



20150378



# Survey Control Report for **Lubbock** Orthophotography

Alan R, Benham, PE, RPLS, CFedS



JUNE 2, 2015



**Introduction:**

This control report documents the establishment of aerial photo control for the City of Lubbock Orthophotography Project. Previous control was provided by the City to BHI for incorporation into the flight plan. That control was utilized and repaneled where possible, however, the majority of the previous control has been destroyed or was a photo ID point. In those cases, BHI opted to set new control consisting of either a 2" aluminum cap on 5/8"x18" rebar or a PK nail with 2" aluminum washer. New control was stamped LUB 15-378-### (378 being the Bohannon Huston Project identification number). Control was established with NGS OPUS solutions and Real Time Kinematic GPS double observations to remaining points. Subsequent occupations were validated to previous RTK or OPUS monumentation. All plastic panel material was subsequently removed after the aerial photography acquisition.

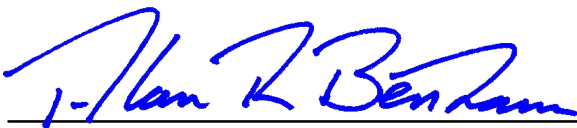
**Project Control Process Flowchart:**

See attachment

**Project Control Specifications:**

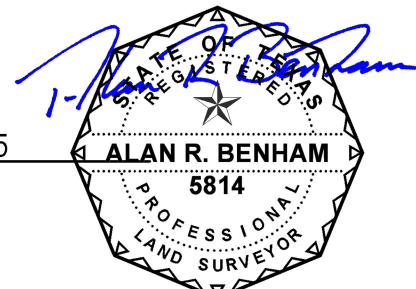
<b>Units:</b>	US Survey Foot
<b>Horizontal Datum:</b>	NAD_83(2011)(EPOCH:2010.0000)
<b>Vertical Datum:</b>	NAVD88
<b>Geoid Model:</b>	GEOID12A – for new control monumentation
<b>Projection:</b>	Lambert Conformal
<b>State Plane and/or UTM Zone:</b>	Texas North Central (4202)
<b>Basis of Bearing:</b>	Grid Bearings
<b>Project Combined Factor:</b>	n/a
<b>Modification Method Used:</b>	n/a
<b>Field Methodology:</b>	OPUS Solution and RTK
<b>Equipment Used:</b>	Trimble GPS Equipment
<b>Control Set Date:</b>	February 16 – February 19, 2015
<b>Observation Date:</b>	February 16 – February 19, 2015
<b>Adjustment/ Publication Date:</b>	June 2, 2015

I, Alan R. Benham, Texas Registered Professional Land Surveyor No. 5814 do hereby certify that this Control Survey Report was prepared by me or under my direct supervision based on an actual survey on the ground as described herein; that I am responsible for this survey.



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 Courtyard I / 7500 Jefferson St. NE  
 Albuquerque, NM 87109-4335  
 (505).823.1000

