>215.79</td></tr> <tr><td>Grid Scale Factor:</td><td>0.99990766</td></tr> <tr><td>Elevation Scale Factor:</td><td>0.99998967</td></tr> <tr><td>Combined Scale Factor:</td><td>0.99989733</td></tr> <tr><td>Convergence Angle:</td><td>2° 05' 05"</td></tr> </table>	Northing (State Plane Grid):	10200590.80	Easting (State Plane Grid):	3569863.02	Elevation: (NAVD 1988)	303.62	Latitude:	N 30° 35' 15.17817"	Longitude:	W 96° 17' 08.59814"	Geoid 09 Height (separation):	-87.83	Ellipsoid Height:	215.79	Grid Scale Factor:	0.99990766	Elevation Scale Factor:	0.99998967	Combined Scale Factor:	0.99989733	Convergence Angle:	2° 05' 05"
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Convergence Angle:	2° 05' 05"																						
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u></p> <table border="0"> <tr><td>2010 Mon 9</td><td>E 2.0 miles</td></tr> <tr><td>CS94 – 131</td><td>SE 1.0 miles</td></tr> </table>	2010 Mon 9	E 2.0 miles	CS94 – 131	SE 1.0 miles																		
2010 Mon 9	E 2.0 miles																						
CS94 – 131	SE 1.0 miles																						
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1' north of a conc. R.O.W. marker at the north corner of Highway 6 (frontage road) and Woodcreek Drive, 18' northwest of the end of curb, on Woodcreek Drive.</p>																							

Disclaimer: No expressed or implied warranties are made for the accuracy, completeness, reliability, usability, or suitability of the point data. The City of College Station, CDS/Muery Services, and Joe Orr, Inc. assume no responsibility for incorrect results or damages resulting from the use of data.



CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 131</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.05 ft. spread of 3 vertical observations: 0.05 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10196004.16</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3572534.05</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">279.55</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 34' 28.84411"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 16' 39.97071"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-87.93</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">191.62</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99990930</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99999083</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99990012</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 05' 20"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 9</td><td style="text-align: right;">NE 1.5 miles</td></tr> <tr><td>CS94 - 130</td><td style="text-align: right;">NW 1.0 miles</td></tr> </table>	Northing (State Plane Grid):	10196004.16	Easting (State Plane Grid):	3572534.05	Elevation: (NAVD 1988)	279.55	Latitude:	N 30° 34' 28.84411"	Longitude:	W 96° 16' 39.97071"	Geoid 09 Height (separation):	-87.93	Ellipsoid Height:	191.62	Grid Scale Factor:	0.99990930	Elevation Scale Factor:	0.99999083	Combined Scale Factor:	0.99990012	Convergence Angle:	2° 05' 20"	2010 Mon 9	NE 1.5 miles	CS94 - 130	NW 1.0 miles
Northing (State Plane Grid):	10196004.16																										
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Convergence Angle:	2° 05' 20"																										
2010 Mon 9	NE 1.5 miles																										
CS94 - 130	NW 1.0 miles																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 3.4' northwest of conc. valley gutter, under a powerline, running along the southwest R.O.W. line of Highway 6. Point is southeast of the driveway into Stylecraft Homes, and 250± northwest of the C of Eagle Avenue.</p>																										
																											

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 134</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.08 ft. spread of 3 vertical observations: 0.06 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet <u>Northing (State Plane Grid):</u> 10181578.09 <u>Easting (State Plane Grid):</u> 3565553.00 <u>Elevation:</u> 323.53 <u>Latitude:</u> N 30° 32' 08.65167" <u>Longitude:</u> W 96° 18' 05.76110" <u>Geoid 09 Height (separation):</u> -88.06 ft. <u>Ellipsoid Height:</u> 235.47 <u>Grid Scale Factor:</u> 0.99991455 <u>Elevation Scale Factor:</u> 0.99998873 <u>Combined Scale Factor:</u> 0.99990328 <u>Convergence Angle:</u> 2° 04' 36"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" below grade. Located 0.7' south of curb end and 22.5' east of culvert headwall, on the south side of the Wellborn Post Office driveway on F.M. 2154. Point is located 123' east of railroad ☐.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 4 SE 2.0 miles CS94 – 216 NW 1.7 miles</p>

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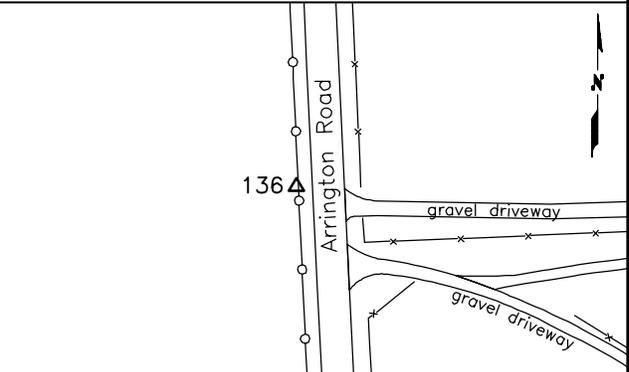
**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 135</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of horizontal observations: n/a spread of vertical observations: n/a</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1/2" below grade. Located 1.8' north of a 10" fence post at tee in a wood rail fence at the end (cul-de-sac) of Woodlake Drive.</p>	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10177162.33 Easting (State Plane Grid): 3576349.95 Elevation: (1929 / 1988*) 278.22 / 278.31 Latitude: N 30° 31' 21.08188" Longitude: W 96° 16' 04.22215" Geoid 09 Height (separation): -88.25 Ellipsoid Height: 189.97 Grid Scale Factor: 0.99991644 Elevation Scale Factor: 0.99999090 Combined Scale Factor: 0.99990734 Convergence Angle: 2° 05' 38"</p>
	<p><u>Upgrade Datums:</u> NGVD1929/NAVD1988*—vertical NAD83(CORS) TX Central zone – horizontal *NGVD 1929 elevations were determined with baseline / network computations. NAVD 1988 elevations were determined w/VERTCON factors.</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 4 SW 2.0 miles CS94 - 235 N 52°00'50"W-812.7 feet</p>

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 136</p> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.07 ft. spread of 4 vertical observations: 0.06 ft.</p> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10181430.68 Easting (State Plane Grid): 3579117.38 Elevation: (NAVD 1988) 277.95 Latitude: N 30° 32' 02.30231" Longitude: W 96° 15' 30.81400" Geoid 09 Height (separation): -88.22 Ellipsoid Height: 189.73 Grid Scale Factor: 0.99991480 Elevation Scale Factor: 0.99999092 Combined Scale Factor: 0.99990572 Convergence Angle: 2° 05' 56"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" above grade. Located 2' east of a steel pipe/cable fence on the west side of Arrington Road, across from mailbox at 2277 Arrington Rd, 0.8 miles south of the intersection of Nantucket Drive with Arrington Road.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 11 NE 1.4 miles CS94 - 152 S 3°59'13"E-1800.2 feet</p> 

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 137</p>				
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>				
	<p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.13 ft. spread of 4 vertical observations: 0.07 ft.</p>				
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10185974.86 Easting (State Plane Grid): 3574741.19 Elevation: (NAVD 1988) 333.09 Latitude: N 30° 32' 48.83716" Longitude: W 96° 16' 18.92607" Geoid 09 Height (separation): -88.10 Ellipsoid Height: 244.99 Grid Scale Factor: 0.99991300 Elevation Scale Factor: 0.99998827 Combined Scale Factor: 0.99990127 Convergence Angle: 2° 05' 31"</p>				
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>				
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" above grade. Located 1.6 south of a guy anchor and 14' southeast of a wood power pole, 32'± northwest of the C of Greens Prairie Road, and 130' southwest of Castlegate Drive C.</p>	<p><u>Nearest City of College Station Monuments:</u></p> <table border="0"> <tr> <td>2010 Mon 11</td> <td>NE 1.4 miles</td> </tr> <tr> <td>CS94 - 136</td> <td>SE 1.2 miles</td> </tr> </table>	2010 Mon 11	NE 1.4 miles	CS94 - 136	SE 1.2 miles
2010 Mon 11	NE 1.4 miles				
CS94 - 136	SE 1.2 miles				

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**



Point Location Description:

Aluminum cap in concrete, flush with ground. Located 60'± northeast of the centerline of the north-bound frontage road of Highway 6, 500' northeast of the centerline of Wm. D. Fitch Parkway,

Station Name:

CS94 - 138

Established by: George W. Muery Services, Inc.
Date Established: 1994

Upgrade Survey by: CDS/Muery Services
(in network w/ 2010 primary monuments)

RTK Observation Quality for this point:
spread of 3 horizontal observations: 0.05 ft.
spread of 3 vertical observations: 0.01 ft.

Upgraded Location: U.S. Survey Feet

Northing (State Plane Grid):	10191189.17
Easting (State Plane Grid):	3578873.36
Elevation: (NAVD 1988)	297.79
Latitude:	N 30° 33' 38.92155"
Longitude:	W 96° 15' 29.51548"
Geoid 09 Height (separation):	-88.08
Ellipsoid Height:	209.71
Grid Scale Factor:	0.99991111
Elevation Scale Factor:	0.99998996
Combined Scale Factor:	0.99990108
Convergence Angle:	2° 05' 56"

Upgrade Datums*: NAVD 1988 – vertical
NAD83(CORS) TX Central zone – horizontal

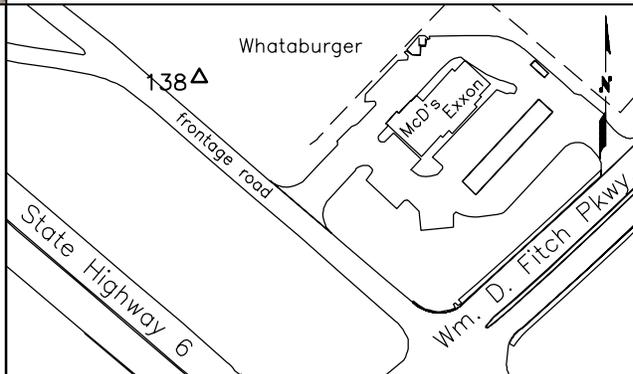
*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station

Note:

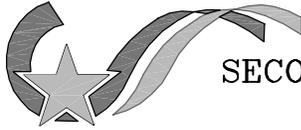
Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.

Nearest City of College Station Monuments:

2010 Mon 11	SE 0.8 miles
CS94 - 149	NE 1.2 miles



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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 140</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.04 ft. spread of 3 vertical observations: 0.08 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10215999.95 Easting (State Plane Grid): 3573670.83 Elevation: (NAVD 1988) 293.58 Latitude: N 30° 37' 46.23242" Longitude: W 96° 16' 18.62472" Geoid 09 Height (separation): -87.67 Ellipsoid Height: 205.91 Grid Scale Factor: 0.99990267 Elevation Scale Factor: 0.99999014 Combined Scale Factor: 0.99989282 Convergence Angle: 2° 05' 31"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 NW 1.6 miles CS94 - 141 N 1.0 miles</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 3'± north of a fence corner post on the west side of Nunn Jones Road and the south fence leading to a cattle guard on a gravel, oil well access road, 1.9 miles south of the intersection of Nunn Jones Road and Highway 30.</p>	

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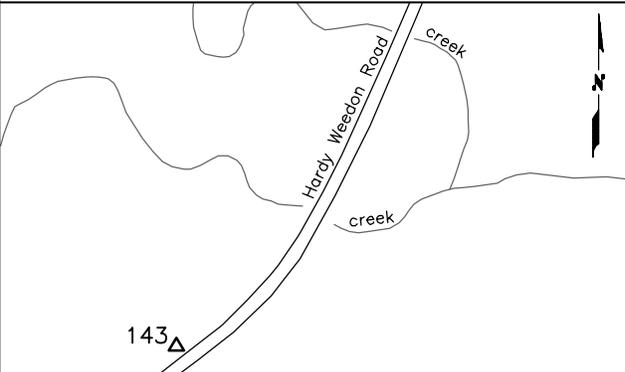
CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 141</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.5'± northwest of barbed-wire fence, on the northwest side of Nunn Jones Road, 28'± southwest of the fence angle post and 165' northeast of High Lonesome (Q).</p> <p><u>Note:</u> This monument was relocated 16' northwest, by Strong Surveying, prior to road realignment in the late 1990's.</p>	<p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.08 ft. spread of 3 vertical observations: 0.02 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10221303.58 Easting (State Plane Grid): 3573117.22 Elevation: (NAVD 1988) 324.39 Latitude: N 30° 38' 38.89588" Longitude: W 96° 16' 22.74206" Geoid 09 Height (separation): -87.59 Ellipsoid Height: 236.80 Grid Scale Factor: 0.99990106 Elevation Scale Factor: 0.99998867 Combined Scale Factor: 0.99988973 Convergence Angle: 2° 05' 29"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 SW 1.3 miles CS94 – 242 N 0.9 miles</p>

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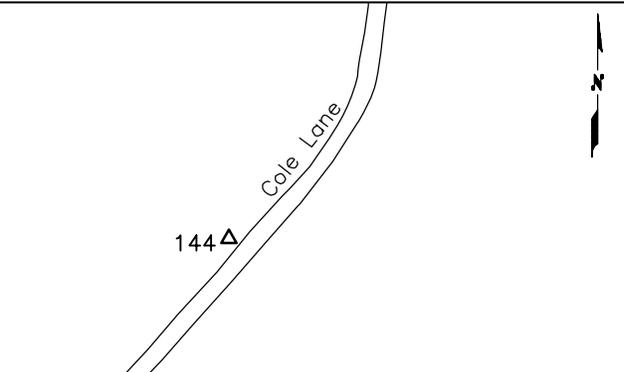
CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 143</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.05 ft. spread of 3 vertical observations: 0.06 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10227651.38 Easting (State Plane Grid): 3580416.01 Elevation: (NAVD 1988) 252.40 Latitude: N 30° 39' 39.04378" Longitude: W 96° 14' 56.57275" Geoid 09 Height (separation): -87.59 Ellipsoid Height: 164.81 Grid Scale Factor: 0.99989930 Elevation Scale Factor: 0.99999211 Combined Scale Factor: 0.99989141 Convergence Angle: 2° 06' 13"</p> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 SW 3.0 miles CS94 – 144 SE 1.2 miles</p>
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.3' south of a barbed-wire fence on the northwest side of Hardy Weedon Road, 36'± northwest from the center of the road, 400'± south of the first (south) creek branch, 1.1 miles northeast from the intersection of Highway 30 with Hardy Weedon Road.</p>
	

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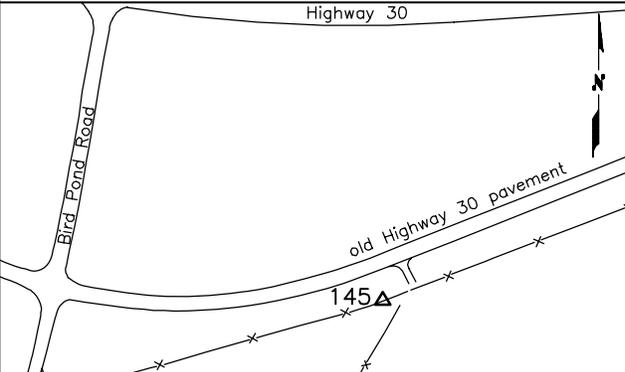
CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 144</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.09 ft. spread of 4 vertical observations: 0.17 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10221464.67 Easting (State Plane Grid): 3582676.48 Elevation: (NAVD 1988) 269.53 Latitude: N 30° 38' 37.02346" Longitude: W 96° 14' 33.31194" Geoid 09 Height (separation): -87.71 Ellipsoid Height: 181.82 Grid Scale Factor: 0.99990112 Elevation Scale Factor: 0.99999130 Combined Scale Factor: 0.99989241 Convergence Angle: 2° 06' 25"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 7 SE 2.9 miles CS94 – 244 S 40°46'14"W-2587.1 feet</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 28'± northwest of the \odot of Cole Lane, 1/2 mile from Highway 30, between homes at 5001 and 5033 Cole Lane, 9.7' southeast of a 6" Live Oak tree near a property corner.</p>	

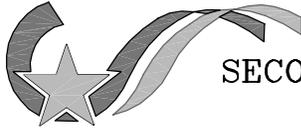
Disclaimer: No expressed or implied warranties are made for the accuracy, completeness, reliability, usability, or suitability of the point data. The City of College Station, CDS/Muery Services, and Joe Orr, Inc. assume no responsibility for incorrect results or damages resulting from the use of data.



CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 145</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.08 ft. spread of 3 vertical observations: 0.08 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10216537.61 Easting (State Plane Grid): 3583848.43 Elevation: (NAVD 1988) 295.13 Latitude: N 30° 37' 47.85879" Longitude: W 96° 14' 21.97972" Geoid 09 Height (separation): -87.79 Ellipsoid Height: 207.34 Grid Scale Factor: 0.99990262 Elevation Scale Factor: 0.99999008 Combined Scale Factor: 0.99989270 Convergence Angle: 2° 06' 31"</p> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 7 SE 2.3 miles CS94 - 244 NW 0.8 miles</p>
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 3.5' north of the barbed-wire fence on the original south R.O.W. line of Highway 30, 550' east of the intersection (C) with Bird Pond Road, 4.5' west of a cedar tree, and 32' east of a conc. R.O.W. marker in fenceline.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 3.5' north of the barbed-wire fence on the original south R.O.W. line of Highway 30, 550' east of the intersection (C) with Bird Pond Road, 4.5' west of a cedar tree, and 32' east of a conc. R.O.W. marker in fenceline.</p>	

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 146</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.09 ft. spread of 4 vertical observations: 0.07 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10211292.97 Easting (State Plane Grid): 3583030.63 Elevation: (NAVD 1988) 284.17 Latitude: N 30° 36' 56.27713" Longitude: W 96° 14' 33.54148" Geoid 09 Height (separation): -87.86 Ellipsoid Height: 196.31 Grid Scale Factor: 0.99990426 Elevation Scale Factor: 0.99999060 Combined Scale Factor: 0.99989487 Convergence Angle: 2° 06' 25"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p>
	<p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 9 SW 2.4 miles CS94 - 145 N 1.0 miles</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 2" below grade. Located 4.2' south of a fence angle post on the east side of Bird Pond Road, at an gravel oil well road, 1.4 mi. south of the intersection of Bird Pond Road with Highway 30.</p>	

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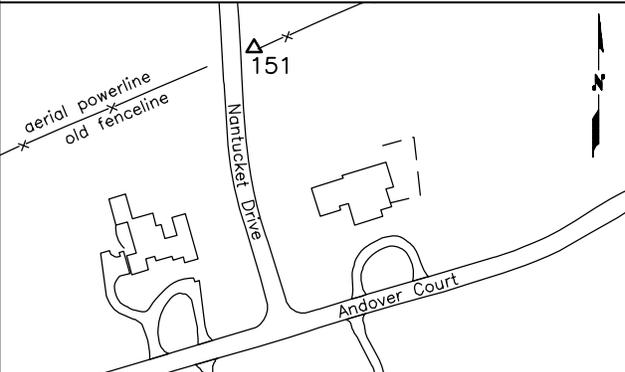
**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 148</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.07 ft. spread of 3 vertical observations: 0.03 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10200516.49 Easting (State Plane Grid): 3580111.93 Elevation: (NAVD 1988) 266.20 Latitude: N 30° 35' 10.73773" Longitude: W 96° 15' 11.44563" Geoid 09 Height (separation): -87.96 Ellipsoid Height: 178.24 Grid Scale Factor: 0.99990781 Elevation Scale Factor: 0.99999147 Combined Scale Factor: 0.99989928 Convergence Angle: 2° 06' 05"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.5' northwest of the barbed-wire fence on the southeast side of Bradley Road, 0.3 miles northeast of Rock Prairie Road, 675' northeast of the Entergy aerial power transmission line, 10'± southwest of a gate ☉.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 9 S 1°23'58"E-1550.0 feet CS94 - 256 SE 1.6 miles</p>

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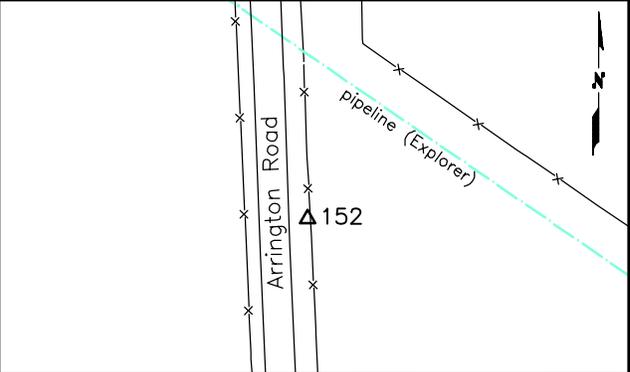
CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 151</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.05 ft. spread of 4 vertical observations: 0.09 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10180838.86 Easting (State Plane Grid): 3583011.75 Elevation: (NAVD 1988) 302.76 Latitude: N 30° 31' 55.03416" Longitude: W 96° 14' 46.56012" Geoid 09 Height (separation): -88.28 Ellipsoid Height: 214.48 Grid Scale Factor: 0.99991508 Elevation Scale Factor: 0.99998973 Combined Scale Factor: 0.99990482 Convergence Angle: 2° 06' 18"</p> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 11 N 1.4 miles CS94 – 251 N 9°40'06"W-1078.0 feet</p>
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 35'± east of Nantucket Drive (Q), 375' north of the intersection with Andover Court, on the north side of an old fenceline, and under an aerial powerline.</p>
	

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 152</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.10 ft. spread of 5 vertical observations: 0.15 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10179634.82</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3579242.54</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">286.39</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 31' 44.49229"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 15' 30.13579"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-88.25</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">198.14</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99991550</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99999052</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99990602</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 05' 56"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 11</td><td style="text-align: right;">NE 1.7 miles</td></tr> <tr><td>CS94 - 136</td><td style="text-align: right;">N 3°59'13"W-1800.2 feet</td></tr> </table>	Northing (State Plane Grid):	10179634.82	Easting (State Plane Grid):	3579242.54	Elevation: (NAVD 1988)	286.39	Latitude:	N 30° 31' 44.49229"	Longitude:	W 96° 15' 30.13579"	Geoid 09 Height (separation):	-88.25	Ellipsoid Height:	198.14	Grid Scale Factor:	0.99991550	Elevation Scale Factor:	0.99999052	Combined Scale Factor:	0.99990602	Convergence Angle:	2° 05' 56"	2010 Mon 11	NE 1.7 miles	CS94 - 136	N 3°59'13"W-1800.2 feet
Northing (State Plane Grid):	10179634.82																										
Easting (State Plane Grid):	3579242.54																										
Elevation: (NAVD 1988)	286.39																										
Latitude:	N 30° 31' 44.49229"																										
Longitude:	W 96° 15' 30.13579"																										
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Combined Scale Factor:	0.99990602																										
Convergence Angle:	2° 05' 56"																										
2010 Mon 11	NE 1.7 miles																										
CS94 - 136	N 3°59'13"W-1800.2 feet																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 0.6' west of a barbed-wire fence on the east side of Arrington Road, 114' south of Explorer Pipeline sign in the east fenceline, and 57' north of a 16" Oak tree in the same fence. Point is 0.8 miles south of the intersection of Harpers Ferry Road with Arrington Road.</p>																										
																											

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 153</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.06 ft. spread of 3 vertical observations: 0.14 ft.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.3' northeast of a barbed-wire fence, 8.8' southeast of a fence corner post (3-way), on the southwest R.O.W. line of Highway 6, 1.2 miles southeast of the overpass to Texas World Speedway.</p>	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10176927.45 Easting (State Plane Grid): 3592877.45 Elevation: (NAVD 1988) 243.18 Latitude: N 30° 31' 12.74225" Longitude: W 96° 12' 55.47981" Geoid 09 Height (separation): -88.47 Ellipsoid Height: 154.71 Grid Scale Factor: 0.99991677 Elevation Scale Factor: 0.99999259 Combined Scale Factor: 0.99990937 Convergence Angle: 2° 07' 16"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 5 SE 1.4 miles CS94 – 263 NW 0.7 miles</p>

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011



Station Name:
CS94 - 154

Established by: George W. Muery Services, Inc.
Date Established: 1994

Upgrade Survey by: Joe Orr, Inc.
 (using average of multiple RTK observations)
RTK Observation Quality for this point:
 spread of 5 horizontal observations: 0.11 ft.
 spread of 5 vertical observations: 0.22 ft.

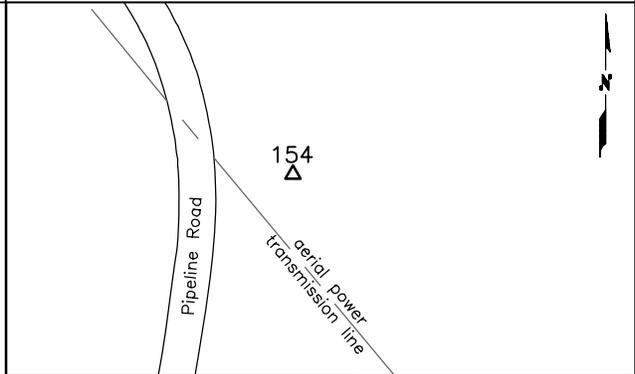
Upgraded Location: U.S. Survey Feet
 Northing (State Plane Grid): 10181118.34
 Easting (State Plane Grid): 3595354.29
 Elevation: (NAVD 1988) Poor Average! 252.7±
 Latitude: N 30° 31' 53.28952"
 Longitude: W 96° 12' 25.40349"
 Geoid 09 Height (separation): -88.45
 Ellipsoid Height: 164.20
 Grid Scale Factor: 0.99991515
 Elevation Scale Factor: 0.99999214
 Combined Scale Factor: 0.99990729
 Convergence Angle: 2° 07' 31"

Upgrade Datums*: NAVD 1988 – vertical
 NAD83(CORS) TX Central zone – horizontal
 *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station

Note:
 Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.

Nearest City of College Station Monuments:
 2010 Mon 5 NW 1.8 miles
 CS94 – 254 N 40°33'52"W-2211.3 feet

Point Location Description:
 Aluminum cap in concrete, flush with ground. Located 35' northeast of the Entergy power transmission line, on the east side of Pipeline Road. The point is 36' west of a power pole at an angle point in a distribution powerline.



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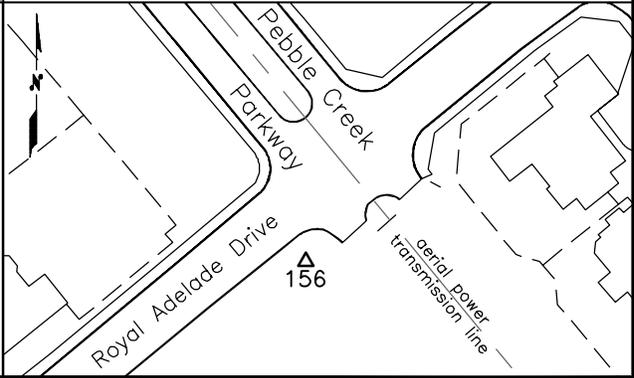
**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 155</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.10 ft. spread of 5 vertical observations: 0.17 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10184147.13 Easting (State Plane Grid): 3592631.36 Elevation: (NAVD 1988) 303.54 Latitude: N 30° 32' 24.24832" Longitude: W 96° 12' 55.23648" Geoid 09 Height (separation): -88.37 Ellipsoid Height: 215.17 Grid Scale Factor: 0.99991394 Elevation Scale Factor: 0.99998970 Combined Scale Factor: 0.99990364 Convergence Angle: 2° 07' 16"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located on the northeast edge of the Texas World Speedway property, 1.0' southwest of a barbed-wire fence and 21' southeast of the south fence corner (chain-link post) of a fenced area with exposed gas valves.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 6 NE 2.1 miles CS94 – 254 S 43°36'28"E-1862.9 feet</p>

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 156</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.03 ft. spread of 3 vertical observations: 0.07 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10191681.91 Easting (State Plane Grid): 3586489.16 Elevation: (NAVD 1988) 259.11 Latitude: N 30° 33' 41.02647" Longitude: W 96° 14' 02.25531" Geoid 09 Height (separation): -88.17 Ellipsoid Height: 170.94 Grid Scale Factor: 0.99991104 Elevation Scale Factor: 0.99999182 Combined Scale Factor: 0.99990285 Convergence Angle: 2° 06' 41"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 6" below grade. Located at the south corner of Pebble Creek Parkway and Royal Adelaide Drive, 15.7' south-east of Royal Adelaide curb, 22.2' southwest of Pebble Creek Pkwy. curb, and 9.3' south of a concrete power pole.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 11 SW 1.1 miles CS94 – 256 N 38°16'05"W-2255.1 feet</p> 

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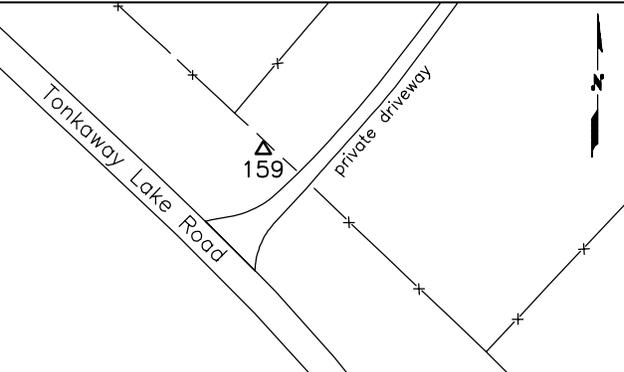
**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> <i>CS94 - 158</i></p>				
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>				
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.11 ft. spread of 3 vertical observations: 0.12 ft.</p>				
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10205844.85 Easting (State Plane Grid): 3590098.50 Elevation: (NAVD 1988) 252.20 Latitude: N 30° 35' 59.80600" Longitude: W 96° 13' 15.01094" Geoid 09 Height (separation): -88.02 Ellipsoid Height: 164.18 Grid Scale Factor: 0.99990613 Elevation Scale Factor: 0.99999214 Combined Scale Factor: 0.99989827 Convergence Angle: 2° 07' 05"</p>				
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>				
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 0.8' northwest of a barbed-wire fence, along the southeast side of a gated roadway to a gas processing site, and 31' southwest of the fence corner in the southwest fenceline of Tonkaway Lake Road. This roadway is 220' north of the \odot of Wm. D. Fitch Parkway at Tonkaway Lake Road.</p>	<p><u>Nearest City of College Station Monuments:</u></p> <table border="0"> <tr> <td>2010 Mon 7</td> <td>NE 1.8 miles</td> </tr> <tr> <td>CS94 - 159</td> <td>SE 0.7 miles</td> </tr> </table>	2010 Mon 7	NE 1.8 miles	CS94 - 159	SE 0.7 miles
2010 Mon 7	NE 1.8 miles				
CS94 - 159	SE 0.7 miles				

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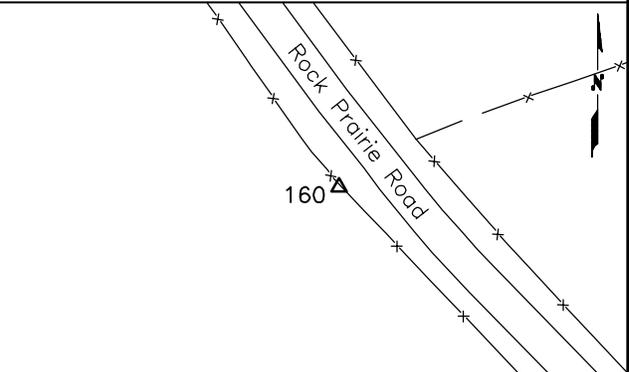
CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 159</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.10 ft. spread of 3 vertical observations: 0.04 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10203377.05 Easting (State Plane Grid): 3592854.50 Elevation: (NAVD 1988) 246.97 Latitude: N 30° 35' 34.38553" Longitude: W 96° 12' 44.54167" Geoid 09 Height (separation): -88.09 Ellipsoid Height: 158.88 Grid Scale Factor: 0.99990700 Elevation Scale Factor: 0.99999240 Combined Scale Factor: 0.99989939 Convergence Angle: 2° 07' 21"</p> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 7 NE 2.0 miles CS94 – 159 NW 0.7 miles</p>
	<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" above ground. Located 1.0' southwest of a wood-rail fence, 30'± northwest of the driveway and cattle guard (C) at 16305 Tonkaway Lake Road, and 0.6 miles southeast of Wm. D. Fitch Parkway.</p>
	

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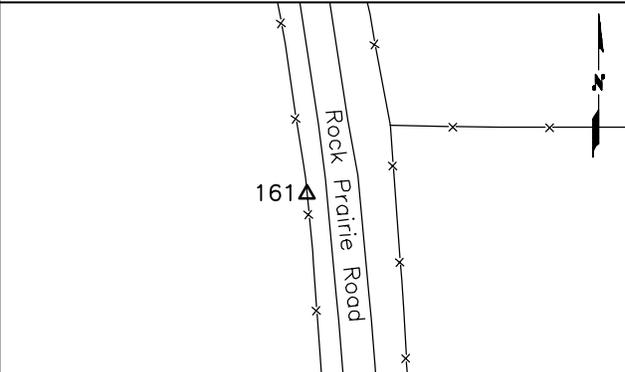
CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 160</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.10 ft. spread of 5 vertical observations: 0.20 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10193980.98</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3598124.66</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">211.20</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 33' 59.50583"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 11' 48.27864"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-88.30</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">122.90</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99991036</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99999412</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99990447</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 07' 50"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <hr/> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 6</td><td style="text-align: right;">SE 1.0 miles</td></tr> <tr><td>CS94 - 260</td><td style="text-align: right;">S 45°35'39"E-1782.5 feet</td></tr> </table>	Northing (State Plane Grid):	10193980.98	Easting (State Plane Grid):	3598124.66	Elevation: (NAVD 1988)	211.20	Latitude:	N 30° 33' 59.50583"	Longitude:	W 96° 11' 48.27864"	Geoid 09 Height (separation):	-88.30	Ellipsoid Height:	122.90	Grid Scale Factor:	0.99991036	Elevation Scale Factor:	0.99999412	Combined Scale Factor:	0.99990447	Convergence Angle:	2° 07' 50"	2010 Mon 6	SE 1.0 miles	CS94 - 260	S 45°35'39"E-1782.5 feet
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CS94 - 260	S 45°35'39"E-1782.5 feet																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" above ground. Located 1.2± east of the barbed-wire fence on the southwest side of Rock Prairie Road, 18± south of a gate (Ⓞ), 1-1/4 miles north of the intersection with Sulphur Springs Road.</p>																										
																											

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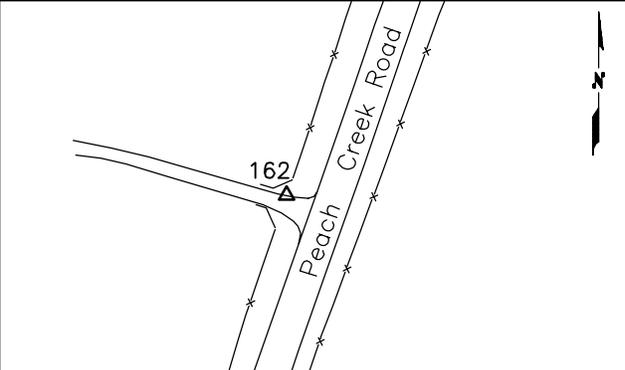
CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 161</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.14 ft. spread of 3 vertical observations: 0.14 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10190506.73</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3601592.87</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">201.81</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 33' 23.86141"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 11' 10.11478"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-88.40</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">113.41</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99991167</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99999457</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99990625</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 08' 10"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <hr/> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 6</td><td style="text-align: right;">S 15°23'E-270.9 feet</td></tr> <tr><td>CS94 - 261</td><td style="text-align: right;">S 3°05'15"E-997.2 feet</td></tr> </table>	Northing (State Plane Grid):	10190506.73	Easting (State Plane Grid):	3601592.87	Elevation: (NAVD 1988)	201.81	Latitude:	N 30° 33' 23.86141"	Longitude:	W 96° 11' 10.11478"	Geoid 09 Height (separation):	-88.40	Ellipsoid Height:	113.41	Grid Scale Factor:	0.99991167	Elevation Scale Factor:	0.99999457	Combined Scale Factor:	0.99990625	Convergence Angle:	2° 08' 10"	2010 Mon 6	S 15°23'E-270.9 feet	CS94 - 261	S 3°05'15"E-997.2 feet
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CS94 - 261	S 3°05'15"E-997.2 feet																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.5± east of a fence post, at a slight angle point in the barbed-wire fence on the west side of Rock Prairie Road, 1/4 mile north of the intersection of Sulphur Springs Rd.</p>																										
																											

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 162</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.12 ft. spread of 4 vertical observations: 0.14 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10186353.96</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3600326.84</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">213.19</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 32' 43.25015"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 11' 26.35376"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-88.44</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">124.75</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99991321</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99999403</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99990724</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 08' 01"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/ Muery Services for the City of College Station</p> <hr/> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 6</td><td style="text-align: right;">NE 0.8 miles</td></tr> <tr><td>CS94 - 262</td><td style="text-align: right;">N 23°05'44"E-2016.5 feet</td></tr> </table>	Northing (State Plane Grid):	10186353.96	Easting (State Plane Grid):	3600326.84	Elevation: (NAVD 1988)	213.19	Latitude:	N 30° 32' 43.25015"	Longitude:	W 96° 11' 26.35376"	Geoid 09 Height (separation):	-88.44	Ellipsoid Height:	124.75	Grid Scale Factor:	0.99991321	Elevation Scale Factor:	0.99999403	Combined Scale Factor:	0.99990724	Convergence Angle:	2° 08' 01"	2010 Mon 6	NE 0.8 miles	CS94 - 262	N 23°05'44"E-2016.5 feet
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CS94 - 262	N 23°05'44"E-2016.5 feet																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, 3" below grade. Located in the north edge of the gravel driveway at 2647 Peach Creek Road. The point is 20.3' east of a cattle guard \square, 8.4' south of a fence corner post, and 1/4 mile southwest of the Sulphur Springs Road / Rock Prairie Road intersection.</p>																										
																											

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 164</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.09 ft. spread of 4 vertical observations: 0.13 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10207269.05 Easting (State Plane Grid): 3541253.11 Elevation: (NAVD 1988) 344.70 Latitude: N 30° 36' 31.42829" Longitude: W 96° 22' 33.01261" Geoid 09 Height (separation): -87.43 Ellipsoid Height: 257.27 Grid Scale Factor: 0.99990508 Elevation Scale Factor: 0.99998769 Combined Scale Factor: 0.99989276 Convergence Angle: 2° 02' 18"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.5± east of a wood rail fence, along the west right-of-way of Turkey Creek Road (F.M. 2513), 1/4 mile north from the intersection with F&B Road.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 1 SE 2.6 miles CS94 – 165 SE 0.9 miles</p>

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 165</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.10 ft. spread of 3 vertical observations: 0.05 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10202981.02 Easting (State Plane Grid): 3543114.99 Elevation: (NAVD 1988) 322.45 Latitude: N 30° 35' 48.35370" Longitude: W 96° 22' 13.46663" Geoid 09 Height (separation): -87.51 Ellipsoid Height: 234.94 Grid Scale Factor: 0.99990652 Elevation Scale Factor: 0.99998875 Combined Scale Factor: 0.99989527 Convergence Angle: 2° 02' 28"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located in the median of McKenzie Terminal Boulevard, 10'± northeast of the Easterwood Airport entrance sign, on the south side of Raymond Stotzer Parkway at the Turkey Creek Road overpass.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 1 E 2.2 miles CS94 – 164 NW 0.9 miles</p>

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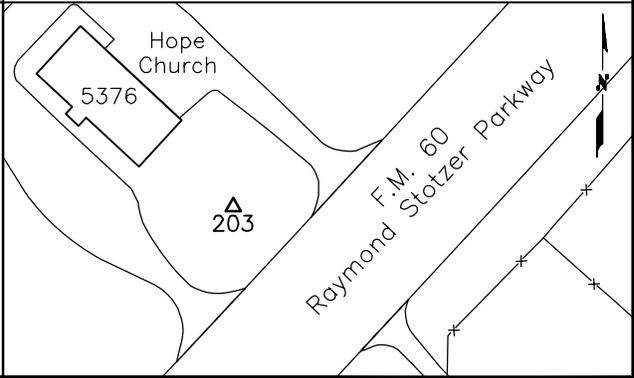
CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 202</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.11 ft. spread of 3 vertical observations: 0.18 ft.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.5' southwest of a barbed-wire fence on the northeast side of Lightsey Road, 15'± northwest from the fence corner at River Road, and 7' northwest of a 30" Post Oak tree.</p>	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10192585.54 Easting (State Plane Grid): 3537636.57 Elevation: (NAVD 1988) Poor Average! 292.5± Latitude: N 30° 34' 07.44480" Longitude: W 96° 23' 20.33125" Geoid 09 Height (separation): -87.62 Ellipsoid Height: 204.83 Grid Scale Factor: 0.99991007 Elevation Scale Factor: 0.99999020 Combined Scale Factor: 0.99990026 Convergence Angle: 2° 01' 54"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 2 SW 1.4 miles CS94 - 102 S 13°18'52"W-2111.7 feet</p>

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 203</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.05 ft. spread of 4 vertical observations: 0.17 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10199181.48 Easting (State Plane Grid): 3538693.26 Elevation: (NAVD 1988) 311.15 Latitude: N 30° 35' 12.32339" Longitude: W 96° 23' 05.57359" Geoid 09 Height (separation): -87.52 Ellipsoid Height: 223.63 Grid Scale Factor: 0.99990776 Elevation Scale Factor: 0.99998930 Combined Scale Factor: 0.99989706 Convergence Angle: 2° 02' 01"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p>
	<p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 2 SW 2.3 miles CS94 - 103 S 39°58'00"W-3988.8 feet</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 10' east of the sign base for Hope Evangelical Free Church at 5376 Raymond Stotzer Parkway (F.M. 60), on the northwest R.O.W. line of F.M. 60, 1/2 mile northeast of Jones Road.</p>	

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 204</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" above grade. Located 1.5' northeast of a barbed-wire fence on the southwest side of Jones Road, across from the intersection of Piper Lane, 33' south of a wood power pole.</p>	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.11 ft. spread of 4 vertical observations: 0.07 ft.</p>
<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10200570.04 Easting (State Plane Grid): 3532324.94 Elevation: (NAVD 1988) 278.70 Latitude: N 30° 35' 28.29093" Longitude: W 96° 24' 17.82949" Geoid 09 Height (separation): -87.45 Ellipsoid Height: 191.25 Grid Scale Factor: 0.99990721 Elevation Scale Factor: 0.99999085 Combined Scale Factor: 0.99989805 Convergence Angle: 2° 01' 24"</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/ Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 2 S 2.0 miles CS94 – 103 SE 1.1 miles</p>	

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 205</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.16 ft. spread of 3 vertical observations: 0.14 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10209526.52 Easting (State Plane Grid): 3533471.53 Elevation: (NAVD 1988) 295.20 Latitude: N 30° 36' 56.49123" Longitude: W 96° 24' 01.09612" Geoid 09 Height (separation): -87.33 Ellipsoid Height: 207.87 Grid Scale Factor: 0.99990426 Elevation Scale Factor: 0.99999005 Combined Scale Factor: 0.99989431 Convergence Angle: 2° 01' 33"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" above grade. Located 0.7' south of the wire fence on the northwest R.O.W. line of West Villa Maria Road, 3.1' south of wood power pole, 100± northeast of Brazos Christian School north driveway (Ⓞ), and 0.9 miles northeast of Highway 47 (Ⓞ).</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 2 S 3.7 miles CS94 – 105 S 38°14'41"W–2383.2 feet</p>

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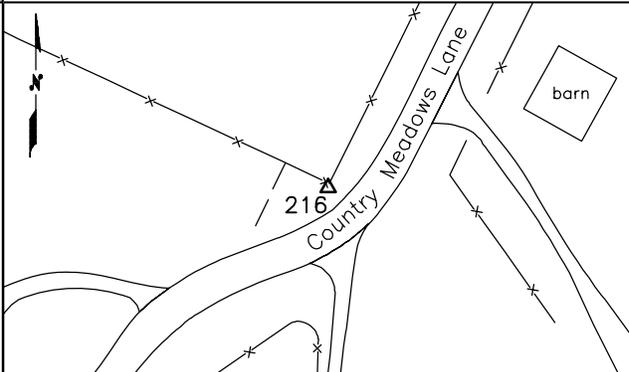
**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 206</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.21 ft. spread of 4 vertical observations: 0.18 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10211789.20 Easting (State Plane Grid): 3538332.49 Elevation: (NAVD 1988) Poor Average! 272.9± Latitude: N 30° 37' 17.17032" Longitude: W 96° 23' 04.57929" Geoid 09 Height (separation): -87.34 Ellipsoid Height: 185.52 Grid Scale Factor: 0.99990359 Elevation Scale Factor: 0.99999112 Combined Scale Factor: 0.99989471 Convergence Angle: 2° 02' 02"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1/2" below grade. Located 8.9' northeast of curb on Puma Drive, 4.0' southeast of edge of concrete driveway of 2200 Puma Drive, and 1.9' north of a steel phone pedestal.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 2 SW 4.4 miles CS94 – 106 S 53°55'08"W – 774.0 feet</p>

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> <i>CS94 - 216</i></p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.09 ft. spread of 4 vertical observations: 0.23 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10185615.34 Easting (State Plane Grid): 3557578.32 Elevation: (NAVD 1988) Poor Average! 260.6± Latitude: N 30° 32' 51.44037" Longitude: W 96° 19' 35.23229" Geoid 09 Height (separation): -87.92 Ellipsoid Height: 172.64 Grid Scale Factor: 0.99991290 Elevation Scale Factor: 0.99999174 Combined Scale Factor: 0.99990463 Convergence Angle: 2° 03' 50"</p> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 10 NE 1.7 miles CS94 – 116 N 26°25'54"E–805.8 feet</p>
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 2.3' south of a fence corner post on the northwest side of Country Meadows Lane, 840' southwest from the center of South Dowling Road.</p>
	

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 220</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.03 ft. spread of 3 vertical observations: 0.06 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10205296.97 Easting (State Plane Grid): 3557969.49 Elevation: (NAVD 1988) 312.32 Latitude: N 30° 36' 05.99521" Longitude: W 96° 19' 22.64845" Geoid 09 Height (separation): -87.63 Ellipsoid Height: 224.69 Grid Scale Factor: 0.99990592 Elevation Scale Factor: 0.99998925 Combined Scale Factor: 0.99989517 Convergence Angle: 2° 03' 56"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 4' south of curb (in radius) on the south quadrant of the Haines Drive / Caudill Street intersection, 11' west of the curb radius point on the west side of Caudill Street.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 1 SW 0.7 miles CS94 - 220 N 61°34'31"E-1086.8 feet</p>
	

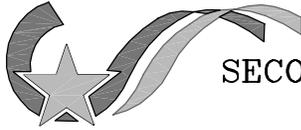
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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 223</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.12 ft. spread of 3 vertical observations: 0.06 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10222939.62 Easting (State Plane Grid): 3555847.54 Elevation: (NAVD 1988) 311.89 Latitude: N 30° 39' 01.27595" Longitude: W 96° 19' 39.64636" Geoid 09 Height (separation): -87.37 Ellipsoid Height: 224.52 Grid Scale Factor: 0.99990039 Elevation Scale Factor: 0.99998925 Combined Scale Factor: 0.99988965 Convergence Angle: 2° 03' 47"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.3' east of steel-picket fence, 5.4' east of sidewalk on Windridge Drive and 10.4' south of the fence corner post, within the playground of Johnson Elementary School in Bryan.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 SE 2.1 miles CS94 - 123 S 16°42'35"E-1078.7 feet</p>

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 235</p> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments)</p> <p><u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.17 ft. spread of 4 vertical observations: 0.16 ft.</p> <p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10177662.55 Easting (State Plane Grid): 3575709.38 Elevation: (NAVD 1988) 283.46 Latitude: N 30° 31' 26.26163" Longitude: W 96° 16' 11.33244" Geoid 09 Height (separation): -88.24 Ellipsoid Height: 195.22 Grid Scale Factor: 0.99991623 Elevation Scale Factor: 0.99999066 Combined Scale Factor: 0.99990688 Convergence Angle: 2° 05' 35"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 4 SW 2.0 miles CS94 - 135 S 52°00'50"E-812.7 feet</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" above grade. Located 28'± north of the street centerline at 16741 Woodlake Drive, 21' west of a phone pedestal, and 7.8' south of a 10" Post Oak tree.</p>	

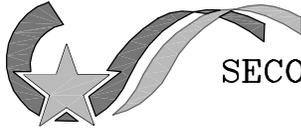
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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 242</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> CDS/Muery Services (in network w/ 2010 primary monuments) <u>RTK Observation Quality for this point:</u> spread of horizontal observations: n/a spread of vertical observations: n/a</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10225758.95 Easting (State Plane Grid): 3572403.18 Elevation: (1929 / 1988*) 321.32 / 321.41 Latitude: N 30° 39' 23.22623" Longitude: W 96° 16' 29.05054" Geoid 09 Height (separation): -87.52 Ellipsoid Height: 233.80 Grid Scale Factor: 0.99989975 Elevation Scale Factor: 0.99998884 Combined Scale Factor: 0.99988859 Convergence Angle: 2° 05' 25"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 2" above grade. Located 39'± northwest of the C of Elmo Weeton Road, 575' northeast of the C of Highway 30, 7'± south of a wood power pole.</p>	<p><u>Upgrade Datums:</u> NGVD1929/NAVD1988*—vertical NAD83(CORS) TX Central zone – horizontal *NGVD 1929 elevations were determined with baseline / network computations. NAVD 1988 elevations were determined w/VERTCON factors.</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 SW 1.6 miles CS94 - 141 S 0.9 miles</p>

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> <i>CS94 - 244</i></p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.09 ft. spread of 5 vertical observations: 0.15 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10219505.37 Easting (State Plane Grid): 3580987.00 Elevation: (NAVD 1988) 311.04 Latitude: N 30° 38' 18.25663" Longitude: W 96° 14' 53.46380" Geoid 09 Height (separation): -87.71 Ellipsoid Height: 223.33 Grid Scale Factor: 0.99990169 Elevation Scale Factor: 0.99998931 Combined Scale Factor: 0.99989100 Convergence Angle: 2° 06' 15"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 1" above grade. Located 2.4' south the fence corner post at the intersection of the southwest R.O.W. line of Highway 30 with the northwest R.O.W. line of Roans Chapel Road, 6.0' northeast of a wood power pole.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 8 W 2.8 miles CS94 - 244 N 40°46'14"E-2587.1 feet</p>

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CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<u>Station Name:</u> <i>CS94 - 251</i>
	<u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994
	<u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 4 horizontal observations: 0.07 ft. spread of 4 vertical observations: 0.18 ft.
	<u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10181901.55 Easting (State Plane Grid): 3582830.70 Elevation: (NAVD 1988) 289.99 Latitude: N 30° 32' 05.61211" Longitude: W 96° 14' 48.18265" Geoid 09 Height (separation): -88.26 Ellipsoid Height: 201.73 Grid Scale Factor: 0.99991467 Elevation Scale Factor: 0.99999034 Combined Scale Factor: 0.99990501 Convergence Angle: 2° 06' 17"
	<u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station <u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.
	<u>Nearest City of College Station Monuments:</u> 2010 Mon 11 N 1.2 miles CS94 – 151 S 9°40'06"E-1078.0 feet
<u>Point Location Description:</u> Aluminum cap in concrete, 1/2" below grade. Located at 4713 Nantucket Drive, 8.9' south of the south edge of the south driveway (loop), 8' southwest of a 14" Elm tree and 11' east of a concrete culvert.	