JUNE 2, 2015  
 Date



06/02/2015



NAME	Latitude	Longitude	Grid Northing	Grid Easting	Ellipsoid	Orthometric Height	Horizontal Accuracy	Vertical Accuracy	Stamping
BH 15-378-11	N 33° 34' 57.3736590"	W 102° 04' 50.4854706"	7277301.273	878219.921	3265.012	3345.342	0.046	0.070	LUB15-378-11
BH 15-378-12	N 33° 37' 16.9708706"	W 102° 04' 5.71322730"	7291273.871	882484.461	3256.684	3337.362	0.044	0.066	LUB15-378-12
BH 15-378-10	N 33° 31' 15.8639429"	W 102° 04' 42.2931207"	7254902.240	878150.102	3250.177	3330.139	0.047	0.060	LUB 15-378-10
BH 15-378-13	N 33° 26' 49.5499016"	W 102° 02' 35.3333534"	7227637.003	887984.175	3237.546	3317.348	0.073	0.095	LUB 15-378-13
BH 15-378-14	N 33° 31' 10.4940865"	W 102° 02' 43.9441446"	7254020.174	888144.956	3227.287	3307.457	0.042	0.062	LUB 15-378-14
BH 15-378-15	N 33° 37' 16.2861423"	W 102° 01' 32.7237386"	7290767.995	895411.448	3231.889	3312.888	0.046	0.063	LUB 15-378-15
BH 15-378-16	N 33° 34' 39.4816055"	W 102° 01' 25.9059327"	7274908.794	895456.112	3238.562	3319.255	0.069	0.102	LUB 15-378-16
BH 15-378-17	N 33° 25' 44.8592736"	W 102° 00' 57.6406463"	7220824.436	896037.927	3220.536	3300.450	0.074	0.091	LUB 15-378-17
BH 15-378-18	N 33° 30' 41.4089911"	W 102° 00' 2.17961980"	7250622.980	901733.856	3206.503	3286.919	0.065	0.105	LUB 15-378-18
BH 15-378-19	N 33° 34' 13.9970840"	W 101° 57' 54.7733653"	7271740.348	913223.389	3200.834	3281.823	0.048	0.072	LUB 15-378-19
BH 15-378-20	N 33° 40' 45.0283299"	W 101° 58' 2.01592820"	7311262.257	913915.141	3196.026	3277.799	0.070	0.084	LUB 15-378-20
BH 15-378-21	N 33° 31' 11.9209747"	W 101° 57' 16.5508519"	7253241.065	915850.525	3197.720	3278.388	0.050	0.076	LUB 15-378-21
BH 15-378-22	N 33° 36' 55.1788246"	W 101° 56' 35.5709401"	7287802.461	920454.800	3178.449	3259.940	0.051	0.059	LUB 15-378-22
BH 15-378-23	N 33° 25' 43.2283958"	W 101° 54' 35.8773324"	7219593.428	928367.248	3154.571	3235.068	0.051	0.061	LUB 15-378-23
BH 15-378-24	N 33° 34' 14.8334519"	W 101° 54' 38.3420519"	7271281.047	929836.932	3159.422	3240.746	0.035	0.062	LUB 15-378-24
BH 15-378-25	N 33° 41' 36.7661935"	W 101° 54' 35.9412289"	7315919.089	931489.601	3225.207	3307.388	0.080	0.089	LUB 15-378-25
BH 15-378-26	N 33° 29' 26.3265084"	W 101° 53' 56.0327002"	7242020.552	932471.494	3151.579	3232.410	0.035	0.044	LUB 15-378-26
BH 15-378-27	N 33° 36' 31.8770601"	W 101° 52' 37.0722238"	7284793.910	940537.151	3136.675	3218.480	0.081	0.103	LUB 15-378-27
BH 15-378-28	N 33° 35' 11.1336293"	W 101° 51' 9.65587090"	7276400.302	947665.871	3117.043	3198.822	0.086	0.099	LUB 15-378-28
BH 15-378-29	N 33° 45' 06.6448534"	W 101° 51' 16.6266250"	7336580.258	948998.236	3226.077	3308.974	0.069	0.100	LUB 15-378-29
BH 15-378-30	N 33° 42' 30.4897110"	W 101° 49' 14.1172336"	7320475.707	958838.125	3201.423	3284.209	0.055	0.081	LUB 15-378-30
BH 15-378-31	N 33° 26' 13.8129695"	W 101° 47' 50.8877339"	7221587.577	962767.487	3074.623	3155.836	0.039	0.057	LUB 15-378-31
BH 15-378-32	N 33° 31' 17.5288016"	W 101° 47' 7.97910610"	7252155.132	967361.503	3072.247	3153.986	0.044	0.067	LUB 15-378-32
BH 15-378-33	N 33° 33' 48.0009614"	W 101° 47' 14.0648409"	7267372.265	967322.375	3083.915	3165.900	0.056	0.079	LUB 15-378-33
BH 15-378-34	N 33° 37' 12.0668993"	W 101° 46' 24.6405640"	7287857.284	972144.975	3107.429	3189.844	0.094	0.105	LUB 15-378-34
BH 15-378-35	N 33° 28' 26.8654765"	W 101° 45' 21.8178543"	7234634.668	975809.732	3069.141	3150.752	0.040	0.082	2015 LUB 15-378-35

NAME	Latitude	Longitude	Grid Northing	Grid Easting	Ellipsoid	Orthometric Height	Horizontal Accuracy	Vertical Accuracy	Stamping
BH 15-378-36	N 33° 42' 31.5595712"	W 101° 45' 48.3230857"	7320039.114	976217.512	3179.852	3262.887	0.049	0.074	LUB 15-378-36
BH 15-378-37	N 33° 29' 28.9641539"	W 101° 42' 23.2466072"	7240442.897	991119.270	3084.100	3166.041	0.043	0.063	LUB 15-378-37
BH 15-378-38	N 33° 32' 44.0129753"	W 101° 42' 20.2855646"	7260139.823	991971.363	3045.089	3127.306	0.048	0.058	LUB 15-378-38
BH 15-378-39	N 33° 38' 09.2941894"	W 101° 42' 20.9695367"	7293003.487	992916.630	3085.963	3168.756	0.066	0.090	LUB 15-378-39
BH 15-378-51	N 33° 39' 01.6504801"	W 101° 53' 18.2483599"	7300036.416	937544.819	3153.285	3235.301	0.040	0.059	LUB 15-378-51
BH 15-378-52	N 33° 39' 01.6982319"	W 101° 57' 23.9660375"	7300717.809	916785.162	3177.151	3258.775	0.061	0.074	LUB 15-378-52
BH 15-378-54	N 33° 26' 49.5591230"	W 101° 51' 11.9312590"	7225737.712	945855.594	3113.665	3194.597	0.049	0.079	LUB 15-378-54
BH 15-378-55	N 33° 26' 49.4432793"	W 102° 00' 5.72298980"	7227201.295	900652.723	3224.817	3304.850	0.092	0.107	LUB 15-378-55
BH 15-378-57	N 33° 31' 11.8919659"	W 101° 43' 41.3975974"	7251043.601	984823.825	3057.422	3139.403	0.038	0.062	LUB 15-378-57
BH 15-378-58	N 33° 45' 01.3145140"	W 101° 48' 08.5796744"	7335538.764	964850.845	3220.615	3303.782	0.061	0.093	LUB 15-378-58
BH 15-378-59	N 33° 33' 02.1582786"	W 101° 51' 15.4462693"	7263386.726	946760.140	3131.110	3212.652	0.066	0.087	LUB 15-378-59
BH 15-378-61	N 33° 28' 35.0094985"	W 101° 49' 06.1637941"	7236051.871	956842.714	3086.275	3167.585	0.048	0.054	LUB 15-378-61
BH 15-378-62	N 33° 38' 09.7377604"	W 101° 59' 31.3077105"	7295824.743	905852.148	3220.062	3301.371	0.035	0.046	LUB 15-378-62
BH 15-378-65	N 33° 30' 44.9220407"	W 101° 51' 10.5941370"	7249510.043	946727.928	3138.034	3219.319	0.052	0.076	LUB 15-378-65
BH2015037800000807	N 33° 38' 38.6733000"	W 101°49'08.7375600"	7297041.942	958552.184	3169.763	3252.133			007
BH2015037800002009	N 33° 32' 03.4010600"	W 102° 03' 39.1413100"	7259522.487	883656.007	3229.679	3309.833			2009
BH2015037800002024	N 33° 33' 37.0825300"	W 101° 43' 43.2929500"	7265716.236	985114.381	3066.255	3148.465			
BH2015037800009099	N 33° 33' 00.4711000"	W 101° 51' 16.1738400"	7263218.252	946693.155	3131.722	3213.244			
BH2015037800081067	N 33° 27' 41.1398200"	W 101° 57' 25.0046100"	7231972.479	914434.344	3202.114	3282.599			
BH2015037800081387	N 33° 41' 37.6728200"	W 101° 51' 15.8843200"	7315466.592	948386.547	3183.397	3265.851			
BH2015037800081411	N 33° 40' 50.2416300"	W 101° 46' 01.4765200"	7309837.707	974788.479	3151.804	3234.631			