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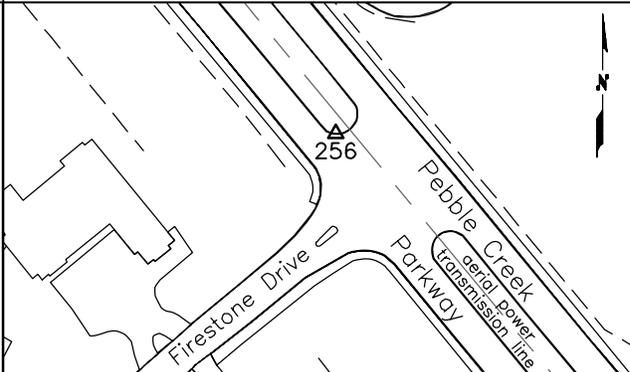
CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 254</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.12 ft. spread of 4 vertical observations: 0.14 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10182798.22 Easting (State Plane Grid): 3593916.28 Elevation: (NAVD 1988) 298.01 Latitude: N 30° 32' 10.43426" Longitude: W 96° 12' 41.12421" Geoid 09 Height (separation): -88.40 Ellipsoid Height: 209.61 Grid Scale Factor: 0.99991448 Elevation Scale Factor: 0.99998997 Combined Scale Factor: 0.99990445 Convergence Angle: 2° 07' 23"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, 6"± above grade, due to severe erosion northeast of point. Located under Entergy power transmission line, 150'± south of the intersection of Pipeline Road and Ball Circle.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 6 NE 2.0 miles CS94 - 155 N 43°36'28"W-1862.9 feet</p>

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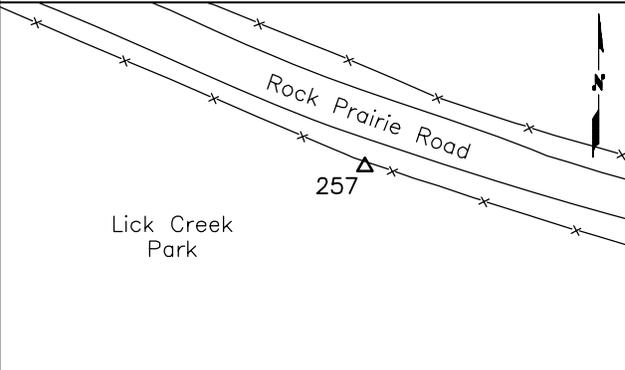
**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> <i>CS94 - 256</i></p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.09 ft. spread of 3 vertical observations: 0.04 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10193452.45 Easting (State Plane Grid): 3585092.47 Elevation: (NAVD 1988) 274.91 Latitude: N 30° 33' 59.04953" Longitude: W 96° 14' 17.47493" Geoid 09 Height (separation): -88.13 Ellipsoid Height: 186.78 Grid Scale Factor: 0.99991037 Elevation Scale Factor: 0.99999106 Combined Scale Factor: 0.99990143 Convergence Angle: 2° 06' 33"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.0' north of curb, in the median of Pebble Creek Parkway, north of the Firestone Drive intersection.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 11 SW 1.2 miles CS94 - 156 S 38°16'05"E-2255.1 feet</p> 

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> <i>CS94 - 257</i></p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.15 ft. spread of 5 vertical observations: 0.18 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10194481.85</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3593170.56</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">242.68</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 34' 06.28001"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 12' 44.69734"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-88.22</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">154.46</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99991011</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99999261</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99990272</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 07' 21"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 6</td><td style="text-align: right;">SE 1.8 miles</td></tr> <tr><td>CS94 – 160</td><td style="text-align: right;">E 0.9 miles</td></tr> </table>	Northing (State Plane Grid):	10194481.85	Easting (State Plane Grid):	3593170.56	Elevation: (NAVD 1988)	242.68	Latitude:	N 30° 34' 06.28001"	Longitude:	W 96° 12' 44.69734"	Geoid 09 Height (separation):	-88.22	Ellipsoid Height:	154.46	Grid Scale Factor:	0.99991011	Elevation Scale Factor:	0.99999261	Combined Scale Factor:	0.99990272	Convergence Angle:	2° 07' 21"	2010 Mon 6	SE 1.8 miles	CS94 – 160	E 0.9 miles
Northing (State Plane Grid):	10194481.85																										
Easting (State Plane Grid):	3593170.56																										
Elevation: (NAVD 1988)	242.68																										
Latitude:	N 30° 34' 06.28001"																										
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2010 Mon 6	SE 1.8 miles																										
CS94 – 160	E 0.9 miles																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.3' north of the barbed-wire fence, on the southwest side of Rock Prairie Road, The point is 9.8' northwest of a fence post at an angle point, 16' north of a wood power pole and 1.6 miles southeast of Wm. D. Fitch Parkway at Rock Prairie Road .</p>																										
																											

Disclaimer: No expressed or implied warranties are made for the accuracy, completeness, reliability, usability, or suitability of the point data. The City of College Station, CDS/Muery Services, and Joe Orr, Inc. assume no responsibility for incorrect results or damages resulting from the use of data.



CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> <i>CS94 - 260</i></p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.16 ft. spread of 5 vertical observations: 0.30 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10192733.73 Easting (State Plane Grid): 3599398.05 Elevation: (NAVD 1988) Poor Average! 202.3± Latitude: N 30° 33' 46.69945" Longitude: W 96° 11' 34.25336" Geoid 09 Height (separation): -88.34 Ellipsoid Height: 113.96 Grid Scale Factor: 0.99991083 Elevation Scale Factor: 0.99999454 Combined Scale Factor: 0.99990537 Convergence Angle: 2° 07' 57"</p>
	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.3' north of the barbed-wire fence on the south side of Rock Prairie Road, 9'± east of a fence angle point, 0.9 miles north of the intersection with Sulphur Springs Road.</p>	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 6 SE 0.6 miles CS94 – 160 N 45°35'39"W-1782.5 feet</p>

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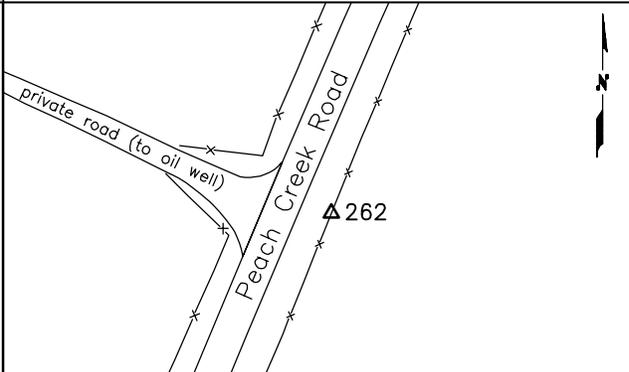
CITY OF COLLEGE STATION
 SECONDARY MONUMENT UPGRADE PROJECT
 AUGUST 2011

	<p align="center"><u>Station Name:</u> CS94 - 261</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.15 ft. spread of 3 vertical observations: 0.17 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10189510.92 Easting (State Plane Grid): 3601646.58 Elevation: (NAVD 1988) 200.18 Latitude: N 30° 33' 13.99138" Longitude: W 96° 11' 09.92538" Geoid 09 Height (separation): -88.41 Ellipsoid Height: 111.77 Grid Scale Factor: 0.99991204 Elevation Scale Factor: 0.99999465 Combined Scale Factor: 0.99990669 Convergence Angle: 2° 08' 10"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 1.8' west of the barbed-wire fence on the east side of Rock Prairie Road, 225'± north of the intersection (Ⓞ) of Sulphur Springs Road.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p>
	<p><u>Nearest City of College Station Monuments:</u> 2010 Mon 6 N 1°24'47"E-734.8 feet CS94 - 161 N 3°05'15"W-997.2 feet</p>

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CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011

	<p style="text-align: center;"><u>Station Name:</u> CS94 - 262</p> <hr/> <p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p> <hr/> <p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations)</p> <p><u>RTK Observation Quality for this point:</u> spread of 5 horizontal observations: 0.18 ft. spread of 4 vertical observations: 0.09 ft.</p> <hr/> <p><u>Upgraded Location:</u> U.S. Survey Feet</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Northing (State Plane Grid):</td><td style="text-align: right;">10188208.84</td></tr> <tr><td>Easting (State Plane Grid):</td><td style="text-align: right;">3601117.83</td></tr> <tr><td>Elevation: (NAVD 1988)</td><td style="text-align: right;">198.53</td></tr> <tr><td>Latitude:</td><td style="text-align: right;">N 30° 33' 01.30649"</td></tr> <tr><td>Longitude:</td><td style="text-align: right;">W 96° 11' 16.52352"</td></tr> <tr><td>Geoid 09 Height (separation):</td><td style="text-align: right;">-88.42</td></tr> <tr><td>Ellipsoid Height:</td><td style="text-align: right;">110.11</td></tr> <tr><td>Grid Scale Factor:</td><td style="text-align: right;">0.99991252</td></tr> <tr><td>Elevation Scale Factor:</td><td style="text-align: right;">0.99999473</td></tr> <tr><td>Combined Scale Factor:</td><td style="text-align: right;">0.99990725</td></tr> <tr><td>Convergence Angle:</td><td style="text-align: right;">2° 08' 06"</td></tr> </table> <hr/> <p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal</p> <p>*Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <hr/> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <hr/> <p><u>Nearest City of College Station Monuments:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2010 Mon 6</td><td style="text-align: right;">NE 0.4 miles</td></tr> <tr><td>CS94 - 162</td><td style="text-align: right;">S 23°05'44"W-2016.5 feet</td></tr> </table>	Northing (State Plane Grid):	10188208.84	Easting (State Plane Grid):	3601117.83	Elevation: (NAVD 1988)	198.53	Latitude:	N 30° 33' 01.30649"	Longitude:	W 96° 11' 16.52352"	Geoid 09 Height (separation):	-88.42	Ellipsoid Height:	110.11	Grid Scale Factor:	0.99991252	Elevation Scale Factor:	0.99999473	Combined Scale Factor:	0.99990725	Convergence Angle:	2° 08' 06"	2010 Mon 6	NE 0.4 miles	CS94 - 162	S 23°05'44"W-2016.5 feet
Northing (State Plane Grid):	10188208.84																										
Easting (State Plane Grid):	3601117.83																										
Elevation: (NAVD 1988)	198.53																										
Latitude:	N 30° 33' 01.30649"																										
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Combined Scale Factor:	0.99990725																										
Convergence Angle:	2° 08' 06"																										
2010 Mon 6	NE 0.4 miles																										
CS94 - 162	S 23°05'44"W-2016.5 feet																										
	<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground. Located 0.8' northwest of barbed-wire fence, on the southeast side of Peach Creek Road, across from an oil well entrance gate, and 0.6 miles southwest of the Sulphur Springs Road / Rock Prairie Road intersection.</p>																										
																											

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**CITY OF COLLEGE STATION
SECONDARY MONUMENT UPGRADE PROJECT
AUGUST 2011**

	<p align="center"><u>Station Name:</u> CS94 - 263</p>
	<p><u>Established by:</u> George W. Muery Services, Inc. <u>Date Established:</u> 1994</p>
	<p><u>Upgrade Survey by:</u> Joe Orr, Inc. (using average of multiple RTK observations) <u>RTK Observation Quality for this point:</u> spread of 3 horizontal observations: 0.04 ft. spread of 3 vertical observations: 0.08 ft.</p>
	<p><u>Upgraded Location:</u> U.S. Survey Feet Northing (State Plane Grid): 10179208.58 Easting (State Plane Grid): 3590133.63 Elevation: (NAVD 1988) 252.60 Latitude: N 30° 31' 36.31100" Longitude: W 96° 13' 25.86651" Geoid 09 Height (separation): -88.41 Ellipsoid Height: 164.19 Grid Scale Factor: 0.99991583 Elevation Scale Factor: 0.99999214 Combined Scale Factor: 0.99990797 Convergence Angle: 2° 07' 00"</p>
<p><u>Point Location Description:</u> Aluminum cap in concrete, flush with ground, Located on private property (Bill Wiseman), on the southwest side of Highway 6, 1/2 mile southeast of the overpass to Texas World Speedway. Point is 2.2' southwest of the concrete footing, under a rolling, steel gate, 40'± northwest of the gate opening (⊕) and a paved driveway.</p>	<p><u>Upgrade Datums*:</u> NAVD 1988 – vertical NAD83(CORS) TX Central zone – horizontal *Based on results of the new deep rod GPS stations set and surveyed in 2010, by CDS/Muery Services for the City of College Station</p> <p><u>Note:</u> Projects requiring critical elevation determinations, such as flood plain certifications and gravity sewer projects, should be field verified from the nearest primary benchmark, through actual survey methods and not rely solely on the data presented herein.</p> <p><u>Nearest City of College Station Monuments:</u> 2010 Mon 5 SE 2.1 miles CS94 – 153 SE 0.7 miles</p>

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Survey Report

Control Survey City of College Station 2010

Submitted to:

City of College Station
Public Works Department
P.O. Box 9960
College Station, TX 77842

Prepared by:

CDS/Muery Services
3411 Magic Dr.
San Antonio, TX 78229

CDS/MS Project No.: 109158
May 2010

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Appendices

- A Control Maps**
 - **Static GPS Network and Panel Layout**
- B Published Control Data Sheets**
- C New Control Data Sheets**
- D GPS Static Observations Logs/DOP and Solar Reports**
- E Station Recovery Reports & GPS Station Visibility Diagrams**
- F Personnel**
- G Equipment**

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		Compact L1/L2	Compact L1/L2	Compact L1/L2	Compact L1/L2
Serial #		w/GP	w/GP	w/GP	w/GP
Phone #		220022983	220021404	220124914	220126287
		827-6649	827-6632	827-6669	827-6673
Session	Obs Period	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID
28-Apr-10	JD=118				
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	Compact L1/L2	Compact L1/L2	Compact L1/L2
Serial #		w/GP	w/GP	w/GP	w/GP
Serial #		220022983	220021404	220124914	220126287
Phone #		827-6649	827-6632	827-6669	827-6673
Session	Obs Period	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID
29-Apr-10	JD=119				
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	Obs Period	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID	Sta ID/Name/PID
30-Apr-10	JD=120				
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

Control Survey

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		

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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	Δ Horiz	Δ Vert	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	Δ Horiz	Δ Vert	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

Report Date: May 2010

Prepared By: CDS/Muery Services

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

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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	Δ Horiz	Δ Vert	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	Δ Horiz	Δ Vert	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		

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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	Δ Horiz	Δ Vert	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	Δ Horiz	Δ Vert	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		

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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		

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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	Δ Horiz	Δ Vert	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	Δ Horiz	Δ Vert	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		

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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	Δ Horiz	Δ Vert	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	Δ Horiz	Δ Vert	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		

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[Summary](#)

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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	Δ Horiz	Δ Vert	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:

Report Date: May 2010

Prepared By: CDS/Muery Services

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	Δ Horiz	Δ Vert	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		

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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	Δ Horiz	Δ Vert	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	Δ Horiz	Δ Vert	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		

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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	Δ Horiz	Δ Vert	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)	Geoid Model	GEOID09 (CONUS)
Vertical Datum			

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

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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	Δ Horiz	Δ Vert	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	Δ Horiz	Δ Vert	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		

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[Summary](#)

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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	Δ Horiz	Δ Vert	PPM
Pass/Fail Criteria		0.098sft	0.164sft	

Report Date: May 2010

Prepared By: CDS/Muery Services

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	Δ Horiz	Δ Vert	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 ($\alpha=95\%$) : 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	Δ Northing	Δ Easting	Δ Elevation	Δ Height	Δ Geoid 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	Δ Northing	Δ Easting	Δ Elevation	Δ Height
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 (1.96 σ)	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

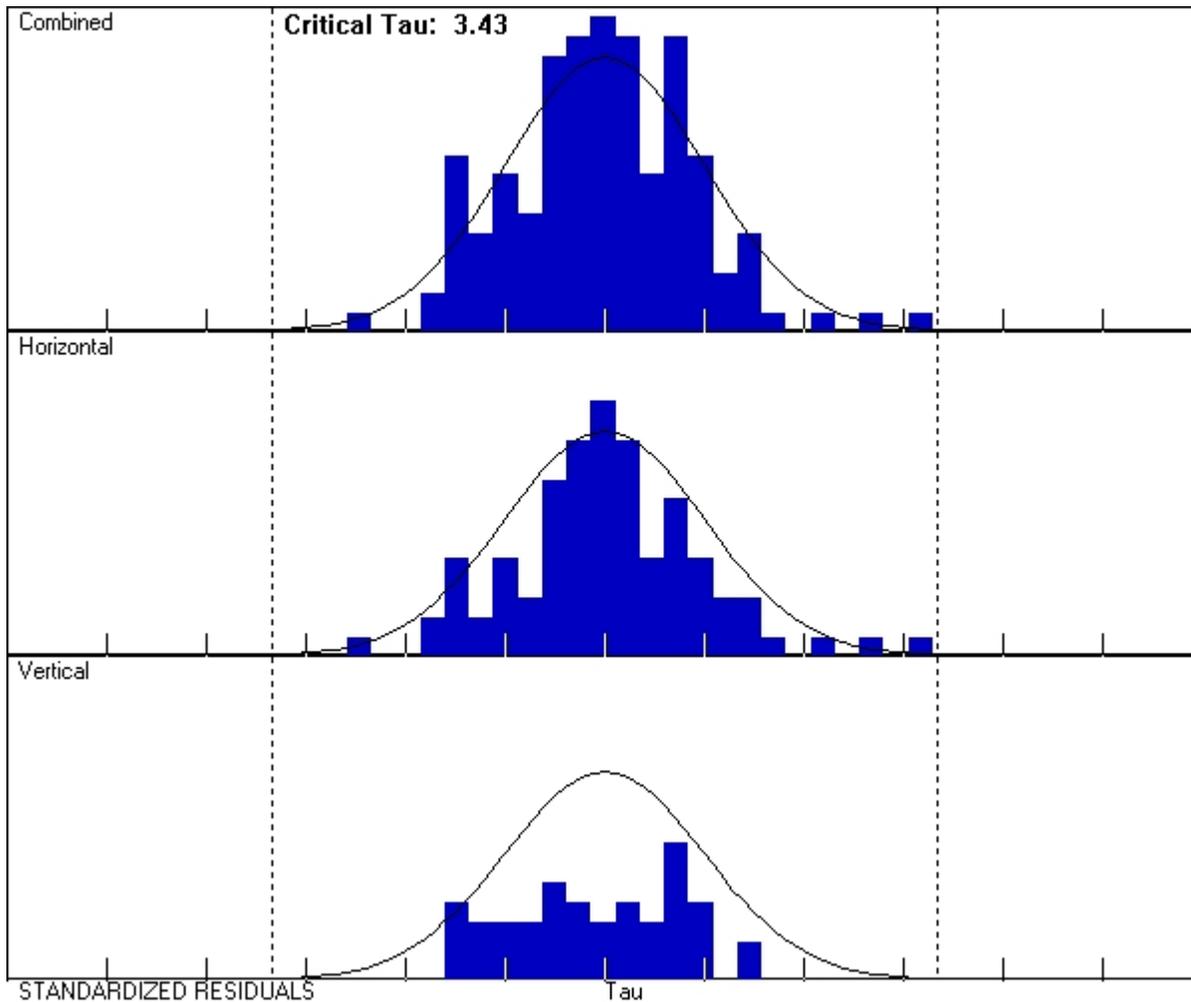
B31	TXBY	MON 107	Az.	188°45'07.6770"	0°00'00.2893"	-0°00'00.0010"	-0.01
			ΔHt.	-37.973sft	0.072sft	0.058sft	1.54
			Dist.	18621.560sft	0.027sft	0.005sft	0.44
B30	TXBY	MON 107	Az.	188°45'07.6770"	0°00'00.2893"	-0°00'00.0795"	-0.47
			ΔHt.	-37.973sft	0.072sft	-0.059sft	-1.51
			Dist.	18621.560sft	0.027sft	-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
			Δ Ht.	-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
			Δ Ht.	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
			Δ Ht.	-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
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	TXCN	KI 8
 42°	 41°	 43°
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
MON 3	MON 4	MON 135
 43°	 42°	 42°
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
MON 7	MON 8	TXHE
 42°	 44°	 43°
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
COCS		
 41°		
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 (1.96 σ)	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	30°36'21.65948"N	96°18'02.61071"W	195.660
KI 1	30°36'49.43728"N	96°11'36.50720"W	107.167
KI 2	30°33'35.20997"N	96°25'14.07465"W	147.574
KI 5	30°29'41.99511"N	96°11'09.95547"W	160.606
KI 8	30°32'15.80580"N	96°20'46.77347"W	187.616
MON 1	30°35'51.09957"N	96°20'02.54416"W	221.544
MON 10	30°34'13.54682"N	96°18'57.73985"W	220.810
MON 101	30°33'00.01902"N	96°23'14.23598"W	199.837
MON 107	30°38'06.82382"N	96°22'46.35204"W	254.560
MON 11	30°33'07.89995"N	96°14'55.79914"W	195.766
MON 135	30°31'21.08186"N	96°16'04.22214"W	190.315
MON 2	30°33'45.02402"N	96°24'42.76715"W	188.399
MON 242	30°39'23.22614"N	96°16'29.05059"W	234.143
MON 3	30°31'24.70221"N	96°20'49.43686"W	134.638
MON 4	30°30'23.61691"N	96°17'47.46427"W	198.563
MON 5	30°30'23.31673"N	96°11'51.73498"W	114.380
MON 6	30°33'21.25101"N	96°11'09.40491"W	111.145
MON 7	30°37'13.56999"N	96°12'09.58494"W	142.807
MON 8	30°38'27.65812"N	96°17'40.46726"W	177.011
MON 9	30°34'55.39580"N	96°15'11.66293"W	181.801
TXBY	30°41'08.98727"N	96°22'13.92022"W	292.533
TXCN	30°20'56.20585"N	95°26'28.33747"W	164.608
TXHE	30°05'56.47287"N	96°03'48.54557"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	Published Minus	Published Minus
		Measured	Measured	Measured
		Delta Northing	Delta Easting	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 ($\alpha=95\%$) : 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	Δ Northing	Δ Easting	Δ Elevation	Δ Height	Δ Geoid 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	Δ Northing	Δ Easting	Δ Elevation	Δ Height
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" (1.96 σ) : 0°00'00.0246"

Network Scale : 0.99999982 (1.96 σ) : 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 (1.96 σ)	Residual	Stand. Residual
B96	COCS	MON 9	Az.	120°14'36.4749"	0°00'00.1875"	0°00'00.2528"	2.22
			Δ Ht.	-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
			Δ Ht.	-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
			Δ Ht.	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
			Δ Ht.	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
			Δ Ht.	-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
			Δ Ht.	-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
			Δ Ht.	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
			Δ Ht.	-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
			Δ Ht.	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
			Δ Ht.	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
			Δ Ht.	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
			Δ Ht.	-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
			Δ Ht.	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
			Δ Ht.	-3.235sft	0.032sft	0.000sft	-0.04
			Dist.	18354.442sft	0.019sft	0.002sft	0.43

Geoid Observations

Number of Observations : 23

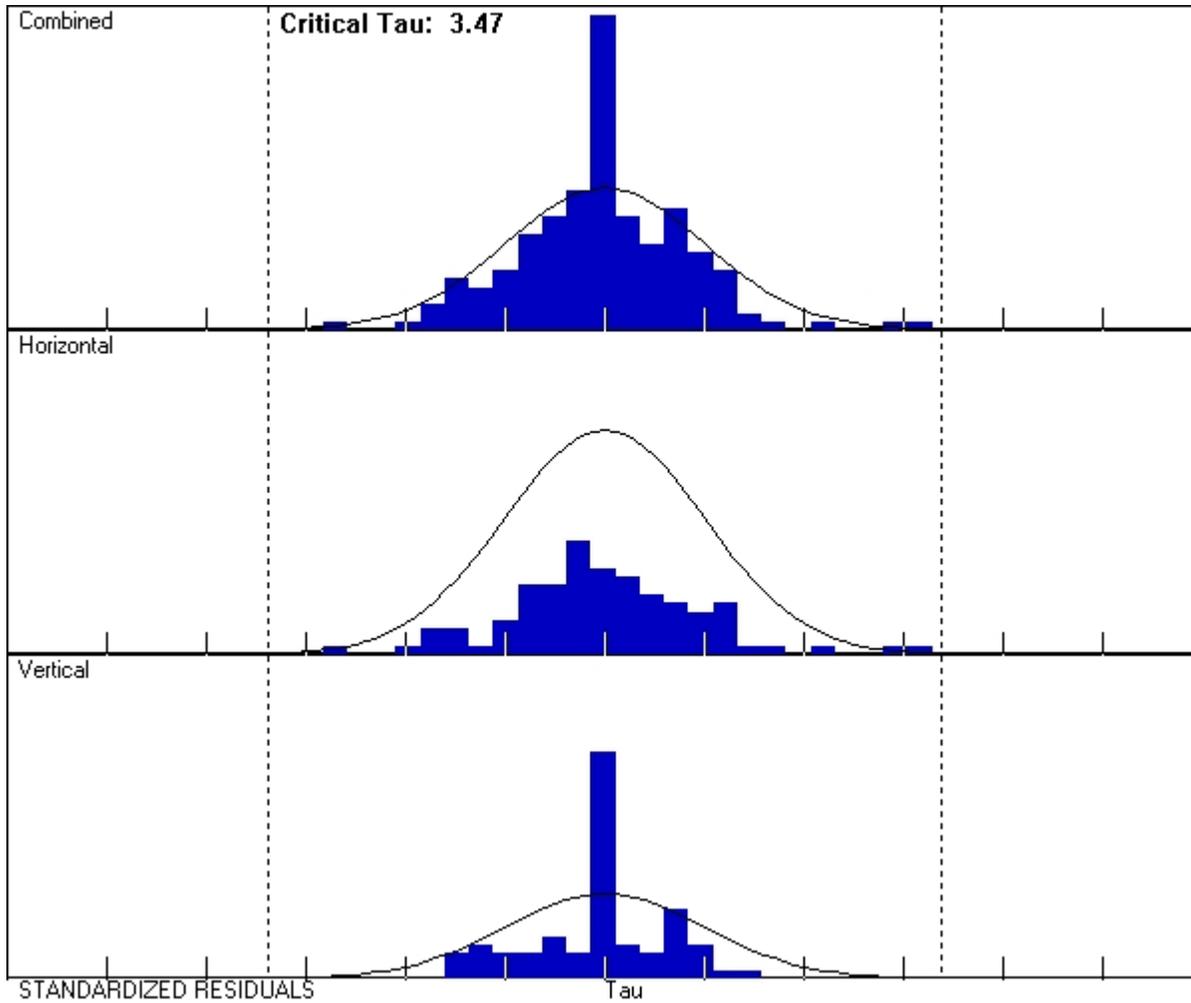
Number of Outliers : 0

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

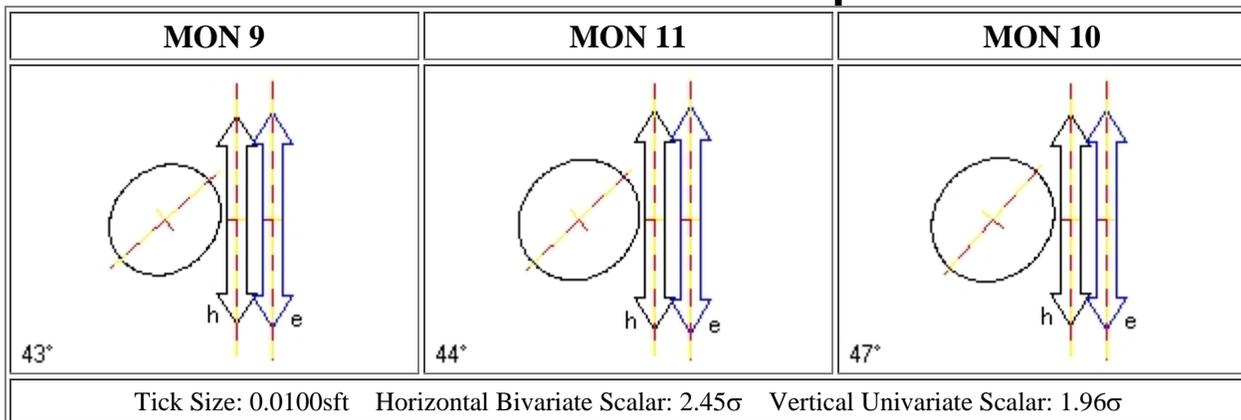
Observation ID	Point Name	Separation	A-posteriori Error (1.96 σ)	Residual	Standardized Residual
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G67	MON 8	-87.533sft	0.016sft	0.000sft	0.00
G69	COCS	-87.690sft	0.016sft	0.000sft	0.00
G68	TXHE	-90.255sft	0.016sft	0.000sft	0.00
G66	MON 7	-87.989sft	0.016sft	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

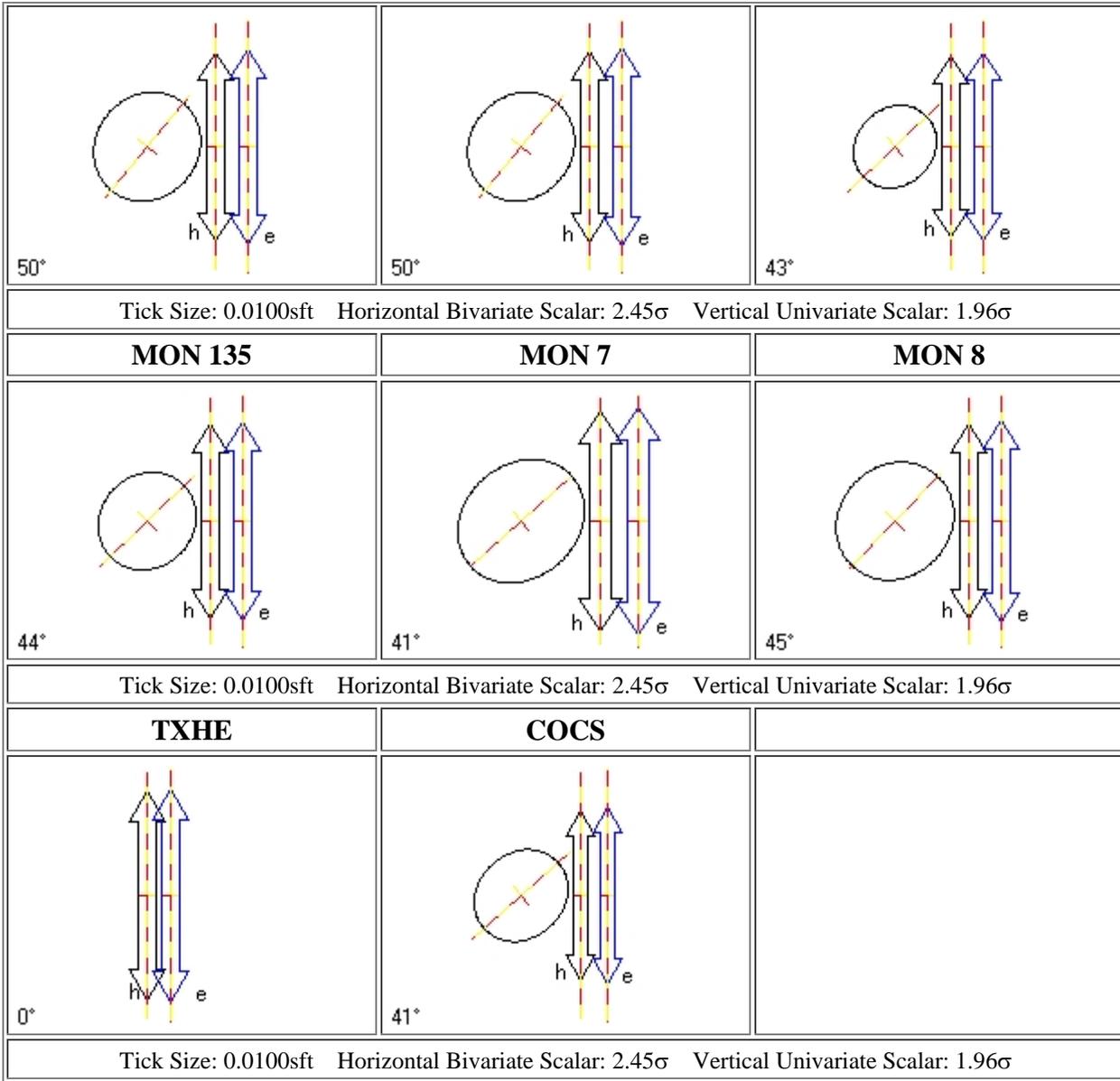
Histograms of Standardized Residuals



Point Error Ellipses



MON 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	30°36'21.65954"N	96°18'02.61070"W	195.314
KI 1	30°36'49.43733"N	96°11'36.50711"W	106.821
KI 2	30°33'35.21000"N	96°25'14.07473"W	147.228
KI 5	30°29'41.99509"N	96°11'09.95542"W	160.260
KI 8	30°32'15.80583"N	96°20'46.77351"W	187.270
TXBY	30°41'08.98727"N	96°22'13.92022"W	292.191
TXCN	30°20'56.20560"N	95°26'28.33685"W	164.260
TXHE	30°05'56.47259"N	96°03'48.54562"W	159.812
MON 1	30°35'51.09963"N	96°20'02.54418"W	221.197
MON 2	30°33'45.02407"N	96°24'42.76722"W	188.053
MON 3	30°31'24.70224"N	96°20'49.43691"W	134.292
MON 4	30°30'23.61692"N	96°17'47.46431"W	198.217
MON 5	30°30'23.31672"N	96°11'51.73491"W	114.034
MON 6	30°33'21.25102"N	96°11'09.40483"W	110.799
MON 7	30°37'13.57004"N	96°12'09.58486"W	142.461
MON 8	30°38'27.65820"N	96°17'40.46723"W	176.665
MON 9	30°34'55.39584"N	96°15'11.66290"W	181.455

Control Survey

NAD83 (CORS) Geodetic Adjustment Results cont'd.

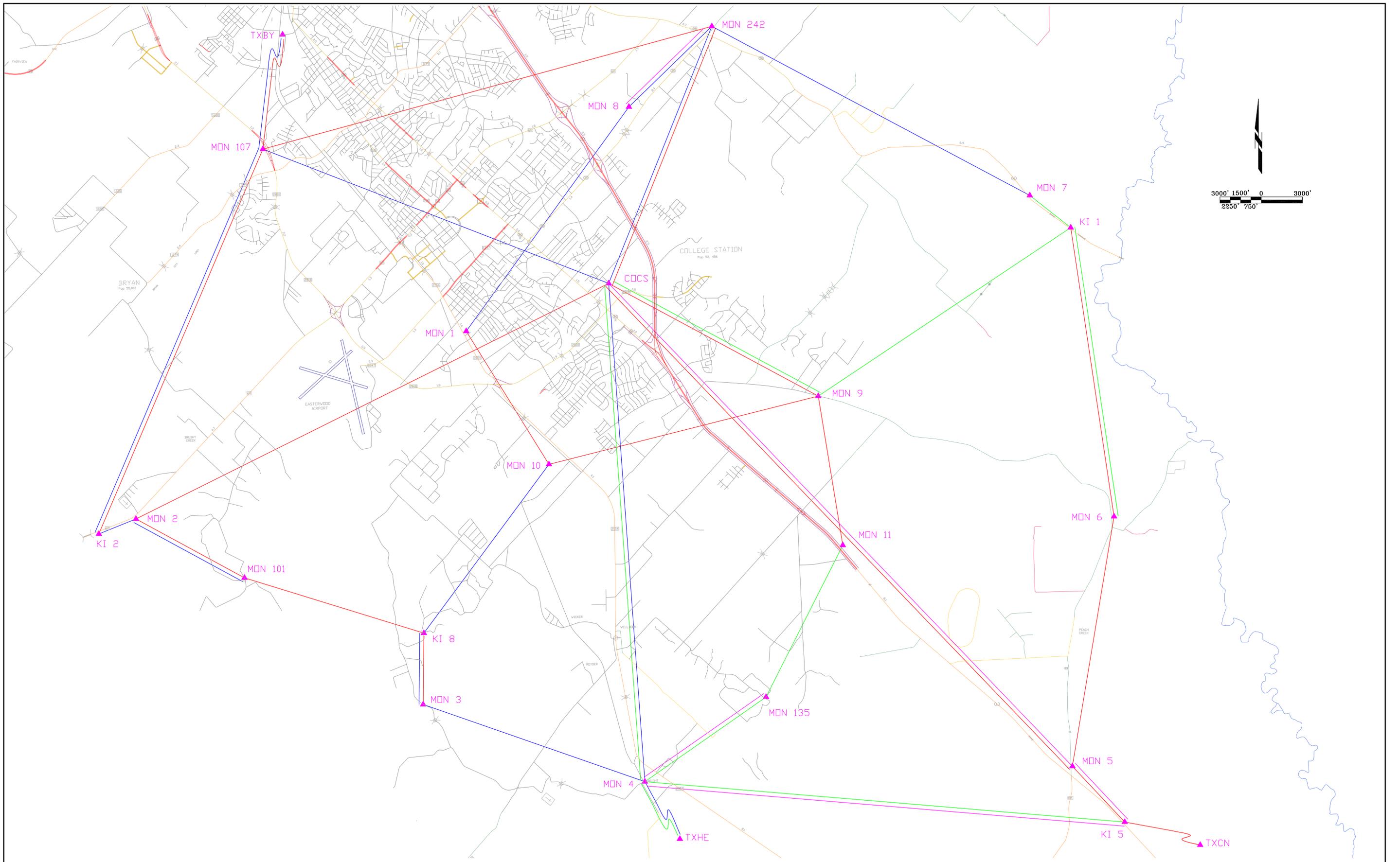
Station	Latitude	Longitude	Ellip. Ht. (ft)
MON 10	30°34'13.54687"N	96°18'57.73986"W	220.464
MON 11	30°33'07.89997"N	96°14'55.79912"W	195.420
MON 101	30°33'00.01906"N	96°23'14.23605"W	199.491
MON 107	30°38'06.82387"N	96°22'46.35207"W	254.215
MON 135	30°31'21.08188"N	96°16'04.22215"W	189.969
MON 242	30°39'23.22623"N	96°16'29.05054"W	233.797

NAD83 (CORS)/NAVD88 Adjustment Results

Station	Northing (us ft)	Easting (us ft)	Ortho. Ht. (ft)	Convergence Angle	Grid Scale Factor	Elev. Scale Factor	Combined Factor
COCS	10207131.21	3564901.95	283.10	2°04'37"	0.99990540	0.99999067	0.99989608
KI 1	10211174.58	3598514.29	194.95	2°07'56"	0.99990449	0.99999490	0.99989939
KI 2	10188979.98	3527814.01	234.91	2°00'55"	0.99991125	0.99999297	0.99990422
KI 5	10168108.96	3602442.22	249.06	2°08'10"	0.99992054	0.99999235	0.99991288
KI 8	10181792.99	3551455.96	275.28	2°03'13"	0.99991427	0.99999106	0.99990533
TXBY	10235350.91	3541921.71	379.37	2°02'28"	0.99989682	0.99998605	0.99988287
TXCN	10124571.97	3839185.97	254.54	2°31'11"	0.99994611	0.99999216	0.99993826
TXHE	10025662.31	3646557.92	250.12	2°11'57"	1.00000476	0.99999237	0.99999713
MON 1	10203667.64	3554539.40	308.91	2°03'36"	0.99990643	0.99998944	0.99989587
MON 2	10190067.18	3530514.48	275.74	2°01'11"	0.99991089	0.99999102	0.99990191
MON 3	10176625.26	3551408.17	222.38	2°03'11"	0.99991629	0.99999359	0.99990988
MON 4	10171032.04	3567536.95	286.56	2°04'45"	0.99991879	0.99999054	0.99990932
MON 5	10172144.51	3598634.49	202.73	2°07'48"	0.99991880	0.99999456	0.99991335
MON 6	10190245.51	3601664.72	199.26	2°08'10"	0.99991177	0.99999471	0.99990648
MON 7	10213503.48	3595535.52	230.52	2°07'39"	0.99990371	0.99999320	0.99989691
MON 8	10219921.95	3566373.63	264.29	2°04'49"	0.99990140	0.99999156	0.99989296
MON 9	10198966.93	3580149.79	269.52	2°06'05"	0.99990835	0.99999134	0.99989969
MON 10	10194022.89	3560554.95	308.39	2°04'09"	0.99990985	0.99998947	0.99989932
MON 11	10188165.44	3581934.10	283.66	2°06'14"	0.99991227	0.99999067	0.99990294
MON 101	10185797.09	3538410.65	287.32	2°01'57"	0.99991257	0.99999048	0.99990305
MON 107	10216858.81	3539745.76	341.61	2°02'11"	0.99990204	0.99998786	0.99988990
MON 135	10177162.33	3576349.95	278.31	2°05'38"	0.99991644	0.99999093	0.99990737
MON 242	10225758.95	3572403.18	321.410	2°05'25"	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

*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
DH3608' 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**



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

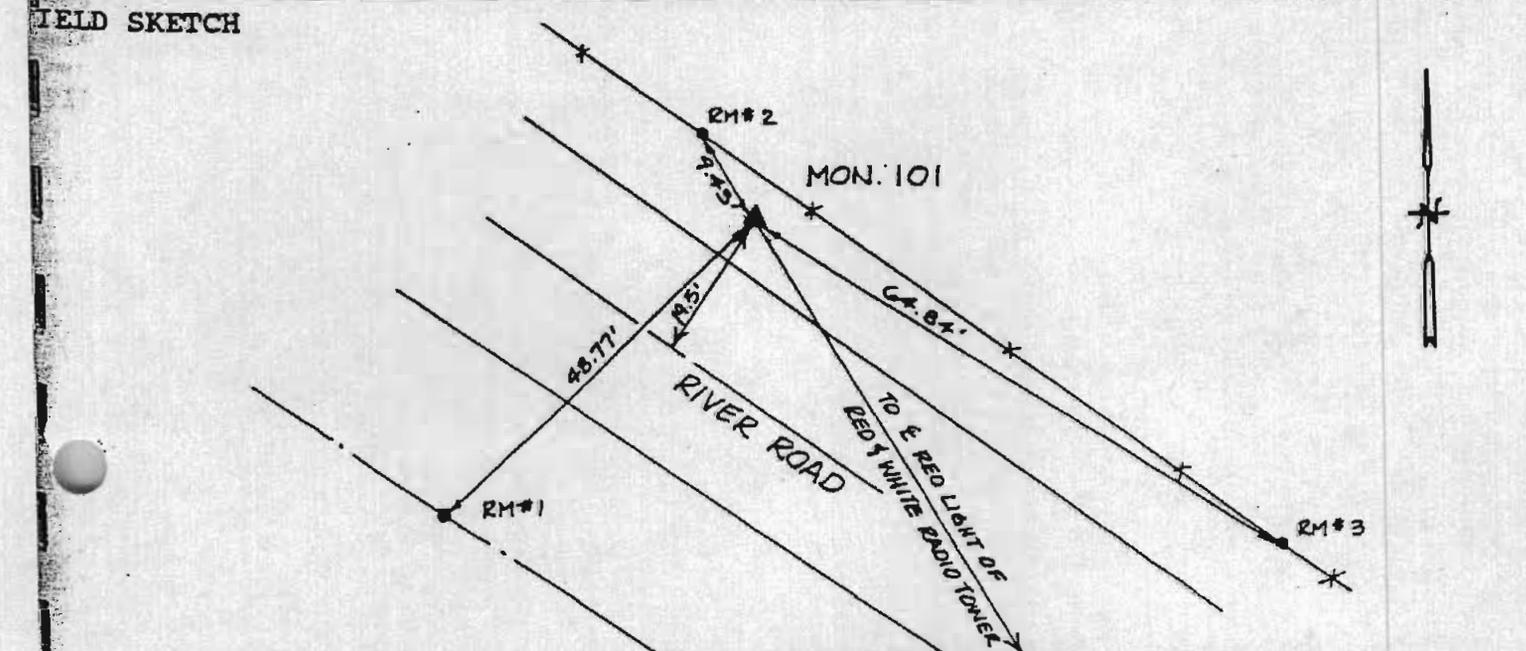
MONUMENT NAME 101	DATE ESTABLISHED 1994	STATE: TEXAS	COUNTY BRAZOS
NAD-27 GEODETIC POSITION LATITUDE N 030° 32' 59.30552" LONGITUDE W 096° 23' 13.34621"		NAD-83 GEODETIC POSITION LATITUDE N 030° 33' 00.03457" LONGITUDE W 096° 23' 14.21430"	
NAD-27 TEXAS STATE PLANE COORDINATES CENTRAL ZONE COORDINATE 343216.744 COORDINATE 3241933.058 CONVERGENCE = 2° 01' 57.26" SCALE FACTOR = 0.9999126		NAD-83 TEXAS STATE PLANE COORDINATES CENTRAL ZONE (US Survey Feet) Y COORDINATE 10185798.719 X COORDINATE 3538412.491 CONVERGENCE = 2° 01' 56.82" SCALE FACTOR = 0.9999126	

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

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

REFERENCE MARK DESCRIPTION	DISTANCE (ft)	DIRECTION
ENTER OF RED LIGHT ON RED AND WHITE RADIO TOWER		000°00'00"
RM 1: P.K. NAIL WITH SHINER NORTHEAST FACE OF P.P.	48.77'	075°47'28"
RM 2: P.K. NAIL WITH SHINER IN CREOSOTE FENCE POST.	9.43'	156°53'25"
RM 3: P.K. NAIL WITH SHINER IN CREOSOTE FENCE POST.	64.84'	333°18'26"

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



CITY OF COLLEGE STATION

HORIZONTAL CONTROL MONUMENT

MONUMENT NAME 107	DATE ESTABLISHED 1994	STATE: TEXAS	COUNTY BRAZOS
----------------------	--------------------------	-----------------	------------------

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

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

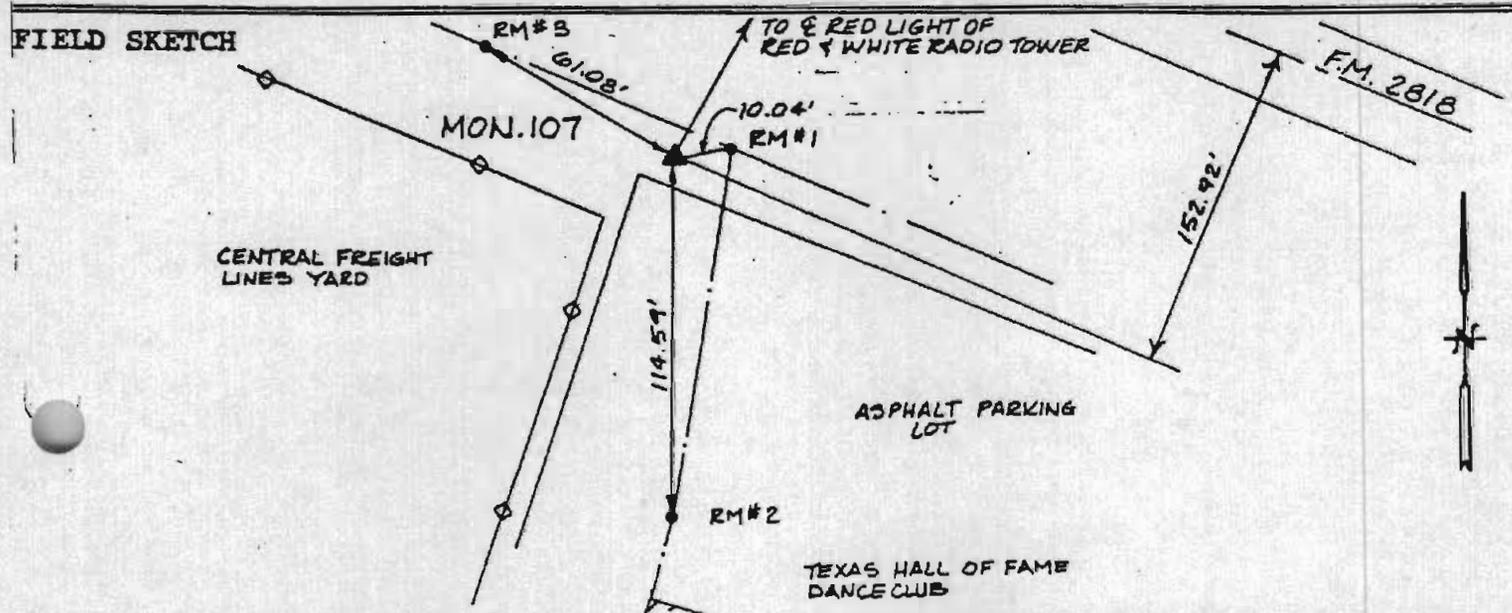
G.P.S ELEVATION : 341.50 ft. (NGVD 1929 MEAN SEA LEVEL DATUM)

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



CITY OF COLLEGE STATION

HORIZONTAL CONTROL MONUMENT

MONUMENT NAME MON. 135	DATE ESTABLISHED 1994	STATE: TEXAS	COUNTY BRAZOS
---------------------------	--------------------------	-----------------	------------------

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

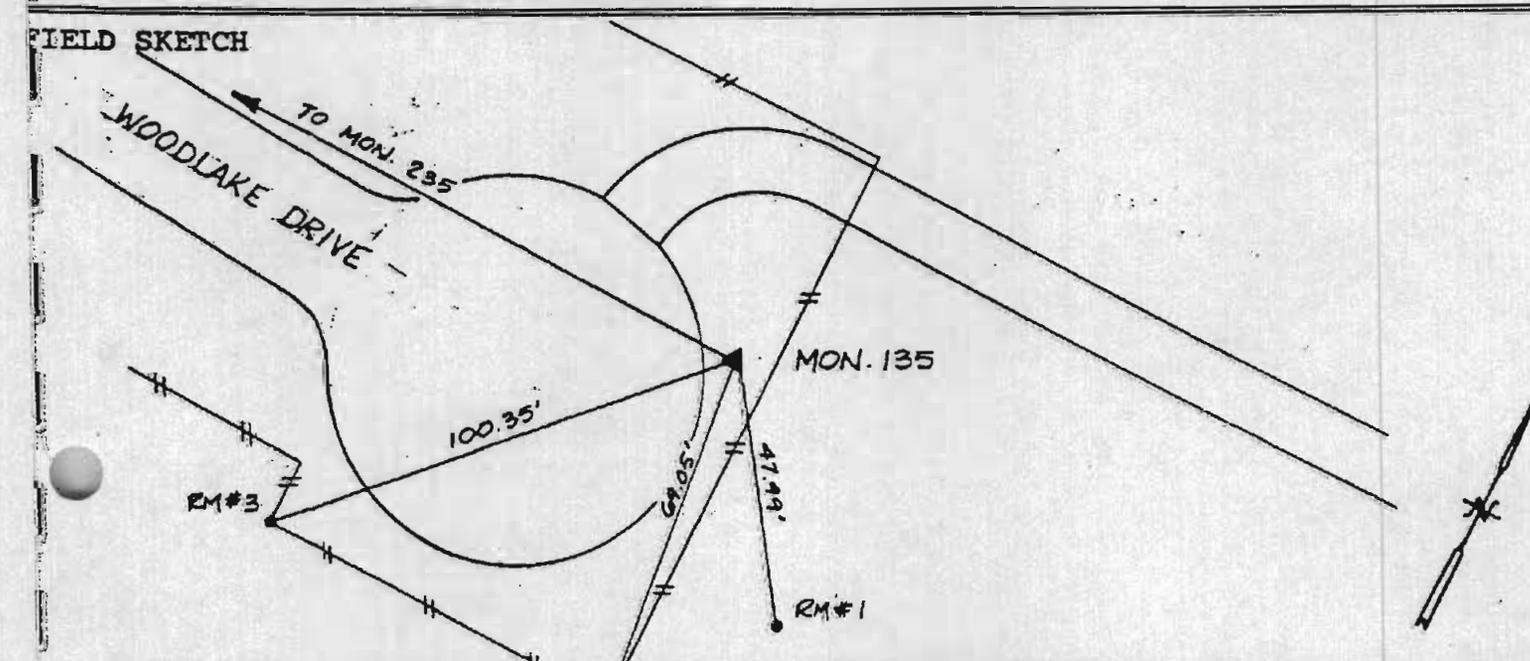
NAD-27 TEXAS STATE PLANE COORDINATES CENTRAL ZONE Y COORDINATE 334582.359 X COORDINATE 3279872.212 CONVERGENCE = 2° 05' 38.74" SCALE FACTOR = 0.9999165	NAD-83 TEXAS STATE PLANE COORDINATES CENTRAL ZONE (US Survey Feet) Y COORDINATE 10177164.001 X COORDINATE 3576351.744 CONVERGENCE = 2° 05' 38.30" SCALE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