# Northeast Quadrant

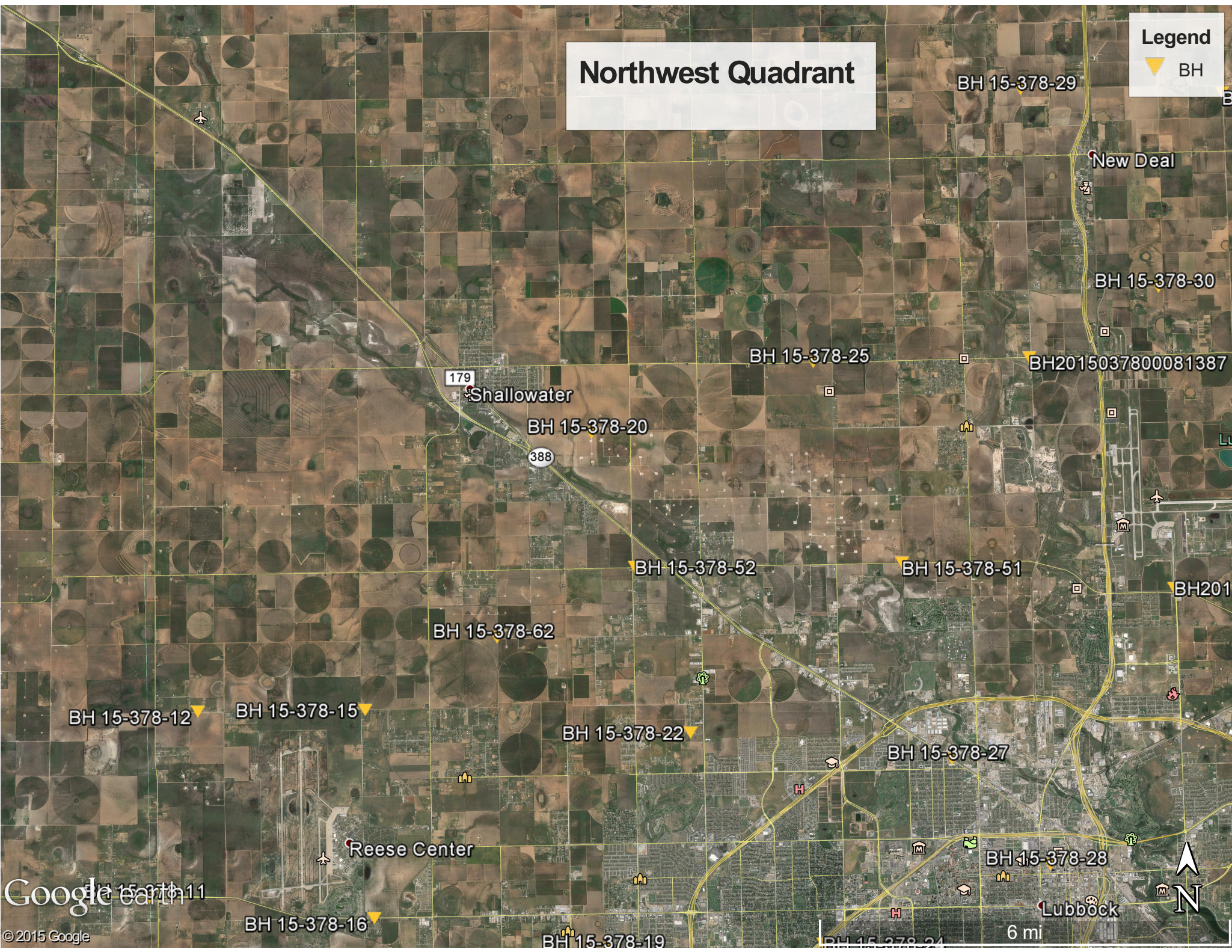
**Legend**  
▼ BH





# Northwest Quadrant

**Legend**  
▼ BH





# Southwest Quadrant

**Legend**  
▼ BH

BH 15-378-11

BH 15-378-16

BH 15-378-19

BH 15-378-24

BH 15-378-23

BH2015037800002009

BH 15-378-59

BH201503780000090

BH 15-378-10

BH 15-378-14

BH 15-378-21

BH 15-378-18

BH 15-378-65

Wolforth  
193

BH 15-378-26

BH 15-378

BH2015037800081067

BH 15-378-13

BH 15-378-55

BH 15-378-54

BH 15-378-17

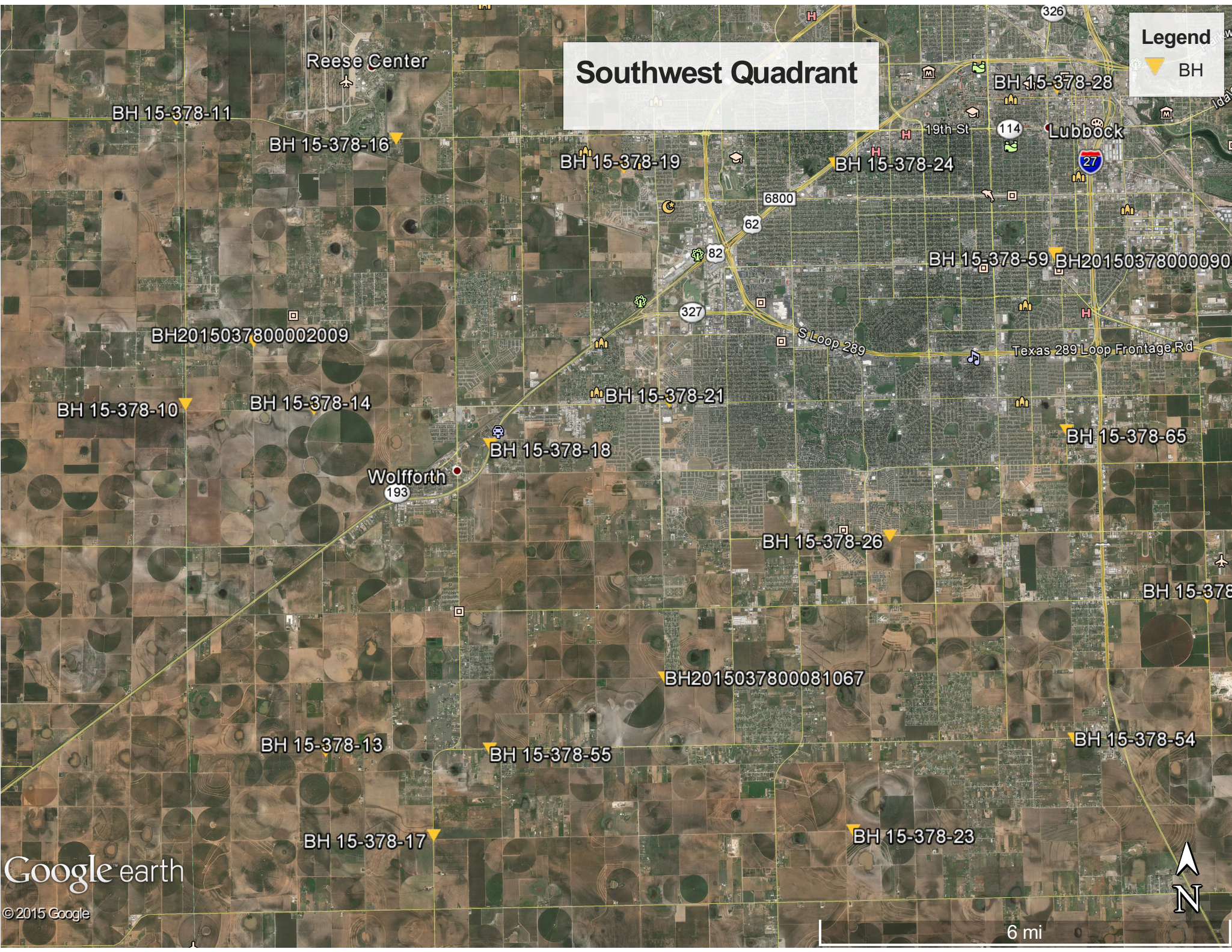
BH 15-378-23

Google earth

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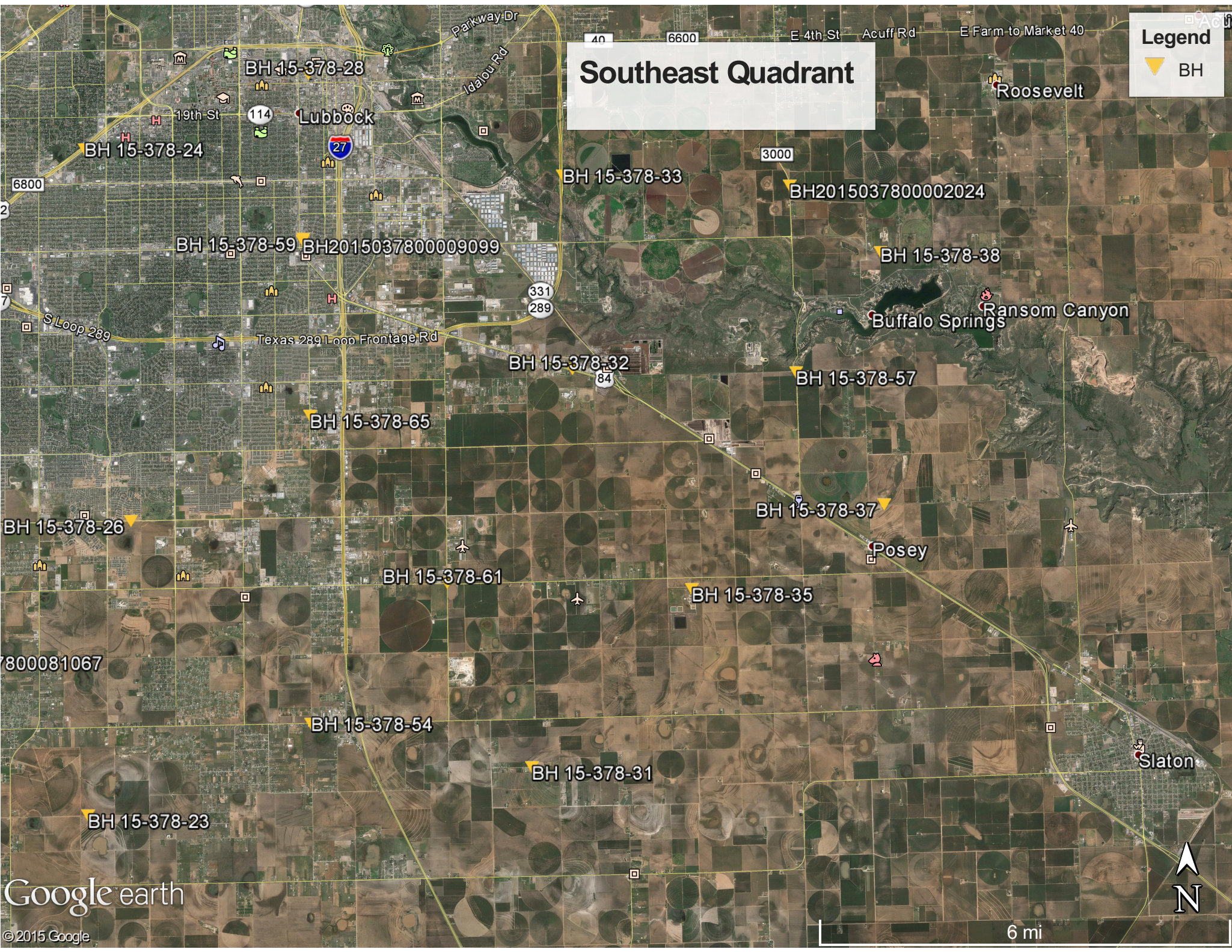
6 mi





# Southeast Quadrant

**Legend**  
▼ BH





807

FILE: 63950500.15o OP1426197995064

NGS OPUS SOLUTION REPORT  
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All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [abenham@bhinc.com](mailto:abenham@bhinc.com) DATE: March 12, 2015  
RINEX FILE: 6395050p.15o TIME: 22:07:11 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2015/02/19 15:00:00  
EPHEMERIS: igs18324.eph [precise] STOP: 2015/02/19 19:13:00  
NAV FILE: brdc0500.15n OBS USED: 10498 / 10972 : 96%  
ANT NAME: TRMR8-4 NONE # FIXED AMB: 47 / 50 : 94%  
ARP HEIGHT: 1.716 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2015.1362)

X: -1088842.676(m) 0.001(m) -1088843.478(m) 0.001(m)  
Y: -5203332.806(m) 0.003(m) -5203331.407(m) 0.003(m)  
Z: 3514184.081(m) 0.008(m) 3514183.924(m) 0.008(m)

LAT: 33 38 38.67359 0.009(m) 33 38 38.69102 0.009(m)  
E LON: 258 10 51.26216 0.001(m) 258 10 51.22058 0.001(m)  
W LON: 101 49 8.73784 0.001(m) 101 49 8.77942 0.001(m)  
EL HGT: 966.156(m) 0.003(m) 965.066(m) 0.003(m)  
ORTHO HGT: 991.252(m) 0.013(m) [NAVD88 (Computed using GEOID12A)]

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 14)	SPC (4202 TXNC)
Northing (Y) [meters]	3726258.358	2224142.842
Easting (X) [meters]	238540.981	292167.283
Convergence [degrees]	-1.56275479	-1.81021524
Point Scale	1.00044286	0.99992595
Combined Factor	1.00029114	0.99977431

US NATIONAL GRID DESIGNATOR: 14SKC3854026258(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DO8869	TXLA LAMESA CORS ARP	N324540.901	W1015638.170	98603.2
DP4773	TXM1 MORTON CORS ARP	N334416.170	W1024534.816	87839.7
DF5391	TXLU LUBBOCK RRP2 CORS ARP	N333207.490	W1015034.162	12253.7