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

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

REFERENCE MARK DESCRIPTION	DISTANCE (ft)	DIRECTION
MONUMENT 235	812.78'	000°00'00"
RM 1: P.K. NAIL WITH SHINER IN LIGHT POLE	47.99'	235°15'45"
RM 2: P.K. NAIL WITH SHINER IN CENTER TOP OF FENCE CORNER POST	69.05'	263°43'05"
RM 3: P.K. NAIL WITH SHINER IN CENTER TOP OF FENCE CORNER POST	100.35'	313°31'45"

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



CITY OF COLLEGE STATION

HORIZONTAL CONTROL MONUMENT

MONUMENT NAME 242	DATE ESTABLISHED 1994	STATE: TEXAS	COUNTY BRAZOS
NAD-27 GEODETIC POSITION LATITUDE N 030° 39' 22.52590" LONGITUDE W 096° 16' 28.17324"		NAD-83 GEODETIC POSITION LATITUDE N 030° 39' 23.24080" LONGITUDE W 096° 16' 29.02787"	
NAD-27 TEXAS STATE PLANE COORDINATES CENTRAL ZONE Y COORDINATE 383178.651 X COORDINATE 3275925.208 CONVERGENCE = 2° 05' 25.95" SCALE FACTOR = 0.9998998		NAD-83 TEXAS STATE PLANE COORDINATES CENTRAL ZONE (US Survey Feet) Y COORDINATE 10225760.493 X COORDINATE 3572405.106 CONVERGENCE = 2° 05' 25.51" SCALE FACTOR = 0.9998998	

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

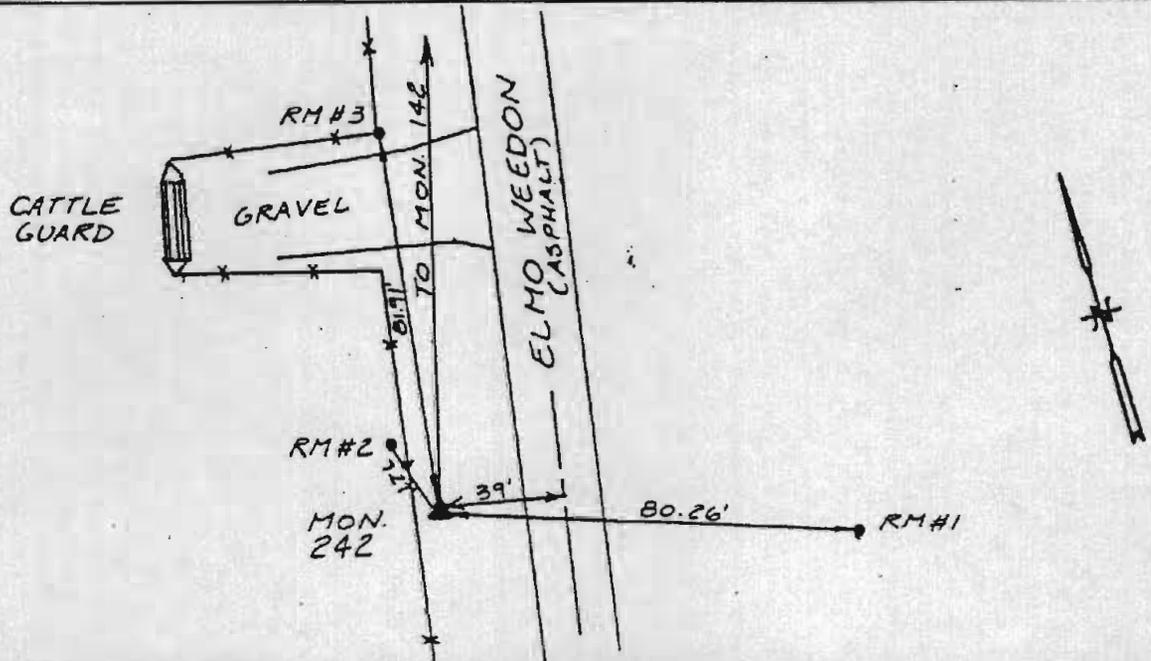
AZIMUTH MARK MONUMENT 142	ASTRONOMIC AZIMUTH (FROM NORTH) N 042° 25' 27"	GRID AZIMUTH (FROM NORTH) N 040° 20' 01"
------------------------------	---	---

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 261	DATE ESTABLISHED 1994	STATE: TEXAS	COUNTY 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)

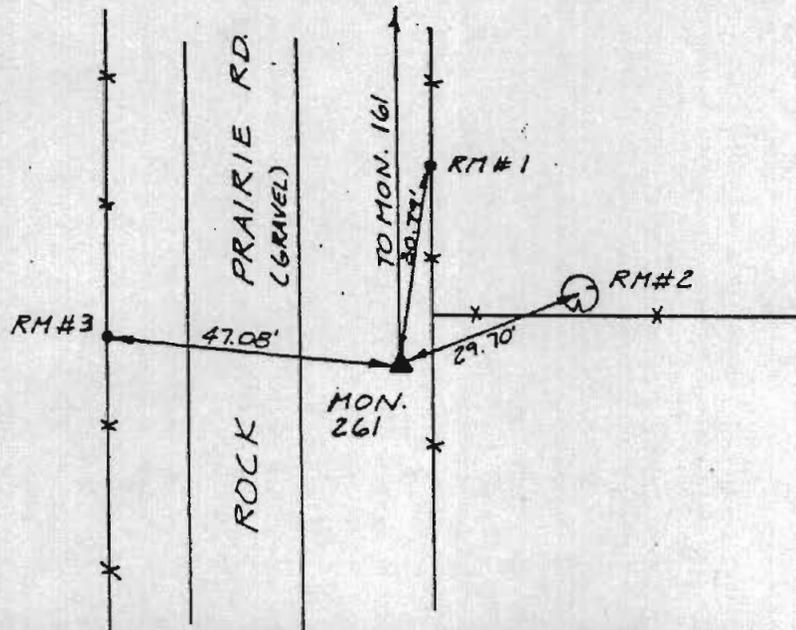
AZIMUTH MARK MONUMENT 161	ASTRONOMIC AZIMUTH (FROM NORTH) N 359° 02' 44"	GRID AZIMUTH (FROM NORTH) N 356° 54' 34"
------------------------------	---	---

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

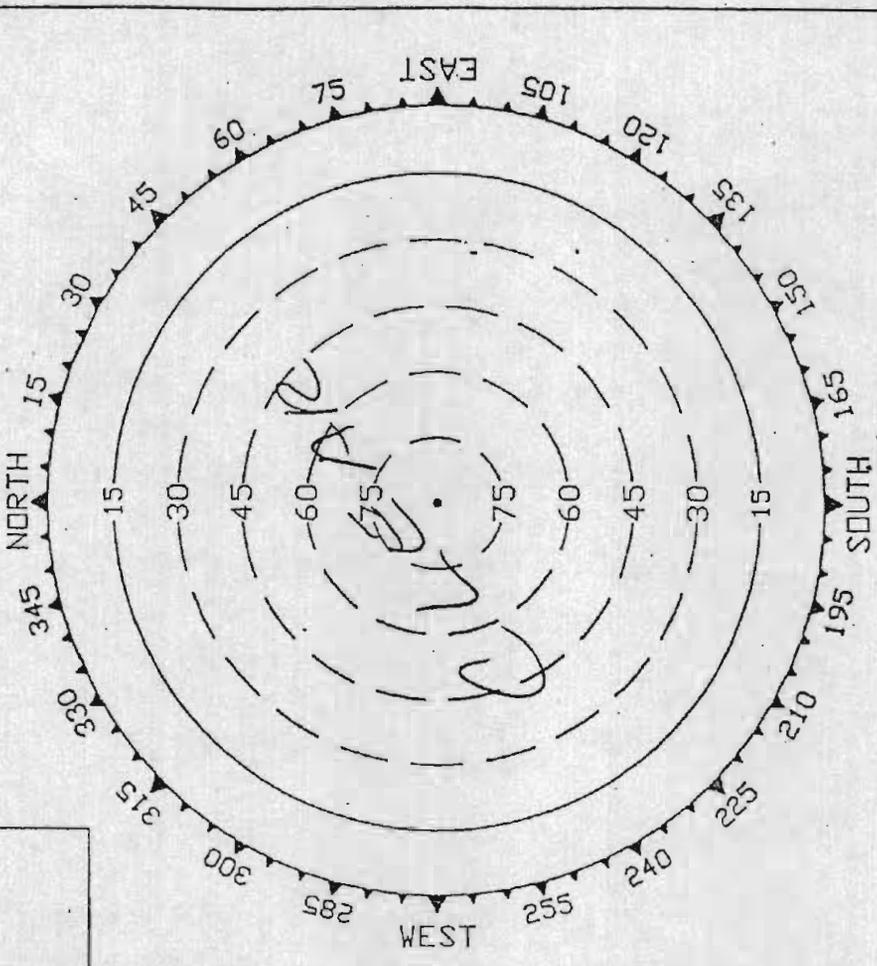
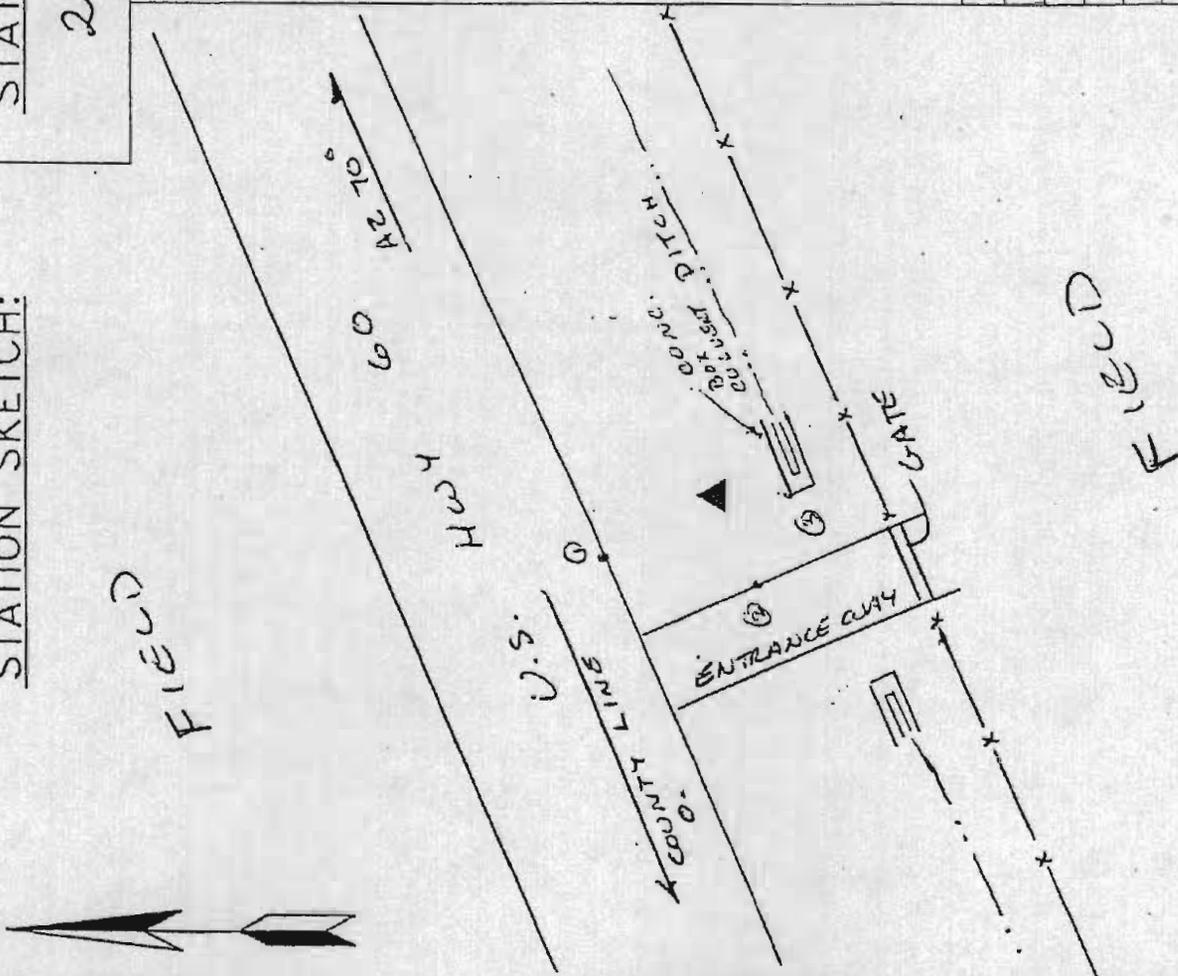
STATION	LATITUDE	LONGITUDE	NORTHING	EASTING	ELEV	REMARKS
1	30°36'49.45301"N	96°11'36.48594"W	10211176.23	3598516.08	195.24	Rebar & Cap
2	30°33'35.22591"N	96°25'14.05330"W	10188981.65	3527815.82	234.84	Rebar & Cap
3	30°28'40.41298"N	96°17'57.53286"W	10160580.86	3567034.79	276.45	Rebar & Cap
4	30°28'34.24322"N	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: 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 COLLECT
4		
5		
6		

ROAD TIES:

ROAD NAME AND/OR ROUTE NUMBER	NEED 2 OF 3:	CONC
	TO EP TO C	SOIL
	WIDTH	GRAY
		PAVE

Appendix C

New Control Data

Sheets



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: 30°35'51.09963"N	Elevation Factor: 0.99998944
Longitude: 96°20'02.54418"W	Combined Factor: 0.99989587
Ellipsoid Height: 221.197	Convergence: 2°03'36"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

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

Geodetic Control Station Page 2

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

Station Sketch

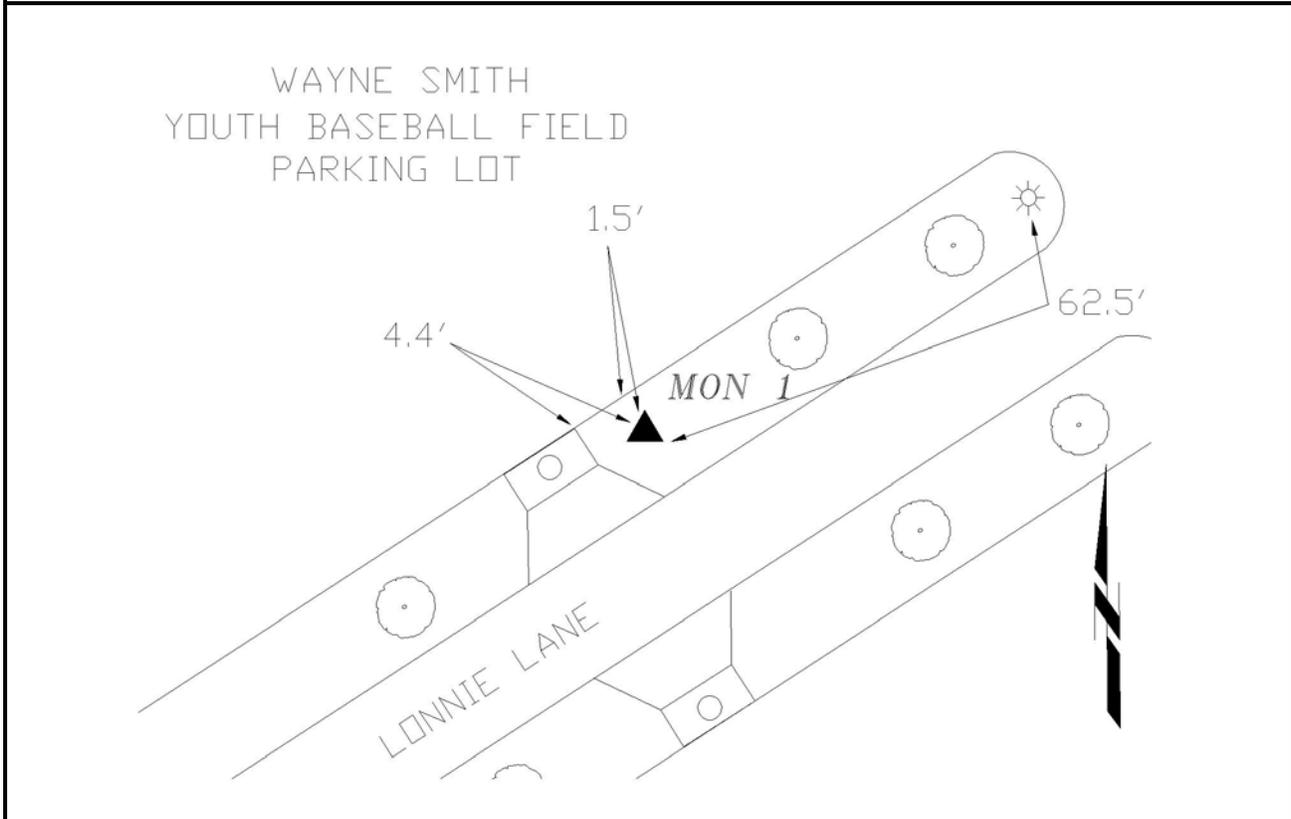


Photo 1 – Station Detail

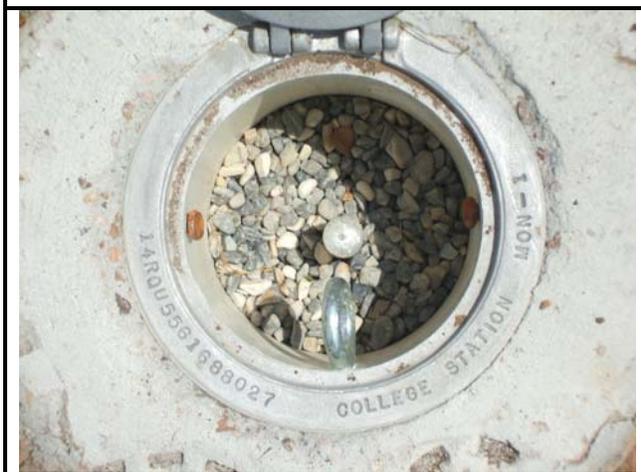


Photo 2 – Station Area Picture



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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: 30°33'45.02407"N	Elevation Factor: 0.99999102
Longitude: 96°24'42.76722"W	Combined Factor: 0.99990191
Ellipsoid Height: 188.053	Convergence: 2°01'11"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

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

Station Sketch

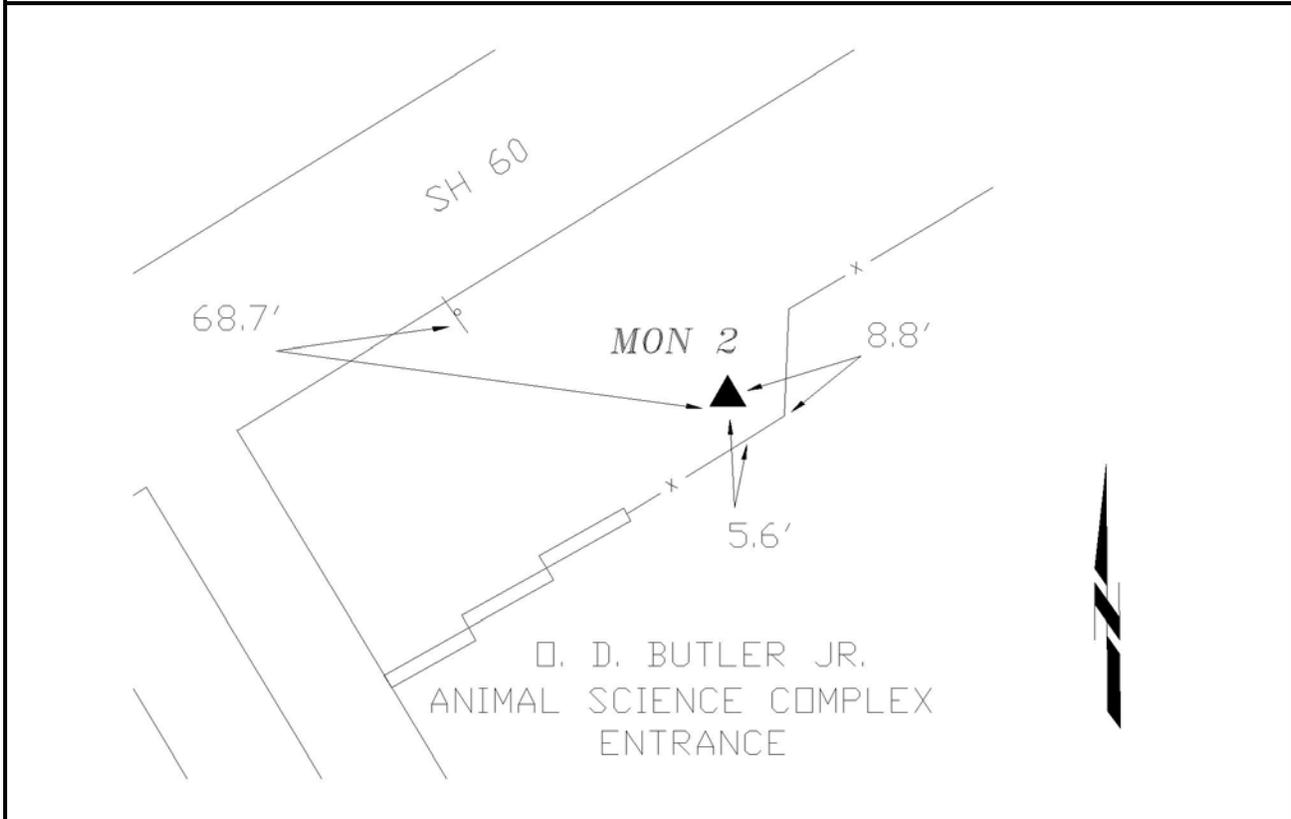


Photo 1 – Station Detail



Photo 2 – Station Area Picture





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: 30°31'24.70224"N	Elevation Factor: 0.99999359
Longitude: 96°20'49.43691"W	Combined Factor: 0.99990988
Ellipsoid Height: 134.292	Convergence: 2°03'11"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

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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

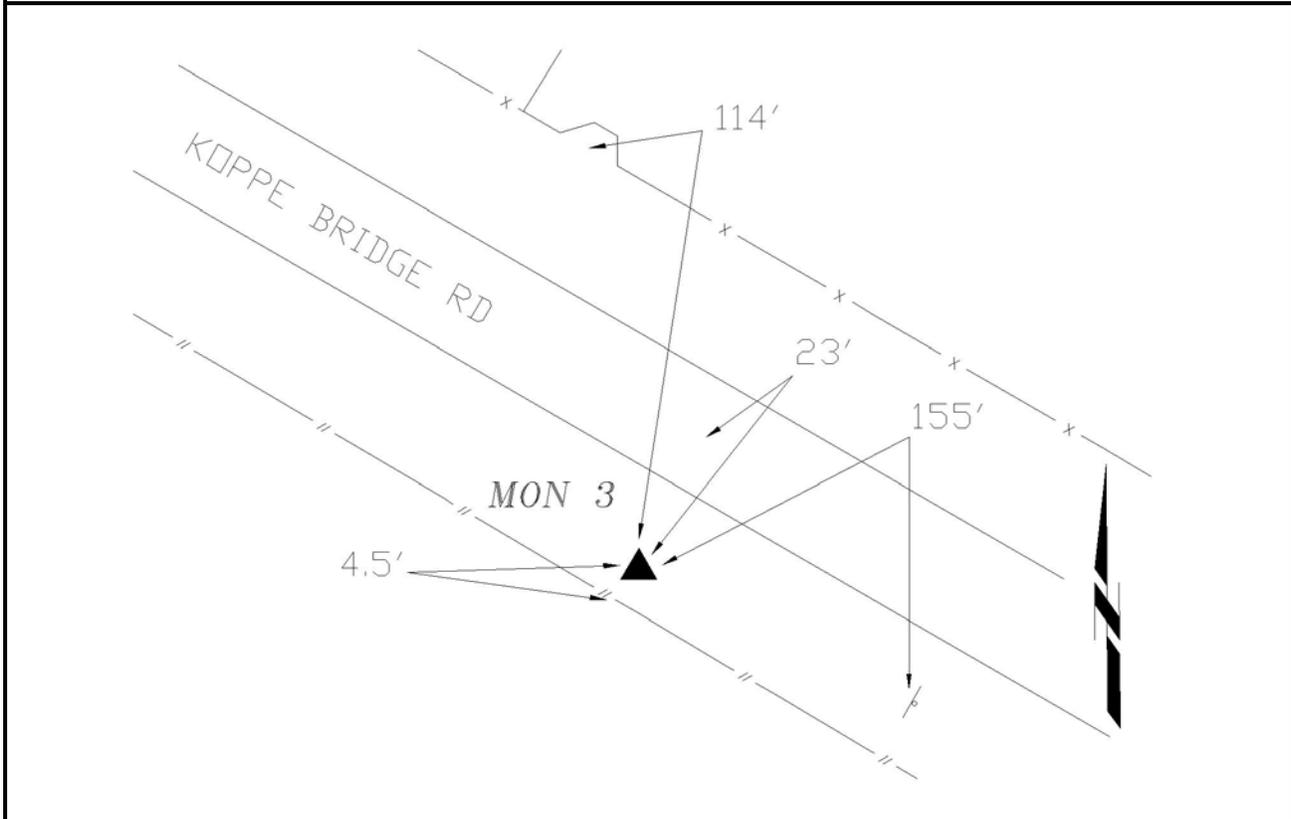


Photo 1 – Station Detail



Photo 2 – Station Area Picture



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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: 30°30'23.61692"N	Elevation Factor: 0.99999054
Longitude: 96°17'47.46431"W	Combined Factor: 0.99990932
Ellipsoid Height: 198.217	Convergence: 2°04'45"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

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

Station Sketch

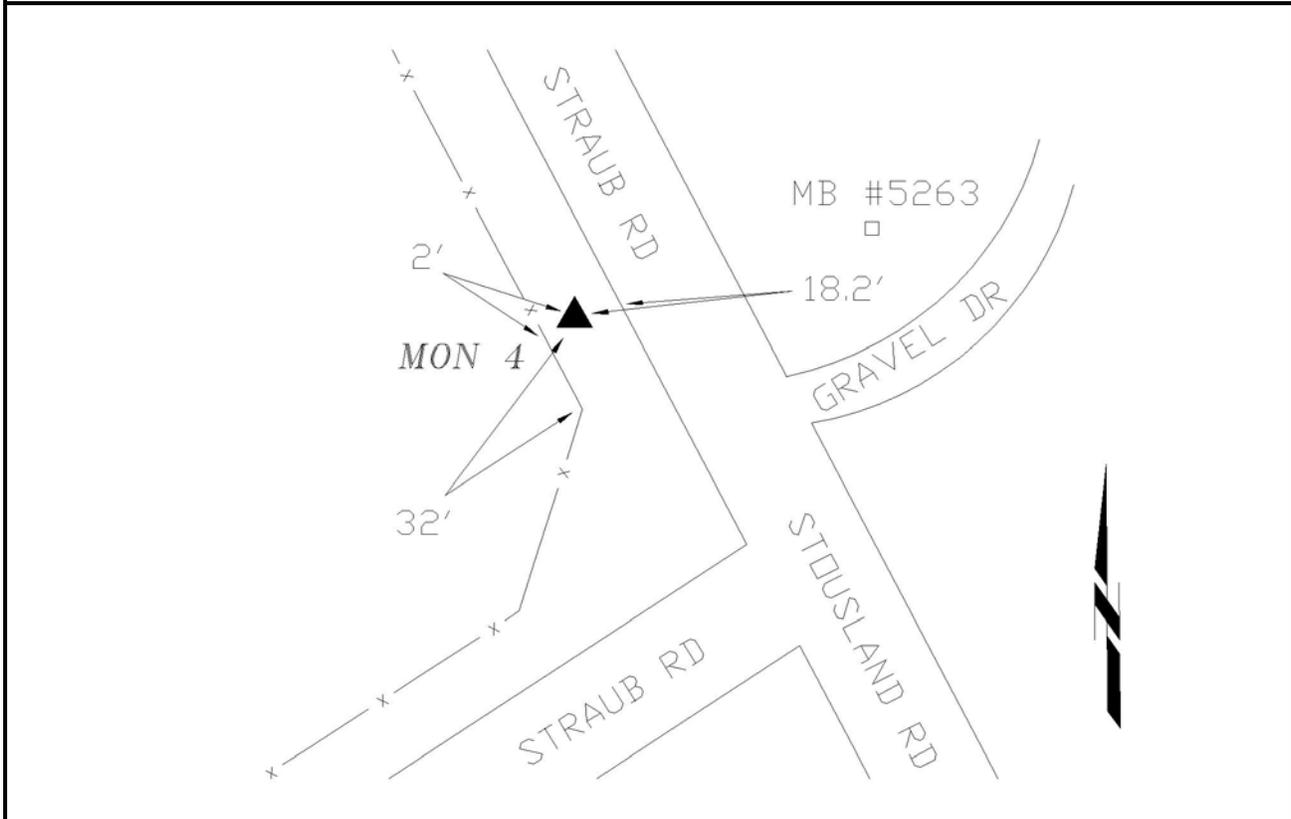


Photo 1 – Station Detail



Photo 2 – Station Area Picture





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: 30°30'23.31672"N	Elevation Factor: 0.99999456
Longitude: 96°11'51.73491"W	Combined Factor: 0.99991335
Ellipsoid Height: 114.034	Convergence: 2°07'48"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

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

Station Sketch

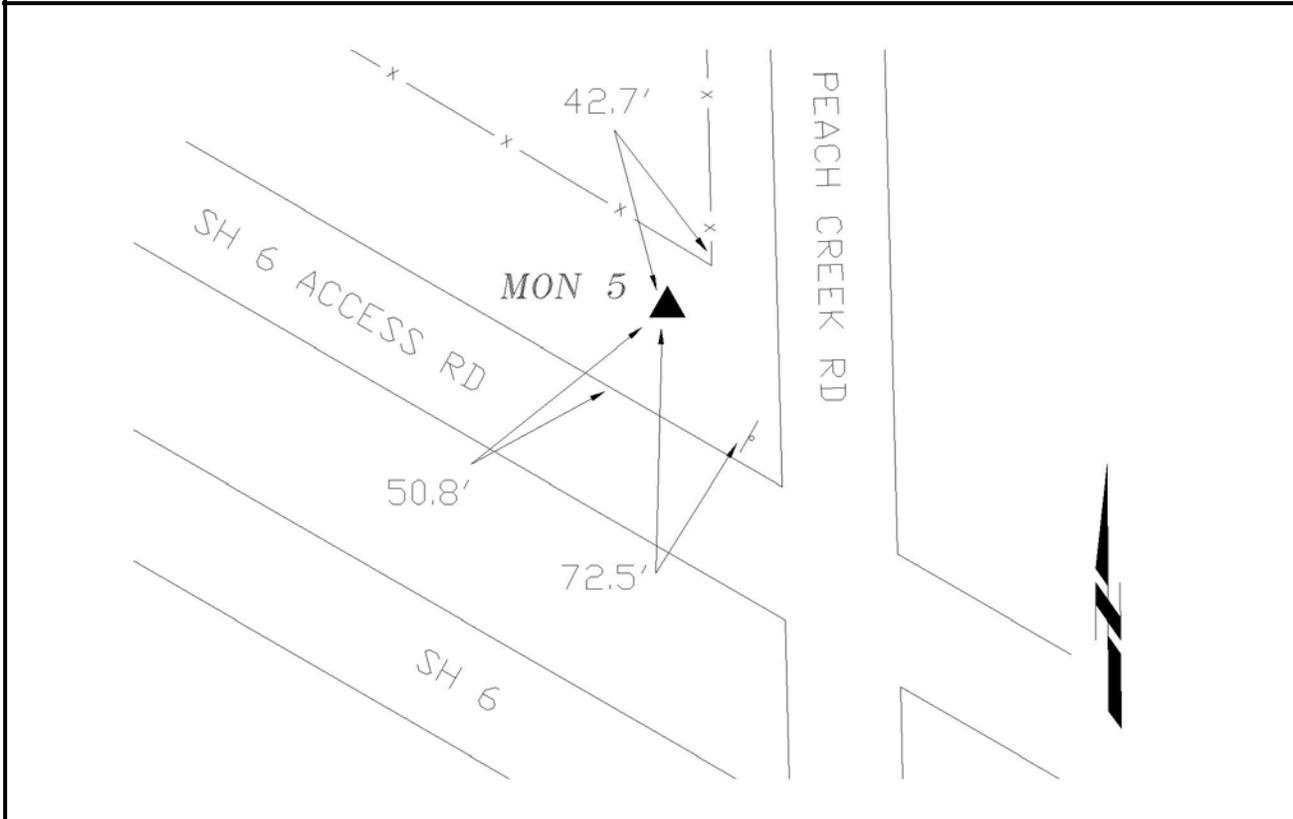


Photo 1 – Station Detail



Photo 2 – Station Area Picture





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: 30°33'21.25102"N	Elevation Factor: 0.99999471
Longitude: 96°11'09.40483"W	Combined Factor: 0.99990648
Ellipsoid Height: 110.799	Convergence: 2°08'10"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

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

Station Sketch

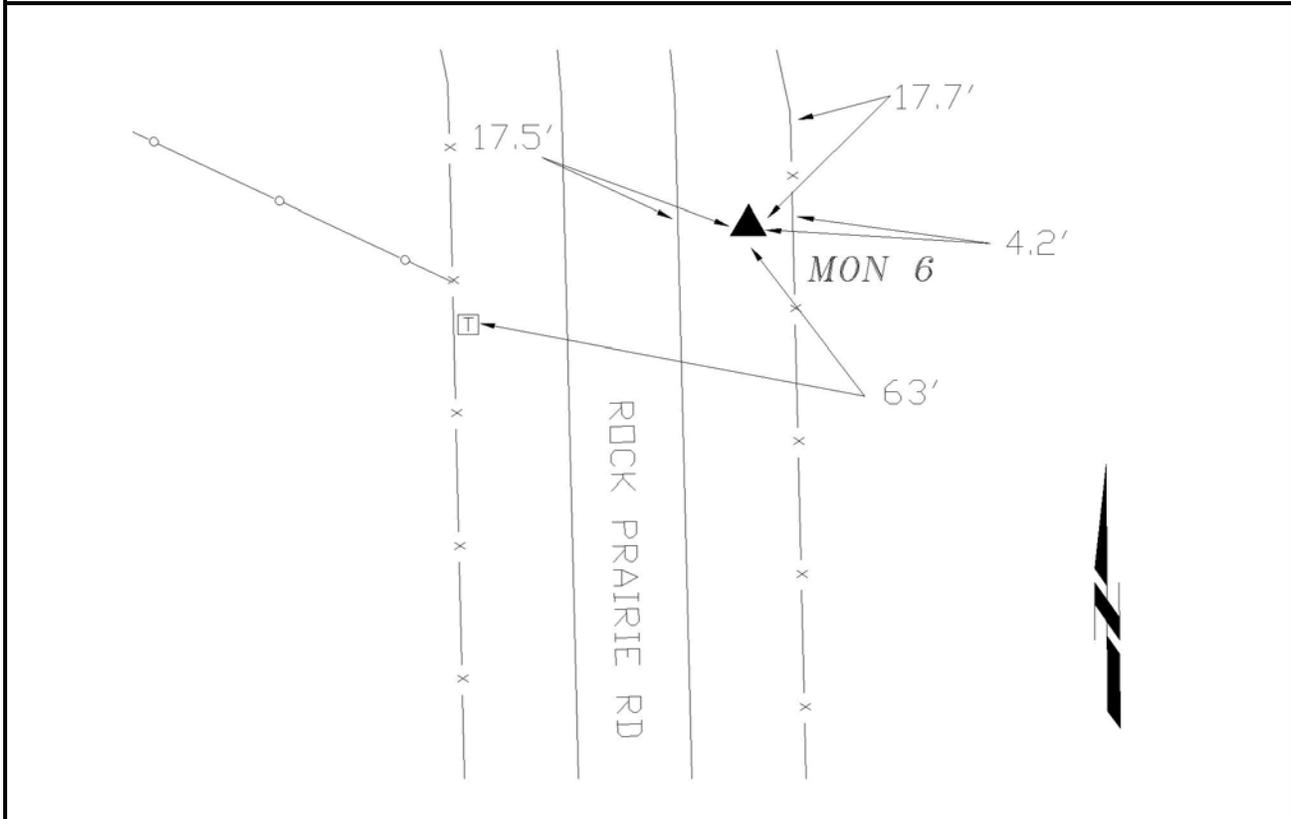


Photo 1 – Station Detail



Photo 2 – Station Area Picture





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: 30°37'13.57004"N	Elevation Factor: 0.9999932
Longitude: 96°12'09.58486"W	Combined Factor: 0.99989691
Ellipsoid Height: 142.461	Convergence: 2°07'39"
<u>To Reach Description</u>	
<p>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".</p>	
<p>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.</p>	

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

Station Sketch

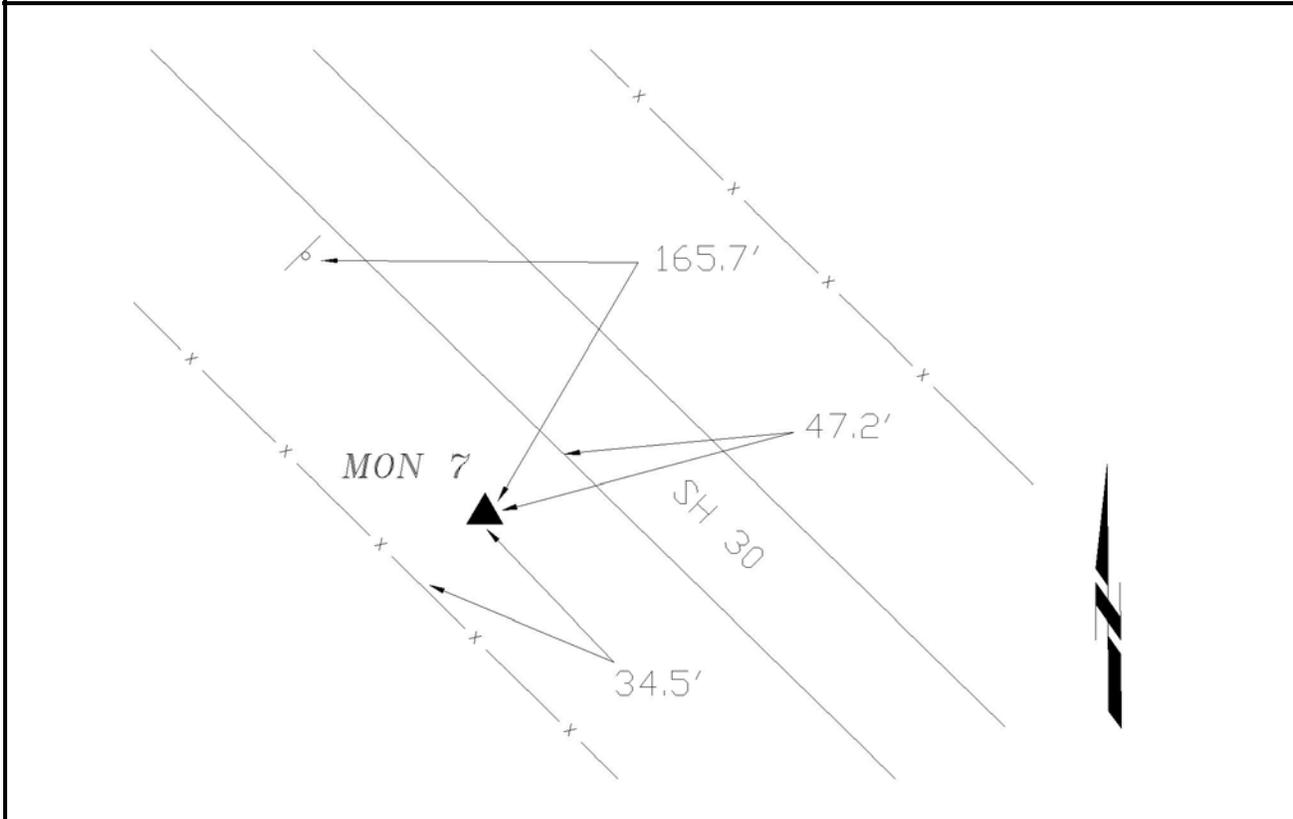


Photo 1 – Station Detail



Photo 2 – Station Area Picture





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: 30°38'27.65820"N	Elevation Factor: 0.99999156
Longitude: 96°17'40.46723"W	Combined Factor: 0.99989296
Ellipsoid Height: 176.665	Convergence: 2°04'49"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

Point Information Disclaimer: This data has been supplied by state statute. No expressed or implied warranties are made by CDS/Muery Services for the accuracy, completeness, reliability, usability, or suitability of the point data. CDS/Muery Services assumes no responsibility for incorrect results or damages resulting from the use of data.

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

Station Sketch

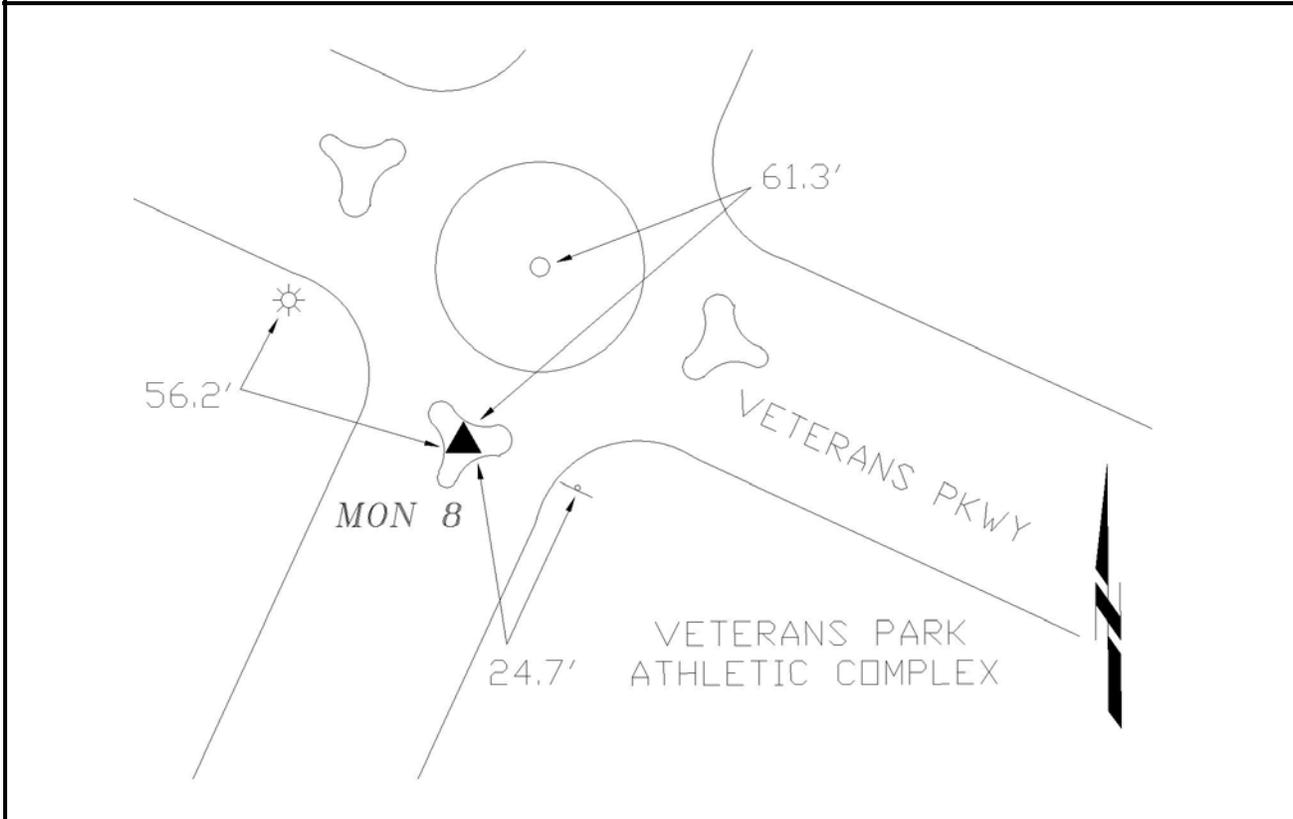


Photo 1 – Station Detail



Photo 2 – Station Area Picture





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: 30°34'55.39584"N	Elevation Factor: 0.99999134
Longitude: 96°15'11.66290"W	Combined Factor: 0.99989969
Ellipsoid Height: 181.455	Convergence: 2°06'05"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

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

Geodetic Control Station Page 2

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

Station Sketch

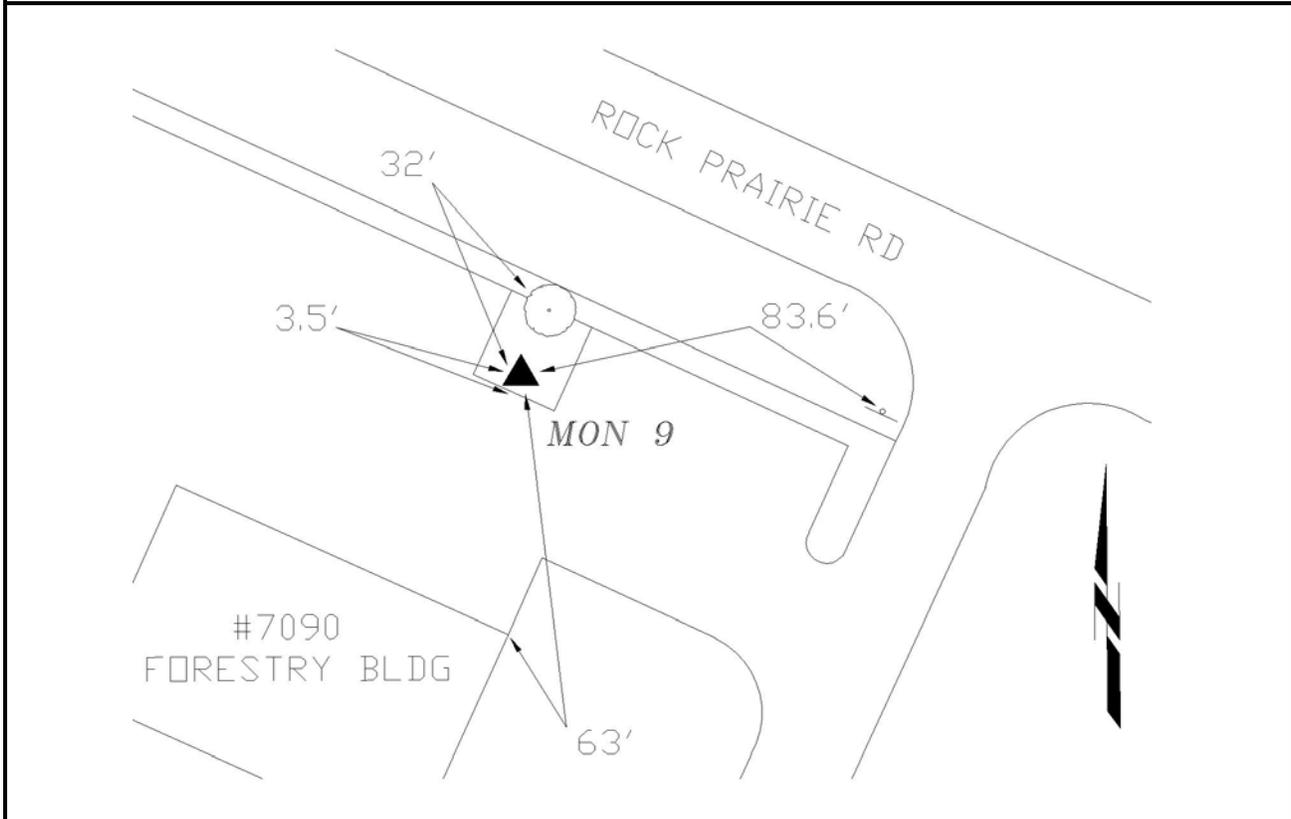


Photo 1 – Station Detail

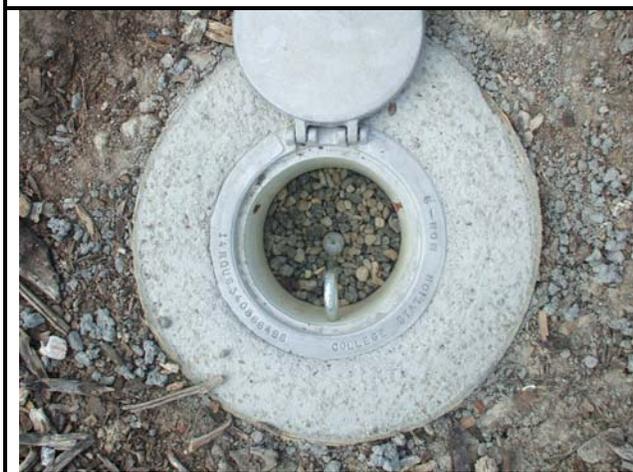


Photo 2 – Station Area Picture



Point Information Disclaimer: This data has been supplied by state statute. No expressed or implied warranties are made by CDS/Muery Services for the accuracy, completeness, reliability, usability, or suitability of the point data. CDS/Muery Services assumes no responsibility for incorrect results or damages resulting from the use of data.



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: 30°34'13.54687"N	Elevation Factor: 0.99998947
Longitude: 96°18'57.73986"W	Combined Factor: 0.99989932
Ellipsoid Height: 220.464	Convergence: 2°04'09"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

Point Information Disclaimer: This data has been supplied by state statute. No expressed or implied warranties are made by CDS/Muery Services for the accuracy, completeness, reliability, usability, or suitability of the point data. CDS/Muery Services assumes no responsibility for incorrect results or damages resulting from the use of data.



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

Geodetic Control Station Page 2

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

Station Sketch

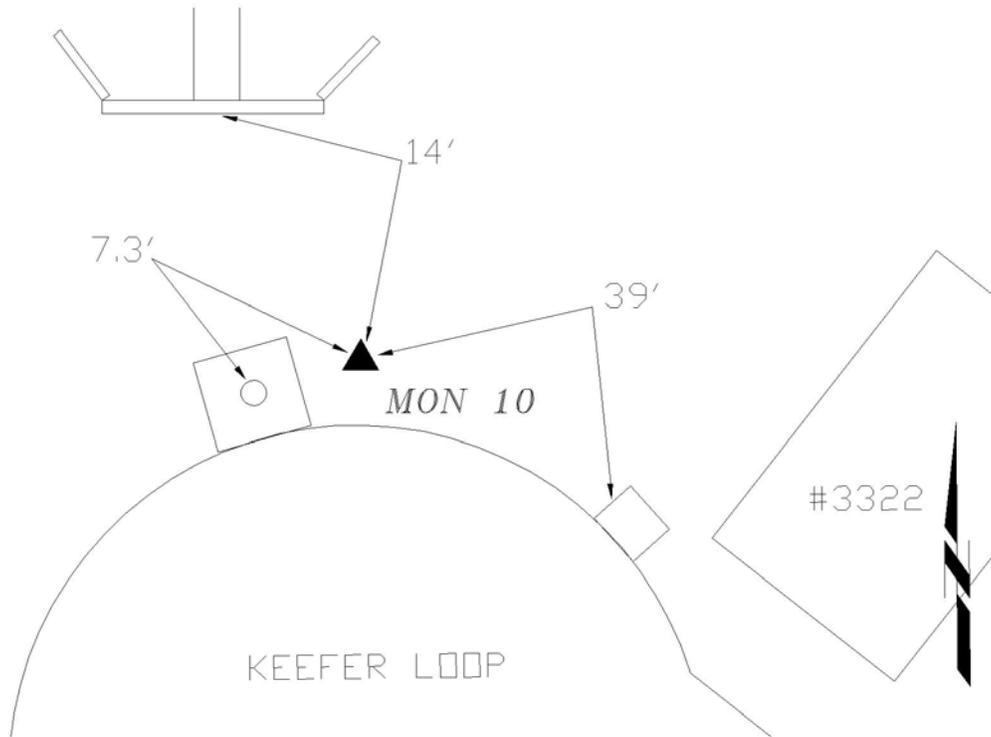


Photo 1 – Station Detail



Photo 2 – Station Area Picture



Point Information Disclaimer: This data has been supplied by state statute. No expressed or implied warranties are made by CDS/Muery Services for the accuracy, completeness, reliability, usability, or suitability of the point data. CDS/Muery Services assumes no responsibility for incorrect results or damages resulting from the use of data.



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: 30°33'07.89997"N	Elevation Factor: 0.99999067
Longitude: 96°14'55.79912"W	Combined Factor: 0.99990294
Ellipsoid Height: 195.42	Convergence: 2°06'14"
<u>To Reach Description</u>	
<p>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.</p>	
<p>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.</p>	

Point Information Disclaimer: This data has been supplied by state statute. No expressed or implied warranties are made by CDS/Muery Services for the accuracy, completeness, reliability, usability, or suitability of the point data. CDS/Muery Services assumes no responsibility for incorrect results or damages resulting from the use of data.



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

Geodetic Control Station Page 2

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

Station Sketch

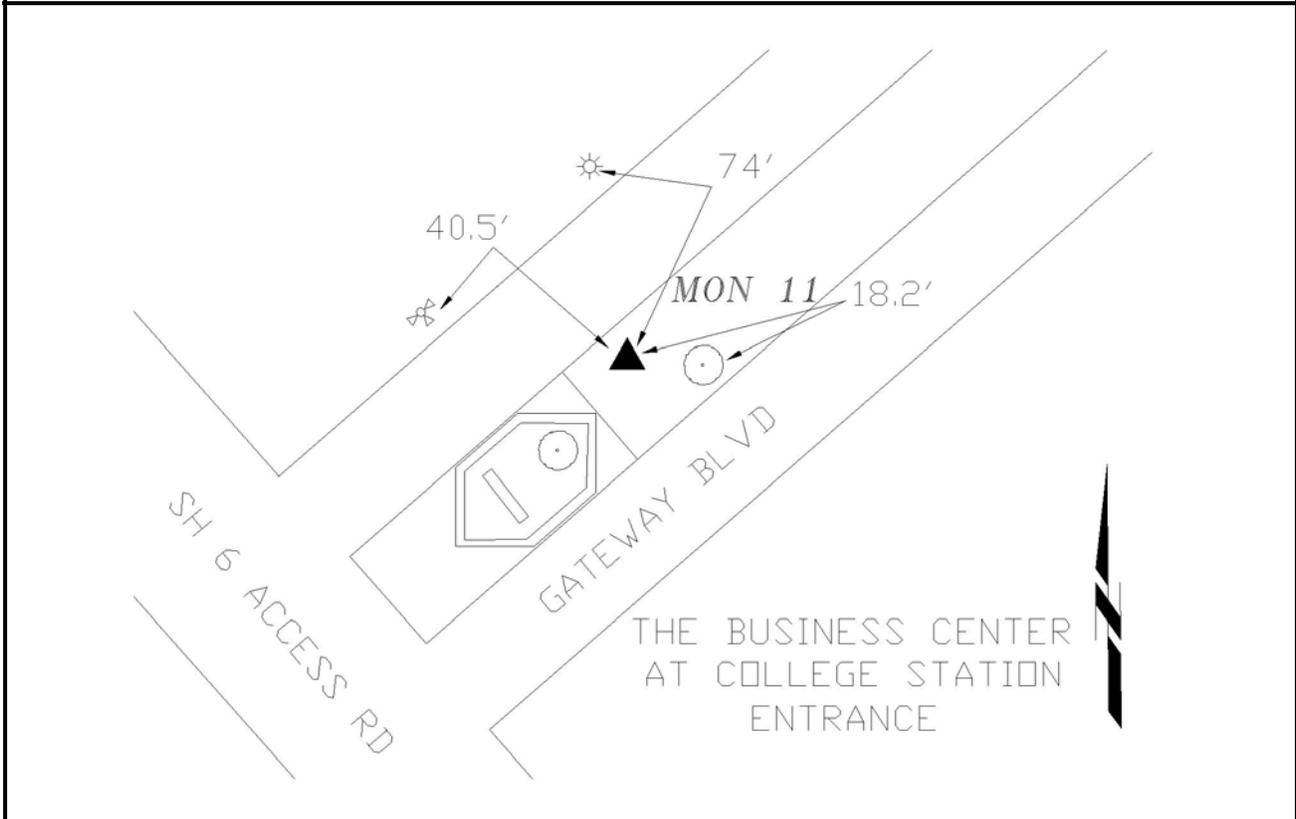


Photo 1 – Station Detail



Photo 2 – Station Area Picture



Point Information Disclaimer: This data has been supplied by state statute. No expressed or implied warranties are made by CDS/Muery Services for the accuracy, completeness, reliability, usability, or suitability of the point data. CDS/Muery Services assumes no responsibility for incorrect results or damages resulting from the use of data.

Appendix D

GPS Static

Observation Logs

DOP and Solar

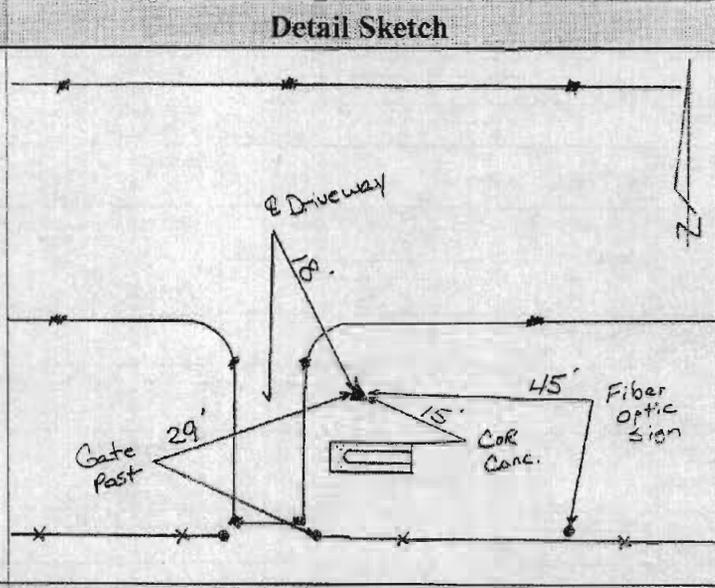
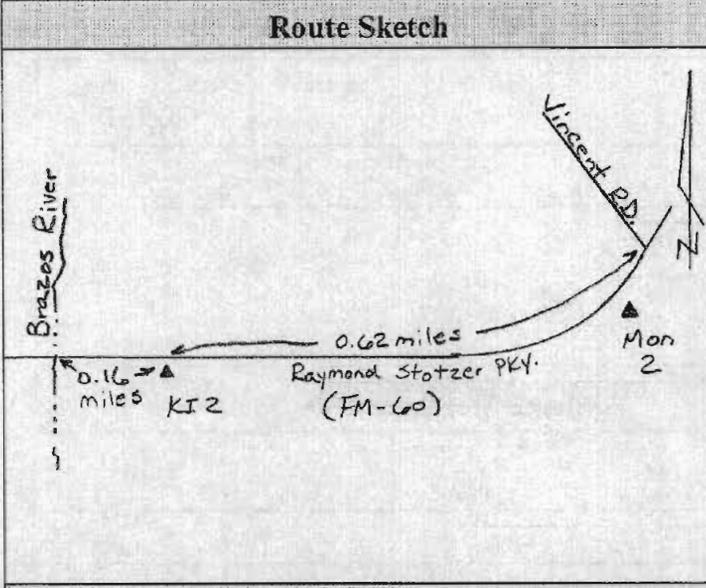
Reports

Project Name: College Station 2010 Control Survey			Project Number 109158		Data File Name (see below)		
Station Description 5/8" IR w/4C		Station Name KI 2		4 Character ID KI02	Julian Day 118	Date (Local) 4-28-10	
Geo Metrics GPS Inc.		Location Brazos Co./FM 60		Station PID	Session # 1	Obs. Agency code CDSMS	
Latitude 30° 33' 35.26" N		Longitude 96° 25' 14.09" W		Ellipsoid Ht.(m) +0044.9	Observer name C. Tarver		
Start Time	(Scheduled): Local 7:30	Other stations observed in this session Mon. 107, Mon 242					
Time	(Actual): Local 7:32						
Stop Time	(Scheduled): Local 8:30						
Time	(Actual): Local 8:30	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: 0220019965 Antenna P/N:		8	1.674	5.49	1.674	5.49	
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> No _____ if No, Explain:					
Power Source Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____		Optional Weather Data					
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)
Obstructions > 10 Degrees above Horizon? <u>N</u> (Y or N) Obstruction Survey Performed? Yes _____ No <input checked="" type="checkbox"/> Performed Previously _____		Before					
Other (explain):		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 <input checked="" type="checkbox"/> If not explain:					

Remarks (Comments on Problems, etc):

Log Checked By: _____

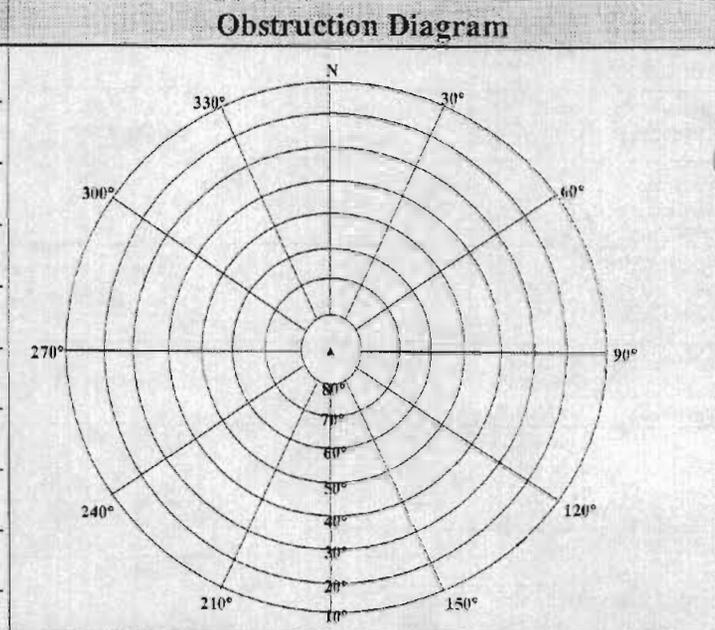
Station Name: **College Station 2010 Control Survey** Project Number: **109158** Date (Local): **4-28-10**



To Reach Description

* KI 2

* No Obstructions



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 F = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

Project Name: College Station 2010 Control Survey	Project Number: 109158	Data File Name (see below): m1071181
---	----------------------------------	--

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

Latitude: 30°38'06.89 N	Longitude: 096°22'46.40 W	Ellipsoid Ht.(m): 10079.9	Observer name: J. Montez
-----------------------------------	-------------------------------------	-------------------------------------	------------------------------------

Start Time	(Scheduled): Local	Other stations observed in this session: K12 mon 2/2 mon 8
Time	(Actual): Local 7:38	
Stop Time	(Scheduled): Local 8:30	

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	7	1.589	5.21	1.589	5.21
Receiver P/N:	2	1.589	5.21	1.589	5.21
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		1.589	5.21	1.589	5.21
Antenna S/N: 0220030199		1.589	5.21	1.589	5.21
Antenna P/N:		1.589	5.21	1.589	5.21
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: Leica S/N: ---	Mean of Measurements	1.589	5.21	1.589	5.21
Tribrach: Manufacturer: Leica S/N: --- Calibration Date: ---					

Photos of Station: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain: ---
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>	

Power Source	Optional Weather Data							
Camcorder Batteries	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
External 12 Volt <input checked="" type="checkbox"/>	Before							
Commercial AC 110 Volt: <input checked="" type="checkbox"/>	Middle							
Barometer MFR/Model: ---	After							
Serial Number: ---	Mean of Readings							
Units of Reading: millibars <input checked="" type="checkbox"/> inches <input type="checkbox"/> Feet <input type="checkbox"/> meters <input checked="" type="checkbox"/>								
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N)								
Obstruction Survey Performed? <input checked="" type="checkbox"/>								
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Performed Previously <input checked="" type="checkbox"/>								
Other (explain): ---								

Data Filename Format: aaaaddss aaa=4-Char ID, ddd=julian day, s=session,	5-Digit Weather Code		
Before: m1071181	Middle: ---	After: ---	
Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		If not explain: ---	

Remarks (Comments on Problems, etc): ---	Log Checked By: ---
---	----------------------------

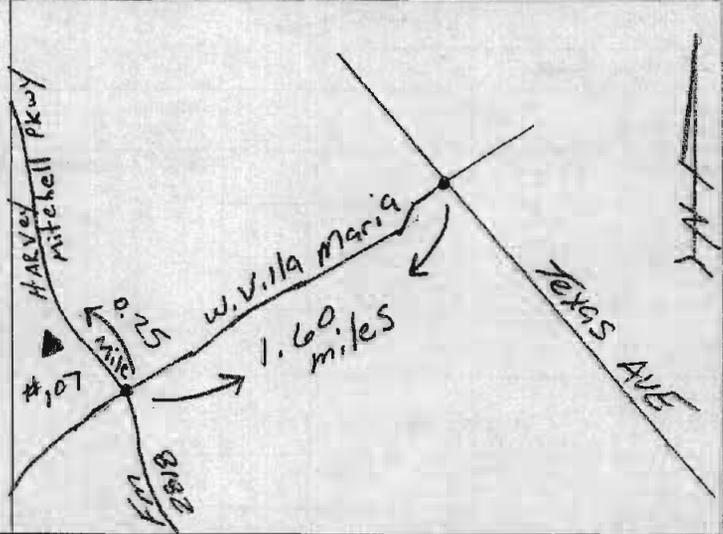
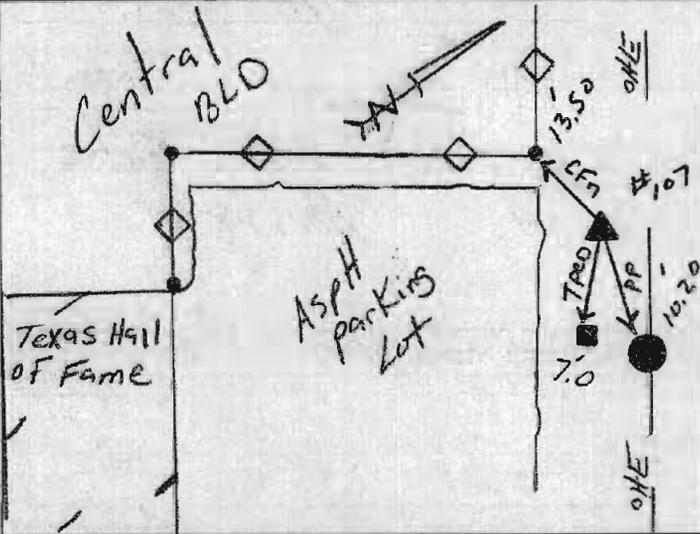
Station Name: Mon 107

Project Number
109158

Date (Local)
4/28/10

Detail Sketch

Route Sketch



To Reach Description

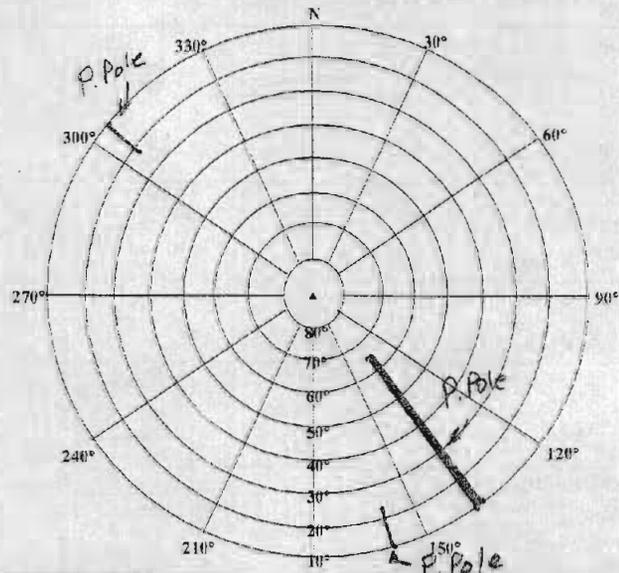
Obstruction Diagram

328° 23° = Power Pole

110° 64° } Power Pole
114° 64° }

148° 22° = Power Pole

* Mon. 107



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 81° F)	Clear (Below 10%)	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, D, 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

Project Name: College Station 2010 Control Survey		Project Number: 109158		Data File Name (see below): M 242-118-1	
Station Description		Station Name: Mon. 242		4 Character ID: M242	Julian Day: 118
		Location: COLLEGE STATION		Station PID:	Date (Local): 4-28-10
				Session #: 1	Obs. Agency code: CDSMS
Latitude: 30° 39' 23.5"		Longitude: 096° 16' 29.11"		Ellipsoid Ht.(m): +007.5	Observer name: Bobby Montez
Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TALVER - KI 2 JOE MONTEZ - MON 107			
Time	(Actual): Local 7:30 AM				
Stop Time	(Scheduled): Local	Antenna Measurements			
Time	(Actual): Local 8:30 AM				
Receiver MFR & Model: Trimble 4000 SSI		Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)
Receiver S/N: Receiver P/N:		3	1.552	5.09	1.552
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		8	1.552	5.09	1.552
Antenna S/N: Antenna P/N:		11	1.552	5.09	1.552
Adjustable or Fixed Hi. Tripod: A ___ or F ___ Manufacturer: ___ S/N: ___		Mean of Measurements			
Tribraich: 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: 5.09 Feet	
Antenna Cable Length: ___ (Meters)		Antenna Oriented North? Yes ___ No <input checked="" type="checkbox"/> if No, Explain: ___			
Antenna Plumb Check: Before? ___ After? <input checked="" type="checkbox"/>					
Power Source Camcorder Batteries: ___ External 12 Volt: ___ Commercial AC 110 Volt: ___		Optional Weather Data			
Barometer MFR/Model: ___ Serial Number: ___ Units of Reading: millibars ___ inches ___ Feet ___ meters ___			Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___		Before			
Other (explain): ___		Middle			
		After			
		Mean of Readings			
Data Filename Format: aaaadddd aaa=4-Char ID, ddd=Julian day, s=session,		5-Digit Weather Code			
		Before:	Middle:	After:	
M 242-118-1		Weather Taken At Antenna Height? Yes ___ No ___		If not explain: ___	
Remarks (Comments on Problems, etc):			Log Checked By: _____		

Station Name:

College Station 2010 Control Survey

Project Number

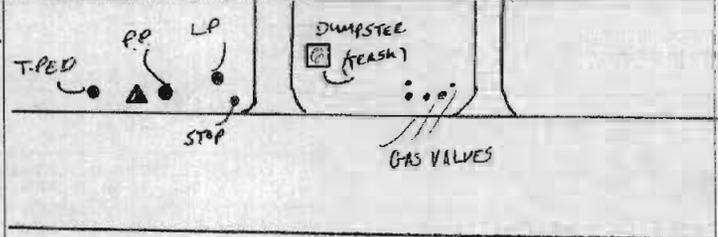
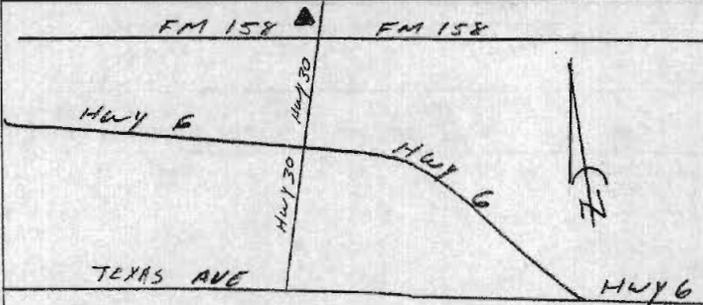
109158

Date (Local)

4-28-10

Route Sketch

Detail Sketch

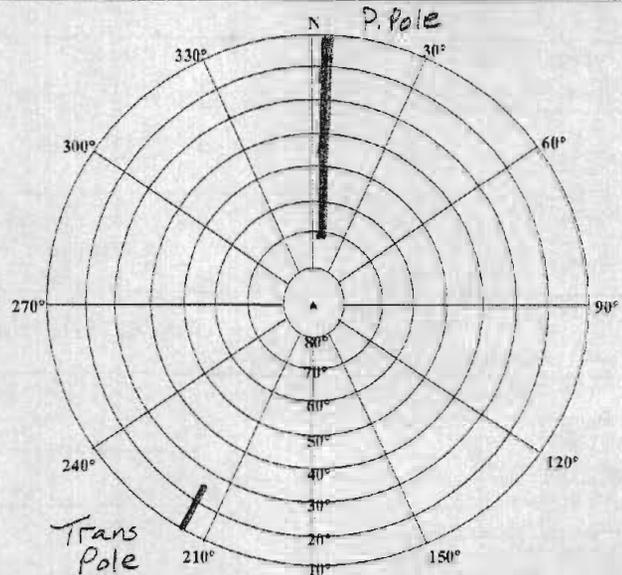


To Reach Description

Obstruction Diagram

* Mon 242
215° 25' - Trans Pole

6° 72' } P. Pole
12° 72' }



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=00200
N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

Project Name: College Station 2010 Control Survey			Project Number: 109158		Data File Name (see below)	
Station Description: 3/4" Mark it Rod w/punch inside Access Cover		Station Name: Mon 1		4 Character ID: Mon1	Julian Day: 118	Date (Local): 4-28-10
Location: Brazos Co./Lonnie Ln.		Station PID:	Session #: 2	Obs. Agency code: CDSMS		
Latitude: 30° 35' 51.19" N		Longitude: 96° 20' 02.55" W		Ellipsoid Ht.(m): +0066.8 m	Observer name: C. Varver	
Start Time (Scheduled): Local 9:15	Time (Actual): Local 9:15	Other stations observed in this session: Mon. 10, Mon. 9, Mon. 11				
Stop Time (Scheduled): Local 10:15	Time (Actual): Local 10:18	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		11	1.715	5.625	1.715	5.625
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		8	1.716	5.63	1.716	5.63
Antenna S/N: 0220019965 Antenna P/N:		3	1.713	5.62	1.713	5.62
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____		Mean of Measurements	1.715	5.625	1.715	5.625
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____						
Photos of Station: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:				
Antenna Plumb Check: Before? _____ After? _____						
Power Source: Camcorder Batteries: _____ External 12 Volt: _____ Commercial AC 110 Volt: _____		Optional Weather Data				
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)
Obstructions > 10 Degrees above Horizon? <u>N</u> (Y or N) Obstruction Survey Performed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Performed Previously _____		Before				
Other (explain): _____		Middle				
		After				
		Mean of Readings				
Data Filename Format: aaaaddds aaa=4-Char ID, ddd=julian day, s=session,		3-Digit Weather Code				
		Before:	Middle:		After:	
		Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/> If not explain:				

Remarks (Comments on Problems, etc):

Log Checked By: _____

Station Name:

College Station 2010 Control Survey

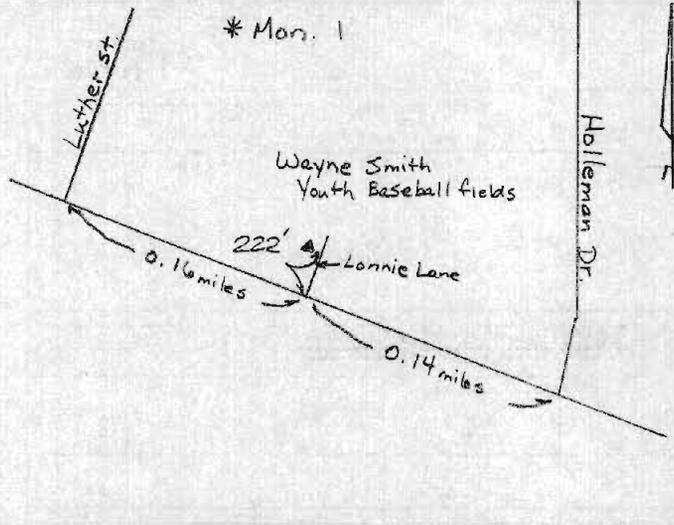
Project Number

109158

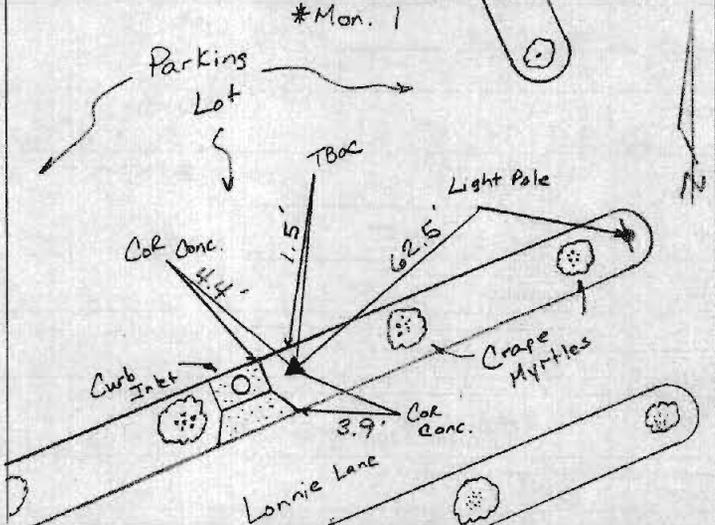
Date (Local)

4-28-10

Route Sketch

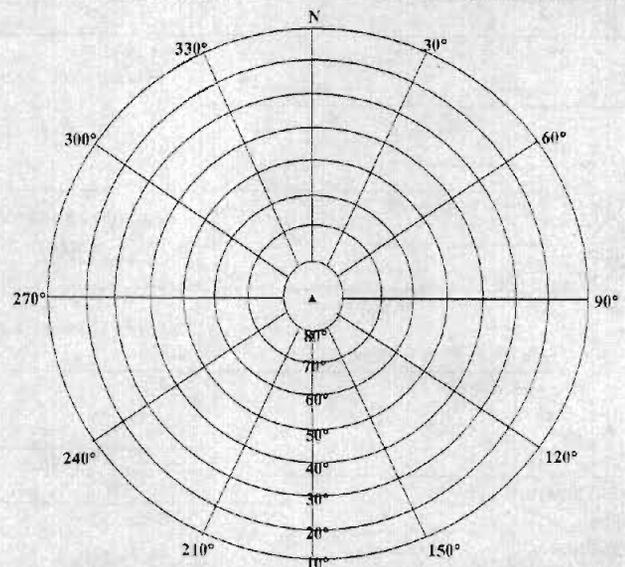


Detail Sketch



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

Project Name: College Station 2010 Control Survey			Project Number 109158		Data File Name (see below) CS101182				
Station Description Set Alum Deep Rod w/ punch inside Access Cover		Station Name CS # 10		4 Character ID CS10	Julian Day 118	Date (Local) 4/28/10			
Location		Station PID Alum Rod		Session # 2	Obs. Agency code CDSMS				
Latitude 30° 34' 13.57 N		Longitude 096° 18' 57.77 W		Ellipsoid Ht. (m) +0068.9 m	Observer name J. Montez				
Start	(Scheduled): Local 9:15	Other stations observed in this session mon 1 mon 9 mon 11							
Time	(Actual): Local 9:13								
Stop	(Scheduled): Local 10:18								
Time	(Actual): Local	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: 3533 A12012		3	1.688	5.54	1.688	5.54			
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		11	1.688	5.54	1.688	5.54			
Antenna S/N: 0220030199		7	1.688	5.54	1.688	5.54			
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: Leica S/N: _____		Mean of Measurements	1.688	5.54	1.688	5.54			
Tribrach: Manufacturer: Leica S/N: _____ Calibration Date: _____									
Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/> 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 Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain: _____							
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>		Optional Weather Data							
Power Source Camcorder Batteries _____ External 12 Volt <input checked="" type="checkbox"/> Commercial AC 110 Volt: _____		Time (Local)	Temperature Dry (F) (C)		Temperature Wet (F) (C)		Relative Humidity %	Pressure (in)Hg (Mb)	
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars _____ inches _____ Feet _____ meters _____		Before							
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously _____		Middle							
Other (explain): _____		After							
		Mean of Readings							
Data Filename Format: aaaddds aaa=4-Char ID, ddd=Julian day, s=session, ...		5-Digit Weather Code							
		Before:		Middle:		After:			
		Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/>					If not explain: _____		

Remarks (Comments on Problems, etc):

Log Checked By: _____

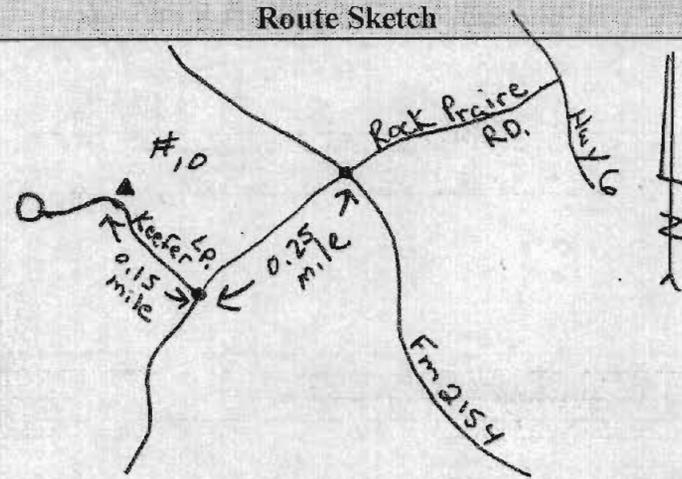
Total Length of Rod used = 15.0

Station Name: *CS #10*

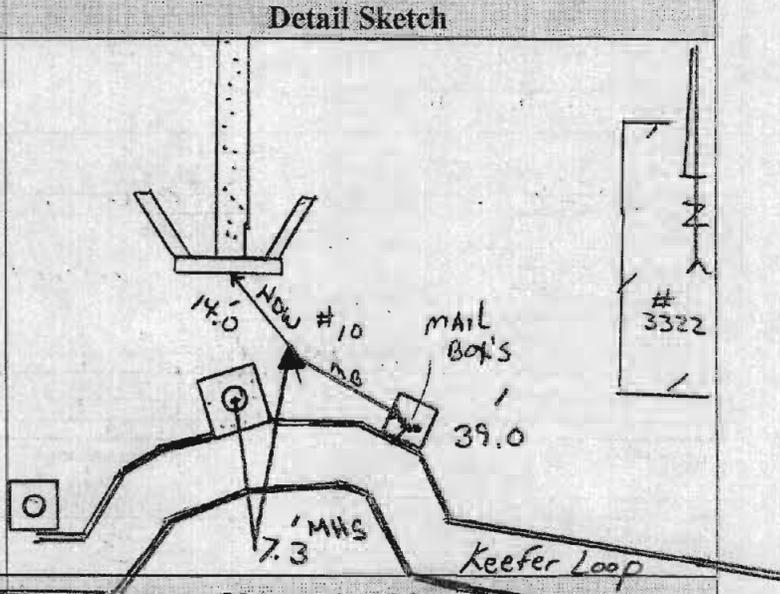
Project Number
109158

Date (Local)
4/28/10

Route Sketch



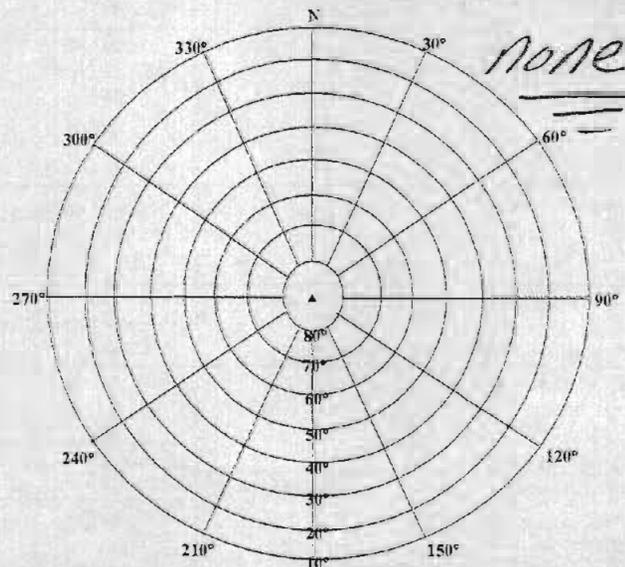
Detail Sketch



To Reach Description

From Inter. of Rock Prairie Rd & Fm 2154 Travel west on Rock Prairie Rd. For Approx 0.25 mile. Then take a right on Keefe Loop and Travel For Approx 0.15 mile monument is located on the right side by conc. Drain.

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 3 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

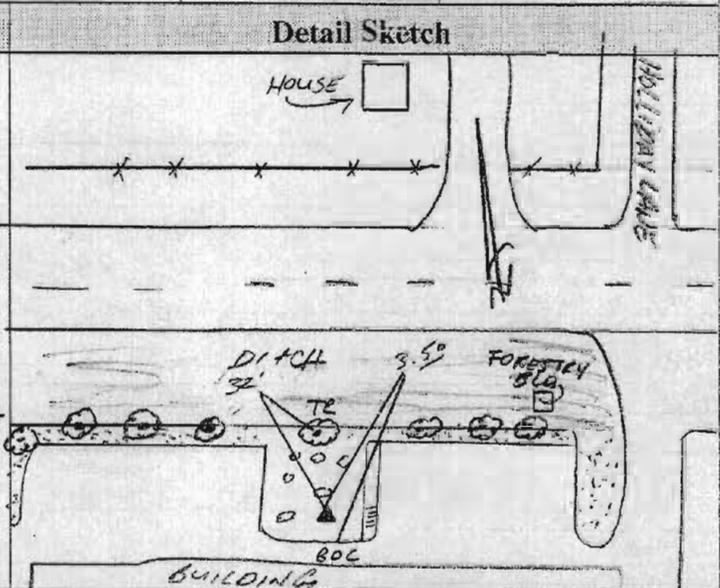
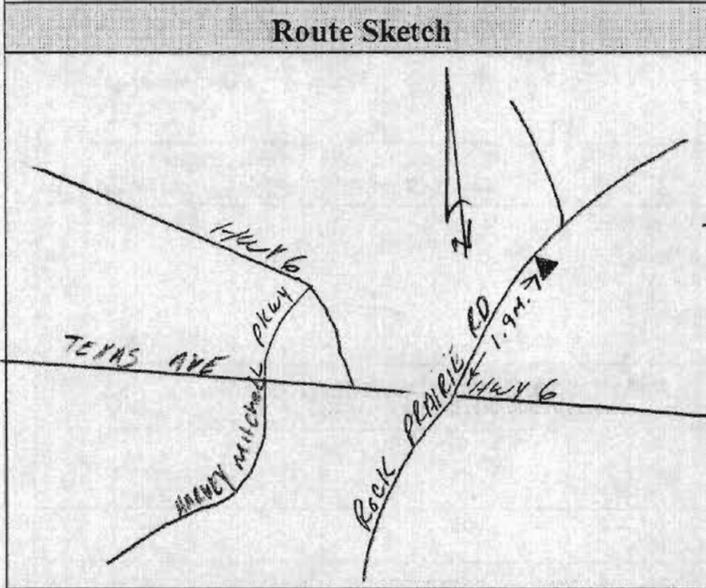
N, O, W, CL, C = 00000 N, F, W, CL, C = 01000 P, P, W, C, M = 12001 N, G, W, F, M = 04200
N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

Project Name: College Station 2010 Control Survey			Project Number: 109158		Data File Name (see below): MON9-118-2				
Station Description		Station Name: MON9		4 Character ID: MON9	Julian Day: 118	Date (Local): 4-28-10			
		Location: COLLEGE STATION		Station PID	Session #: 2	Obs. Agency code: CDSMS			
Latitude: 30° 34' 55.43"		Longitude: 096° 15' 11.67"		Ellipsoid Ht. (m): +0058.7	Observer name: Cobby Martinez				
Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TAYLOR - MON 1							
Time	(Actual): Local 9:07 AM	JOE MONTEZ - MON 10							
Stop Time	(Scheduled): Local	Antenna Measurements							
Time	(Actual): Local 10:18 AM								
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: Receiver P/N:		4	1.649	5' 4"	1.649	5' 4"			
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		9	1.649	5' 4"	1.649	5' 4"			
Antenna S/N: Antenna P/N:		12	1.649	5' 4"	1.649	5' 4"			
Adjustable or Fixed Ht. Tripod: A ___ or F ___ Manufacturer: ___ S/N: ___		Mean of Measurements							
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' 4" Feet				
Antenna Cable Length: ___ (Meters)		Antenna Oriented North? Yes ___ No <input checked="" type="checkbox"/> if No, Explain:							
Antenna Plumb Check: Before? ___ After? <input checked="" type="checkbox"/>									
Power Source Camcorder Batteries: ___ External 12 Volt: ___ Commercial AC 110 Volt: ___		Optional Weather Data							
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)	
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___		Before							
Other (explain):		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:			
MON9-118-2		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.

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



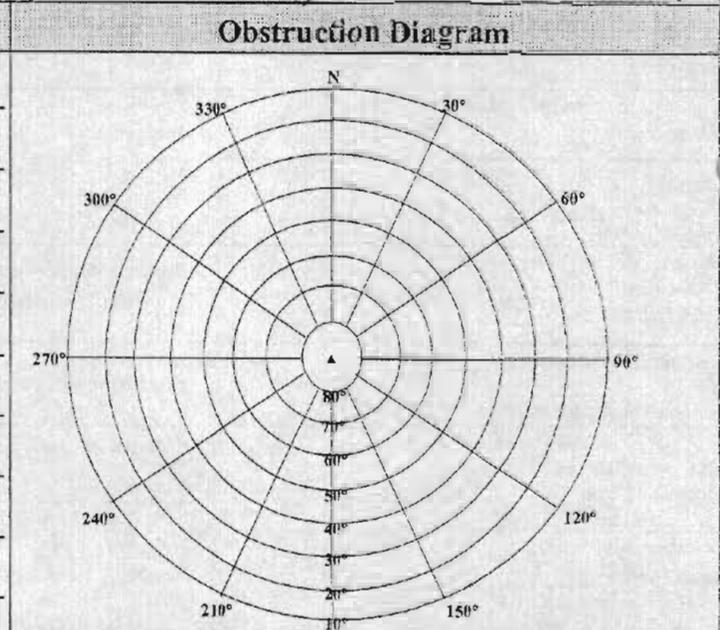
To Reach Description

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
FORESTY BUILDING.

ADDRESS 7090 (ROCK PRAIRIE)

32' FT TO 3IN TR.

3.50 FT TO BACK OF CURB



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

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below): OM11-118-2	
Station Description: MON#11	Station Name: Mon #11	4 Character ID: OM11	Julian Day: 118	Date (Local): 04-28-10
Location: College Station		Station PID:	Session #: 2	Obs. Agency code: CDSMS

Latitude: 30° 33.1321 N	Longitude: 096° 14.9303 W	Ellipsoid Ht.(m): 0661.0M	Observer name: A. E. ...
Start Time: (Scheduled): 9:15 Local (Actual): 9:18 Local	Other stations observed in this session: MON#12, MON#10, MON#9		
Stop Time: (Scheduled): 10:18 Local (Actual): 10:19 Local	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					
Receiver S/N: Receiver P/N: 3515A15357	2	1.646	5.405	1.646	5.405
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	6	1.644	5.40	1.644	5.40
Antenna S/N: Antenna P/N: 220126287	10	1.646	5.405	1.646	5.405
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____	Mean of Measurements				
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____		1.645	5.40	1.645	5.40

Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/> 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: _____ (Meters)
Antenna Plumb Check: Before? After?

Antenna Oriented North? Yes No if No, Explain: _____

Power Source		Optional Weather Data							
Camcorder Batteries: _____	External 12 Volt: _____	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg	Pressure (Mb)
Commercial AC 110 Volt: _____	Barometer MFR/Model: _____	Before							
Serial Number: _____	Units of Reading: millibars _____ inches _____ Feet _____ meters _____	Middle							
Obstructions > 10 Degrees above Horizon? (Y or N) _____	Obstruction Survey Performed? Yes <input type="checkbox"/> No <input type="checkbox"/> Performed Previously _____	After							
Other (explain): _____		Mean of Readings							

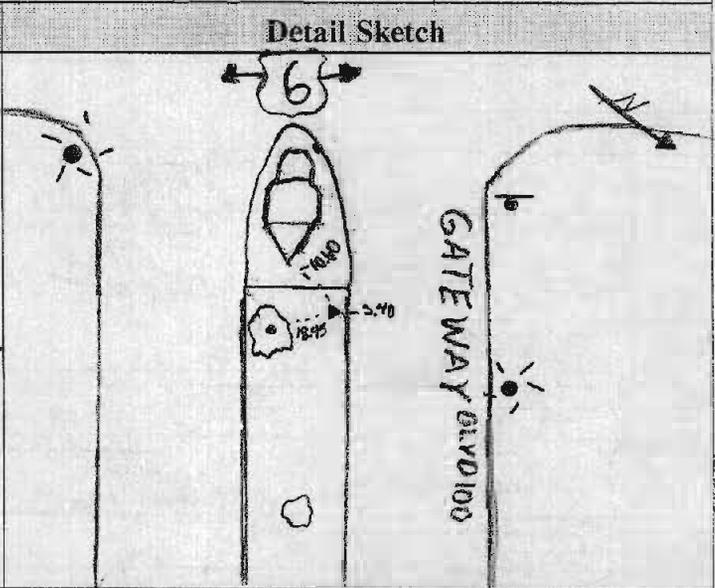
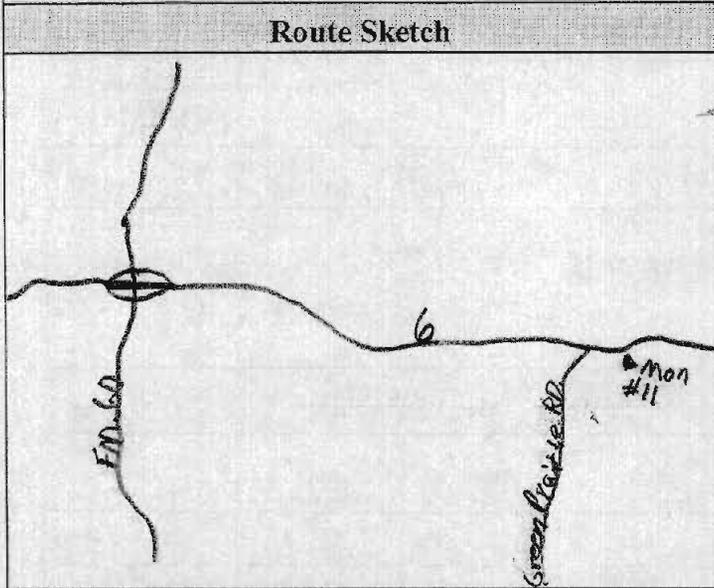
Data Filename Format: aaaadddd aaa=4-Char ID, ddd=julian day, s=session.	5-Digit Weather Code	
Before: _____	Middle: _____	After: _____
Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/>		If not explain: _____

Remarks (Comments on Problems, etc): _____

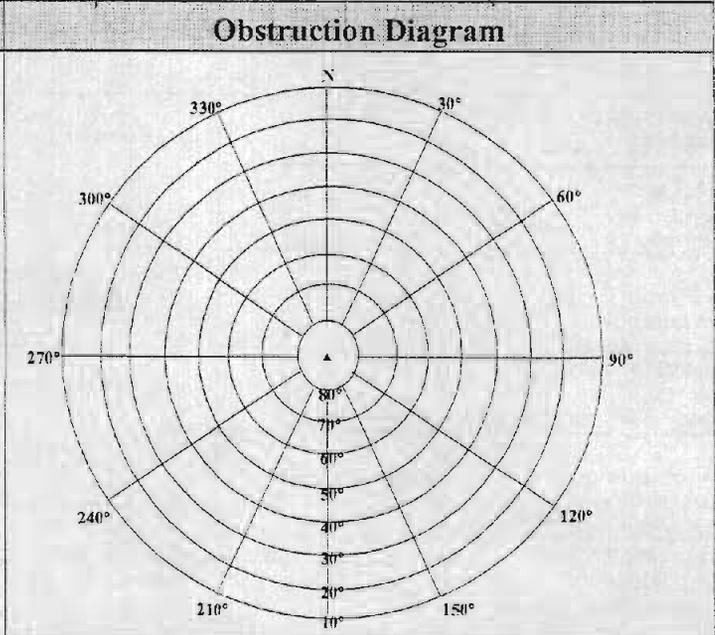
Log Checked By: _____

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

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



To Reach Description



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

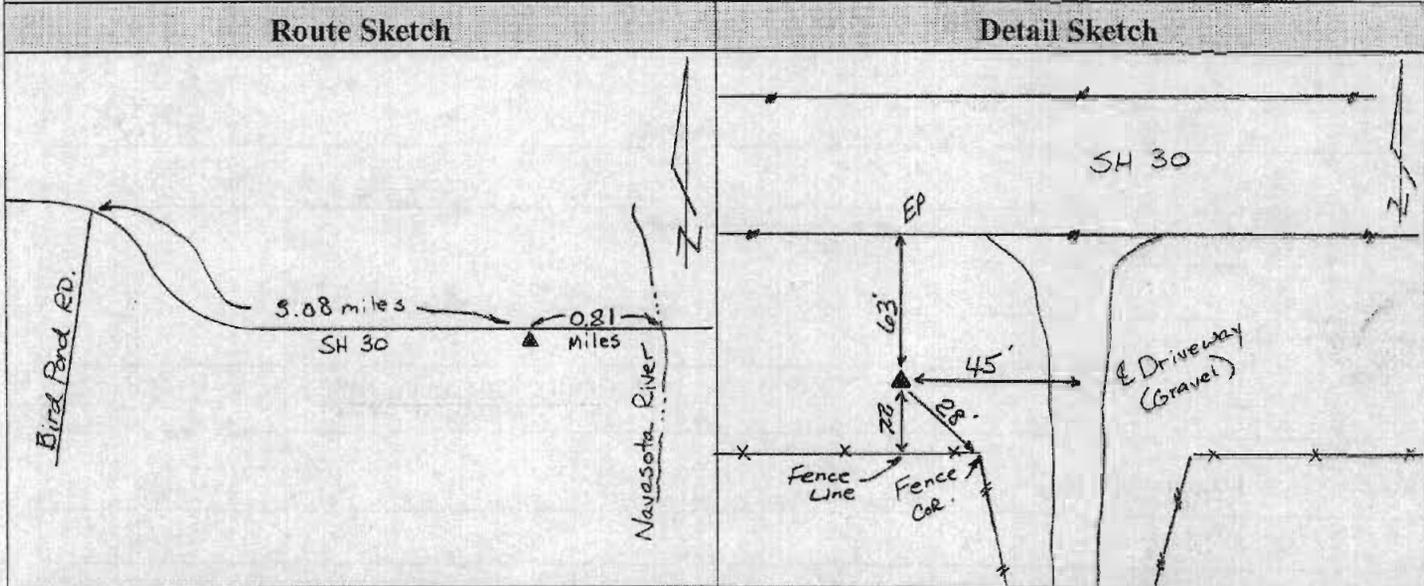
N, O, W, Cl, C = 00000 N, F, W, Cl, C = 01000 Pr, P, W, C, M = 12001 N, G, W, F, M = 00200
 N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

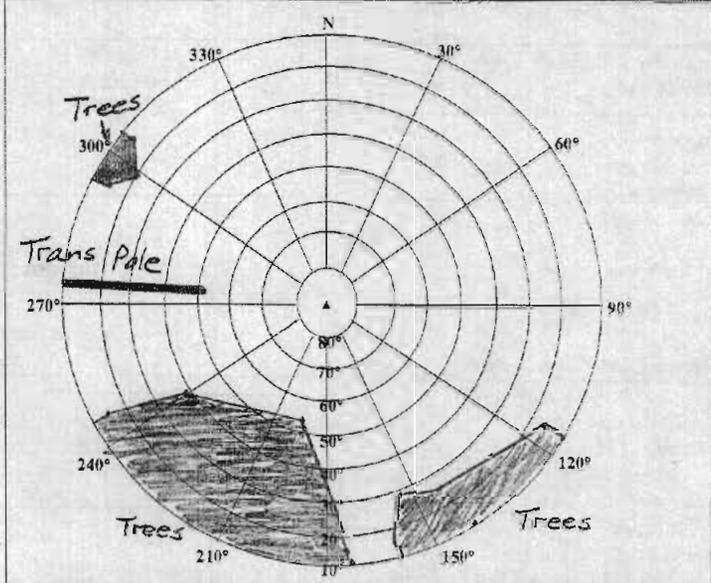
Project Name: College Station 2010 Control Survey		Project Number 109158	Data File Name (see below)		
Station Description 5/8" IR w/YC	Station Name KI 1	4 Character ID KI01	Julian Day 118	Date (Local) 4-28-10	
Geo Metrics GPS Inc.	Location Brazos Co. / SH. 30	Station PID	Session # 3	Obs. Agency code CDSMS	
Latitude 30° 36' 49.50" N	Longitude 96° 11' 36.52" W	Ellipsoid Ht. (m) +0032.4	Observer name C. Tarver		
Start Time (Scheduled): Local 11:00	Other stations observed in this session				
Time (Actual): Local 11:00	Mon. 6, KI 5, Mon. 5				
Stop Time (Scheduled): Local 12:26					
Time (Actual): Local 12:26	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	6	1.652	5.42	1.652	5.42
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	2	1.650	5.415	1.650	5.415
Antenna S/N: 0220019965 Antenna P/N:	10	1.652	5.42	1.652	5.42
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F _____ Manufacturer: _____ S/N: _____	Mean of Measurements				
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____	1.651	5.418	1.651	5.418	
Photos of Station: Yes _____ No <input checked="" type="checkbox"/> 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 Oriented North? Yes <input checked="" type="checkbox"/> No _____ if No, Explain:				
Antenna Plumb Check: Before? _____ After? _____					
Power Source Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____	Optional Weather Data				
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)
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No _____ Performed Previously _____	Before				
Other (explain):	Middle				
	After				
	Mean of Readings				
Data Filename Format: aaaadddd aaa=4-Char ID, ddd=julian day, s=session.	5-Digit Weather Code				
	Before:	Middle:	After:		
	Weather Taken At Antenna Height? Yes _____ No <input checked="" type="checkbox"/>		If not explain:		

Remarks (Comments on Problems, etc):

Log Checked By: _____

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



To Reach Description	Obstruction Diagram
* 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° } Trees	
205° 52° } 240° 38° } 248° 15° }	

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

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

Station Description <i>Along Deep Road w/ punch inside Access Cover</i>	Station Name <i>CS #6</i>	4 Character ID <i>CS06</i>	Julian Day <i>118</i>	Date (Local) <i>9/28/10</i>
	Location <i>College Station</i>	Station PID <i>Alum Road</i>	Session # <i>3</i>	Obs. Agency code CDSMS

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

Start Time	(Scheduled): Local 11:00	Other stations observed in this session KI1 KIS MONS
Time	(Actual): Local 10:58	
Stop Time	(Scheduled): Local 12:26	

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					
Receiver S/N: 3533412012 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: 0220030199 Antenna P/N:	6	1.529	5.02	1.529	5.02
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> 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 Oriented North? Yes No if No, Explain:

Antenna Plumb Check: Before? After?

Optional Weather Data

Power Source	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)
Camcorder Batteries <input checked="" type="checkbox"/> External 12 Volt <input checked="" type="checkbox"/> Commercial AC 110 Volt: <input checked="" type="checkbox"/>					
Barometer MFR/Model: --- Serial Number: --- Units of Reading: millibars <input checked="" type="checkbox"/> inches <input type="checkbox"/> Feet <input checked="" type="checkbox"/> meters <input type="checkbox"/>	Before				
Obstructions > 10 Degrees above Horizon? <input type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously <input type="checkbox"/>	Middle				
Other (explain):	After				
	Mean of Readings				

5-Digit Weather Code

Data Filename Format: **aaaaddc**
aaa=4-Char ID, add= Julian day, c=session.

Before: **CS061183** 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.