NEAREST NGS PUBLISHED CONTROL POINT

AB6602 LBB B3 N333919.083 W1014927.872 1343.1

2009

FILE: 37230480.15o OP1426189644128

NGS OPUS SOLUTION REPORT  
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All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [abenham@bhinc.com](mailto:abenham@bhinc.com) DATE: March 12, 2015  
RINEX FILE: 37230480.15o TIME: 19:48:18 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2015/02/17 14:39:00  
EPHEMERIS: igs18322.eph [precise] STOP: 2015/02/17 21:16:00  
NAV FILE: brdc0480.15n OBS USED: 17478 / 18654 : 94%  
ANT NAME: TRMR8\_GNSS NONE # FIXED AMB: 82 / 102 : 80%  
ARP HEIGHT: 1.536 OVERALL RMS: 0.021(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2015.1308)

X: -1112201.304(m) 0.011(m) -1112202.106(m) 0.011(m)  
Y: -5205296.330(m) 0.015(m) -5205294.931(m) 0.015(m)  
Z: 3504047.839(m) 0.011(m) 3504047.682(m) 0.011(m)

LAT: 33 32 3.40105 0.010(m) 33 32 3.41833 0.010(m)  
E LON: 257 56 20.85869 0.008(m) 257 56 20.81697 0.008(m)  
W LON: 102 3 39.14131 0.008(m) 102 3 39.18303 0.008(m)  
EL HGT: 984.408(m) 0.017(m) 983.321(m) 0.017(m)  
ORTHO HGT: 1008.839(m) 0.031(m) [NAVD88 (Computed using GEOID12A)]

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 14)	SPC (4202 TXNC)
Northing (Y) [meters]	3714716.483	2212706.879
Easting (X) [meters]	215748.726	269338.890
Convergence [degrees]	-1.69206964	-1.94208001
Point Scale	1.00059626	0.99990800
Combined Factor	1.00044165	0.99975349

US NATIONAL GRID DESIGNATOR: 14SKC1574814716(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DO9484	TXL1 LITTLEFIELD CORS ARP	N335618.226	W1022058.275	52206.7
DF5391	TXLU LUBBOCK RRP2 CORS ARP	N333207.490	W1015034.162	20257.1
DO9608	TXP1 POST CORS ARP	N331057.073	W1012247.633	74435.5

NEAREST NGS PUBLISHED CONTROL POINT

DQ0052 MP 13 N332940. W1020213. 4959.3

# BH 15-378-35

FILE: 37230500.15o OP1426195321672

## NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [abenham@bhinc.com](mailto:abenham@bhinc.com) DATE: March 12, 2015  
RINEX FILE: 37230500.15o TIME: 21:22:41 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2015/02/19 14:48:00  
EPHEMERIS: igs18324.eph [precise] STOP: 2015/02/19 19:08:00  
NAV FILE: brdc0500.15n OBS USED: 10796 / 11256 : 96%  
ANT NAME: TRMR8\_GNSS NONE # FIXED AMB: 50 / 53 : 94%  
ARP HEIGHT: 1.607 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2015.1362)

X:	-1085235.756(m)	0.002(m)	-1085236.558(m)	0.002(m)
Y:	-5214705.427(m)	0.014(m)	-5214704.026(m)	0.014(m)
Z:	3498457.149(m)	0.011(m)	3498456.991(m)	0.011(m)

LAT:	33 28 26.86547	0.011(m)	33 28 26.88282	0.011(m)
E LON:	258 14 38.18214	0.005(m)	258 14 38.14068	0.005(m)
W LON:	101 45 21.81786	0.005(m)	101 45 21.85932	0.005(m)
EL HGT:	935.476(m)	0.013(m)	934.381(m)	0.013(m)
ORTHO HGT:	960.351(m)	0.025(m)	[NAVD88 (Computed using GEOID12A)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 14)	SPC (4202 TXNC)
Northing (Y) [meters]	3707250.058	2205121.057
Easting (X) [meters]	243887.187	297427.401
Convergence [degrees]	-1.52096154	-1.77583721
Point Scale	1.00040876	0.99989973
Combined Factor	1.00026186	0.99975290

US NATIONAL GRID DESIGNATOR: 14SKC4388707250(NAD 83)

### BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DP4773	TXM1 MORTON CORS ARP	N334416.170	W1024534.816	97642.8
DF5391	TXLU LUBBOCK RRP2 CORS ARP	N333207.490	W1015034.162	10546.5
DO8869	TXLA LAMESA CORS ARP	N324540.901	W1015638.170	80983.0

### NEAREST NGS PUBLISHED CONTROL POINT

DP0428	K 1468	N333006.	W1014443.	3224.8
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# BH 15-378-54

FILE: 37230481.15o OP1426195095592

## NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [abenham@bhinc.com](mailto:abenham@bhinc.com) DATE: March 12, 2015  
RINEX FILE: 3723048w.15o TIME: 21:18:53 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2015/02/17 22:25:00  
EPHEMERIS: igs18322.eph [precise] STOP: 2015/02/18 00:30:30  
NAV FILE: brdc0480.15n OBS USED: 5986 / 6207 : 96%  
ANT NAME: TRMR8\_GNSS NONE # FIXED AMB: 39 / 40 : 98%  
ARP HEIGHT: 1.549 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2015.1314)