Station Name:

CS#6

Project Number

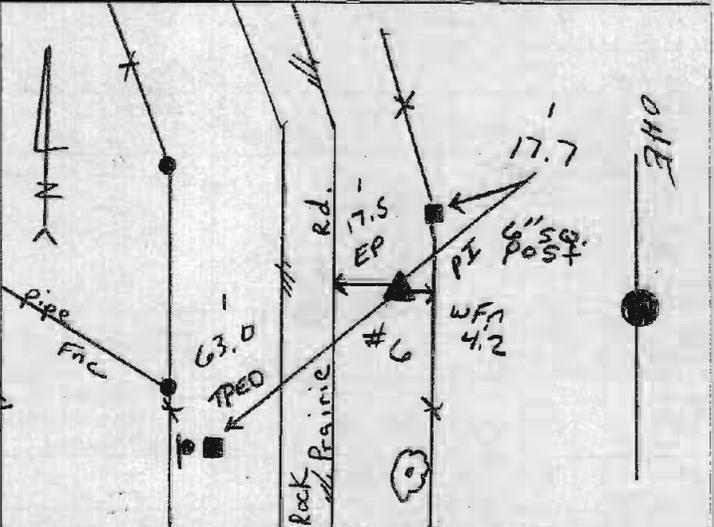
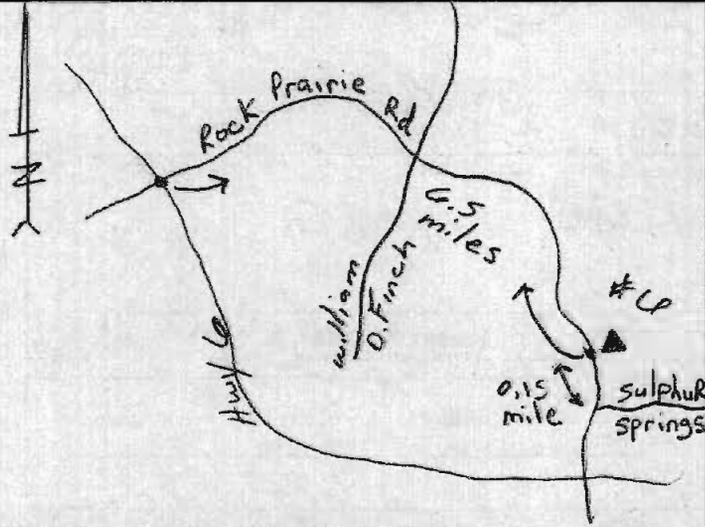
109158

Date (Local)

4/28/10

Route Sketch

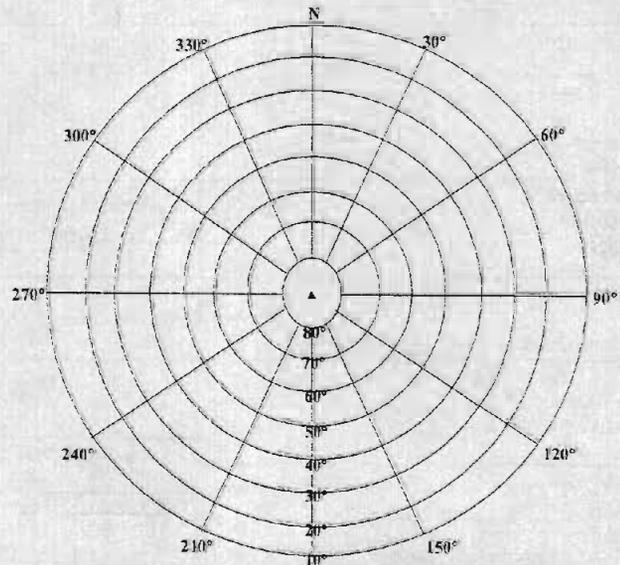
Detail Sketch



To Reach Description

Obstruction Diagram

From the Inter. of Hwy 66
to Rock Prairie Rd Travel East
on Rock Prairie Rd For Approx
6.5 miles. Monument is
located on the left side
l.o.w.



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)

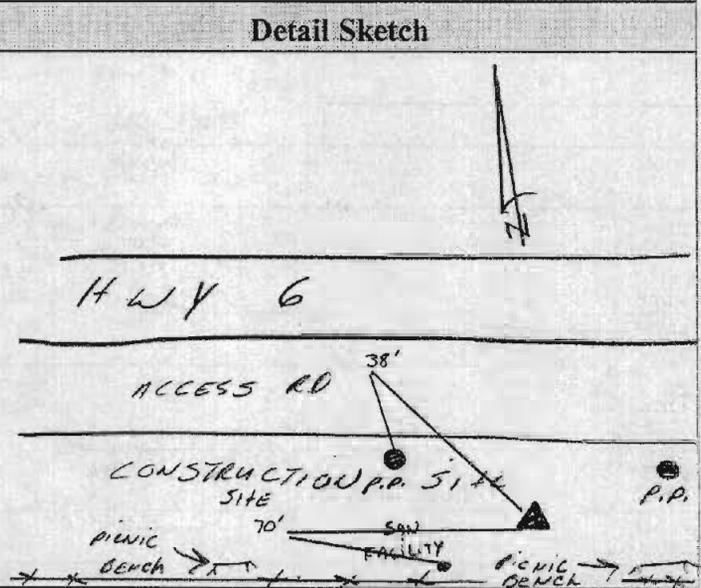
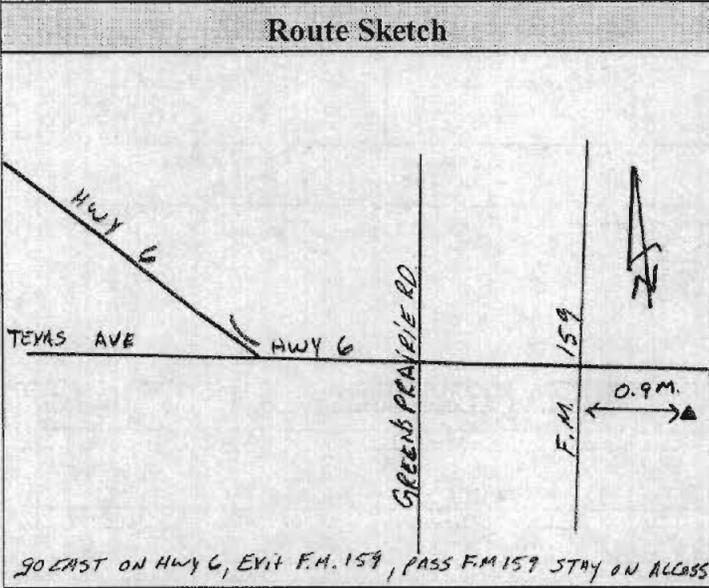
Condition = Entry

N, G, W, C, I, C = 00000 N, F, W, C, I, 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 I = Clear

Project Name: College Station 2010 Control Survey			Project Number: 109158		Data File Name (see below): MKIS-118-3	
Station Description		Station Name: KI 5		4 Character ID: MKIS	Julian Day: 118	Date (Local): 4-28-10
		Location: College Station		Station PID	Session #: 3	Obs. Agency code: CDSMS
Latitude: 30° 29' 42.06"		Longitude: 096° 11' 09.95"		Ellipsoid Ht.(m): +0046.2	Observer name: Bobby Hernandez	
Start Time	(Scheduled): Local	Other stations observed in this session: AS ESCOBAR Mon 5				
Time	(Actual): Local 10:52 AM	CHAO TRUVER KI 2				
Stop Time	(Scheduled): Local	JOE MONTEZ Mon 6				
Time	(Actual): Local 12:26 PM	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: Receiver P/N:		2	1.643	5.39	1.643	5.39
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		7	1.643	5.39	1.643	5.39
Antenna S/N: Antenna P/N:		11	1.643	5.39	1.643	5.39
Adjustable or Fixed Ht. Tripod: A ___ or F ___ Manufacturer: S/N:		Mean of Measurements				
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: 5.39 Feet	
Antenna Cable Length: (Meters)		Antenna Oriented North? Yes ___ No <input checked="" type="checkbox"/> if No, Explain:				
Antenna Plumb Check: Before? ___ After? <input checked="" type="checkbox"/>						
Power Source Camcorder Batteries External 12 Volt Commercial AC 110 Volt:		Optional Weather Data				
Barometer MFR/Model: Serial Number: Units of Reading: millibars ___ inches ___ Feet ___ meters		Time (Local)	Temperature Dry (F) (C)		Temperature Wet (F) (C)	
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___		Before				
Other (explain):		Middle				
		After				
		Mean of Readings				
Data Filename Format: aaaadddd aaa=4-Char ID, ddd=Julian day, s=session,		5-Digit Weather Code				
		Before:	Middle:		After:	
MKIS-118-3		Weather Taken At Antenna Height? Yes ___ No ___			If not explain:	

Remarks (Comments on Problems, etc): _____ Log Checked By: _____

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

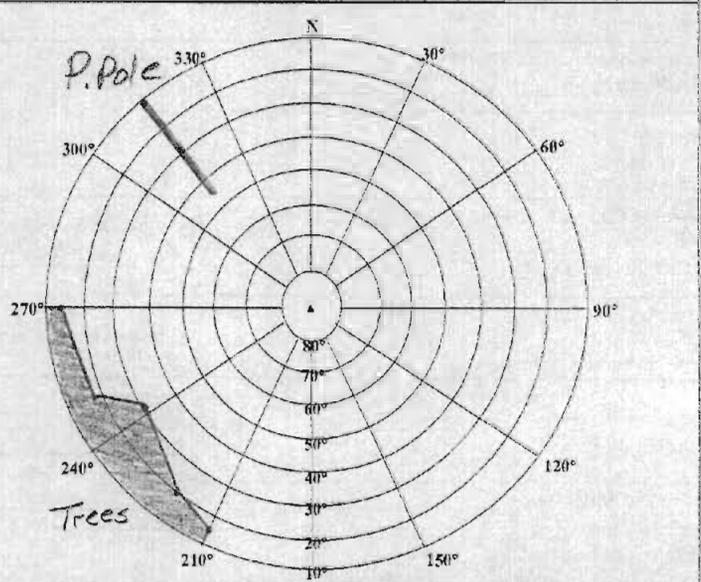


To Reach Description

* KI 5

210° 15°	} Trees	38' FT TO P.P.
225° 20°		70' FT TO SGN FACILITY
242° 32°		
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

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below): MON5-118-3			
Station Description: MON#5	Station Name: MON#5	4 Character ID: MON5	Julian Day: 118	Date (Local): 04-28-10		
Location: College Station		Station PID:	Session #: 3	Obs. Agency code: CDSMS		
Latitude: 30° 30.3897W		Longitude: 096° 11.8629W	Ellipsoid Ht. (m): 0032.0m	Observer name: A. Seaman		
Start Time:	(Scheduled): Local 11:00 AM	Other stations observed in this session: KI1-MON#6-KI5				
Time:	(Actual): Local 10:54 AM					
Stop Time:	(Scheduled): Local 12:26					
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: Receiver P/N: 3515A15357	2	1.661	5.455	1.661	5.455	
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	10	1.662	5.46	1.662	5.46	
Antenna S/N: Antenna P/N: 220126287	6	1.661	5.455	1.661	5.455	
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____	Mean of Measurements	1.661	5.45	1.661	5.45	
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____				1.661	5.45	
Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/> 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? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain: _____					
Power Source: Camcorder Batteries: _____ External 12 Volt: _____ Commercial AC 110 Volt: _____	Optional Weather Data					
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)
Obstructions > 10 Degrees above Horizon? <input type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input type="checkbox"/> No <input type="checkbox"/> Performed Previously <input type="checkbox"/>	Before					
Other (explain): _____	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 <input type="checkbox"/> No <input type="checkbox"/>			If not explain: _____		

Remarks (Comments on Problems, etc):

Log Checked By: _____

Station Name:

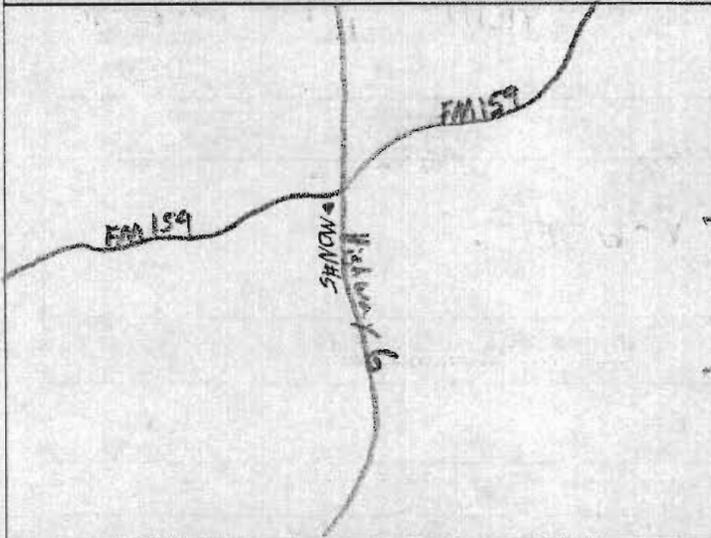
College Station 2010 Control Survey

Project Number

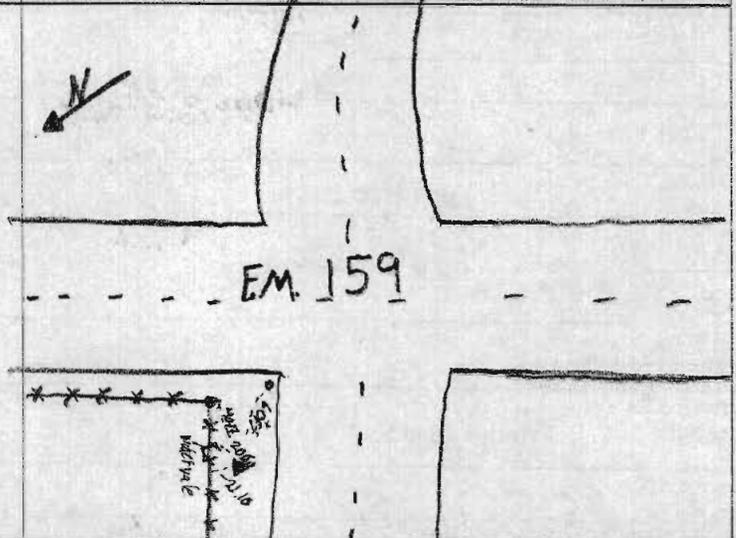
109158

Date (Local)

Route Sketch

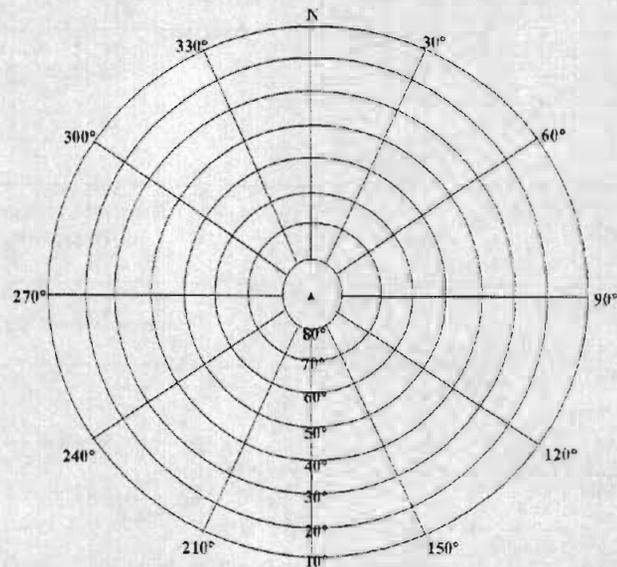


Detail Sketch



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 P, 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

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

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

Latitude: **30° 33' 35.26" N** Longitude: **96° 25' 14.12" W** Ellipsoid Ht. (m): **+0041.6** Observer name: **C. Yarver**

Start Time	(Scheduled): Local 5:22	Other stations observed in this session Mon. 107, Mon. 101, Mon. 2
Time	(Actual): Local 5:22	
Stop Time	(Scheduled): Local 6:22	

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					
Receiver S/N: 3615A15357 Receiver P/N: 24840-21	12	1.673	5.49	1.673	5.49
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	8	1.673	5.49	1.673	5.49
Antenna S/N: 0220019965 Antenna P/N:	4	1.671	5.48	1.671	5.48
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F _____ Manufacturer: _____ S/N: _____	Mean of Measurements	1.672	5.487	1.672	5.487
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: **5.487** Feet

Antenna Cable Length: _____ (Meters) Antenna Oriented North? Yes No _____ if No, Explain:

Antenna Plumb Check: Before? _____ After? _____

Optional Weather Data

Power Source	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (m)Hg (Mb)
Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____					
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars _____ inches _____ Feet _____ meters _____	Before				
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes _____ No <input checked="" type="checkbox"/> Performed Previously _____	Middle				
Other (explain):	After				
	Mean of Readings				

5-Digit Weather Code

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

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.

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

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

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

Latitude: **30° 38' 06.90 N** Longitude: **096° 22' 46.39 W** Ellipsoid Ht. (m): **40075.3m** Observer name: **J. Montez**

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

Other stations observed in this session:
KI2 mon101 mon2

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					
Receiver S/N: 3533A12012 Receiver P/N:	3	1.595	5.235	1.595	5.235
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	11	1.595	5.23	1.595	5.23
Antenna S/N: 0226030199 Antenna P/N:	7	1.595	5.23	1.595	5.23
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: Leica S/N:	Mean of Measurements	1.595	5.23	1.595	5.23
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: **5.23** Feet

Antenna Cable Length: **15** (Meters)

Antenna Plumb Check: Before? After?

Antenna Oriented North? Yes No if No, Explain:

Optional Weather Data

Power Source	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)
Camcorder Batteries					
External 12 Volt: <input checked="" type="checkbox"/>					
Commercial AC 110 Volt:					
Barometer MFR/Model:	Before				
Serial Number:					
Units of Reading: millibars <input checked="" type="checkbox"/> inches <input type="checkbox"/> Feet <input checked="" type="checkbox"/> meters <input type="checkbox"/>					
Obstructions > 10 Degrees above Horizon? <input type="checkbox"/> (Y or N)	Middle				
Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously <input type="checkbox"/>	After				
Other (explain):	Mean of Readings				

5-Digit Weather Code

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

Before: **m1071184** Middle: **—** After: **—**

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

Remarks (Comments on Problems, etc): **—**

Log Checked By: **—**

Station Name:

mon # 107

Project Number

109158

Date (Local)

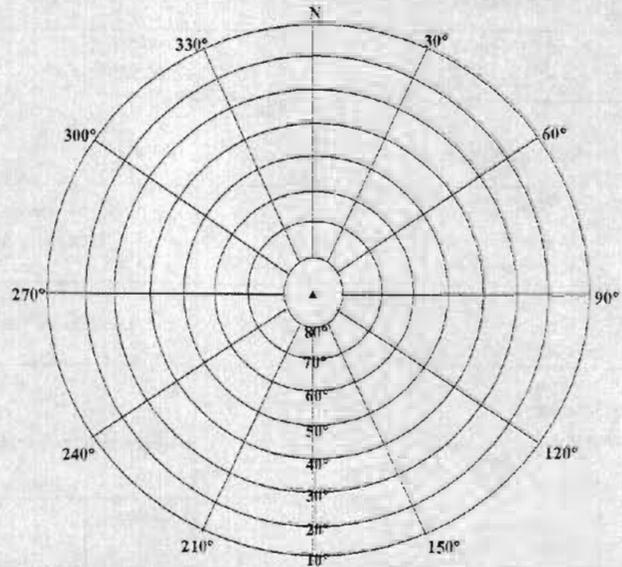
4/28/10

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

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

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

Latitude: **30° 33' 00.13"** Longitude: **096° 23' 14.26"** Ellipsoid Ht. (m): **40060.2** Observer name: **Robby Martinez**

Start Time	(Scheduled): Local	Other stations observed in this session CHAD TAYLOR K12 JOE MONTEZ Mon 107	AJ ESCOBAR Mon 2
	(Actual): Local 5:12 PM		
Stop Time	(Scheduled): Local		
	(Actual): Local 6:22 PM		

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	1	1.523	5.00	1.523	5.00
Receiver S/N: Receiver P/N:					
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	4	1.523	5.00	1.523	5.00
Antenna S/N: Antenna P/N:	9	1.523	5.00	1.523	5.00
Adjustable or Fixed Ht. Tripod: A ___ or F ___ Manufacturer: ___ S/N: ___	Mean of Measurements				
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: **5.00** Feet

Antenna Cable Length: ___ (Meters) Antenna Oriented North? Yes ___ No ___ if No, Explain: ___

Antenna Plumb Check: Before? After?

Optional Weather Data

Power Source Camcorder Batteries: ___ External 12 Volt: ___ Commercial AC 110 Volt: ___	Time (Local)	Temperature Dry		Temperature Wet		Relative Humidity %	Pressure	
		(F)	(C)	(F)	(C)		(in)Hg	(Mb)
Barometer MFR/Model: ___ Serial Number: ___ Units of Reading: millibars ___ inches ___ Feet ___ meters ___	Before							
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___	Middle							
Other (explain):	After							
	Mean of Readings							

5-Digit Weather Code

Data Filename Format: **aaaaddds**
aaa=4-Char ID, add=Julian day, s=session.

Before: ___ Middle: ___ After: ___

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

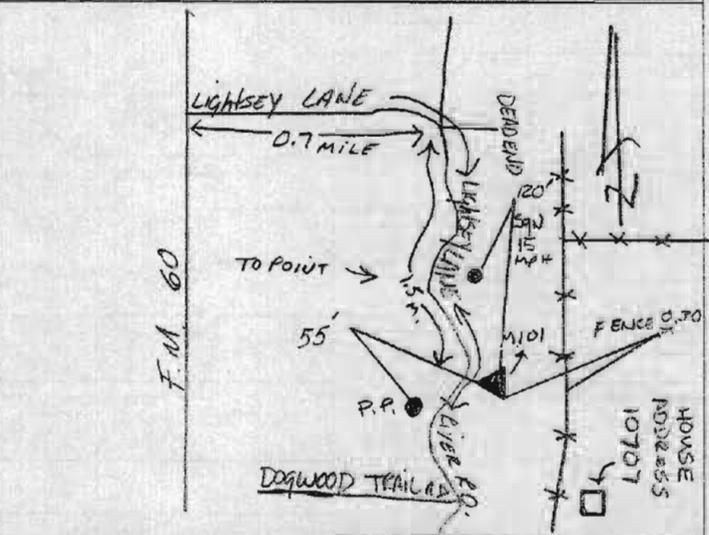
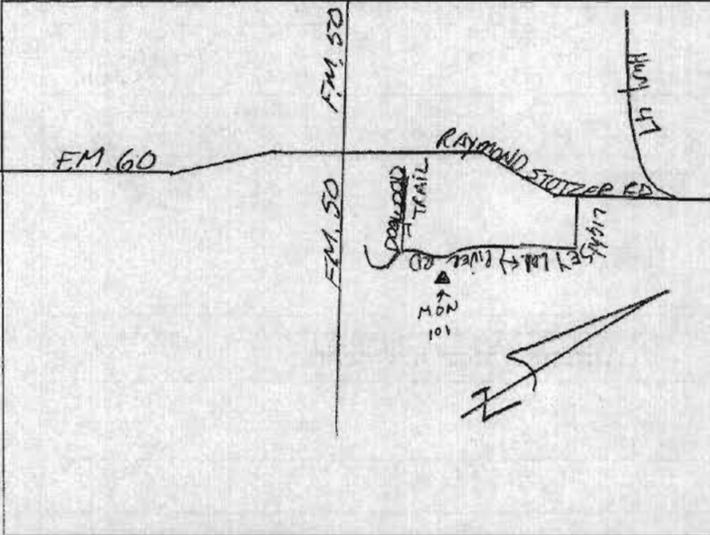
M101-118-4

Remarks (Comments on Problems, etc): _____ Log Checked By: _____

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

Route Sketch

Detail Sketch



To Reach Description

Obstruction Diagram

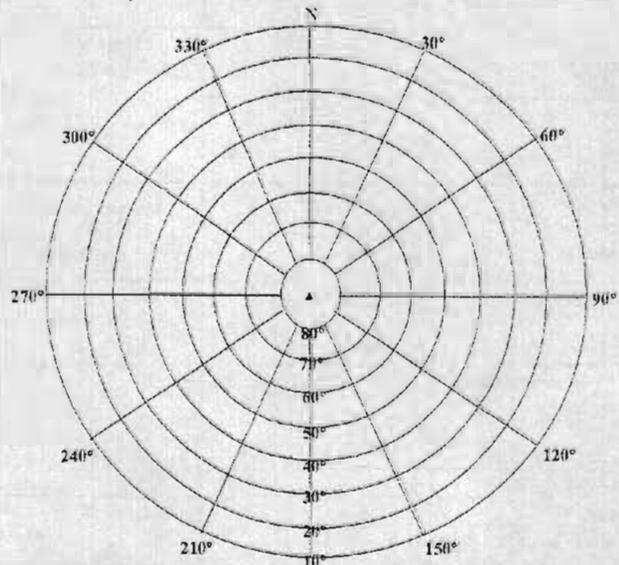
* Mon. 101

* No Obstructions

55' FT TO RP

0.30 TENTHS TO FENCE

120' FT TO SQW 15 MPH



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

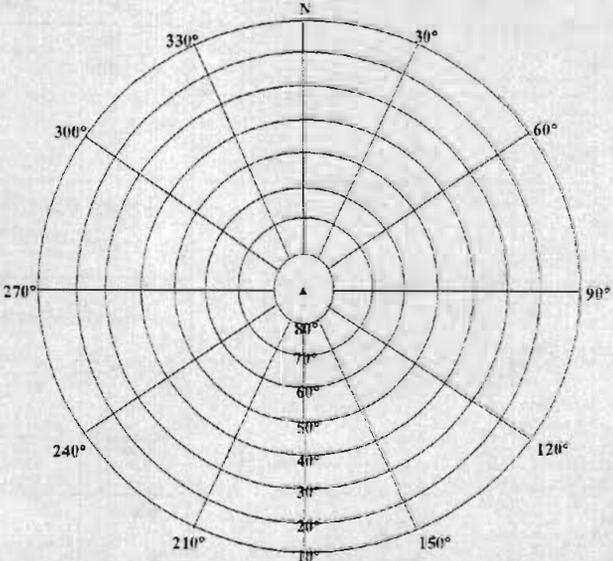
N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

Project Name: College Station 2010 Control Survey			Project Number 109158		Data File Name (see below) MON2-1124				
Station Description		Station Name MON#2		4 Character ID MON2	Julian Day 118	Date (Local) 04-29-10			
		Location College Station		Station PID	Session # 4	Obs. Agency code CDSMS			
Latitude 30° 33.7518 N		Longitude 096° 24.7134		Ellipsoid Ht. (m) 0055.1M	Observer name ASG				
Start Time	(Scheduled): Local 5:22 PM	Other stations observed in this session R12 - MON#107 - MON#101							
Time	(Actual): Local 5:23 PM								
Stop Time	(Scheduled): Local 6:22								
Time	(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: Receiver P/N: 3515A15357		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: Antenna P/N: 220126287		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	1.690	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 Oriented North? Yes <input checked="" type="checkbox"/> No ___ if No, Explain: _____							
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>		Optional Weather Data							
Power Source Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____		Time (Local)	Temperature Dry (F) (C)		Temperature Wet (F) (C)		Relative Humidity %	Pressure (in)Hg (Mb)	
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars ___ inches ___ Feet ___ meters		Before							
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___		Middle							
Other (explain): _____		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: _____

Station Name: College Station 2010 Control Survey	Project Number 109158	Date (Local)
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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 3 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

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below)		
Station Description: <i>3/4" Mark + Rod w/punch inside access cover</i>	Station Name: <i>Mon 1</i>	4 Character ID: <i>Mon 1</i>	Julian Day: <i>119</i>	Date (Local): <i>4-29-10</i>	
Location: <i>Brazos Co./Lonnie Ln.</i>		Station PID:	Session #: <i>1</i>	Obs. Agency code: CDSMS	
Latitude: <i>30° 35' 51.13" N</i>		Longitude: <i>96° 20' 02.56" W</i>	Ellipsoid Ht.(m): <i>10069.0</i>	Observer name: <i>C. Tarver</i>	
Start Time (Scheduled): <i>7:26</i>	Other stations observed in this session				
Time (Actual): <i>7:26</i>	<i>Mon. 7, Mon. 242, Mon. 8</i>				
Stop Time (Scheduled): <i>8:26</i>					
Time (Actual): <i>8:26</i>	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: <i>3615A15357</i> Receiver P/N: <i>24840-21</i>	<i>11</i>	<i>1.638</i>	<i>5.375</i>	<i>1.638</i>	<i>5.375</i>
Antenna MFR & Model: Trimble Compact LI/L2 with Ground Plane	<i>7</i>	<i>1.638</i>	<i>5.375</i>	<i>1.638</i>	<i>5.375</i>
Antenna S/N: <i>0220019965</i> Antenna P/N:	<i>3</i>	<i>1.636</i>	<i>5.37</i>	<i>1.636</i>	<i>5.37</i>
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F _____ Manufacturer: _____ S/N: _____	Mean of Measurements				
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date:	<i>1.637</i>		<i>5.373</i>	<i>1.637</i>	<i>5.373</i>
Photos of Station: Yes _____ No <input checked="" type="checkbox"/> Roll Number _____ Picture Number(s) _____	Antenna Measurement Method: Bottom Notch of Ground Plane			Ht entered into receiver or controller <i>5.373</i> Feet	
Antenna Cable Length: _____ (Meters)	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No _____ if No, Explain:				
Antenna Plumb Check: Before? _____ After? _____					
Power Source: Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____	Optional Weather Data				
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)
Obstructions > 10 Degrees above Horizon? <i>N</i> (Y or N) Obstruction Survey Performed? Yes _____ No <input checked="" type="checkbox"/> Performed Previously _____	Before				
Other (explain):	Middle				
	After				
	Mean of Readings				
Data Filename Format: aaaaddds <i>aaa=4-Char ID, ddd=julian day, s=session.</i>	5-Digit Weather Code				
	Before:	Middle:	After:		
	Weather Taken At Antenna Height? Yes _____ No <input checked="" type="checkbox"/>			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.					

Station Name:

College Station 2010 Control Survey

Project Number

109158

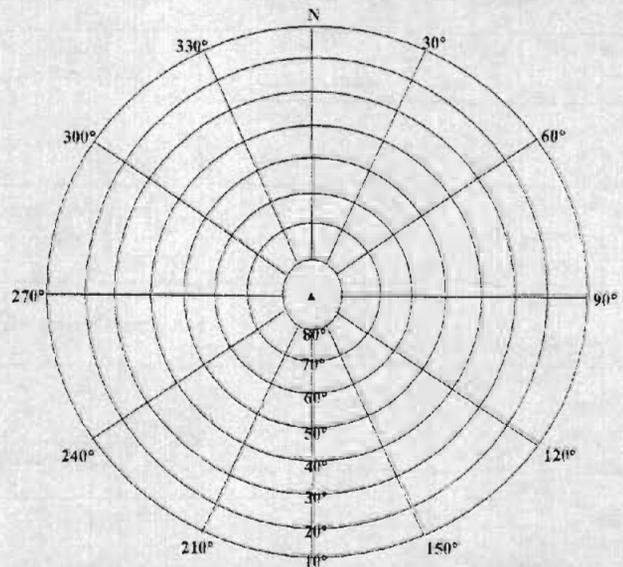
Date (Local)

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

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

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

Latitude: *30° 37' 13.60 N* Longitude: *096° 12' 09.64 W* Ellipsoid Ht.(m): *40043.4m* Observer name: *J. Matez*

Start Time	(Scheduled): Local <i>7:26</i>	Other stations observed in this session <i>MON 1 MON 242 MON 8</i>
Time	(Actual): Local <i>7:24</i>	
Stop Time	(Scheduled): Local <i>8:26</i>	

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					
Receiver S/N: <i>3533A12012</i> Receiver P/N:	<i>7</i>	<i>1.602</i>	<i>5.26</i>	<i>1.602</i>	<i>5.26</i>
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	<i>3</i>	<i>1.602</i>	<i>5.26</i>	<i>1.602</i>	<i>5.26</i>
Antenna S/N: <i>0220030199</i> Antenna P/N:	<i>11</i>	<i>1.602</i>	<i>5.26</i>	<i>1.602</i>	<i>5.26</i>
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: <i>Leica</i> S/N:	Mean of Measurements	<i>1.602</i>	<i>5.26</i>	<i>1.602</i>	<i>5.26</i>
Tribrach: Manufacturer: <i>Leica</i> S/N: Calibration Date:					

Photos of Station: Yes No
Roll Number: *7*
Picture Number(s): *7*

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:

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					

5-Digit Weather Code

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

Before: *CS071191* Middle: After: Weather Taken At Antenna Height? Yes No If not explain:

Remarks (Comments on Problems, etc):
Log Checked By: _____

Station Name:

MON # 7

Project Number:

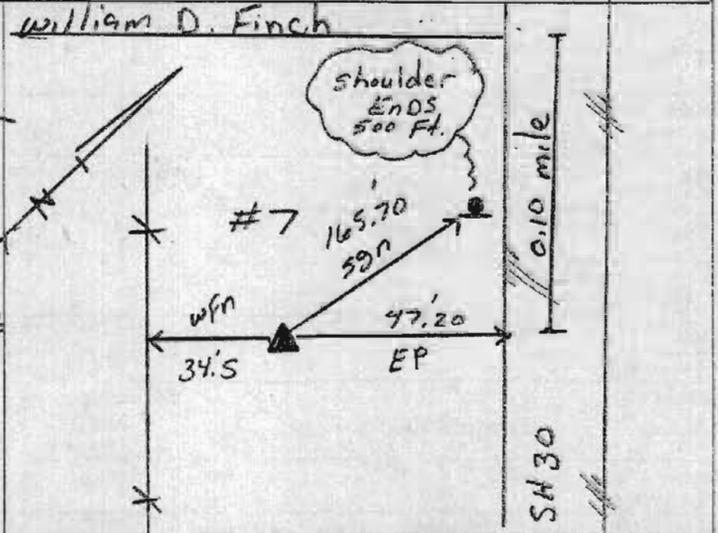
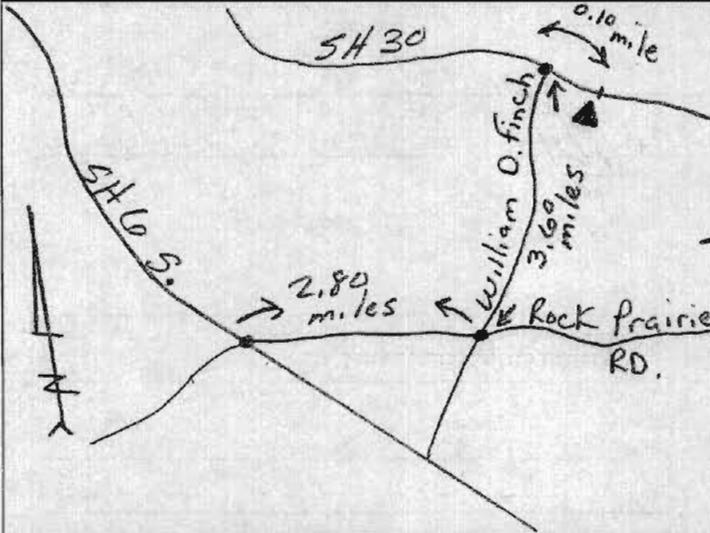
109158

Date (Local)

4/29/10

Route Sketch

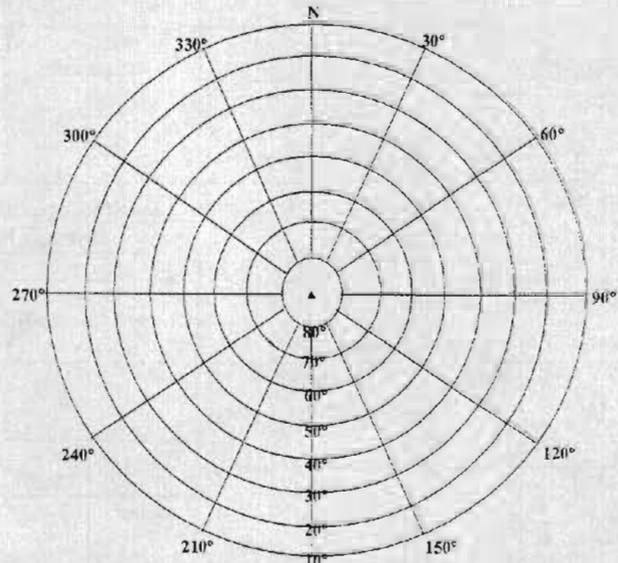
Detail Sketch



To Reach Description

Obstruction Diagram

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
Approx 3.60 miles to SH 30
turn right and go for 0.10 miles
points is on the right side of R.o.w



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%)	Fair (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

Project Name: College Station 2010 Control Survey	Project Number: 109158	Data File Name (see below): M242-119-1
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Station Description	Station Name: MON 242	4 Character ID: M242	Julian Day: 119	Date (Local): 4-29-10
	Location: COLLEGE STATION	Station PID	Session #: 1	Obs. Agency code: CDSMS

Latitude: 30° 39' 23.24"	Longitude: 096° 16' 29.09"	Ellipsoid Ht.(m): 40071.5	Observer name: Bobby Martinez
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Start Time	(Scheduled): Local	Other stations observed in this session: CHAD TARVER MON-1 JOE MONTEZ MON-7 AS ESCOBAR MON-8
	(Actual): Local: 7:20 AM	
Stop Time	(Scheduled): Local	
	(Actual): Local: 8:26 AM	

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	4	1.593	5.22	1.593	5.22
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	8	1.593	5.22	1.593	5.22
Antenna S/N: _____ Antenna P/N: _____	12	1.593	5.22	1.593	5.22
Adjustable or Fixed Ht. Tripod: A _____ or F _____ Manufacturer: _____ S/N: _____	Mean of Measurements				
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: 5.22 Feet
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Antenna Cable Length: _____ (Meters)	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No _____ if No, Explain:
Antenna Plumb Check: Before? _____ After? <input checked="" type="checkbox"/>	

Optional Weather Data

Power Source	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)
Camcorder Batteries: _____ External 12 Volt: _____ Commercial AC 110 Volt: _____					
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars _____ inches _____ Feet _____ meters _____	Before				
Obstructions > 10 Degrees above Horizon? (Y or N) _____ Obstruction Survey Performed? _____ Yes _____ No _____ Performed Previously _____	Middle				
Other (explain): _____	After				
	Mean of Readings				

Data Filename Format: aaaaddds 5-Digit Weather Code

aaa=4-Char ID, ddd=julian day, s=session	Before:	Middle:	After:
M242-119-1			
Weather Taken At Antenna Height? Yes _____ No _____		If not explain:	

Remarks (Comments on Problems, etc):	Log Checked By: _____
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Station Name:

College Station 2010 Control Survey

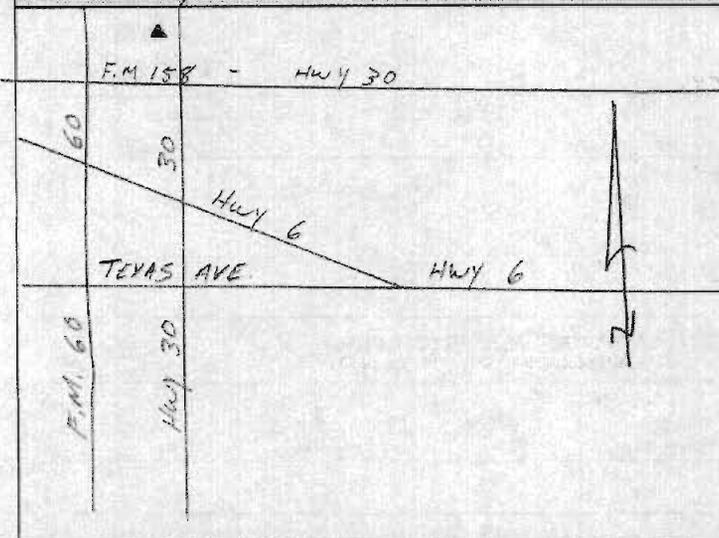
Project Number

109158

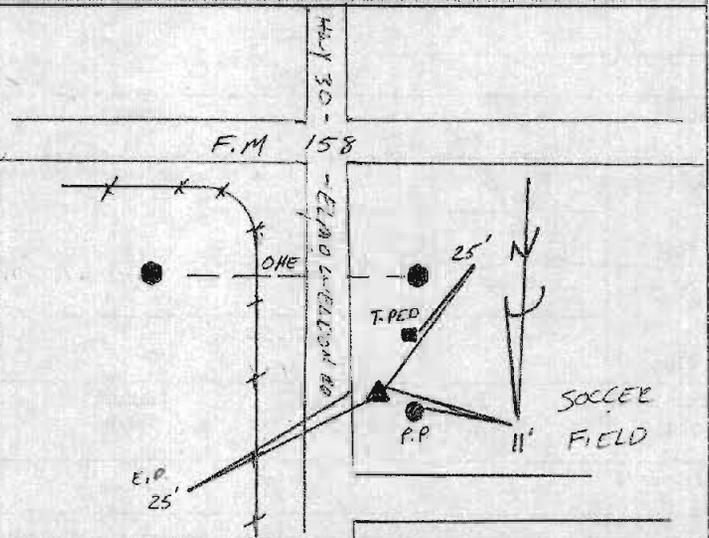
Date (Local)

4-29-10

Route Sketch



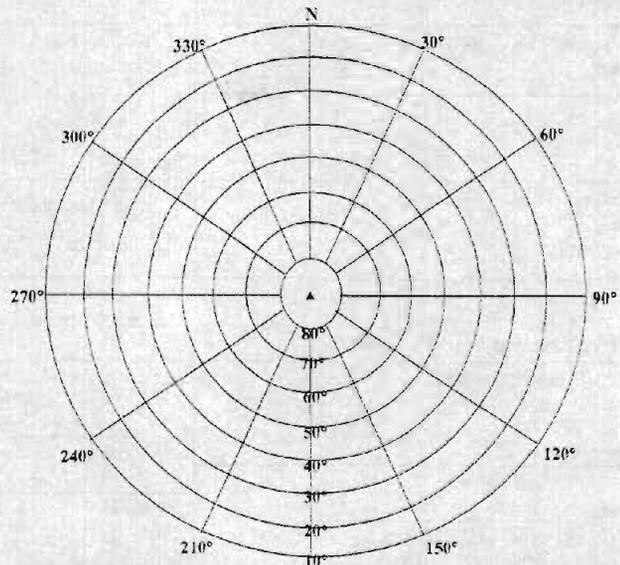
Detail Sketch



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 F = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below): 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° 38.4614N	Longitude: 096° 17.6751	Ellipsoid Ht. (m): 169536M	Observer name: ASG/6/11
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Start Time	(Scheduled): Local 7:26	Other stations observed in this session MON #1 - MON #7 - MON #242
	(Actual): Local 7:20	
Stop Time	(Scheduled): Local	
	(Actual): Local 8:27	

Receiver MFR & Model:		Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Trimble 4000 SSI						
Receiver S/N:	3515A15357	10	1.620	5.32	1.620	5.32
Receiver P/N:						
Antenna MFR & Model:	Trimble Compact L1/L2 with Ground Plane	2	1.620	5.32	1.620	5.32
Antenna S/N:	220126287	6	1.618	5.315	1.618	5.315
Antenna P/N:						
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/>		Mean of Measurements				
Manufacturer: _____ S/N: _____						
Tribrach: Manufacturer: _____ S/N: _____		1.620	5.32	1.620	5.32	
Calibration Date: _____						
Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/>		Antenna Measurement Method:		HI entered into receiver or controller		
Roll Number _____		Bottom Notch of Ground Plane		5.32 Feet		
Picture Number(s) _____						

Antenna Cable Length: _____ (Meters)	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input type="checkbox"/>	

Power Source		Optional Weather Data							
Camcorder Batteries _____		Time (Local)	Temperature Dry (F) (C)		Temperature Wet (F) (C)		Relative Humidity %	Pressure (in)Hg (Mb)	
External 12 Volt: _____		Before							
Commercial AC 110 Volt: _____		Middle							
Barometer MFR/Model: _____		After							
Serial Number: _____		Mean of Readings							
Units of Reading: millibars _____ inches _____									
Feet _____ meters _____									
Obstructions > 10 Degrees above Horizon? (Y or N) _____									
Obstruction Survey Performed? Yes <input type="checkbox"/> No <input type="checkbox"/> Performed Previously _____									
Other (explain): _____									

Data Filename Format: aaaaddds aaa=4-Char ID, add=julian day, s=session.	5-Digit Weather Code	
Before: _____	Middle: _____	After: _____
Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/>		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.

Station Name:

College Station 2010 Control Survey

Project Number

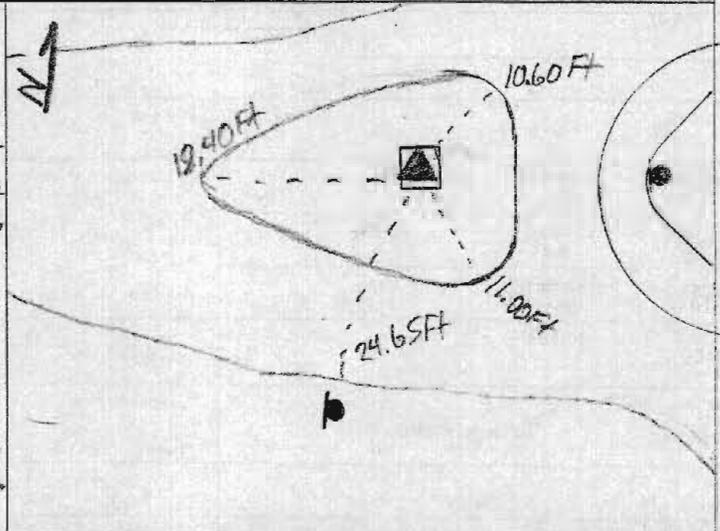
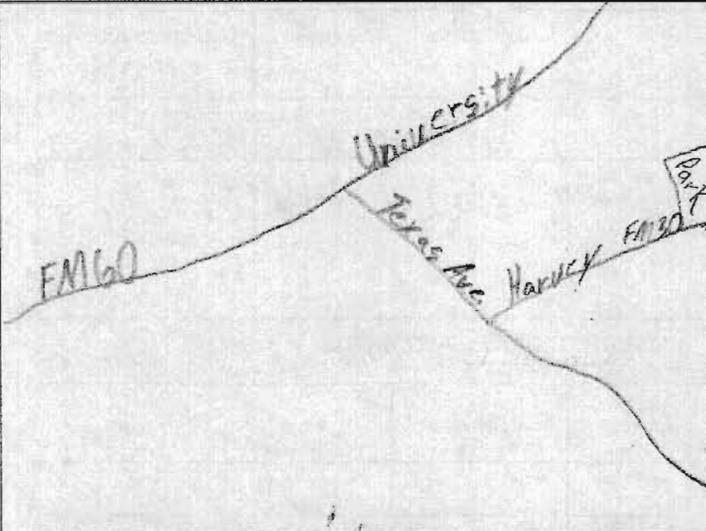
109158

Date (Local)

04-29-10

Route Sketch

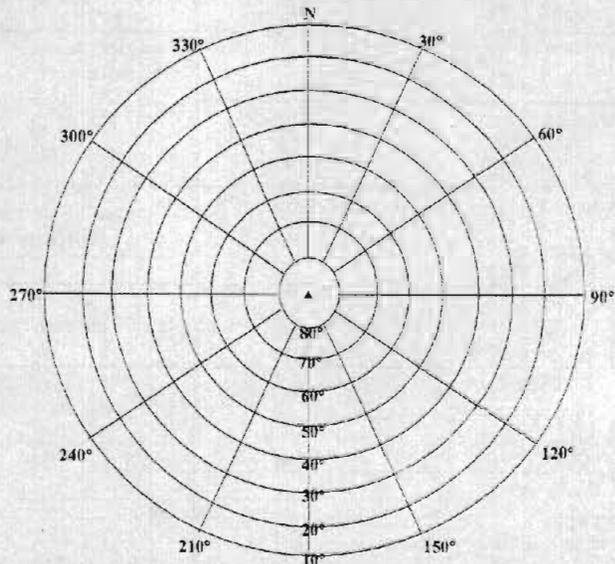
Detail Sketch



To Reach Description

Obstruction Diagram

Get on FM 60 also known as University
Turn right on Texas Ave. approx 1.1
miles. Turn left on Harvey later known
as FM30. approx 2.3 miles to main
gate of Veterans on the right.
MON#8 is 0.1 miles in park.



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

Project Name: College Station 2010 Control Survey			Project Number: 109158		Data File Name (see below)				
Station Description: 3" Alum Cap in Conc.		Station Name: Mon 135		4 Character ID: M135	Julian Day: 119	Date (Local): 4-29-10			
Stamped College Station Mon. 135 (1994)		Location: Brazos Co./Woodlake Dr		Station PID	Session #: 2	Obs. Agency code: CDSMS			
Latitude: 30° 31' 21.11" N		Longitude: 96° 16' 04.22" W		Ellipsoid Ht. (m): +0058.6	Observer name: C. Tarver				
Start Time	(Scheduled): Local: 9:11	Other stations observed in this session: Mon. 4, KI 5, Mon. 5							
Time	(Actual): Local: 9:11								
Stop Time	(Scheduled): Local: 10:11								
Time	(Actual): Local: 10:11	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		1	1.716	5.63	1.716	5.63			
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		9	1.717	5.63	1.717	5.63			
Antenna S/N: 0220019965 Antenna P/N:		6	1.715	5.625	1.715	5.625			
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____		Mean of Measurements	1.716	5.628	1.716	5.628			
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____									
Photos of Station: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:							
Antenna Plumb Check: Before? _____ After? _____									
Power Source Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____		Optional Weather Data							
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)	
Obstructions > 10 Degrees above Horizon? <u>Y</u> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously _____		Before							
Other (explain):		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 <input type="checkbox"/> No <input checked="" type="checkbox"/>					If not explain:		

Remarks (Comments on Problems, etc):

Log Checked By: _____

Station Name:

College Station 2010 Control Survey

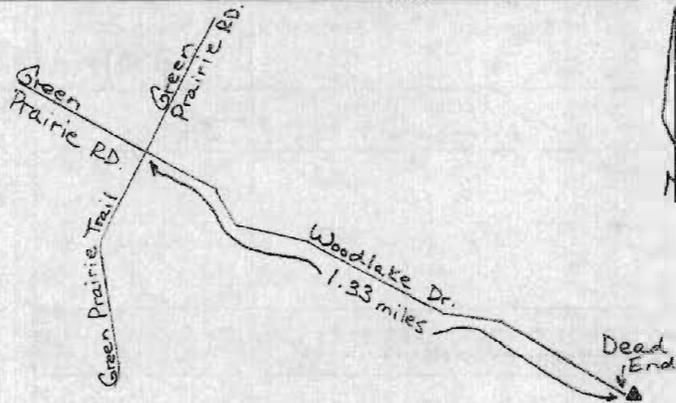
Project Number

109158

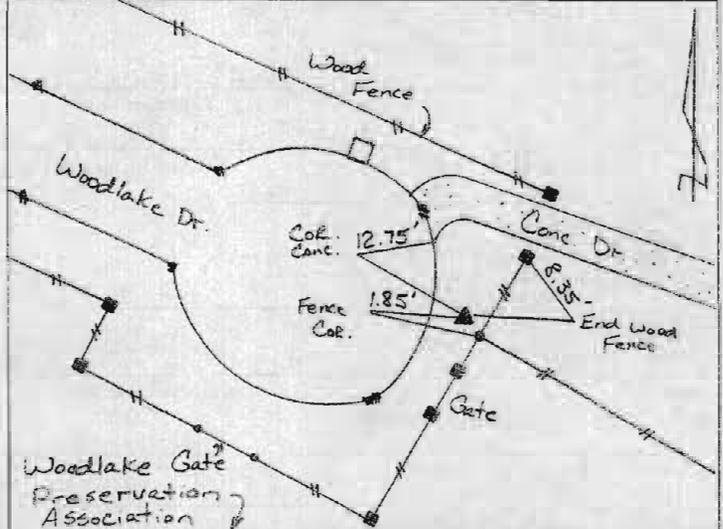
Date (Local)

4-29-10

Route Sketch



Detail Sketch

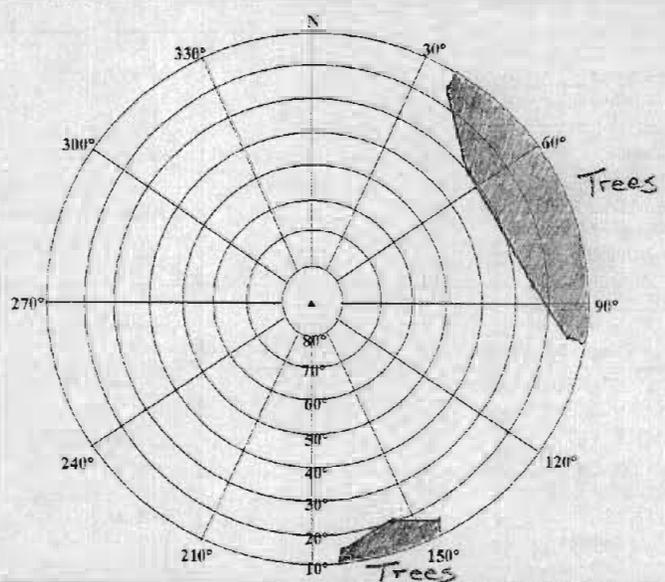


To Reach Description

* Mon 135

40° 15'	145° 15'	} Trees
55° 30'	155° 20'	
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

Project Name: College Station 2010 Control Survey		Project Number 109158	Data File Name (see below) CS041192		
Station Description Alum Deep Rod to Refussl inside Access Cover		Station Name QU59457802=CS 4	4 Character ID CS04	Julian Day 119	Date (Local) 4/29/10
Location		Station PID Alum Rod	Session # 2	Obs. Agency code CDSMS	
Latitude 30° 30' 23.64" N		Longitude 096° 17' 47.48" W	Ellipsoid Ht. (m) +0063.8 M	Observer name J. Montez	
Start Time	(Scheduled): Local 9:11 (Actual): Local 9:10	Other stations observed in this session mon 135 KIS mon 5			
Stop Time	(Scheduled): Local 10:11 (Actual): Local				
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:	10	1.603	5.26	1.603	5.26
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	6	1.603	5.26	1.603	5.26
Antenna S/N: 0220030199 Antenna P/N:	2	1.603	5.26	1.603	5.26
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: Leica S/N:	Mean of Measurements		1.603	5.26	1.603 5.26
Tribrach: Manufacturer: Leica S/N: — Calibration Date:					
Photos of Station: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:				
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>					
Power Source Camcorder Batteries External 12 Volt <input checked="" type="checkbox"/> Commercial AC 110 Volt:	Optional Weather Data				
Barometer MFR/Model: Serial Number: Units of Reading: millibars <input checked="" type="checkbox"/> inches <input type="checkbox"/> Feet <input checked="" type="checkbox"/> meters <input type="checkbox"/>	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously <input type="checkbox"/>	Before				
Other (explain):	Middle				
	After				
	Mean of Readings				
Data Filename Format: aaaaddds aaa=4-Char ID, ddd=julian day, s=session,	5-Digit Weather Code				
CS041192	Before:	Middle:	After:		
	Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/>			If not explain:	

Remarks (Comments on Problems, etc):

Log Checked By: _____

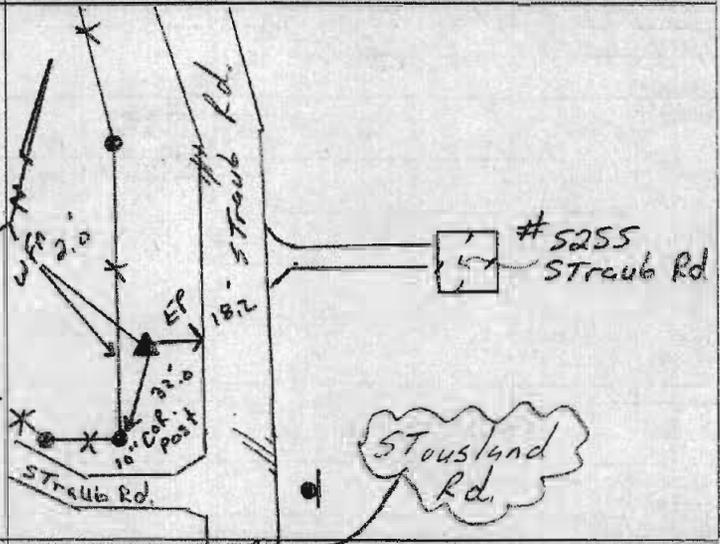
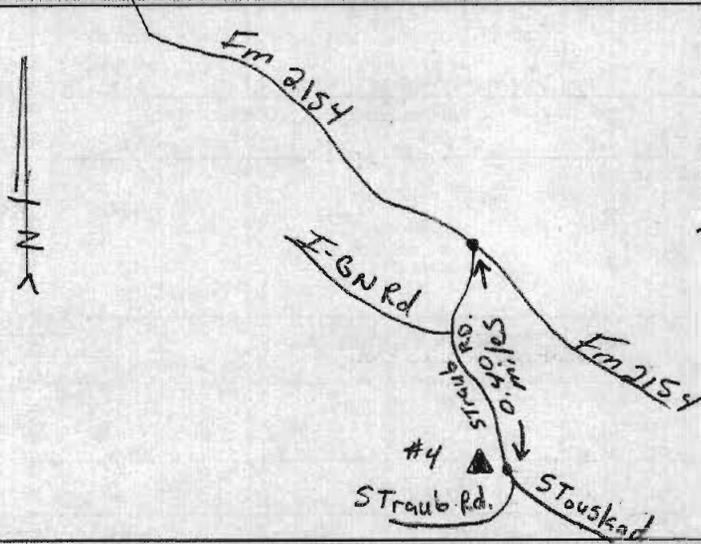
Station Name: *mon #4*

Project Number
109158

Date (Local)
4/29/10

Route Sketch

Detail Sketch



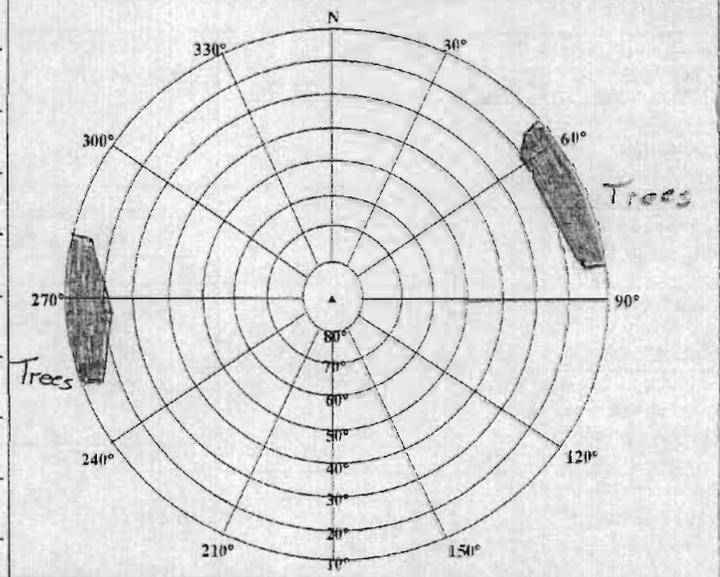
To Reach Description

Obstruction Diagram

*QU59457802 = CS 4

52° 15°
55° 20° } Trees
80° 15° }

255° 15°
268° 22° } Trees
284° 15° }



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

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below): MKI5-119-2		
Station Description	Station Name: KI5	4 Character ID: MKI5	Julian Day: 119	Date (Local): 4-29-10	
	Location: COLLEGE STATION	Station PID	Session #: 2	Obs. Agency code: CDSMS	
Latitude: 30° 29' 42.01"		Longitude: 096° 11' 09.98"		Ellipsoid Ht.(m): +0052.9	Observer name: Cobby Martinez
Start Time	(Scheduled): Local (Actual): Local 9:05 AM	Other stations observed in this session: CHAD TARVER MON-135 AJ ESCOBAR MON 5 JOE MONTEZ MON-4			
Stop Time	(Scheduled): Local (Actual): Local 10:11 AM	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: Receiver P/N:	4	1.701	5.58	1.701	5.58
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	7	1.701	5.58	1.701	5.58
Antenna S/N: Antenna P/N:	11	1.701	5.58	1.701	5.58
Adjustable or Fixed Ht. Tripod: A ___ or F ___ Manufacturer: ___ S/N: ___	Mean of Measurements				
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: 5.58 Feet	
Antenna Cable Length: ___ (Meters)	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No ___ if No, Explain:				
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>					
Power Source: Camcorder Batteries: ___ External 12 Volt: ___ Commercial AC 110 Volt: ___	Optional Weather Data				
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 (m)Hg (Mb)
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___	Before				
Other (explain):	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:		
MKI5-119-2	Weather Taken At Antenna Height? Yes ___ No ___			If not explain:	
Remarks (Comments on Problems, etc):	Log Checked By: _____				

Station Name:

College Station 2010 Control Survey

Project Number

109158

Date (Local)

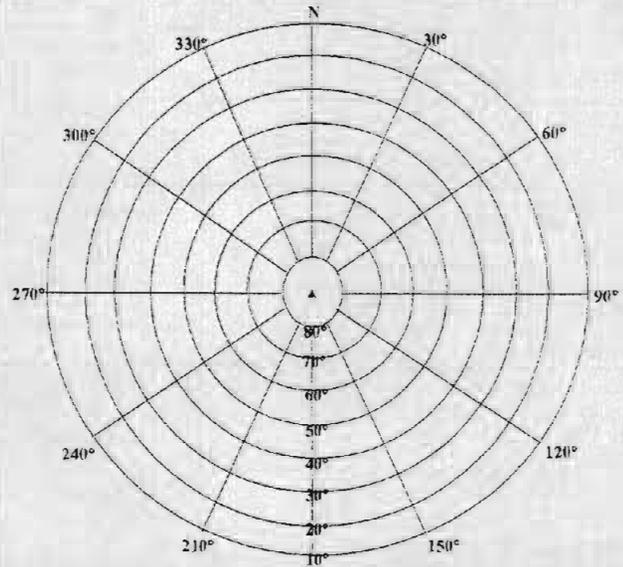
4-29-10

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

Project Name: **College Station 2010 Control Survey** Project Number: **109158** Data File Name (see below): **MON5-1A-2**

Station Description	Station Name MON#5	4 Character ID MON5	Julian Day 119	Date (Local) 04-29-10
	Location College Station	Station PID	Session # 2	Obs. Agency code CDSMS

Latitude: **30° 30.3889' N** Longitude: **91° 11.8627' W** Ellipsoid Ht. (m): **0038.8 m** Observer name: **ASB**

Start Time	(Scheduled): 9:11 AM Local	Other stations observed in this session mon# 135 - mon# 4 - KFS
Time	(Actual): 9:00 AM Local	
Stop Time	(Scheduled): 10:11 AM Local	

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					
Receiver S/N: 3515415357 Receiver P/N:	2	1.627	5.345	1.627	5.345
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	6	1.626	5.34	1.626	5.34
Antenna S/N: 220126281 Antenna P/N:	10	1.627	5.345	1.627	5.345
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____	Mean of Measurements				
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____		1.627	5.34	1.627	5.34
Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/> Roll Number: _____ Picture Number(s): _____	Antenna Measurement Method: Bottom Notch of Ground Plane			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 _____	Optional Weather Data					
	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)	
Obstructions > 10 Degrees above Horizon? (Y or N) _____ Obstruction Survey Performed? Yes <input type="checkbox"/> No <input type="checkbox"/> Performed Previously _____	Before					
Other (explain): _____	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.

Station Name:

College Station 2010 Control Survey

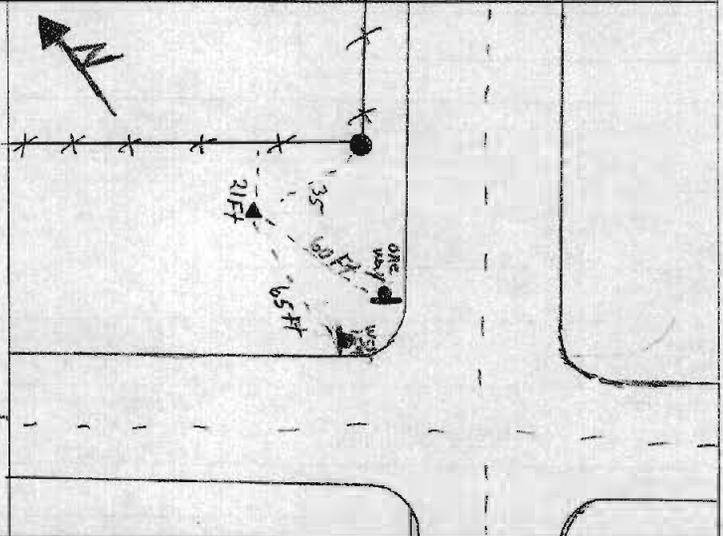
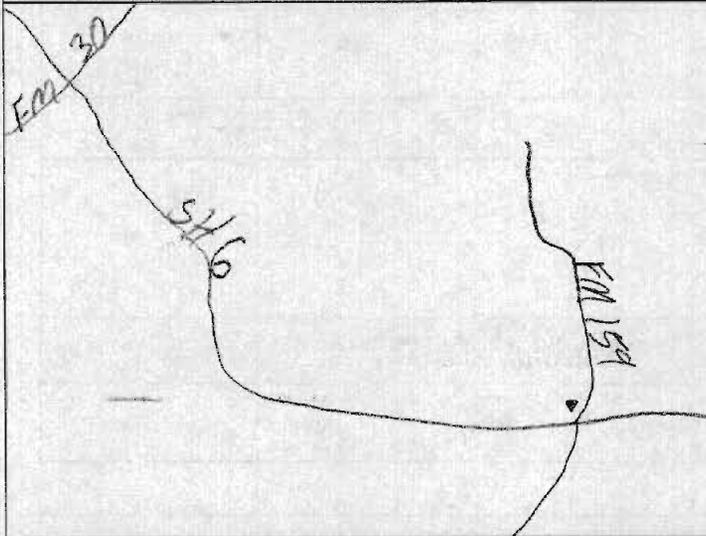
Project Number

109158

Date (Local)

Route Sketch

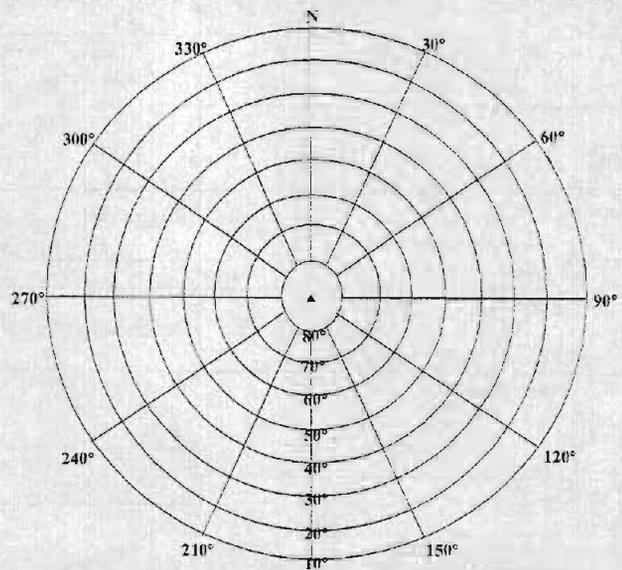
Detail Sketch



To Reach Description

Obstruction Diagram

From FM 30 go south 11.2 miles to FM 159. Exit 159 then go East for 0.1 miles and mark #5 is on the left side of Road.



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, D, 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

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

Station Description: **5/8" IR w/yc** Station Name: **KI 8** 4 Character ID: **KI08** Julian Day: **119** Date (Local): **4-29-10**
Geo Metrics GPS Inc. Location: **Brazos Co. / Valley Cir. & ^{Blue} Ridge Dr.** Station PID: Session #: **3** Obs. Agency code: **CDSMS**

Latitude: **30° 32' 15.85" N** Longitude: **96° 20' 46.78" W** Ellipsoid Ht. (m): **10053.9** Observer name: **C. Varner**

Start (Scheduled): **11:00** Other stations observed in this session: **Mon. 3, Mon. 101, Mon. 2**
Time (Actual): **11:00**
Stop (Scheduled): **12:00**
Time (Actual): **12:00**

Receiver MFR & Model:	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Trimble 4000 SSI					
Receiver S/N: 3615A15357 Receiver P/N: 24840-21	4	1.758	5.765	1.758	5.765
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	12	1.760	5.775	1.760	5.775
Antenna S/N: 0220019965 Antenna P/N:	8	1.760	5.775	1.760	5.775
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F Manufacturer: S/N:	Mean of Measurements				
Tribrach: Manufacturer: S/N: Calibration Date:		1.759	5.772	1.759	5.772

Photos of Station: Yes ___ No Roll Number: Picture Number(s):
Antenna Measurement Method: **Bottom Notch of Ground Plane** HI entered into receiver or controller: **5.772** Feet

Antenna Cable Length: (Meters) Antenna Oriented North? Yes No ___ if No, Explain:
Antenna Plumb Check: Before? After?

Power Source	Optional Weather Data						
Camcorder Batteries	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (in)Hg (Mb)
External 12 Volt Commercial AC 110 Volt:							
Barometer MFR/Model: Serial Number: Units of Reading: millibars ___ inches ___ Feet ___ meters	Before						
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No ___ Performed Previously ___	Middle						
Other (explain):	After						
	Mean of Readings						

Data Filename Format: **aaaaddds** 5-Digit Weather Code
aaa=4-Char ID, ddd=julian-day, s=session.
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.

Station Name:

College Station 2010 Control Survey

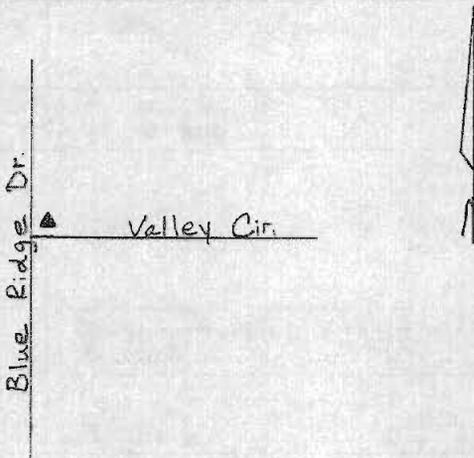
Project Number

109158

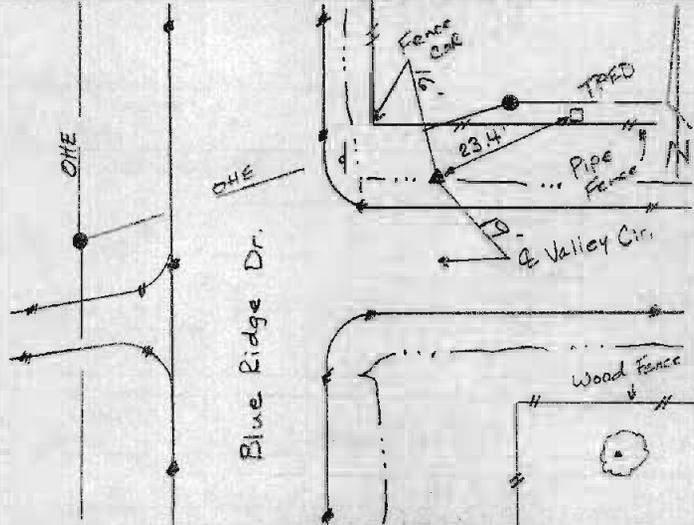
Date (Local)

4-29-10

Route Sketch



Detail Sketch

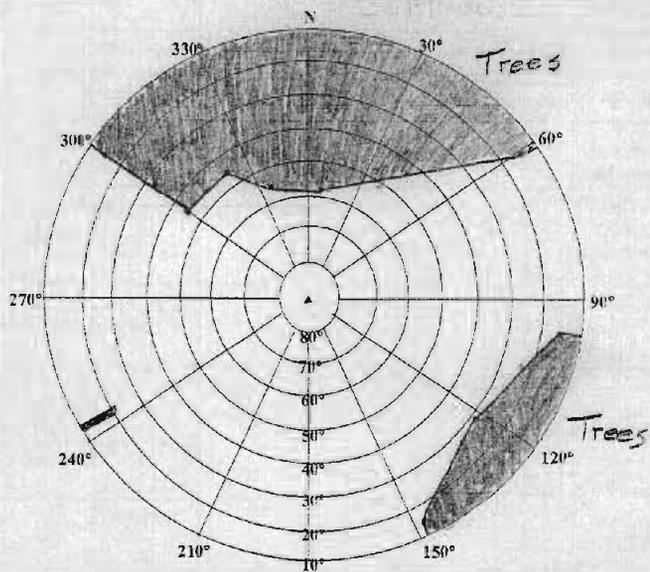


To Reach Description

* KI 8

300° 15°	105° 15°	} Trees
300° 45°	125° 28°	
325° 45°	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, C, 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

Project Name: College Station 2010 Control Survey		Project Number 109158	Data File Name (see below) CS03 1193				
Station Description <i>Alum Deep Road w/ punch inside Access Cover</i>		Station Name mon #3	4 Character ID CS03	Julian Day 119	Date (Local) 4/29/10		
Location		Station PID Alum Rd0	Session # 3	Obs. Agency code CDSMS			
Latitude 30° 31' 24.74" N		Longitude 096° 20' 49.44" W	Ellipsoid Ht. (m) +0038.9 m	Observer name J. Montez			
Start Time	(Scheduled): Local 11:00	Other stations observed in this session KI8 mon101 mon2					
Time	(Actual): Local 10:59						
Stop Time	(Scheduled): Local 12:00						
Time	(Actual): Local	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		11	1.591	5.22	1.591	5.22	
Receiver P/N:							
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		7	1.591	5.22	1.591	5.22	
Antenna S/N: 0220030199		3	1.591	5.22	1.591	5.22	
Antenna P/N:							
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/>		Mean of Measurements					
Manufacturer: Leica S/N: _____							
Tribrach: Manufacturer: Leica S/N: _____							
Calibration Date: _____							
Photos of Station: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Antenna Measurement Method: Bottom Notch of Ground Plane			HI entered into receiver or controller 5.22 Feet		
Roll Number _____							
Picture Number(s) _____							
Antenna Cable Length: 15 (Meters)		Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:					
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>							
Power Source		Optional Weather Data					
Caincorder Batteries							
External 12 Volt <input checked="" type="checkbox"/>							
Commercial AC 110 Volt: <input checked="" type="checkbox"/>							
Barometer MFR/Model: _____							
Serial Number: _____							
Units of Reading: millibars _____ inches _____ Feet _____ meters _____							
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N)							
Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously _____							
Other (explain): _____							
Data Filename Format: aaaaddds aaa=4-Char ID, ddd=Julian day, s=session		5-Digit Weather Code					
CS031193		Before:		Middle:		After:	
		Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/>		If not explain:			

Remarks (Comments on Problems, etc):

Log Checked By: _____

Station Name:

mon #3

Project Number

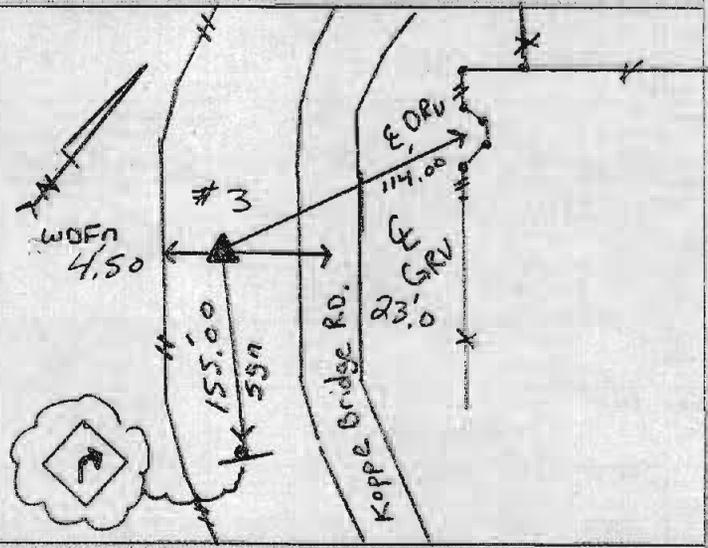
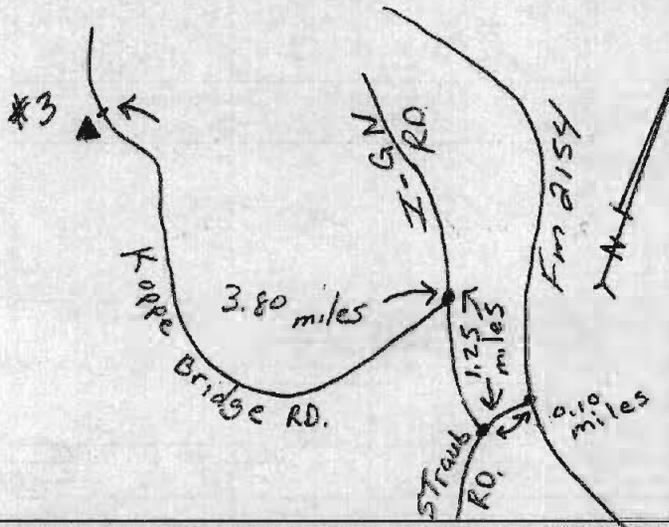
109158

Date (Local)

4/29/10

Route Sketch

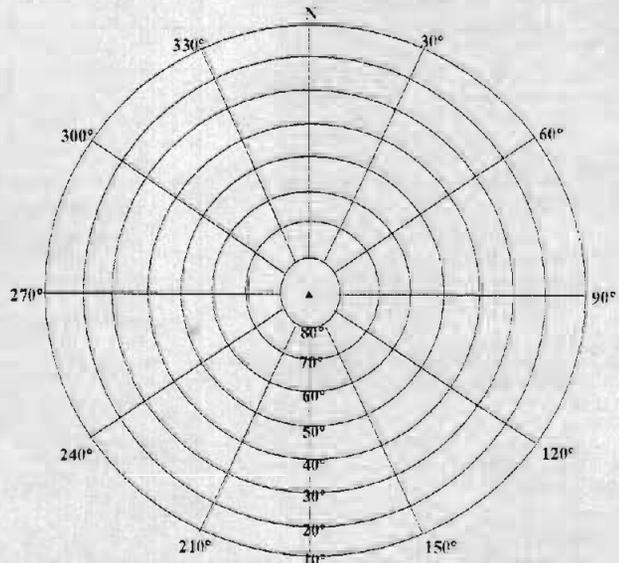
Detail Sketch



To Reach Description

none Obstruction Diagram

From "T" Inter. 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.



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, C, W, CL, C=00000

N, F, W, CL, C=01000

Pr, F, W, C, M=12001

T, G, W, F, M=00200

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

Project Name: College Station 2010 Control Survey			Project Number: 109158		Data File Name (see below): M101-119-3				
Station Description		Station Name: MON 101		4 Character ID: M101	Julian Day: 119	Date (Local): 4-29-10			
		Location: COLLEGE STATION		Station PID	Session #: 3	Obs. Agency code: CDSMS			
Latitude: 30° 33' 00.06"		Longitude: 096° 23' 14.24"		Ellipsoid Ht.(m): +0058.6	Observer name: Casby Martinez				
Start Time	(Scheduled): Local	Other stations observed in this session							
Time	(Actual): Local 10:54 AM	CHAO TAYLOR KI8		AS ESCOBAR MON-2					
Stop Time	(Scheduled): Local	JOE MONTEZ MON-3							
Time	(Actual): Local 12:00 PM	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: Receiver P/N:		3	1.688	5'54"	1.688	5'54"			
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		8	1.688	5'54"	1.688	5'54"			
Antenna S/N: Antenna P/N:		11	1.688	5'54"	1.688	5'54"			
Adjustable or Fixed Ht. Tripod: A ___ or F ___ Manufacturer: ___ S/N: ___		Mean of Measurements							
Tribrach: Manufacturer: ___ S/N: ___ Calibration Date: ___									
Photos of Station: Yes ___ No ___ Roll Number: ___ Picture Number(s): ___									
Antenna Cable Length: ___ (Meters)		Antenna Measurement Method: Bottom Notch of Ground Plane			HI entered into receiver or controller: 5'54" Feet				
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>		Antenna Oriented North? Yes <input checked="" type="checkbox"/> No ___ if No. Explain:							
Power Source Camcorder Batteries: ___ External 12 Volt: ___ Commercial AC 110 Volt: ___		Optional Weather Data							
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)	
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___		Before							
Other (explain):		Middle							
		After							
		Mean of Readings							
Data Filename Format: aaaadddd aaa=4-Char ID, ddd=julian day, s=session,		5-Digit Weather Code							
M101-119-3		Before:		Middle:		After:			
Remarks (Comments on Problems, etc):		Weather Taken At Antenna Height? Yes ___ No ___					If not explain:		
		Log Checked By: _____							

Station Name:

College Station 2010 Control Survey

Project Number

109158

Date (Local)

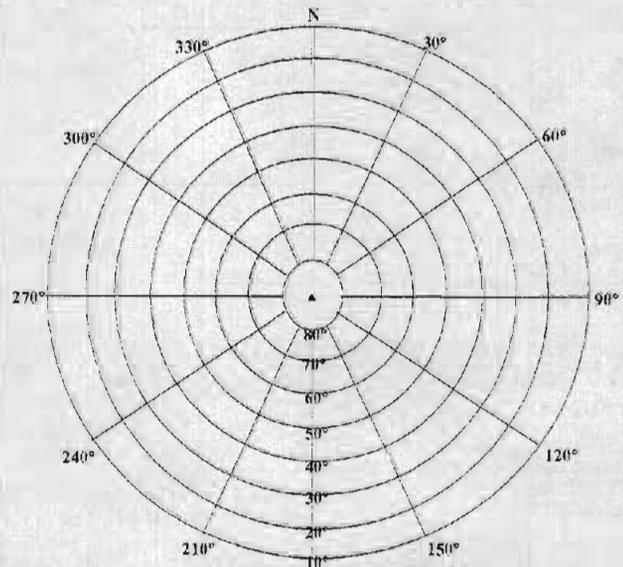
4-29-10

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

Project Name: College Station 2010 Control Survey			Project Number 109158		Data File Name (see below) MON2-18-3	
Station Description		Station Name MON#2		4 Character ID MON2	Julian Day 119	Date (Local) 04-29-10
		Location College Station		Station PID	Session # 3	Obs. Agency code CDSMS
Latitude 30° 33.7512 N		Longitude 096° 24.7129 W		Ellipsoid Ht. (m) 0055.2	Observer name ASG/ken	
Start Time	(Scheduled): Local 11:00 AM	Other stations observed in this session K18-MON#3 - MON#101				
Time	(Actual): Local 10:55 AM					
Stop Time	(Scheduled): Local 12:00 P.M.					
Time	(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: Receiver P/N: 3515A15357		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: Antenna P/N: 220126287		8	1.726	5.67	1.726	5.67
Adjustable or Fixed Ht. Tripod: A <u> </u> or F <u> </u> Manufacturer: _____ S/N: _____		Mean of Measurements	1.726	5.67	1.726	5.67
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____						
Photos of Station: Yes <u> </u> No <u> </u> Roll Number _____ Picture Number(s) _____		Antenna Measurement Method: Bottom Notch of Ground Plane			Ht entered into receiver or controller 5.67 Feet	
Antenna Cable Length: _____ (Meters)		Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <u> </u> if No, Explain: _____				
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>						
Power Source Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt _____		Optional Weather Data				
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars <u> </u> inches <u> </u> Feet <u> </u> meters		Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)
Obstructions > 10 Degrees above Horizon? <u> </u> (Y or N) Obstruction Survey Performed? Yes <u> </u> No <u> </u> Performed Previously <u> </u>		Before				
Other (explain): _____		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 <u> </u> No <u> </u>			If not explain: _____	
Remarks (Comments on Problems, etc): _____			Log Checked By: _____			

Station Name:

College Station 2010 Control Survey

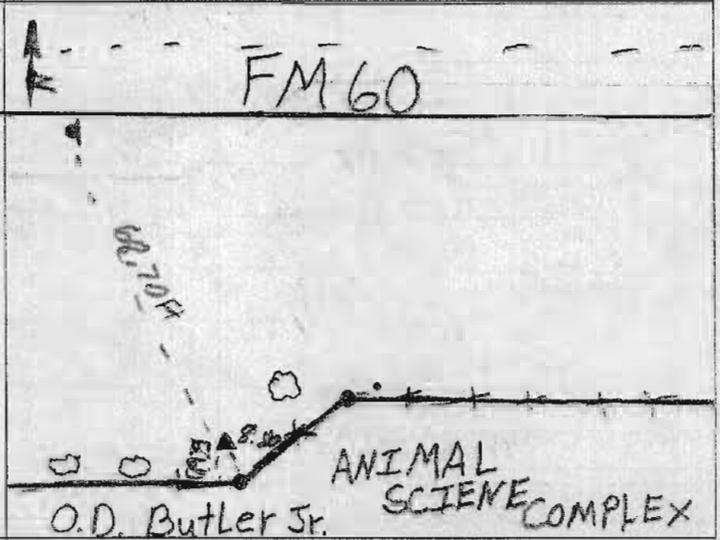
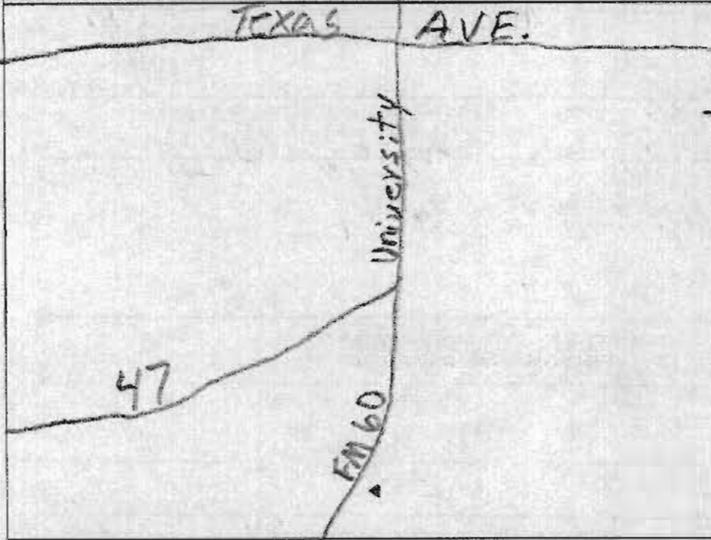
Project Number

109158

Date (Local)

Route Sketch

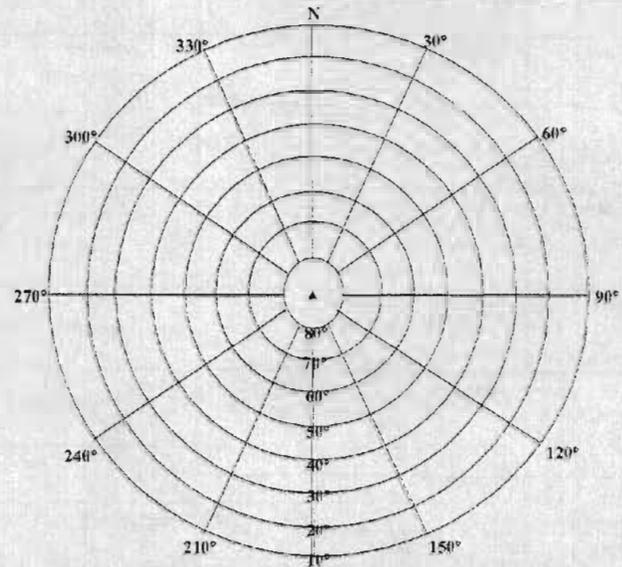
Detail Sketch



To Reach Description

Obstruction Diagram

From Texas Ave. turn left on to University (as known as FM. 60) and go west 6.5 miles and Mon #2 is on the left side of F.M. 60 WEST.



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)	Fair (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, C, I, C=00800

N, F, W, C, I, C=01000

Pr, P, W, C, M=12001

N, G, W, F, M=90200

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

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

Station Description: **5/8" IR w/VC** Station Name: **KI 1** 4 Character ID: **KI01** Julian Day: **119** Date (Local): **4-29-10**
 Geo Metrics GPS Inc. Location: **Brazos Co./SH 30** Station PID: Session #: **4** Obs. Agency code: **CDSMS**

Latitude: **30° 36' 49.52" N** Longitude: **96° 11' 36.55" W** Ellipsoid Ht.(m): **+0033.6** Observer name: **C. Varver**

Start Time (Scheduled): **5:26** Other stations observed in this session: **Mon. 7, Mon. 9, Mon. 6**
 Time (Actual): **5:26**
 Stop Time (Scheduled): **6:26**
 Time (Actual): **6:26**

Receiver MFR & Model:		Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Trimble 4000 SSi						
Receiver S/N: 3615415357 Receiver P/N: 24840-21		10	1.597	5.24	1.597	5.24
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		6	1.595	5.23	1.595	5.23
Antenna S/N: 0220019965 Antenna P/N:		1	1.596	5.235	1.596	5.235
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F _____ Manufacturer: _____ S/N: _____		Mean of Measurements				
Leica Tripod: _____ Manufacturer: _____ S/N: _____ Calibration Date: _____		1.596	5.235	1.596	5.235	

Photos of Station: Yes _____ No Roll Number: _____ Picture Number(s): _____
 Antenna Measurement Method: **Bottom Notch of Ground Plane** HI entered into receiver or controller: **5.235** Feet

Antenna Cable Length: _____ (Meters) Antenna Oriented North? Yes No _____ if No, Explain:
 Antenna Plumb Check: Before? _____ After? _____

Power Source		Optional Weather Data							
Camcorder Batteries		Time (Local)	Temperature Dry (F) (C)		Temperature Wet (F) (C)		Relative Humidity %	Pressure (in)Hg (Mb)	
External 12 Volt: _____ Commercial AC 110 Volt: _____			Before						
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars _____ inches _____ Feet _____ meters		Middle							
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No _____ Performed Previously _____		After							
Other (explain): _____		Mean of Readings							

Data Filename Format: aaaaddds **5-Digit Weather Code**
 aaa=4-Char ID, ddd=julian day, s=session.
 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.

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

Project Name: College Station 2010 Control Survey	Project Number: 109158	Data File Name (see below): CS071194
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Station Description: Alum. Deep Rod w/ punch inside Access Cover	Station Name: CS # 7	4 Character ID: CS07	Julian Day: 119	Date (Local): 4/29/10
Location:		Station PID: Alum Rod	Session #: 4	Obs. Agency code: CDSMS

Latitude: 30° 37' 13.64" N	Longitude: 096° 12' 09.61" W	Ellipsoid Ht. (m): +0042.0 m	Observer name: S. Montez
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Start Time	(Scheduled): Local 5:26	Other stations observed in this session: KI1 mon9 mon6
Time	(Actual): Local 5:25	
Stop Time	(Scheduled): Local 6:26	

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					
Receiver S/N: 3533A12012	7	1.652	5.42	1.652	5.42
Receiver P/N:					
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	11	1.652	5.42	1.652	5.42
Antenna S/N: 0220030199	3	1.652	5.42	1.652	5.42
Antenna P/N:					
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/>	Mean of Measurements				
Manufacturer: Leica S/N: _____		1.652	5.42	1.652	5.42
Tribrach: Manufacturer: Leica S/N: _____					
Calibration Date:					

Photos of Station: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Antenna Measurement Method: Bottom Notch of Ground Plane	HI entered into receiver or controller: 5.42 Feet
Roll Number: _____		
Picture Number(s): _____		

Antenna Cable Length: 15 (Meters)	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>	

Optional Weather Data

Power Source	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)
Camcorder Batteries					
External 12 Volt <input checked="" type="checkbox"/>					
Commercial AC 110 Volt: <input checked="" type="checkbox"/>					
Barometer MFR/Model: _____	Before				
Serial Number: _____					
Units of Reading: millibars _____ inches _____ Feet _____ meters _____					
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N)	Middle				
Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously _____	After				
Other (explain): _____	Mean of Readings				

5-Digit Weather Code

Data Filename Format: aaaaddds aaa=4-Char ID, ddd=julian day, s=session.	Before:	Middle:	After:
CS071194			
Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/> If not explain:			

Remarks (Comments on Problems, etc): <hr/>	Log Checked By: _____
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Station Name: mon # 7

Project Number
109158

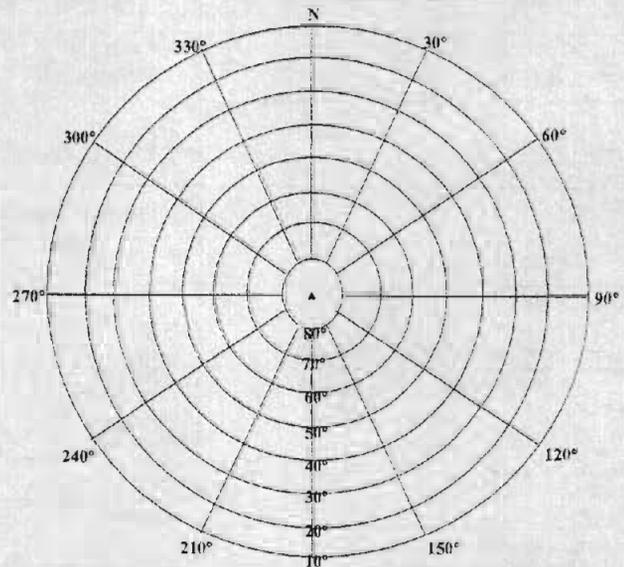
Date (Local)
4/29/10

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 Ki - 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

Project Name: College Station 2010 Control Survey		Project Number 109158	Data File Name (see below) MON9-119-4		
Station Description	Station Name MON9	4 Character ID MON9	Julian Day 119	Date (Local) 4-29-10	
	Location COLLEGE STATION	Station PID	Session # 4	Obs. Agency code CDSMS	
Latitude 30° 34' 55.46"	Longitude 096° 15' 11.70"	Ellipsoid Ht. (m) 40054.7	Observer name Bobby Marline		
Start Time	(Scheduled): Local (Actual): Local 5:23 PM	Other stations observed in this session CHAD TARVER - KI 1 AZ ESCOBAR - MON 6 JOE MONTEZ - MON 7			
Stop Time	(Scheduled): Local (Actual): Local 6:26 PM	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: Receiver P/N:	3	1.692	5' 55"	1.692	5' 55"
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	6	1.692	5' 55"	1.692	5' 55"
Antenna S/N: Antenna P/N:	10	1.692	5' 55"	1.692	5' 55"
Adjustable or Fixed Ht. Tripod: A ___ or F ___ Manufacturer: _____ S/N: _____	Mean of Measurements				
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? <input checked="" type="checkbox"/>	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No ___ if No, Explain: _____				
Power Source Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____	Optional Weather Data				
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 (m)Hg (Mb)
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously _____	Before				
Other (explain): _____	Middle				
	After				
	Mean of Readings				
Data Filename Format: aaaadddd aaa=4-Char ID, ddd=julian day, s=session,	5-Digit Weather Code				
	Before:	Middle:	After:		
MON9-119-4	Weather Taken At Antenna Height? Yes ___ No ___		If not explain: _____		
Remarks (Comments on Problems, etc): _____		Log Checked By: _____			

Station Name:

College Station 2010 Control Survey

Project Number

109158

Date (Local)

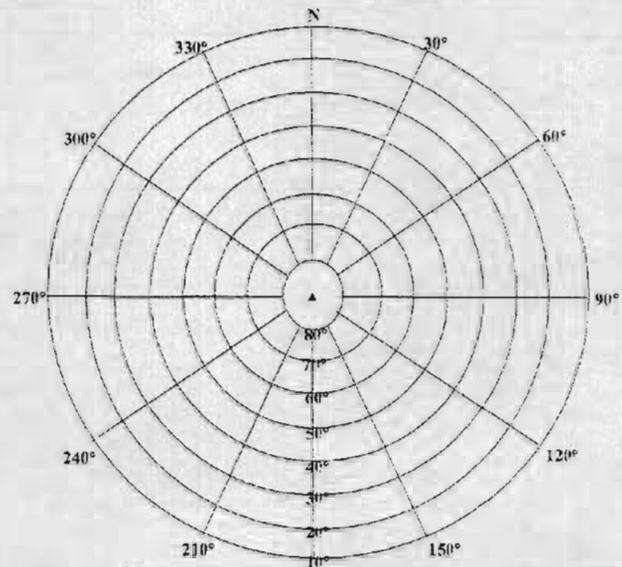
4-29-10

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)

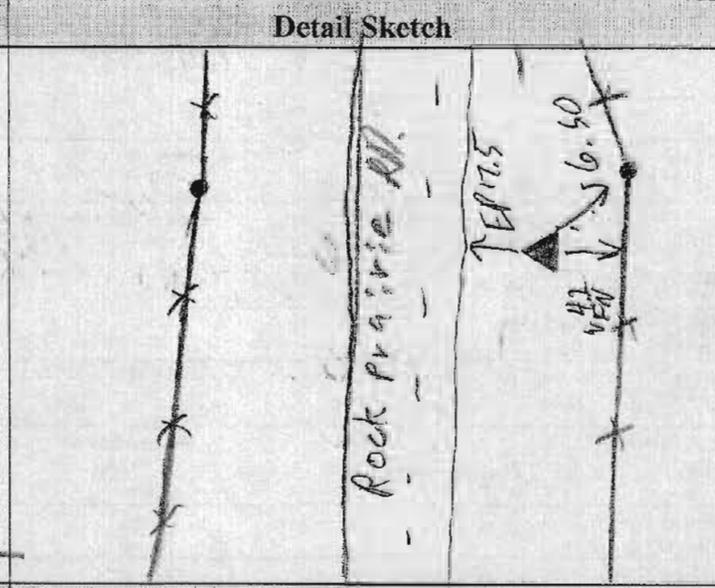
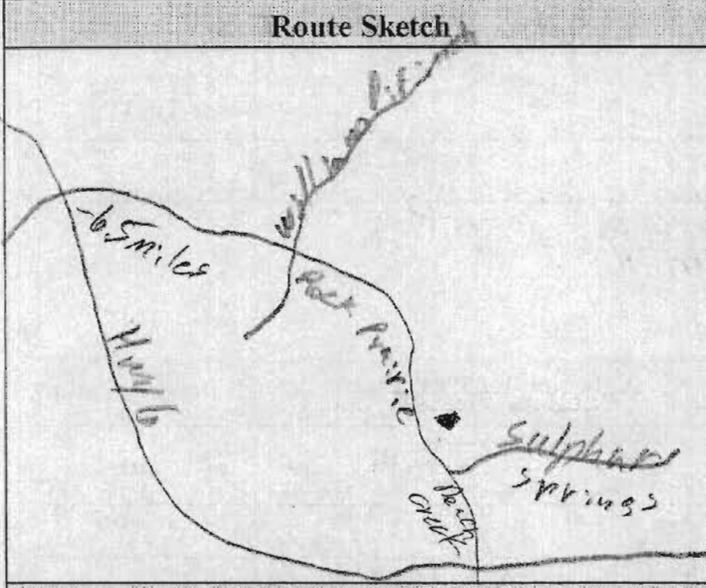
Condition = Entry

N, C, 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

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) 0031.6m	Observer name HSE			
Start Time	(Scheduled): Local 5:26 PM	Other stations observed in this session KI1 - MON#7 - MON#9				
Time	(Actual): Local 5:20 PM					
Stop Time	(Scheduled): Local 6:26					
Time	(Actual): Local 6:26	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: Receiver P/N:	1	1.598	5.25	1.598	5.25	
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	5	1.600	5.255	1.600	5.255	
Antenna S/N: Antenna P/N:	8	1.598	5.25	1.598	5.25	
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____	Mean of Measurements					
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____		1.598	5.25	1.598	5.25	
Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/> Roll Number _____ Picture Number(s) _____	Antenna Measurement Method: Bottom Notch of Ground Plane	HI entered into receiver or controller 5.25 Feet				
Antenna Cable Length: _____ (Meters)	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain: _____					
Antenna Plumb Check: Before? <input type="checkbox"/> After? <input checked="" type="checkbox"/>	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)
Obstructions > 10 Degrees above Horizon? (Y or N) Obstruction Survey Performed? Yes <input type="checkbox"/> No <input type="checkbox"/> Performed Previously _____	Before					
Other (explain): _____	Middle					
	After					
	Mean of Readings					
Data Filename Format: aaaaddds aa=a-4-Char ID, ddd=Julian day, s=session	5-Digit Weather Code					
	Before:	Middle:	After:			
	Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/>				If not explain: _____	

Remarks (Comments on Problems, etc): _____ Log Checked By: _____

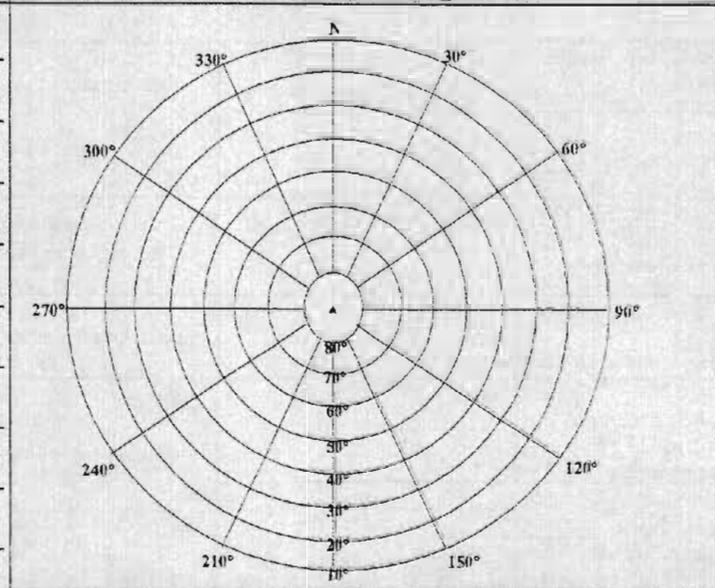
Station Name: **College Station 2010 Control Survey** Project Number: **109158** Date (Local):



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 = 02000
 N = None P = Poor W = Warm F = Fair G = Good C = Calm M = Moderate Pr = Problem Cl = Clear

Project Name: College Station 2010 Control Survey	Project Number: 109158	Data File Name (see below)
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Station Description: <i>3" Alum cap in Conc.</i>	Station Name: <i>Mon 135</i>	4 Character ID: <i>M135</i>	Julian Day: <i>120</i>	Date (Local): <i>4-30-10</i>
Stamped College Station: <i>Mon 135 (1994)</i>	Location: <i>Brazos Co./Woodlake Dr.</i>	Station PID	Session #: <i>1</i>	Obs. Agency code: CDSMS

Latitude: <i>30° 31' 21.09" N</i>	Longitude: <i>96° 16' 04.27" W</i>	Ellipsoid Ht. (m): <i>+0061.7</i>	Observer name: <i>C. Tarver</i>
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Start Time	(Scheduled): Local <i>6:40</i>	Other stations observed in this session: <i>Mon. 4, KI 5, Mon. 11</i>
Time	(Actual): Local <i>6:47</i>	
Stop Time	(Scheduled): Local <i>8:10</i>	
Time	(Actual): Local <i>8:10</i>	

Receiver MFR & Model:	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Trimble 4000 SSi					
Receiver S/N: <i>3615A15357</i> Receiver P/N: <i>24840-21</i>	<i>2</i>	<i>1.695</i>	<i>5.56</i>	<i>1.695</i>	<i>5.56</i>
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	<i>10</i>	<i>1.696</i>	<i>5.565</i>	<i>1.696</i>	<i>5.565</i>
Antenna S/N: <i>0220019965</i> Antenna P/N:	<i>6</i>	<i>1.695</i>	<i>5.56</i>	<i>1.695</i>	<i>5.56</i>
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F _____ Manufacturer: _____ S/N: _____	Mean of Measurements				
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date:	<i>1.695</i>	<i>5.562</i>	<i>1.695</i>	<i>5.562</i>	

Photos of Station: Yes _____ No <input checked="" type="checkbox"/> Roll Number _____ Picture Number(s) _____	Antenna Measurement Method: Bottom Notch of Ground Plane	HI entered into receiver or controller: <i>5.562</i> Feet
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Antenna Cable Length: _____ (Meters)	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No _____ if No, Explain:
Antenna Plumb Check: Before? _____ After? _____	

Power Source	Optional Weather Data							
Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____	Time (Local)	Temperature Dry (F)	Temperature Dry (C)	Temperature Wet (F)	Temperature Wet (C)	Relative Humidity %	Pressure (inHg)	Pressure (Mb)
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars _____ inches _____ Feet _____ meters _____	Before							
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No _____ Performed Previously _____	Middle							
Other (explain): _____	After							
	Mean of Readings							

Data Filename Format: aaaaddds <i>aaa=4 Char ID, add=Julian day, ds=session</i>	5-Digit Weather Code		
	Before:	Middle:	After:
	Weather Taken At Antenna Height? Yes _____ No <input checked="" type="checkbox"/> If not explain:		

Remarks (Comments on Problems, etc):	Log Checked By: _____
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Station Name:

College Station 2010 Control Survey

Project Number

109158

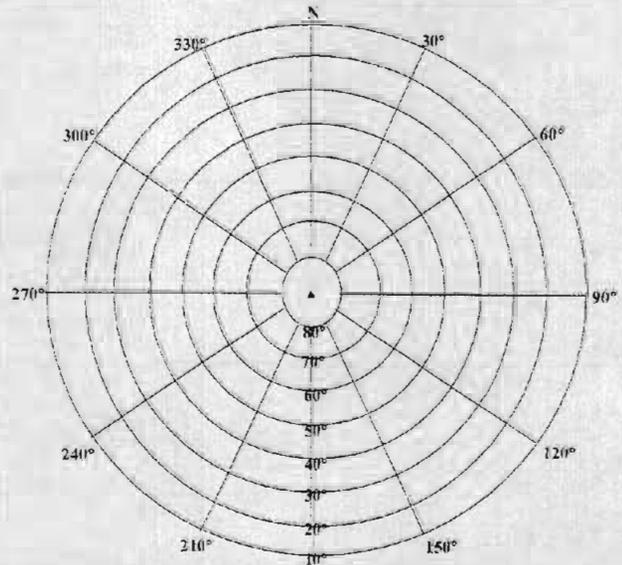
Date (Local)

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 (3° 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

F, P, W, C, M=12001

N, G, W, F, N =0020E

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

Project Name: College Station 2010 Control Survey			Project Number 109158		Data File Name (see below) CS041201	
Station Description Alum Deep Road w/punch inside Access Cover		Station Name CS#4		4 Character ID CS04	Julian Day 120	Date (Local) 4/30/10
Location		Station PID Alum RoD		Session # 1	Obs. Agency code CDSMS	
Latitude 30° 30' 23.62" N		Longitude 096° 17' 47.51" W		Ellipsoid Ht. (m) 40064.1 m	Observer name J. A. ...	
Start Time (Scheduled): Local 6:40	Time (Actual): Local 6:39	Other stations observed in this session mon135 KIS mon11				
Stop Time (Scheduled): Local 8:10	Time (Actual): Local	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: 353BA12012		6	1.594	5.23	1.594	5.23
Receiver P/N:		10	1.594	5.23	1.594	5.23
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		2	1.594	5.23	1.594	5.23
Antenna S/N: 0220030199		Mean of Measurements	1.594	5.23	1.594	5.23
Antenna P/N:		Tribrach: Manufacturer: Leica S/N: ---	Calibration Date:	Photos of Station: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Roll Number	Picture Number(s)
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/>		Antenna Measurement Method: Bottom Notch of Ground Plane		HI entered into receiver or controller 5.23 Feet		
Antenna Cable Length: 15 (Meters)		Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:				
Antenna Plumb Check: Before? <input type="checkbox"/> After? <input checked="" type="checkbox"/>		Optional Weather Data				
Power Source Camcorder Batteries		Time (Local)	Temperature Dry (F) (C)		Temperature Wet (F) (C)	
External 12 Volt <input checked="" type="checkbox"/>		Before				
Commercial AC 110 Volt <input type="checkbox"/>		Middle				
Barometer MFR/Model:		After				
Serial Number:		Mean of Readings				
Units of Reading: millibars <input type="checkbox"/> inches <input type="checkbox"/> Feet <input type="checkbox"/> meters <input type="checkbox"/>		Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (S or N)				
Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously <input type="checkbox"/>		Other (explain):				
Data Filename Format: aaaaddids aaa=Char ID, ddd=julian day, s=session.		5-Digit Weather Code				
CS041201		Before:	Middle:		After:	
Remarks (Comments on Problems, etc):		Weather Taken At Antenna Height? Yes <input type="checkbox"/> No <input type="checkbox"/> If not explain:				
Log Checked By: _____		Truck is Parked _____ meters (direction) from antenna.				