X:	-1094427.519(m)	0.005(m)	-1094428.320(m)	0.005(m)
Y:	-5214484.857(m)	0.005(m)	-5214483.456(m)	0.005(m)
Z:	3495963.202(m)	0.018(m)	3495963.044(m)	0.018(m)

LAT:	33 26 49.55912	0.014(m)	33 26 49.57643	0.014(m)
E LON:	258 8 48.06874	0.005(m)	258 8 48.02725	0.005(m)
W LON:	101 51 11.93126	0.005(m)	101 51 11.97275	0.005(m)
EL HGT:	949.047(m)	0.012(m)	947.954(m)	0.012(m)
ORTHO HGT:	973.715(m)	0.024(m)	[NAVD88 (Computed using GEOID12A)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 14)	SPC (4202 TXNC)
Northing (Y) [meters]	3704496.153	2202409.259
Easting (X) [meters]	234764.388	288297.362
Convergence [degrees]	-1.57357058	-1.82887885
Point Scale	1.00046742	0.99989637
Combined Factor	1.00031838	0.99974741

US NATIONAL GRID DESIGNATOR: 14SKC3476404496(NAD 83)

### BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DO8869	TXLA LAMESA CORS ARP	N324540.901	W1015638.170	76532.3
DO9484	TXL1 LITTLEFIELD CORS ARP	N335618.226	W1022058.275	71327.6
DF5391	TXLU LUBBOCK RRP2 CORS ARP	N333207.490	W1015034.162	9845.1

### NEAREST NGS PUBLISHED CONTROL POINT

DP0654	SHEPARD	N332833.759	W1015358.557	5372.0
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# BH 15-378-57

FILE: 37230490.15o OP1426197030426

## NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [abenham@bhinc.com](mailto:abenham@bhinc.com) DATE: March 12, 2015  
RINEX FILE: 37230490.15o TIME: 21:51:30 UTC

SOFTWARE: page5 1209.04 master51.pl 022814 START: 2015/02/18 14:20:00  
EPHEMERIS: igs18323.eph [precise] STOP: 2015/02/18 22:40:00  
NAV FILE: brdc0490.15n OBS USED: 19991 / 21333 : 94%  
ANT NAME: TRMR8\_GNSS NONE # FIXED AMB: 91 / 106 : 86%  
ARP HEIGHT: 1.607 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2015.1336)

X:	-1082125.777(m)	0.009(m)	-1082126.579(m)	0.009(m)
Y:	-5212482.399(m)	0.011(m)	-5212480.998(m)	0.011(m)
Z:	3502695.707(m)	0.002(m)	3502695.549(m)	0.002(m)

LAT:	33 31 11.89196	0.006(m)	33 31 11.90935	0.006(m)
E LON:	258 16 18.60240	0.010(m)	258 16 18.56094	0.010(m)
W LON:	101 43 41.39760	0.010(m)	101 43 41.43906	0.010(m)
EL HGT:	931.904(m)	0.009(m)	930.809(m)	0.009(m)
ORTHO HGT:	956.892(m)	0.019(m)	[NAVD88 (Computed using GEOID12A)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 14)	SPC (4202 TXNC)
Northing (Y) [meters]	3712266.138	2210122.510
Easting (X) [meters]	246613.839	300174.902
Convergence [degrees]	-1.50737146	-1.76062370
Point Scale	1.00039163	0.99990593
Combined Factor	1.00024529	0.99975966

US NATIONAL GRID DESIGNATOR: 14SKC4661312266(NAD 83)

### BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5391	TXLU LUBBOCK RRP2 CORS ARP	N333207.490	W1015034.162	10789.3
DO9608	TXP1 POST CORS ARP	N331057.073	W1012247.633	49520.7
DO8869	TXLA LAMESA CORS ARP	N324540.901	W1015638.170	86521.8

### NEAREST NGS PUBLISHED CONTROL POINT

DP0428	K 1468	N333006.	W1014443.	2583.4
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# BH 15-378-62

FILE: 37230470.15o OP1426189687752

## NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [abenham@bhinc.com](mailto:abenham@bhinc.com) DATE: March 12, 2015  
RINEX FILE: 3723047v.15o TIME: 19:48:50 UTC

SOFTWARE: page5 1209.04 master51.pl 022814 START: 2015/02/16 21:40:00  
EPHEMERIS: igs18321.eph [precise] STOP: 2015/02/17 00:32:00  
NAV FILE: brdc0470.15n OBS USED: 7554 / 7739 : 98%  
ANT NAME: TRMR8\_GNSS NONE # FIXED AMB: 47 / 51 : 92%  
ARP HEIGHT: 1.521 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2015.1287)

X:	-1104648.213(m)	0.007(m)	-1104649.016(m)	0.007(m)
Y:	-5200518.298(m)	0.002(m)	-5200516.900(m)	0.002(m)
Z:	3513450.240(m)	0.009(m)	3513450.083(m)	0.009(m)

LAT:	33 38 9.73776	0.008(m)	33 38 9.75510	0.008(m)
E LON:	258 0 28.69229	0.007(m)	258 0 28.65055	0.007(m)
W LON:	101 59 31.30771	0.007(m)	101 59 31.34945	0.007(m)
EL HGT:	981.477(m)	0.004(m)	980.390(m)	0.004(m)
ORTHO HGT:	1006.260(m)	0.014(m)	[NAVD88 (Computed using GEOID12A)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 13)	SPC (4202 TXNC)
Northing (Y) [meters]	3725860.845	2223771.829
Easting (X) [meters]	779008.508	276104.287
Convergence [degrees]	1.66723737	-1.90453361
Point Scale	1.00055982	0.99992451
Combined Factor	1.00040568	0.99977046