Station Name:

mon # 4

Project Number

109158

Date (Local)

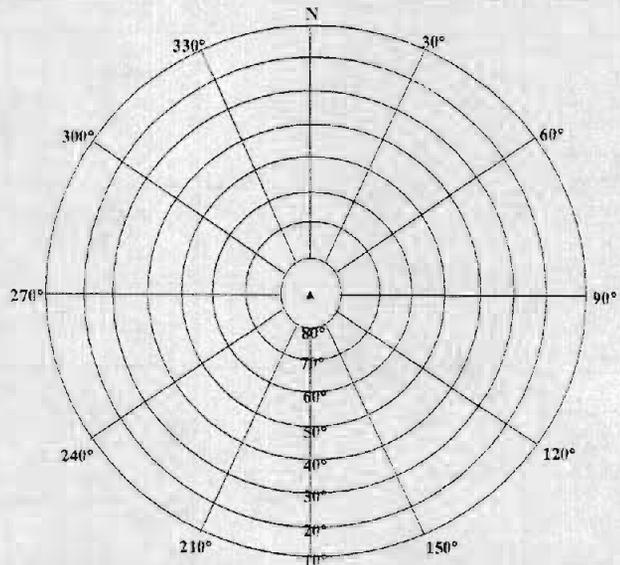
4/30/10

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, N =00200

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

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: Bobly Martin	
Start Time	(Scheduled): Local (Actual): Local 6:37 AM	Other stations observed in this session: CHAD TUCKER Mon-135 JOE MONTER Mon-4		AS ESCOBAR Mon-11		
Stop Time	(Scheduled): Local (Actual): Local 8:10 AM	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: 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: ___	Mean of Measurements					
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: 5.53 Feet		
Antenna Cable Length: ___ (Meters)	Antenna Oriented North? Yes ___ No ___ if No, Explain: ___					
Antenna Plumb Check: Before? ___ After? <input checked="" type="checkbox"/>						
Power Source Camcorder Batteries: ___ External 12 Volt: ___ Commercial AC 110 Volt: ___	Optional Weather Data					
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 (mHg) (Mb)	
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___	Before					
Other (explain):	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:			
MKI5-120-1	Weather Taken At Antenna Height? Yes ___ No ___			If not explain: ___		

Remarks (Comments on Problems, etc):

Log Checked By: _____

Station Name: College Station 2010 Control Survey	Project Number 109158	Date (Local) 4-30-10
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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

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° 41.9306	Ellipsoid Ht.(m): 2064.2	Observer name: H. Decker
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Start Time	(Scheduled): Local 6:44 AM	Other stations observed in this session: MON#135 - MON#14 - KI 5
	(Actual): Local 6:38 AM	
Stop Time	(Scheduled): Local 8:10 AM	
	(Actual): Local	

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					
Receiver S/N: Receiver P/N: 3515A15357	12	1.650	5.42	1.650	5.42
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	4	1.650	5.42	1.650	5.42
Antenna S/N: Antenna P/N: 220126287	8	1.649	5.415	1.649	5.415
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____	Mean of Measurements				
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____		1.650	5.42	1.650	5.42

Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/> Roll Number _____ Picture Number(s) _____	Antenna Measurement Method: Bottom Notch of Ground Plane	HI entered into receiver or controller: 5.42 Feet
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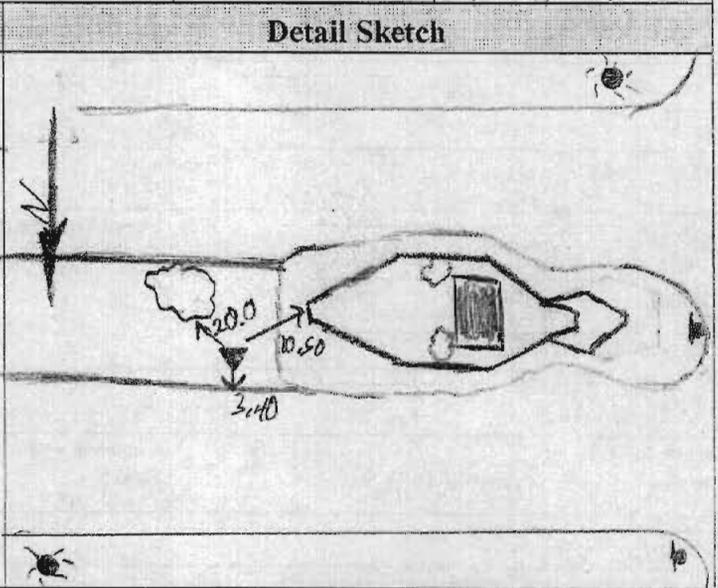
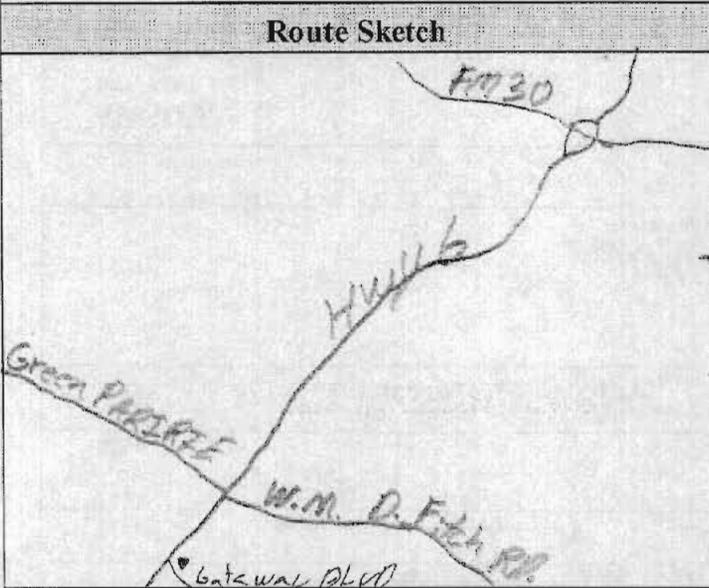
Antenna Cable Length: _____ (Meters)	Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain: _____
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>	

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 (inHg) (Mb)
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars _____ inches _____ Feet _____ meters _____	Before						
Obstructions > 10 Degrees above Horizon? _____ (Y or N) Obstruction Survey Performed? Yes _____ No _____ Performed Previously _____	Middle						
Other (explain): _____	After						
	Mean of Readings						

Data Filename Format: aaaadddd 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: _____

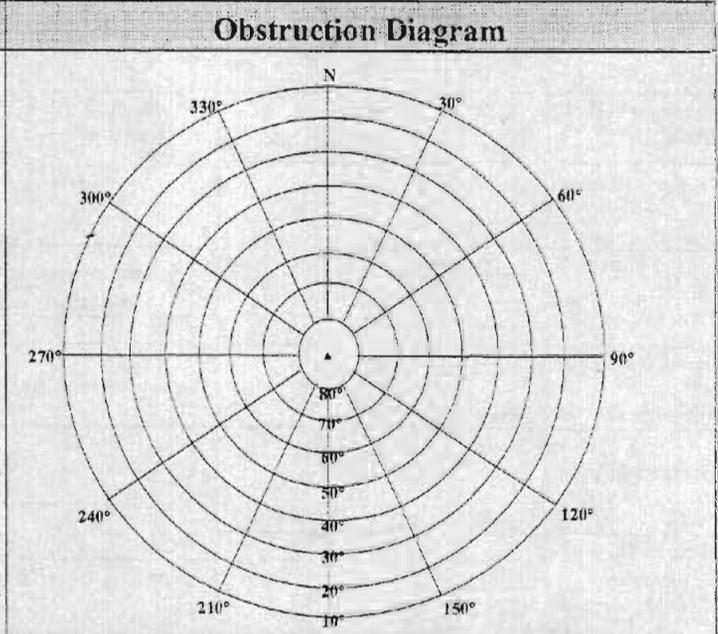
Remarks (Comments on Problems, etc): _____ Log Checked By: _____

Station Name: **College Station 2010 Control Survey** Project Number: **109158** Date (Local): **04-30-10**



To Reach Description

From FM 30 go south on Hwy 6 for 7.5 miles. Exit on W.M. D. Fitch Rd. on rd 0.7 miles and make a turn around. Mon #11 is on Gateway Blvd.



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

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

Station Description: **5/8" IR w/vc** Station Name: **KI8** 4 Character ID: **KI08** Julian Day: **120** Date (Local): **4-30-10**
 GeoMetrics GPS Inc. Location: **Brazos Co./Valley Cir & Ridge Dr. Blue** Station PID: Session #: **2** Obs. Agency code: **CDSMS**

Latitude: **30° 32' 15.82" N** Longitude: **96° 20' 46.81" W** Ellipsoid Ht. (m): **40056.1** Observer name: **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:	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)	After Feet (ft.)
Trimble 4000 SSI					
Receiver S/N: 3615415357 Receiver P/N: 24840-21	4	1.761	5.78	1.761	5.78
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane	12	1.764	5.785	1.764	5.785
Antenna S/N: 0220019965 Antenna P/N:	8	1.764	5.785	1.764	5.785
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F _____ Manufacturer: _____ S/N: _____	Mean of Measurements				
Tribrach: _____ Manufacturer: _____ S/N: _____ Calibration Date: _____		1.763	5.783	1.763	5.783

Photos of Station: Yes _____ No Roll Number: _____ Picture Number(s): _____
 Antenna Measurement Method: **Bottom Notch of Ground Plane** HI entered into receiver or controller: **5.783** Feet

Antenna Cable Length: _____ (Meters) Antenna Oriented North? Yes No _____ if No, Explain:
 Antenna Plumb Check: Before? _____ After? _____

Optional Weather Data

Power Source	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)
Camcorder Batteries: _____ External 12 Volt: _____ Commercial AC 110 Volt: _____ Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars _____ inches _____ Feet _____ meters	Before				
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No _____ Performed Previously _____	Middle				
Other (explain): _____	After				
	Mean of Readings				

Data Filename Format: aaaaddds **5-Digit Weather Code**

aaa=4-Char ID, ddd=julian day, s=session, Before: _____ Middle: _____ After: _____
 Weather Taken At Antenna Height? Yes _____ No If not explain: _____

Remarks (Comments on Problems, etc): _____ Log Checked By: _____

Station Name:

College Station 2010 Control Survey

Project Number

109158

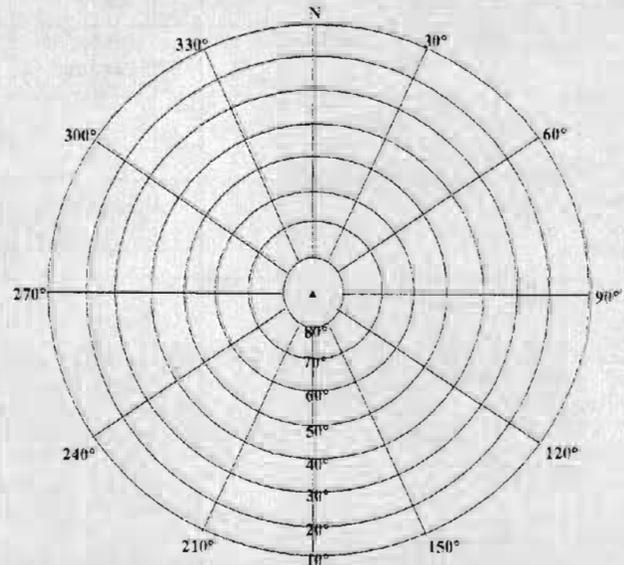
Date (Local)

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, E, W, C, M=12001

N, G, W, F, M =00200

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

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below): CS101202			
Station Description: Alum Deep Rod w/ punch inside Access Cover		Station Name: CS 10	4 Character ID: CS10	Julian Day: 120	Date (Local): 4/30/10	
Location: College Station		Station PID: Alum Rod	Session #: 2	Obs. Agency code: CDSMS		
Latitude: 30° 34' 13.56" N		Longitude: 096° 18' 57.72" W	Ellipsoid Ht. (m): 10068.9 m	Observer name: J. Montez		
Start Time:	(Scheduled): Local 8:55	Other stations observed in this session: KI8 mon3 mon4				
Time:	(Actual): Local 8:54					
Stop Time:	(Scheduled): Local 9:55					
Time:	(Actual): Local 10:00	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
Receiver P/N:						
Antenna MFR & Model:	Trimble Compact L1/L2 with Ground Plane	7	1.645	5.40	1.645	5.40
Antenna S/N:	0220030199	11	1.645	5.40	1.645	5.40
Antenna P/N:						
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/>	Manufacturer: Leica S/N: -	Mean of Measurements	1.645	5.40	1.645	5.40
Tribrach:	Manufacturer: Leica S/N: -					
Calibration Date:						
Photos of Station: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Roll Number: _____	Antenna Measurement Method: Bottom Notch of Ground Plane		HI entered into receiver or controller: 5.40 Feet		
Picture Number(s): _____						
Antenna Cable Length: 15 (Meters)		Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:				
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>						
Power Source		Optional Weather Data				
Camcorder Batteries						
External 12 Volt	<input checked="" type="checkbox"/>					
Commercial AC 110 Volt	<input checked="" type="checkbox"/>					
Barometer MFR/Model:		Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %	Pressure (in)Hg (Mb)
Serial Number:		Before				
Units of Reading: millibars _____ inches _____ Feet _____ meters _____						
Obstructions > 10 Degrees above Horizon? <input checked="" type="checkbox"/> (Y or N)		Middle				
Obstruction Survey Performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Performed Previously _____		After				
Other (explain):		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 <input type="checkbox"/> No <input type="checkbox"/>			If not explain:	

Remarks (Comments on Problems, etc):

Log Checked By: _____

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below): MON3-120-2	
Station Description	Station Name: MON3	4 Character ID: MON3	Julian Day: 120	Date (Local): 4-30-10
	Location: COLLEGE STATION	Station PID	Session #: 2	Obs. Agency code: CDSMS

Latitude: 30° 31' 24.71"	Longitude: 096° 20' 49.42"	Ellipsoid Ht.(m): 40042.9	Observer name: Colby Rodriguez
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Start Time (Scheduled):	Other stations observed in this session: AS ESCOBAR - MON 4
Start Time (Actual): 8:47 AM	CHAD TARVER - K18
Stop Time (Scheduled):	JOE MONTEZ - MON 10
Stop Time (Actual): 10:00 AM	

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					
Receiver S/N:	4	1.707	5.60	1.707	5.60
Receiver P/N:					
Antenna MFR & Model:	8	1.707	5.60	1.707	5.60
Trimble Compact L1/L2 with Ground Plane					
Antenna S/N:	12	1.707	5.60	1.707	5.60
Antenna P/N:					

Adjustable or Fixed Ht. Tripod: A ___ or F ___	Mean of Measurements
Manufacturer: ___ S/N: ___	
Tribrach: ___	
Manufacturer: ___ S/N: ___	
Calibration Date: ___	

Photos of Station: Yes ___ No ___	Antenna Measurement Method: Bottom Notch of Ground Plane	HI entered into receiver or controller: 5.60 Feet
Roll Number: ___		
Picture Number(s): ___		

Antenna Cable Length: ___ (Meters)	Antenna Oriented North? Yes ___ No ___ If No, Explain: ___
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>	

Optional Weather Data

Power Source	Time (Local)	Temperature Dry		Temperature Wet		Relative Humidity %	Pressure	
		(F)	(C)	(F)	(C)		(inHg)	(Mb)
Camcorder Batteries: ___	Before							
External 12 Volt: ___	Middle							
Commercial AC 110 Volt: ___	After							
Barometer MFR/Model: ___	Mean of Readings							
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):								

5-Digit Weather Code

Data Filename Format: aaaaddds aaa=4-Char ID, ddd=julian day, s=session.	Before:	Middle:	After:
MON3-120-2			
	Weather Taken At Antenna Height? Yes ___ No ___		If not explain: ___

Remarks (Comments on Problems, etc): _____ Log Checked By: _____

Station Name:

College Station 2010 Control Survey

Project Number

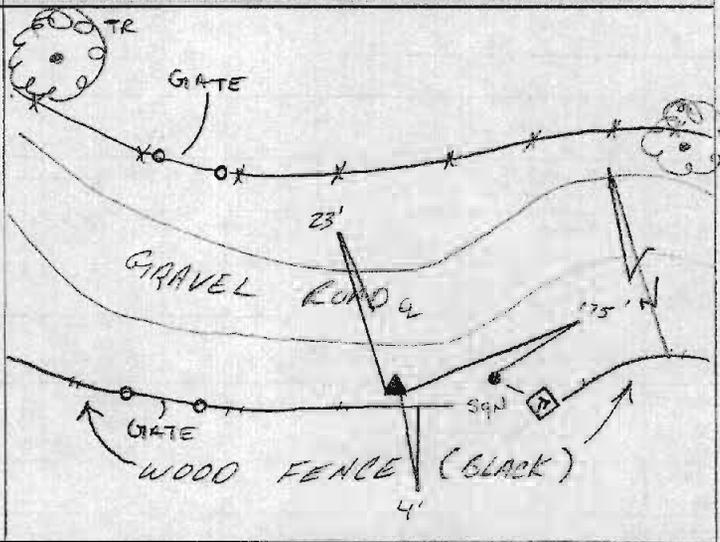
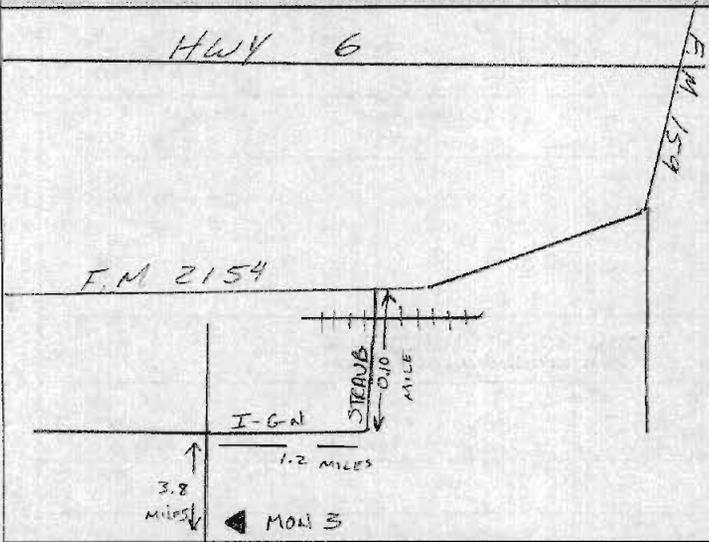
109158

Date (Local)

4-30-10

Route Sketch

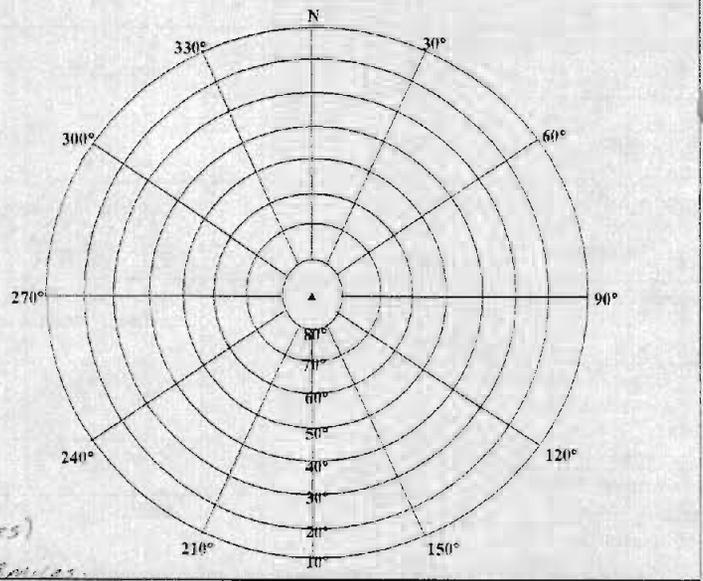
Detail Sketch



To Reach Description

Obstruction Diagram

23' TO E 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 STRAUS RD (0.10 miles) you
go to I-G-N RD Make right check (1/2 miles)
to Farmway stop Sgn, travel on left side 3.8 miles.



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 (25%)	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

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below): MON4-120-2	
Station Description:	Station Name: MON#4	4 Character ID: MON4	Julian Day: 120	Date (Local): 04-20-10
	Location: College Station	Station PID:	Session #: 2	Obs. Agency code: CDSMS
Latitude: 30° 30.3936'	Longitude: 096° 12.7911	Ellipsoid Ht. (m): 0061.1m	Observer name: AS Schiner	
Start Time:	(Scheduled): Local 8:55	Other stations observed in this session: KI8-MON#10 - MON#3		
Time:	(Actual): Local 8:52			
Stop Time:	(Scheduled): Local 9:55			
Time:	(Actual): Local	Antenna Measurements		
Receiver MFR & Model: Trimble 4000 SSI	Measurement Taken From/To-Notch #	Before Meter (m)	Before Feet (ft.)	After Meter (m)
Receiver S/N: Receiver P/N: 3515#15357	8	1.650	5.42	1.650
Antenna MFR & Model: Trimble Compact LI/L2 with Ground Plane	3	1.650	5.42	1.650
Antenna S/N: Antenna P/N: 270126207	11	1.652	5.425	1.652
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____	Mean of Measurements			
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____		1.650	5.42	1.650
Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/> 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 Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No. Explain:			
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>				
Power Source Camcorder Batteries _____ External 12 Volt _____ Commercial AC 110 Volt: _____	Optional Weather Data			
Barometer MFR/Model: _____ Serial Number: _____ Units of Reading: millibars _____ inches _____ Feet _____ meters _____	Time (Local)	Temperature Dry (F) (C)	Temperature Wet (F) (C)	Relative Humidity %
Obstructions > 10 Degrees above Horizon? <input type="checkbox"/> (Y or N) Obstruction Survey Performed? Yes <input type="checkbox"/> No <input type="checkbox"/> Performed Previously _____	Before			
Other (explain): _____	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 <input type="checkbox"/> No <input type="checkbox"/>			If not explain:

Remarks (Comments on Problems, etc):

Log Checked By: _____

Station Name:

College Station 2010 Control Survey

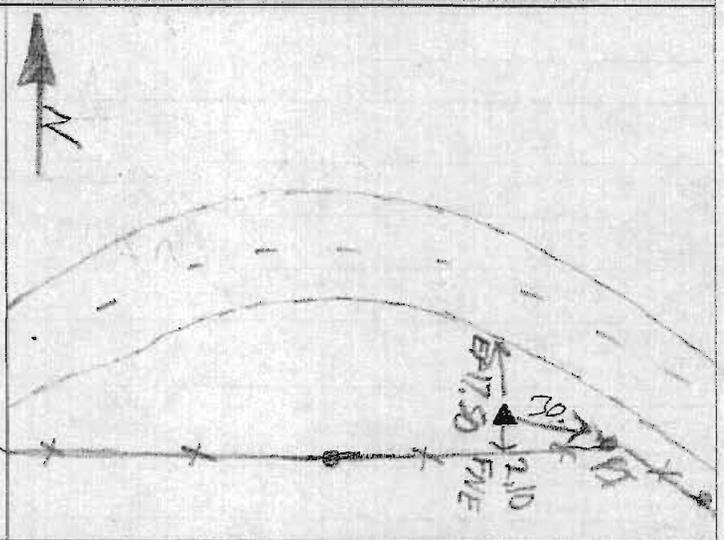
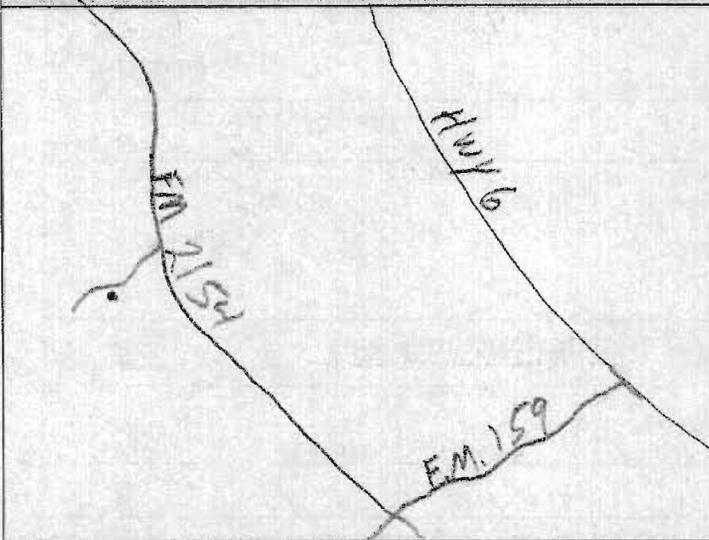
Project Number

109158

Date (Local)

Route Sketch

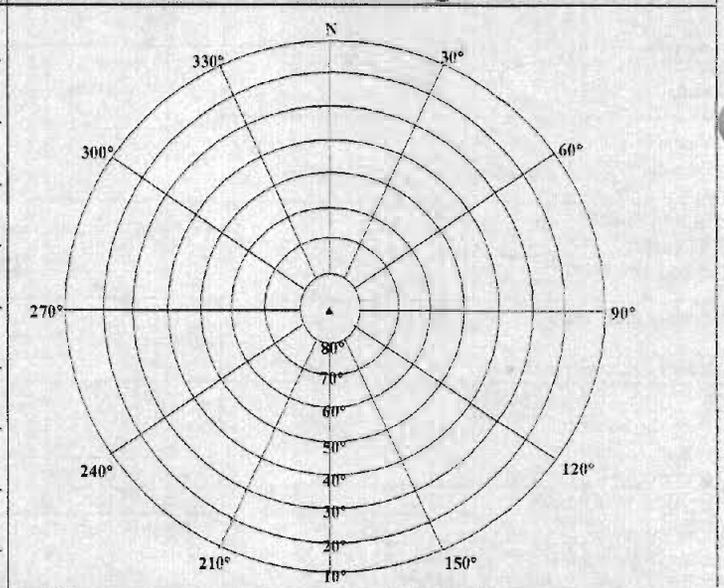
Detail Sketch



To Reach Description

Obstruction Diagram

Get on 159 west and go 2.6 miles to FM 2154 North. Turn right on 2154 and go 2.3 miles turn left on Straub RD and go 0.4 miles. Mon #4 is on right side of road.



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

Project Name: **College Station 2010 Control Survey** Project Number: **109158** Data File Name (see below): **M242-120-3**

Station Description	Station Name MON 242	4 Character ID M242	Julian Day 120	Date (Local) 4-30-10
	Location COLLEGE STATION	Station PID	Session # 3	Obs. Agency code CDSMS

Latitude: **30° 39' 23.28"** Longitude: **096° 16' 29.06** Ellipsoid Ht.(m): **40069.3** Observer name: **Colleen Miller**

Start Time (Actual): **10:37 AM** Stop Time (Actual): **11:25 AM**

Other stations observed in this session: **AJ ESCOBAR - MON 8**

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	3	1.570	5' 15"	1.570	5' 15"
Trimble Compact L1/L2 with Ground Plane	9	1.570	5' 15"	1.570	5' 15"
	11	1.570	5' 15"	1.570	5' 15"

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

Optional Weather Data

Barometer MFR/Model:	Time (Local)	Temperature Dry		Temperature Wet		Relative Humidity %	Pressure	
		(F)	(C)	(F)	(C)		(in)Hg	(Mb)
Serial Number: ___ Units of Reading: millibars ___ inches ___ Feet ___ meters ___	Before							
Obstructions > 10 Degrees above Horizon? ___ (Y or N) Obstruction Survey Performed? Yes ___ No ___ Performed Previously ___	Middle							
Other (explain):	After							
	Mean of Readings							

Data Filename Format: aaaadddd **5-Digit Weather Code**
 aa=4 Char ID, ddd=Julian day, s=session.
M242-120-3

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

Remarks (Comments on Problems, etc): _____ Log Checked By: _____

Station Name:

College Station 2010 Control Survey

Project Number

109158

Date (Local)

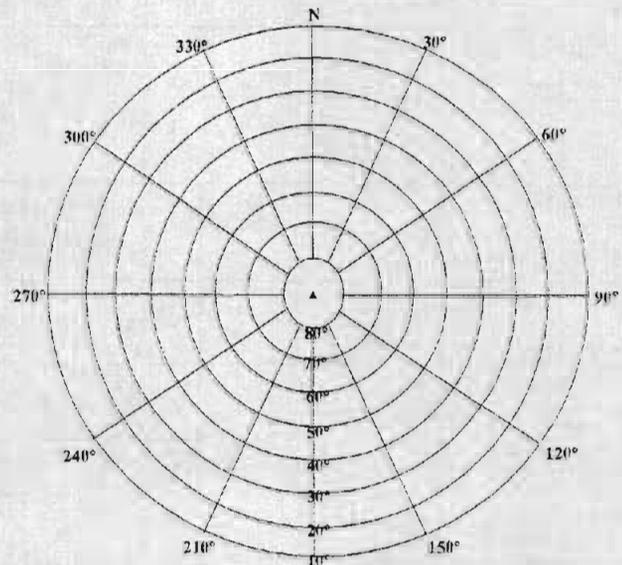
4-30-10

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 25 Miles)	Normal (0° C To 23° 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,E,W,Cl,E=01000

Pr,P,W,C,M=12001

N,O,W,Cl,M=00200

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

Project Name: College Station 2010 Control Survey		Project Number: 109158	Data File Name (see below): MON8-120-3			
Station Description:		Station Name: MON#8	4 Character ID: MON8	Julian Day: 120	Date (Local): 04-30-10	
		Location: College Station	Station PID:	Session #: 3	Obs. Agency code: CDSMS	
Latitude: 30° 38.46 20N		Longitude: 096° 17.6746		Ellipsoid Ht. (m): 0052.6m	Observer name: ASL/don	
Start Time:	(Scheduled): Local: 10:40	Other stations observed in this session: MON# 242				
Time:	(Actual): Local: 10:35					
Stop Time:	(Scheduled): Local: 11:24					
Time:	(Actual): Local:	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: Receiver P/N: 3515A15 357		2	1.617	5.31	1.617	5.31
Antenna MFR & Model: Trimble Compact L1/L2 with Ground Plane		5	1.615	5.305	1.615	5.305
Antenna S/N: Antenna P/N: 9201 26 287		9	1.617	5.31	1.617	5.31
Adjustable or Fixed Ht. Tripod: A <input checked="" type="checkbox"/> or F <input type="checkbox"/> Manufacturer: _____ S/N: _____		Mean of Measurements				
Tribrach: Manufacturer: _____ S/N: _____ Calibration Date: _____		1.617	5.31	1.617	5.31	
Photos of Station: Yes <input type="checkbox"/> No <input type="checkbox"/> Roll Number: _____ Picture Number(s): _____		Antenna Measurement Method: Bottom Notch of Ground Plane		Ht entered into receiver or controller: 5.31 Feet		
Antenna Cable Length: _____ (Meters)		Antenna Oriented North? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> if No, Explain:				
Antenna Plumb Check: Before? <input checked="" type="checkbox"/> After? <input checked="" type="checkbox"/>						
Power Source Camcorder Batteries: _____ External 12 Volt: _____ Commercial AC 110 Volt: _____		Optional Weather Data				
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)
Obstructions > 10 Degrees above Horizon? _____ (Y or N) Obstruction Survey Performed? Yes <input type="checkbox"/> No <input type="checkbox"/> Performed Previously _____		Before				
Other (explain): _____		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 <input type="checkbox"/> No <input type="checkbox"/>				If not explain:

Remarks (Comments on Problems, etc): _____ Log Checked By: _____

Station Name:

College Station 2010 Control Survey

Project Number

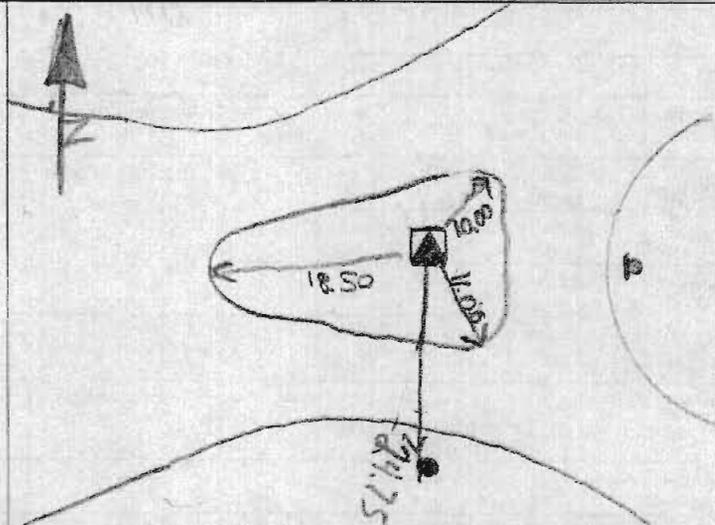
109158

Date (Local)

Route Sketch



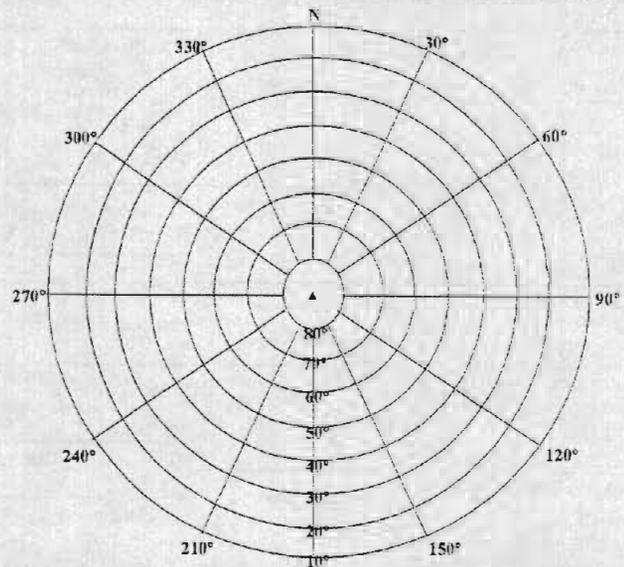
Detail Sketch



To Reach Description

To reach get on FM 30
and go 2.9 miles.
The monument 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

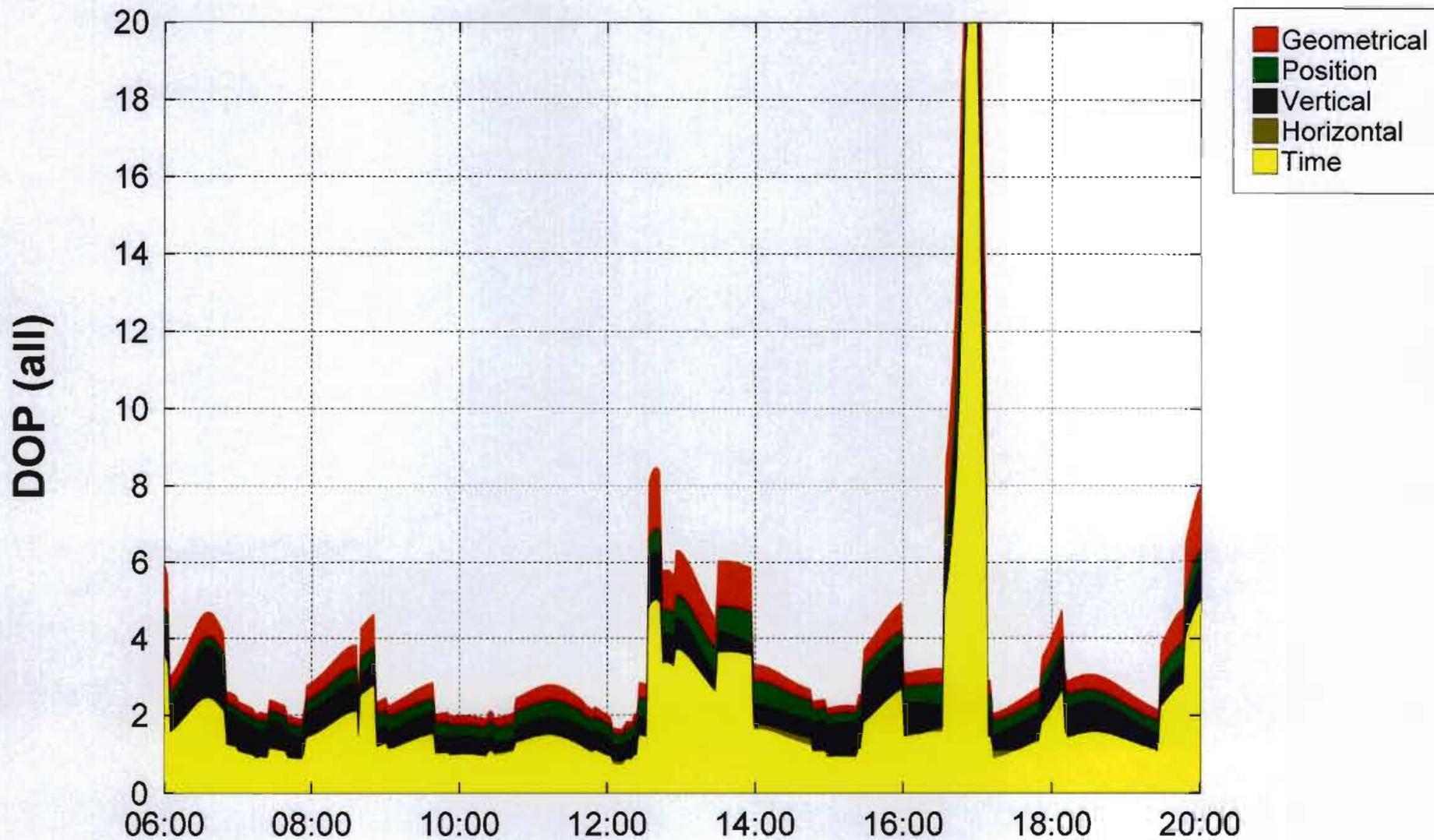
N, F, W, Cl, C=01000

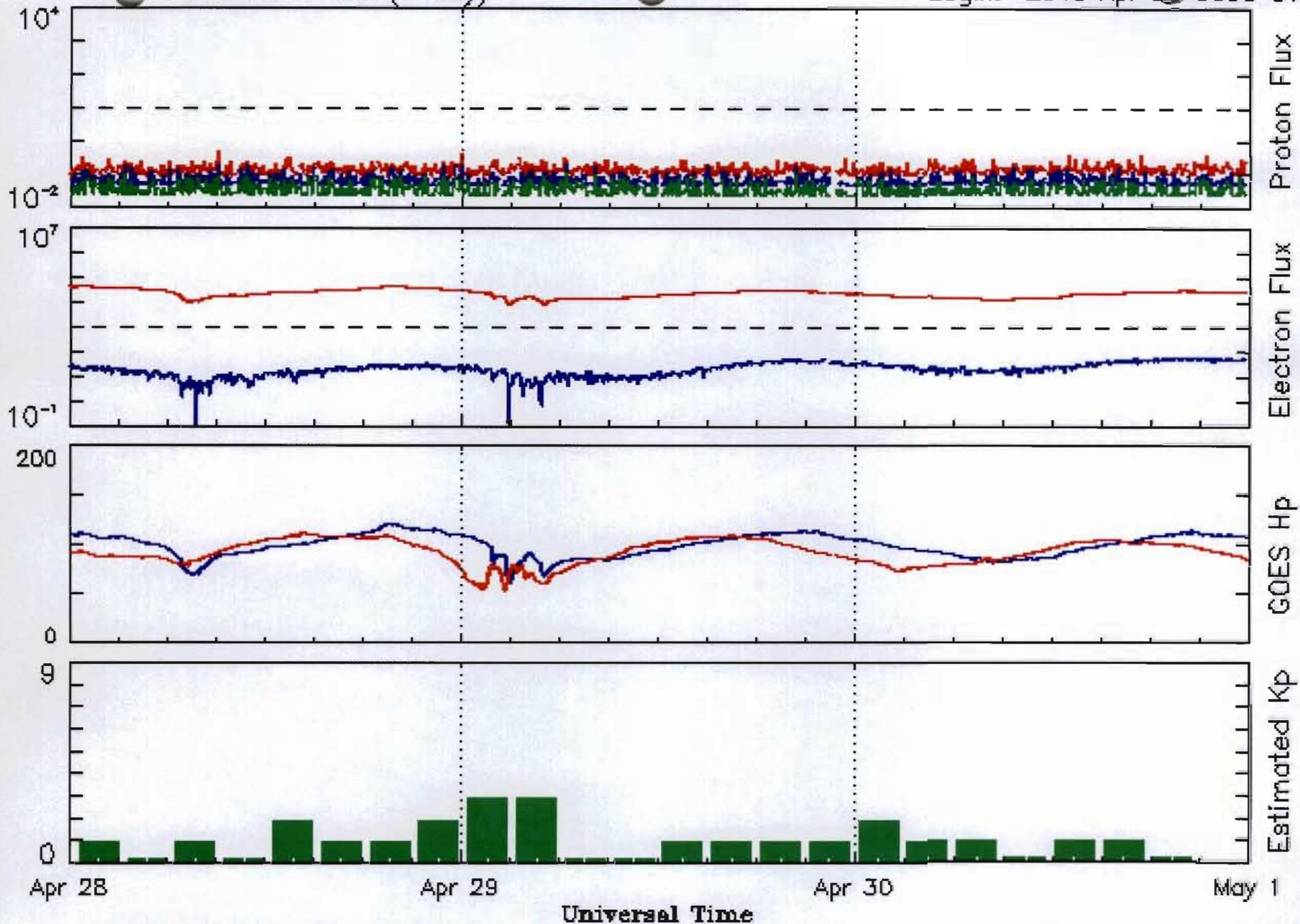
Pr, P, W, C, M=12001

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)





Appendix E

Station Recovery Reports

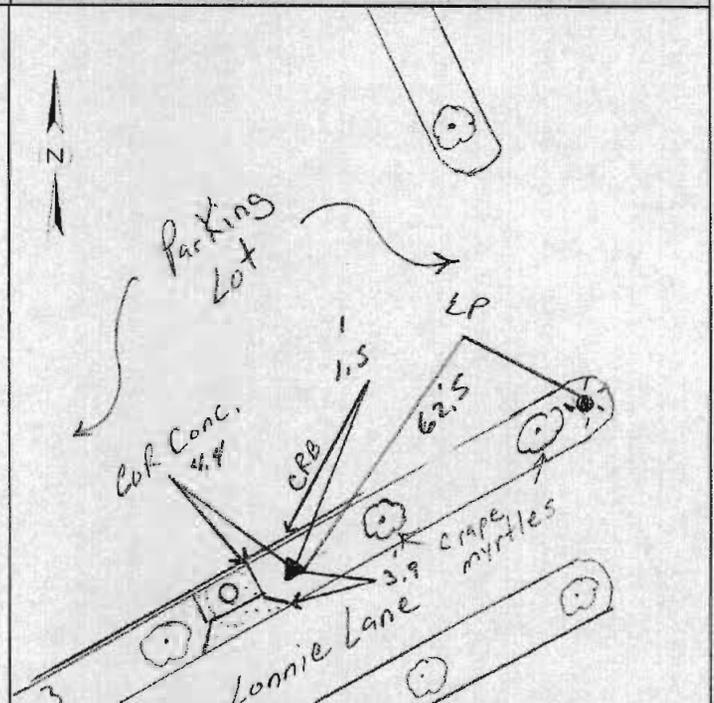
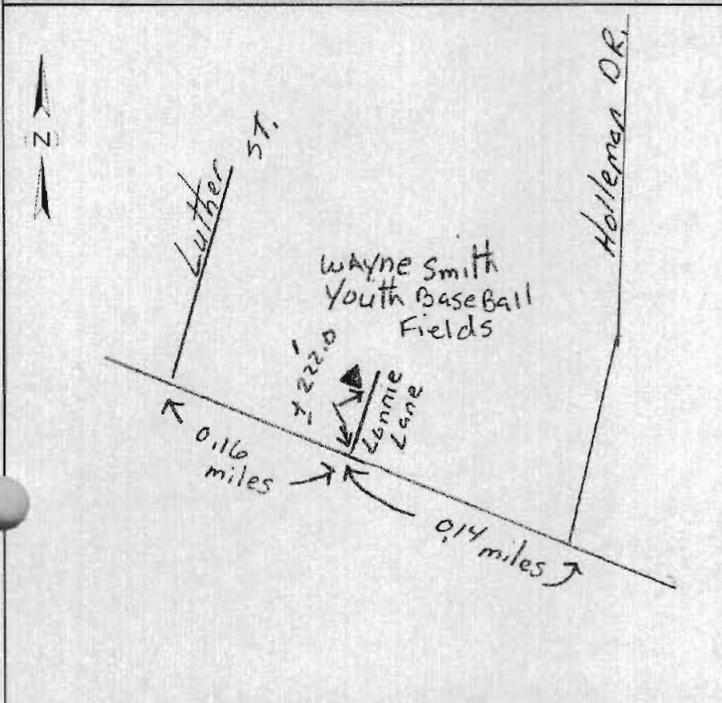
And

GPS Station Visibility Diagrams

Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.
Station Description: <i>Set Alum Deep Rod to Refusal inside Access Cover</i>	Station Name <i>mon # 1</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/26/10</i>
Location: City/County/State		Station PID N/A	Session # N/A
Approx. Latitude <i>30.35.51.10 N</i>	Approx. Longitude <i>96.20.02.54W</i>	Approx. Elev. (ft)	Party Chief Name <i>J. Montez</i>
Obs. Agency code CDSMS			

Route Sketch

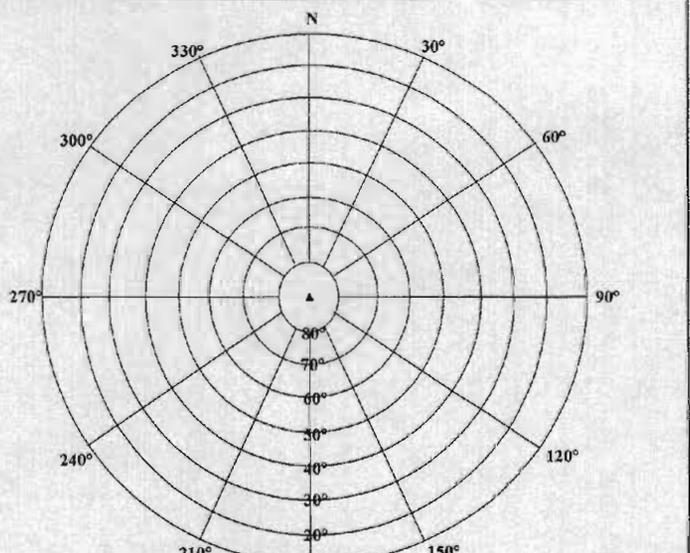
Detail Sketch



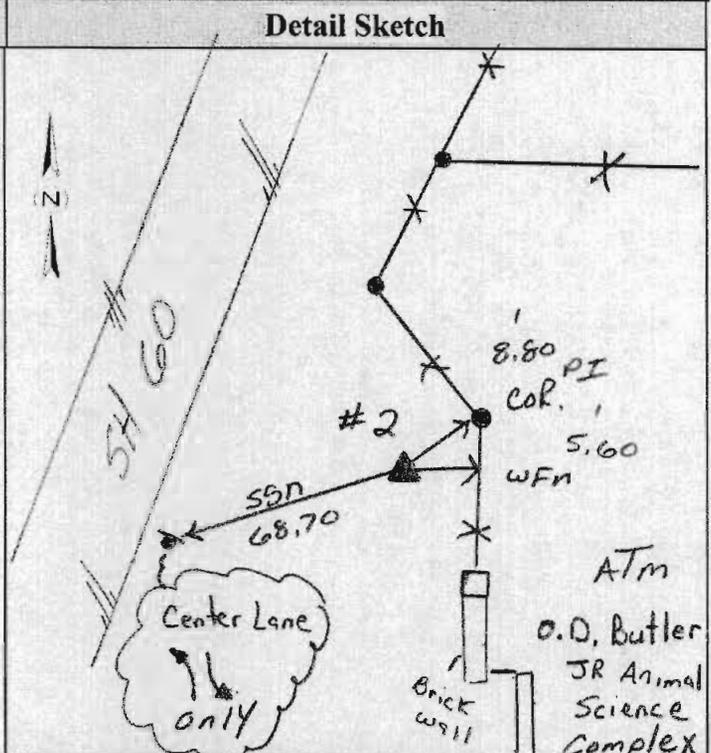
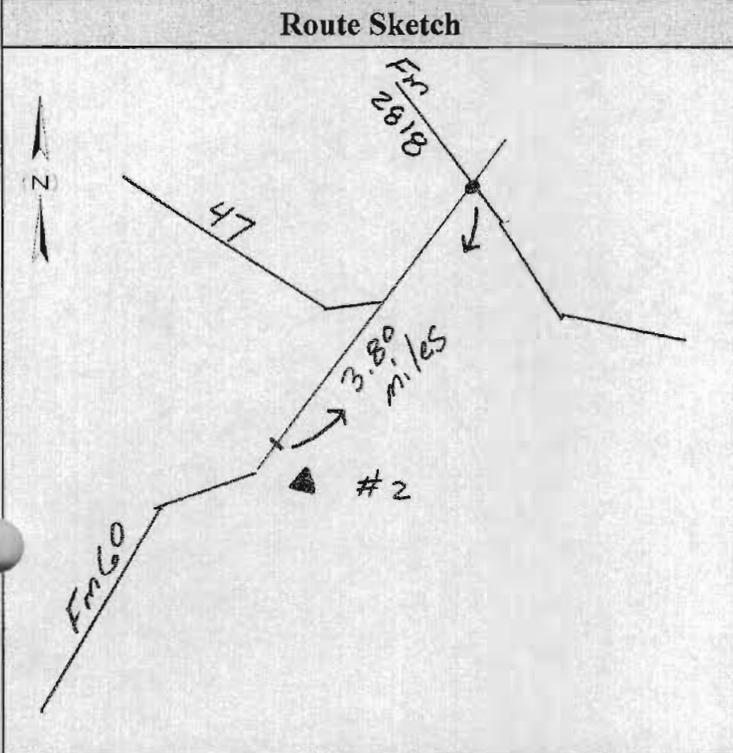
To Reach Description

none **Obstruction Diagram**

Total Length of Rod Used = *18.0*



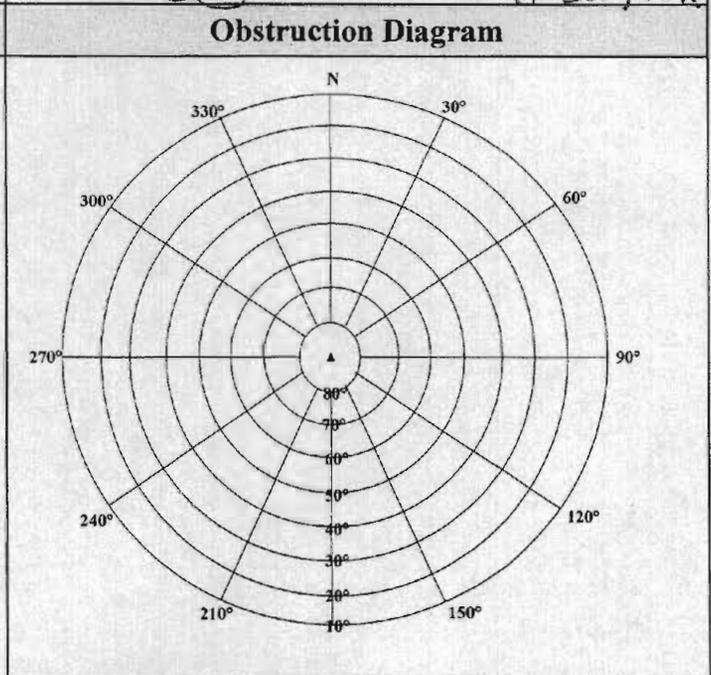
Project Name: <i>Collese Station</i>		Project Number <i>109158</i>	Task No.
Station Description: <i>set Alum Deep Rod to Refusal inside Access Cover</i>	Station Name <i>mon # 2</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/28/10</i>
Location: City/County/State		Station PID N/A	Session # N/a
Approx. Latitude <i>30.33.45.02 N</i>	Approx. Longitude <i>96.24.42.77 W</i>	Approx Elev. (ft)	Party Chief Name <i>J. Mantez</i>
		Obs. Agency code CDSMS	



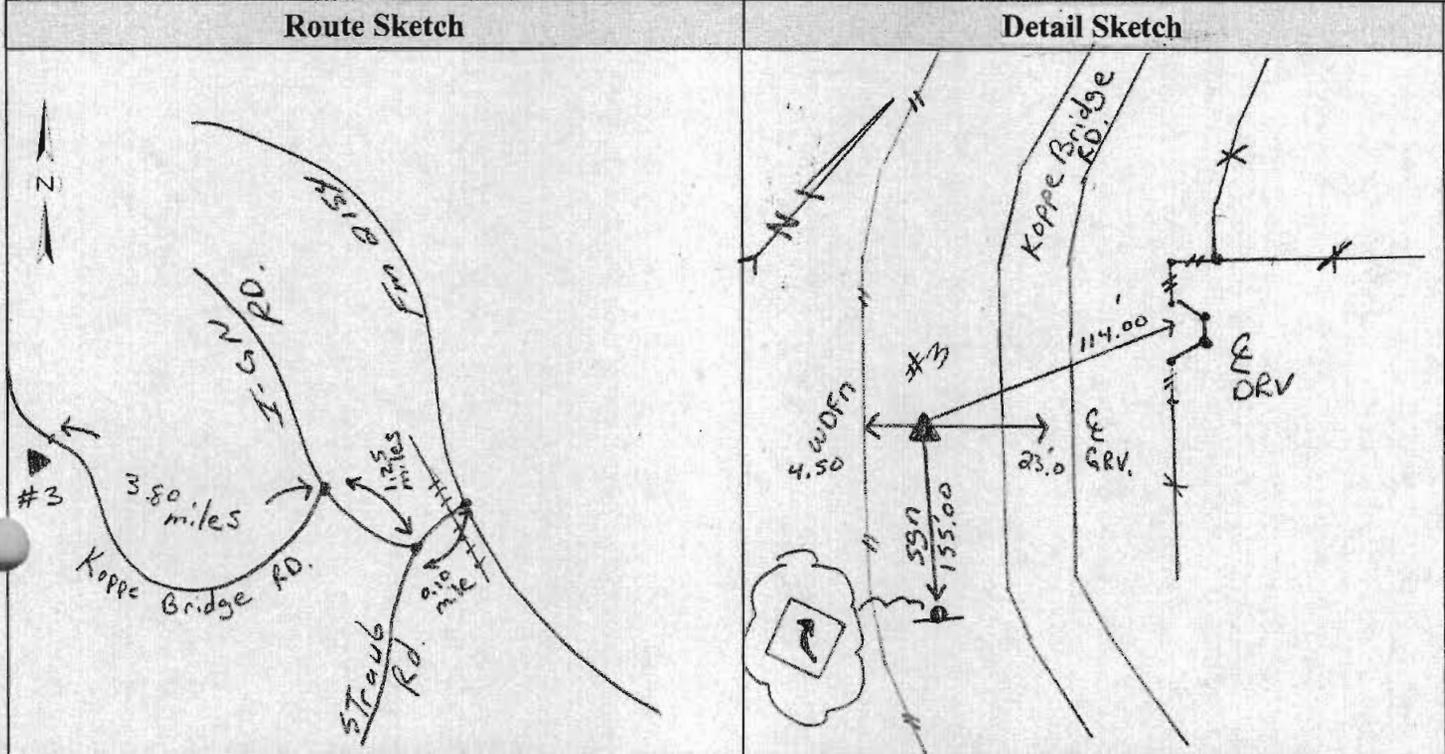
To Reach Description

Total Length of Rod Used = *21.0*

*From Inters. 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 Fac. Angle.*



Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.
Station Description: <i>Set Alum. Deep Rod w/ punch inside Access Cover</i>	Station Name <i>Mon #3</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/27/10</i>
Location: City/County/State		Station PID N/A	Session # N/A
Approx. Latitude <i>30.31.24.70 N</i>	Approx. Longitude <i>96.20.49.44 W</i>	Approx. Elev. (ft)	Party Chief Name <i>J. Montez</i>



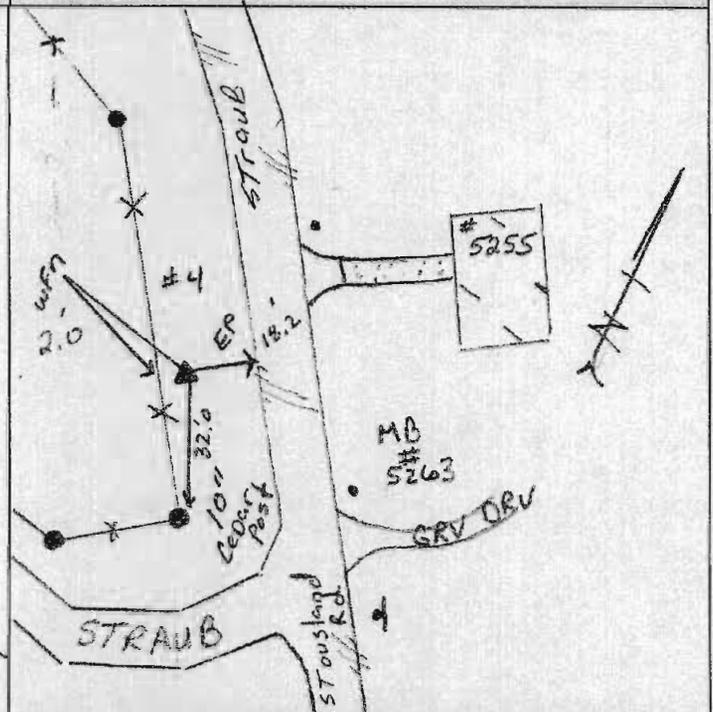
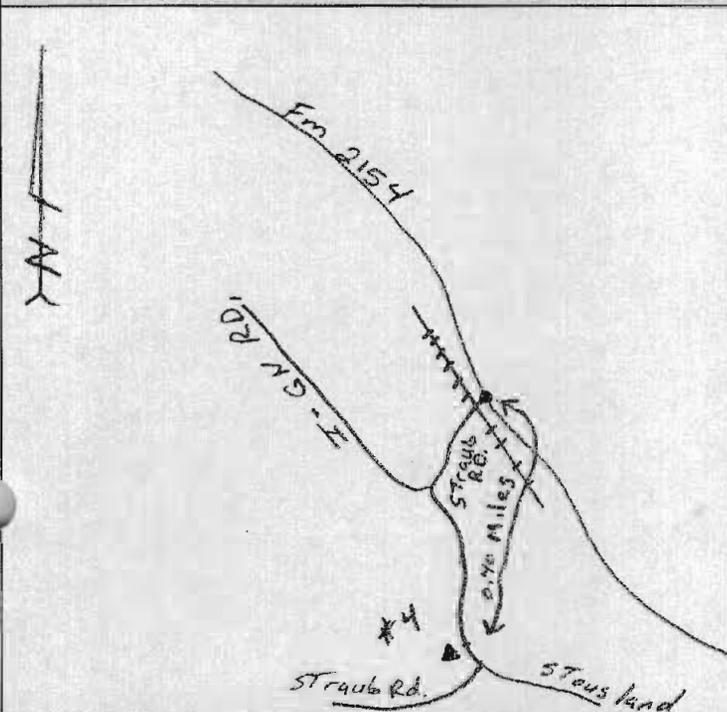
To Reach Description	Obstruction Diagram
----------------------	---------------------

<p><u>Total Length of Rod Used =</u> <i>29.0</i></p> <p><i>From "T" Jctns. of FM 2154 & Straub Rd go 0.10 mile west on Straub Rd turn right on I-20 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</i></p>	<p>A circular grid diagram for an obstruction diagram, showing angles from 0 to 330 degrees in 30-degree increments. The grid is centered on a point marked with a triangle and the letter 'N'.</p>
---	---

Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.
Station Description: <i>Set Alum. Deep Rod w/punch inside Access Cover</i>	Station Name <i>mon #4</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>7/27/10</i>
Location: City/County/State		Station PID	Session #
Approx. Latitude <i>30.30.23.62 N</i>		Approx. Longitude <i>96.17.47.46 W</i>	Approx. Elev. (ft)
		Party Chief Name <i>J. Montez</i>	

Route Sketch

Detail Sketch

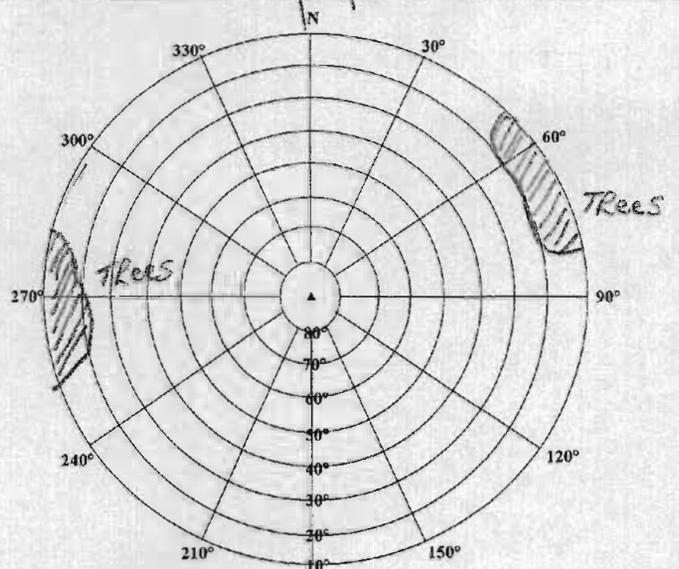


To Reach Description

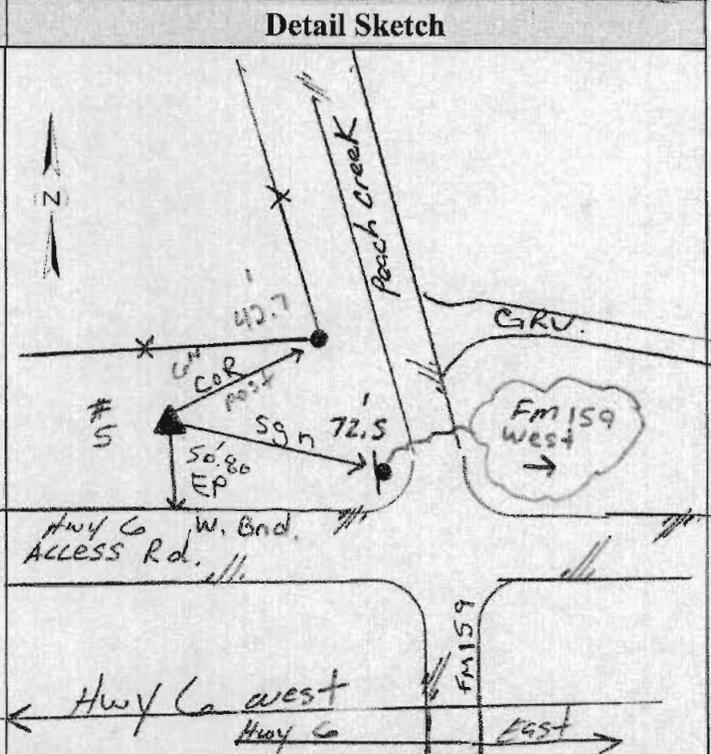
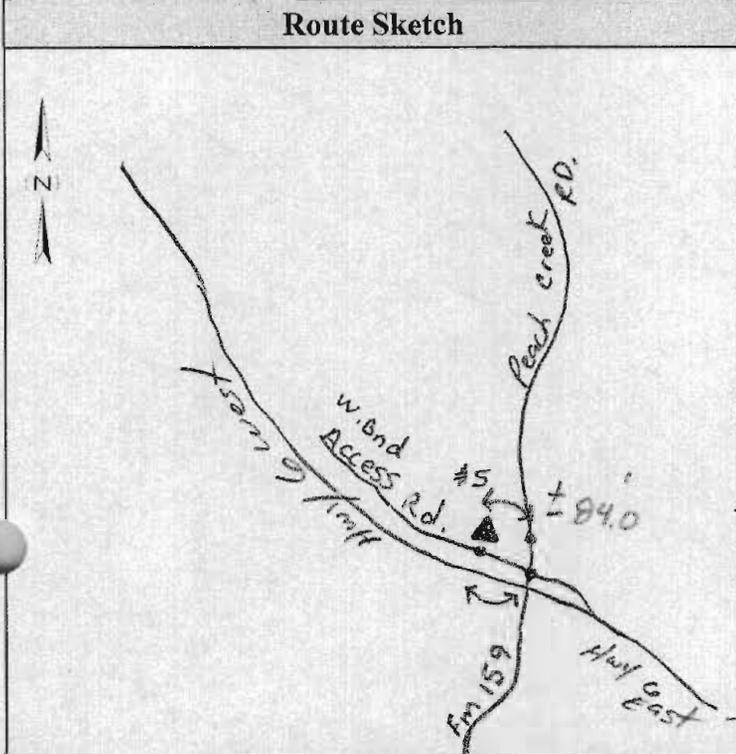
Obstruction Diagram

Total Length of Rod Used = *60.0*

Set Alum. Deep Rod w/punch To Refusal inside Access Cover ± 0.40 miles west of the "T" Inters. of Em 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.



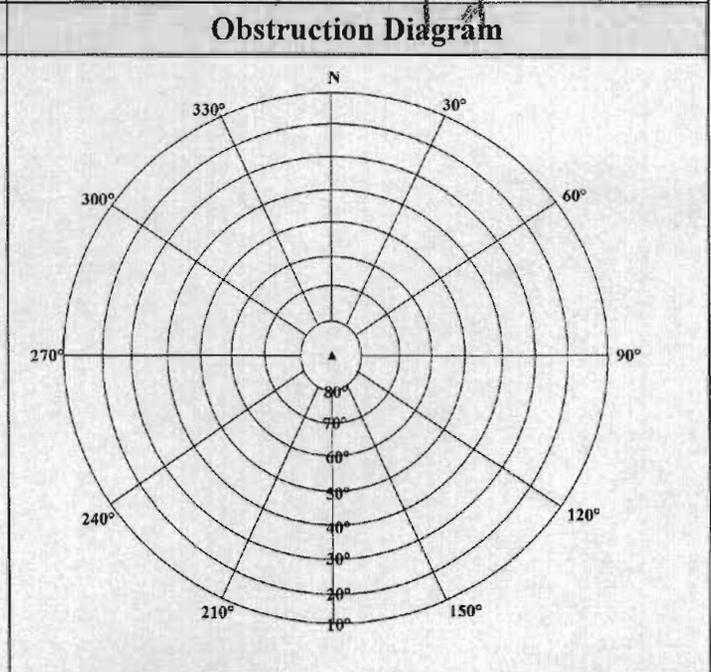
Project Name: <i>Colless Station</i>		Project Number <i>109158</i>	Task No.	
Station Description: <i>Set Alum. Deep Rod w/punch inside Access Cover</i>	Station Name <i>mon # 5</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/27/10</i>	
Location: City/County/State		Station PID N/A	Session # N/a	Obs. Agency code CDSMS
Approx. Latitude <i>30-30-23.32 N</i>	Approx. Longitude <i>96-11-51.73 W</i>	Approx. Elev. (ft)	Party Chief Name <i>J. Mantez</i>	



To Reach Description

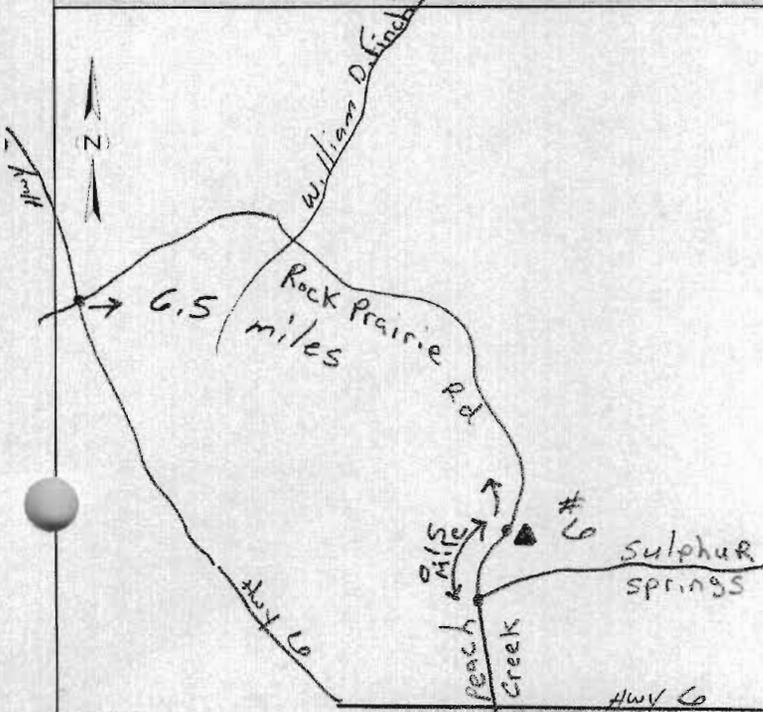
Total Length of Rod Used = *20.0*

monument is located on the North side Row of SH 6 ± 84.0 N.W of Peach Creek Rd = SH 6 Access Rd

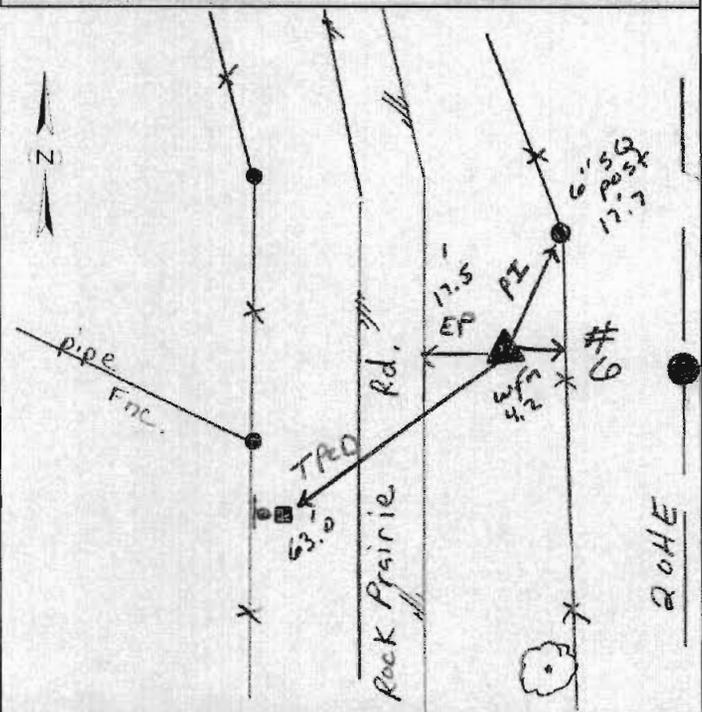


Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.	
Station Description: <i>Set Alum Rod to Refusal inside Access Cover</i>	Station Name <i>mon # 6</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/27/10</i>	
Location: City/County/State		Station PID N/A	Session # N/A	Obs. Agency code CDSMS
Approx. Latitude <i>30-33.21.25 N</i>	Approx. Longitude <i>96-11-09.40 W</i>	Approx. Elev. (ft)	Party Chief Name <i>J. Montez</i>	

Route Sketch



Detail Sketch

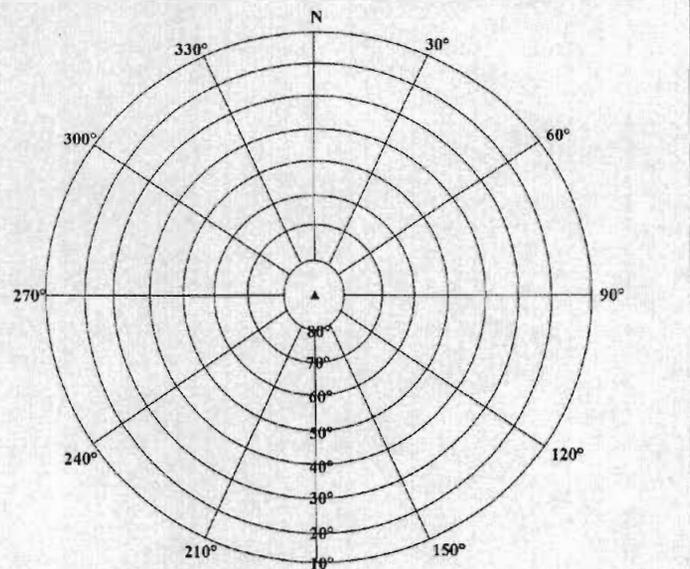


To Reach Description

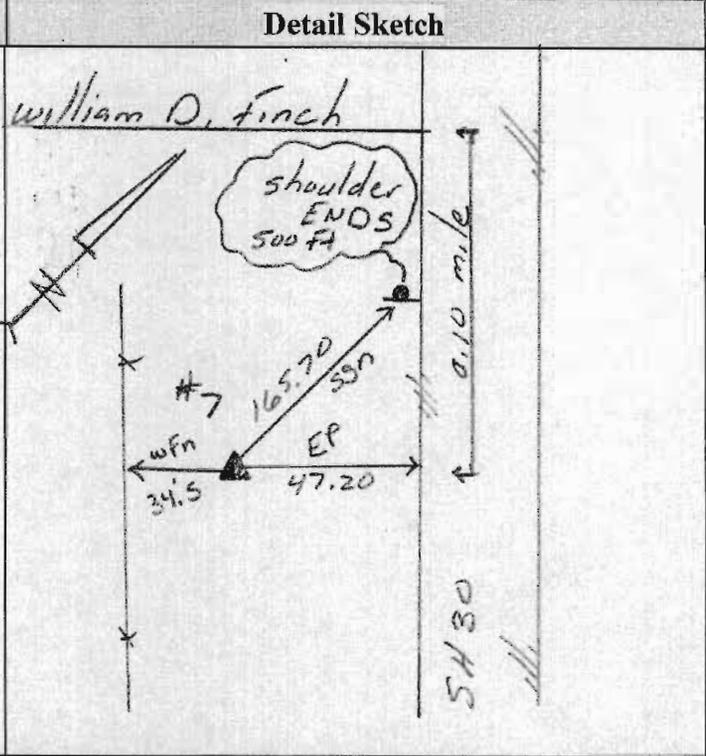
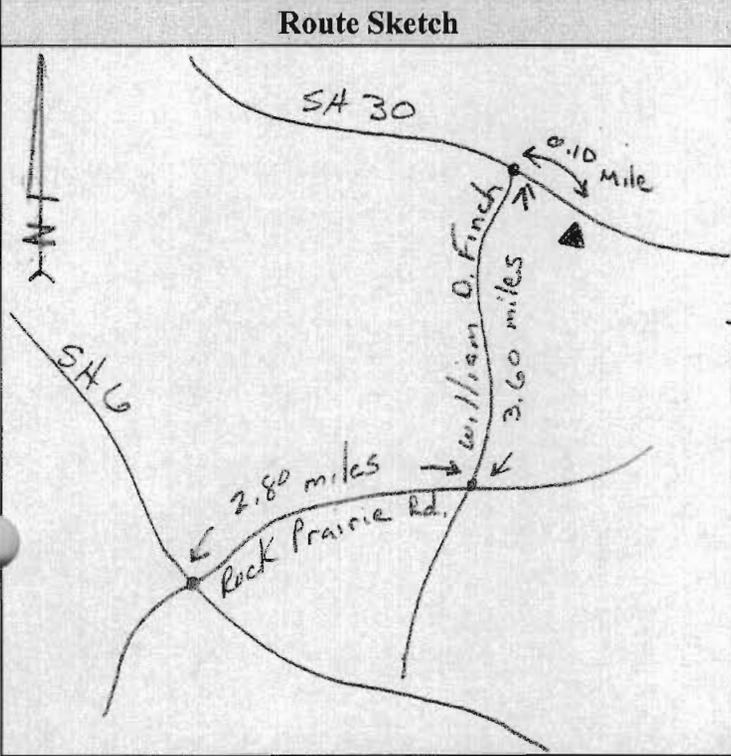
Obstruction Diagram

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.



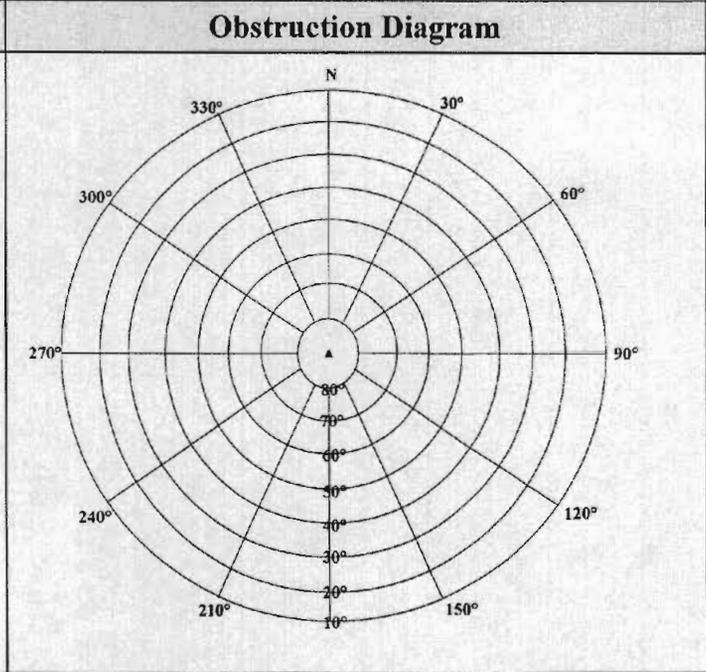
Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.
Station Description: <i>Set Alum Deep Rod To Refussl inside Access Cover</i>	Station Name <i>mon #7</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/27/10</i>
Location: City/County/State		Station PID N/A	Session # N/a
Approx. Latitude <i>30-37-13.57 N</i>	Approx. Longitude <i>90-12-09.58 W</i>	Approx. Elev. (ft)	Party Chief Name <i>J. Montez</i>



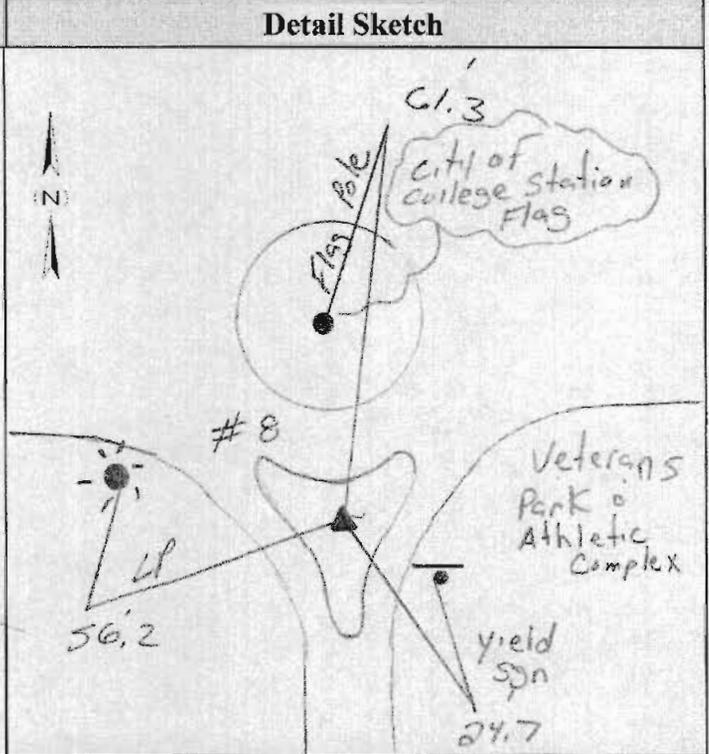
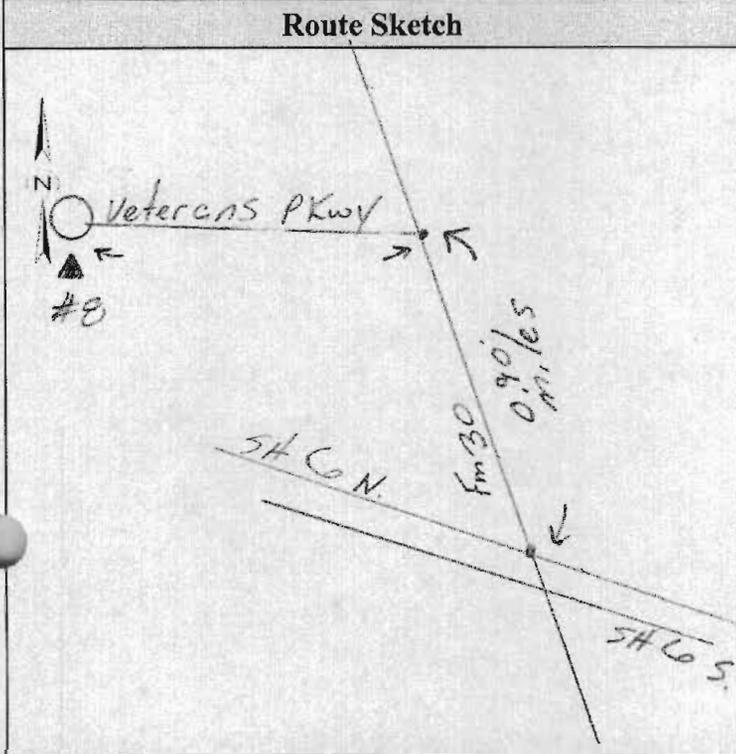
To Reach Description

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

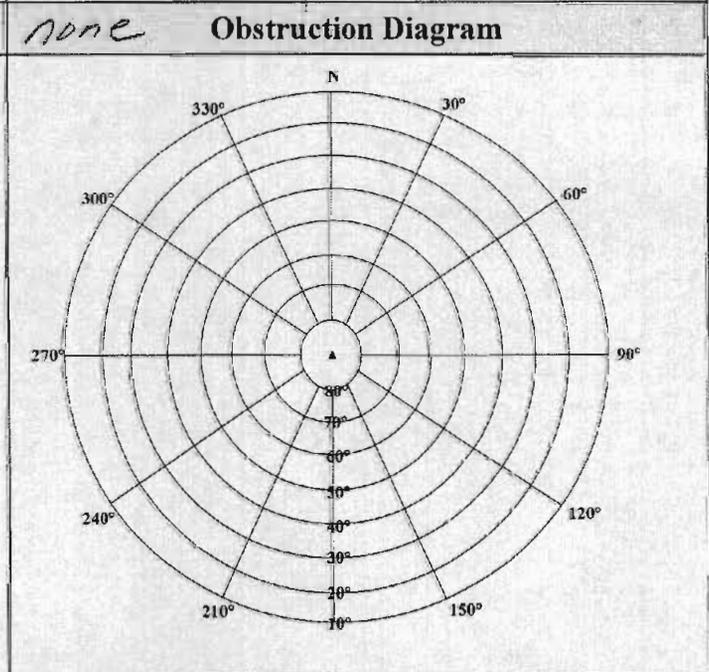


Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.
Station Description:	Station Name <i>mon #8</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/26/10</i>
	Location: City/County/State	Station PID N/A	Session # N/a
Approx. Latitude <i>30.38.27.46 N</i>	Approx. Longitude <i>96.17.40.47 W</i>	Approx. Elev. (ft)	Party Chief Name <i>J. Monter</i>
			CDSMS

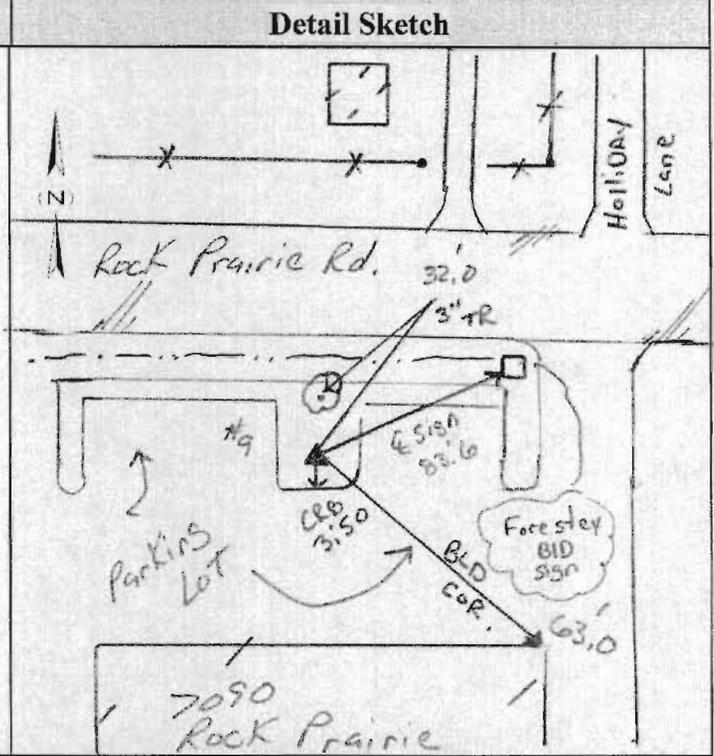
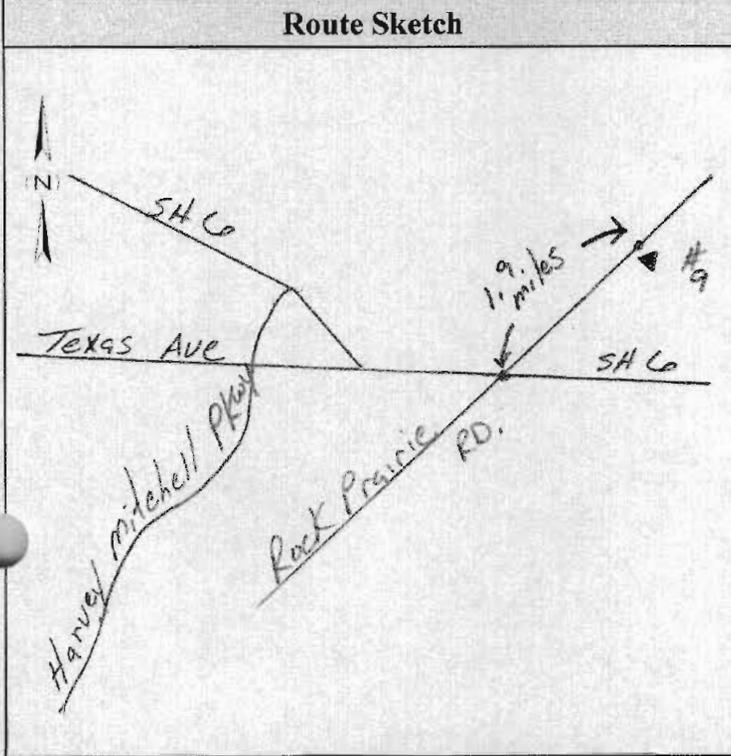


To Reach Description 1

Total Length of Rod Used = *36.0*



Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.
Station Description: <i>Set Alum Deep Rod w/punch inside Access cover</i>	Station Name <i>mon #9</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/26/10</i>
Location: City/County/State		Station PID N/A	Session # N/A
Approx. Latitude <i>30.34.55.40 N</i>	Approx. Longitude <i>96.15.11.66W</i>	Approx. Elev. (ft)	Party Chief Name <i>J. Mentez</i>

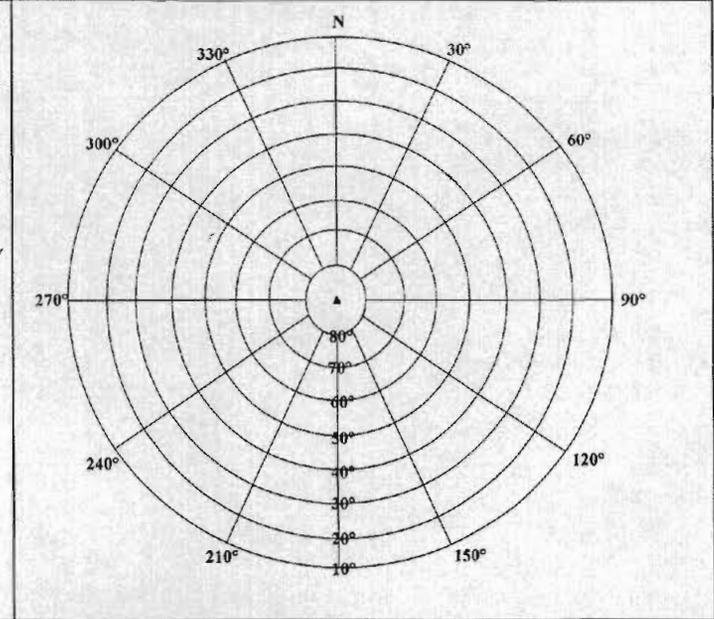


To Reach Description

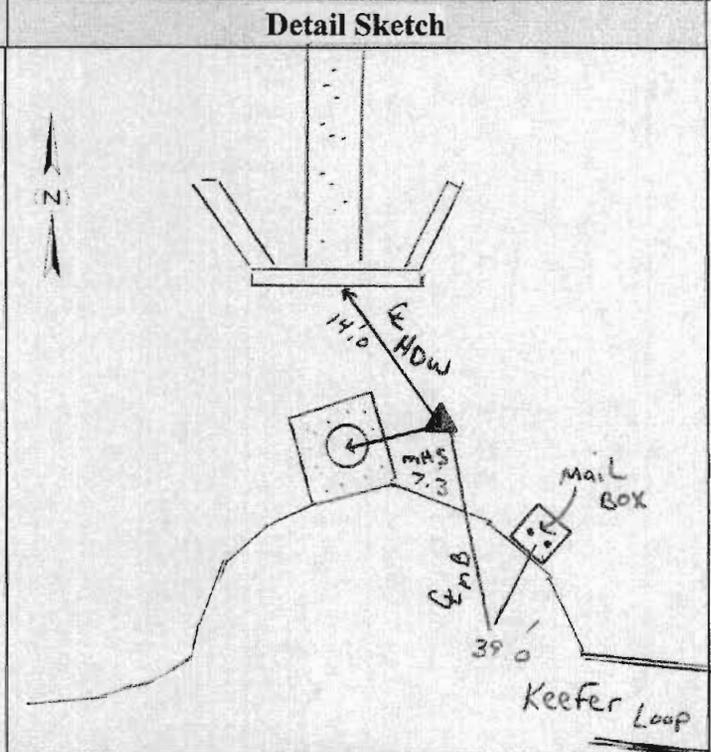
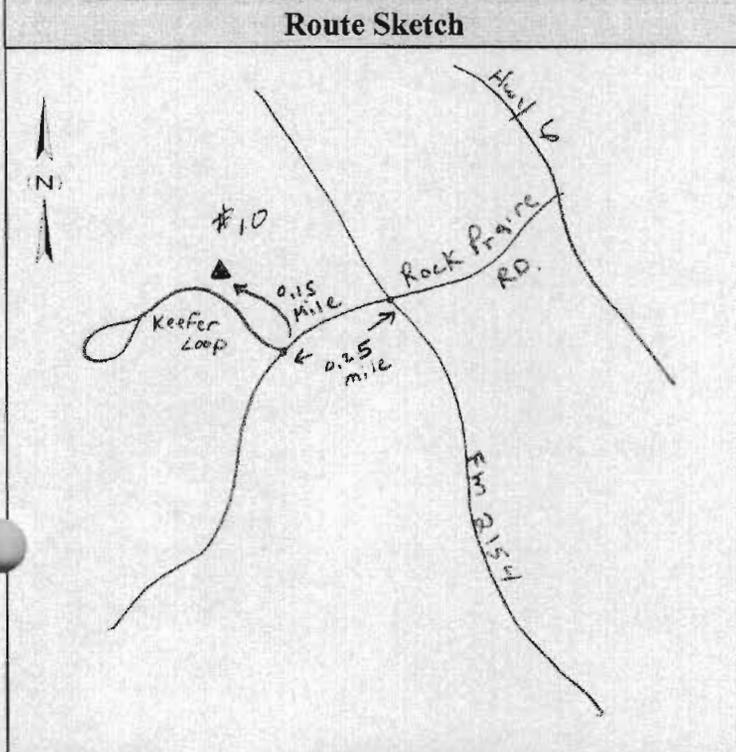
Total Length of Rod Used = *15.0*

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 at Forestal Building

Obstruction Diagram



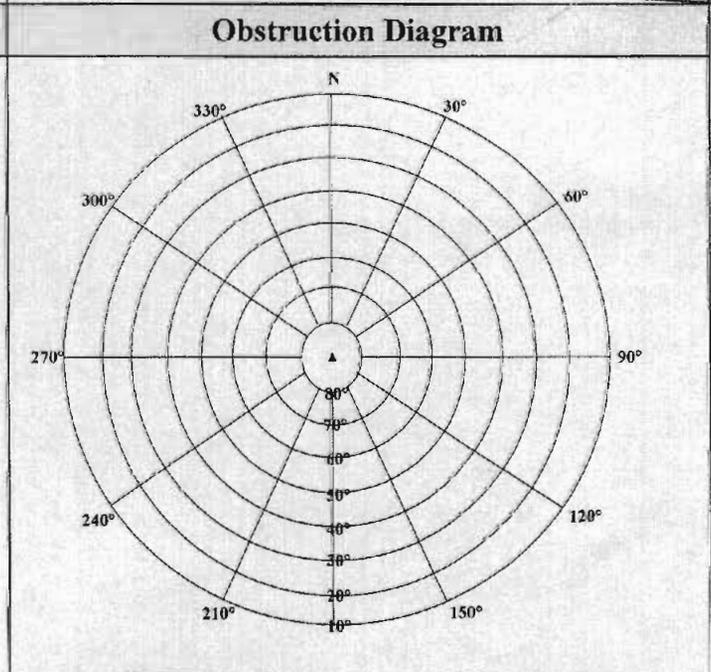
Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.
Station Description:	Station Name <i>mon #10</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/27/10</i>
	Location: City/County/State	Station PID N/A	Session # N/A
Approx. Latitude <i>30.34.13.55 N</i>	Approx. Longitude <i>96.18.57.74 W</i>	Approx. Elev. (ft)	Party Chief Name/ <i>J. Montez</i>
			Obs. Agency code CDSMS



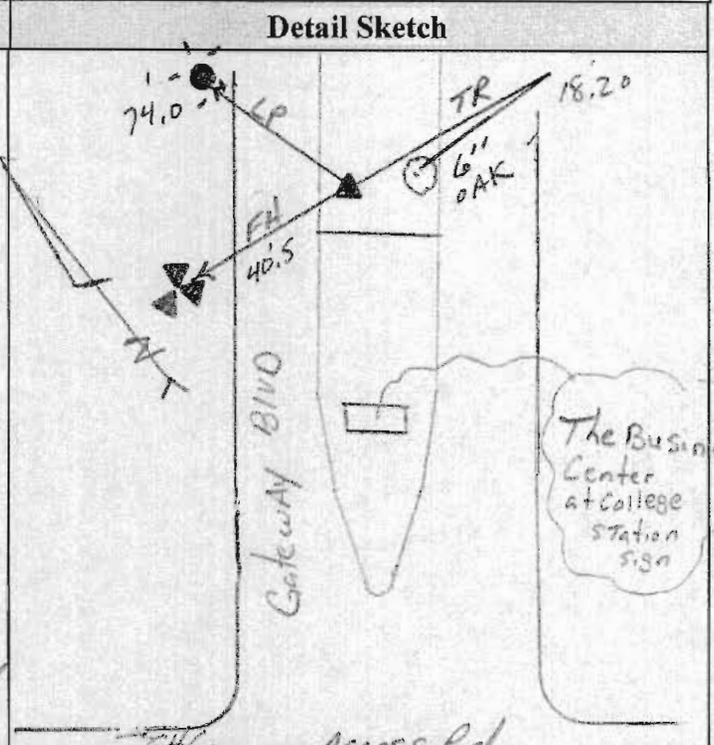
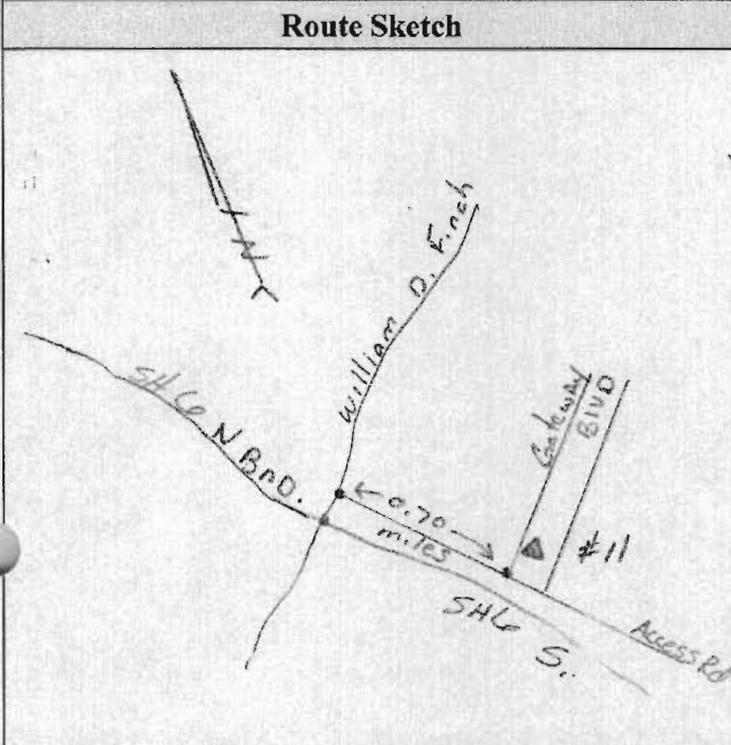
To Reach Description

Total Length of Rod Used = *15.0*

*From Inter. of Rock Prairie Rd
& FM 2154. Travel west on Rock
Prairie Rd. For Approx 0.25 mile
Then take right on Keeper Loop
and Travel for Approx 0.15 mile
monument is located on the right
side by Conc. Area.*



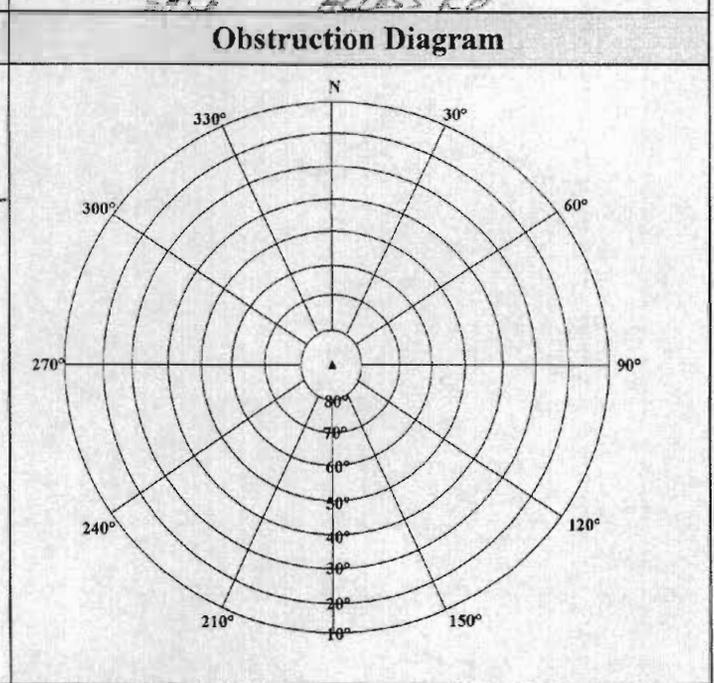
Project Name: <i>College Station</i>		Project Number <i>109158</i>	Task No.
Station Description: <i>set Alum. Deep Rod w/punch inside Access Cover</i>	Station Name <i>mon # 11</i>	New <input checked="" type="checkbox"/> Existing <input type="checkbox"/>	Date (Local) <i>4/27/10</i>
Location: City/County/State		Station PID N/A	Session # N/a
Approx. Latitude <i>30.33.07.90 N</i>	Approx. Longitude <i>96.14.55.80 W</i>	Approx. Elev. (ft)	Party Chief Name <i>J. Marquez</i>



To Reach Description

Total Length of Rod Used = *9.0*

Monument is located ± 0.70 miles S.E. of the Inter. of SH Co & William O. Finch Point is on the N.E side of SH Co



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