US NATIONAL GRID DESIGNATOR: 13SGT7900825860(NAD 83)

### BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DP4773	TXM1 MORTON CORS ARP	N334416.170	W1024534.816	72078.8
DO9484	TXL1 LITTLEFIELD CORS ARP	N335618.226	W1022058.275	47134.3
DO9608	TXP1 POST CORS ARP	N331057.073	W1012247.633	75985.7

### NEAREST NGS PUBLISHED CONTROL POINT

DP0411	D 1469	N333938.	W1015741.	3938.4
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**Control Station Data**

**Name of Station:** BH 15-378-10

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537810

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 31' 15.86394"	7,254,902.240 US Ft	7,254,902.240 US Ft
Longitude   Easting   X:	W 102° 04' 42.29312"	878,150.102 US Ft	878,150.102 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	990.656 m	3,250.177 US Ft	3,330.139 US Ft

**Location**

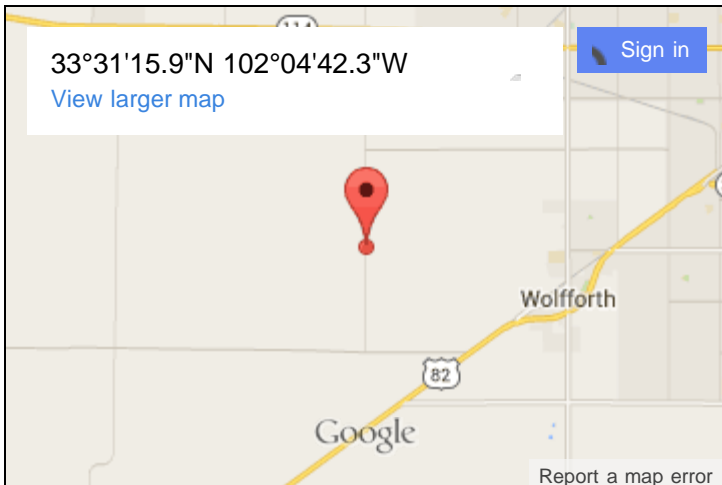
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

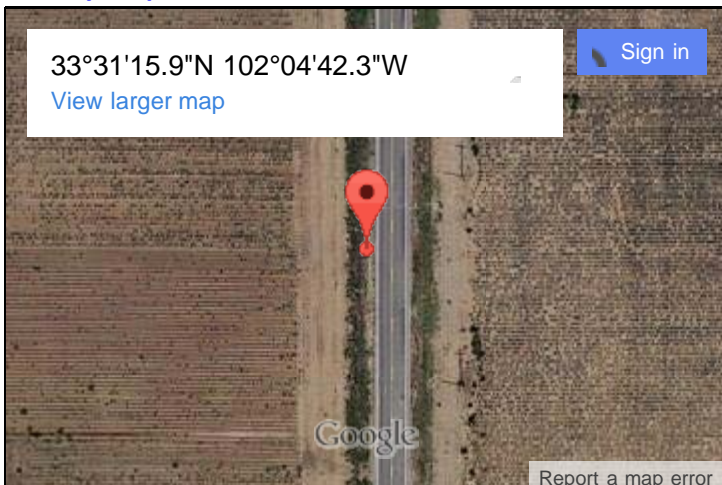
**Location Map:**



**Vicinity Photo (Looking North):**



**Vicinity Map:**



**Close Up Photo:**





### Control Station Data

**Name of Station:** BH 15-378-11

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 11

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 34' 57.37366"	7,277,301.273 US Ft	7,277,301.273 US Ft
Longitude   Easting   X:	W 102° 04' 50.48547"	878,219.921 US Ft	878,219.921 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	995.177 m	3,265.011 US Ft	3,345.342 US Ft

### Location

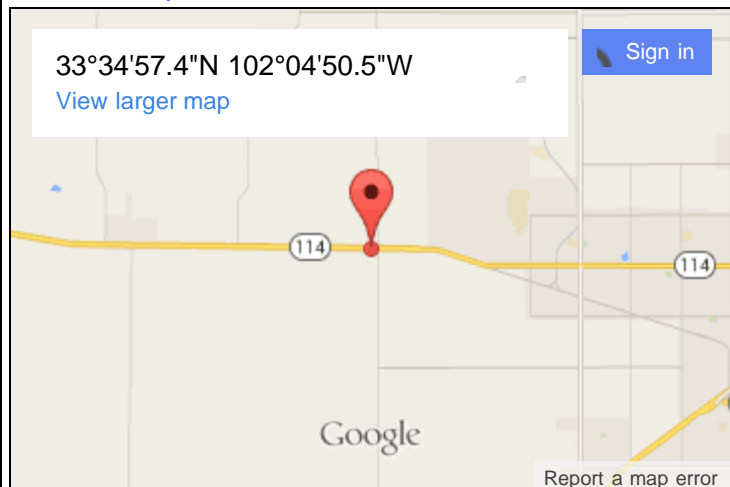
**County & State:** Hockley, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

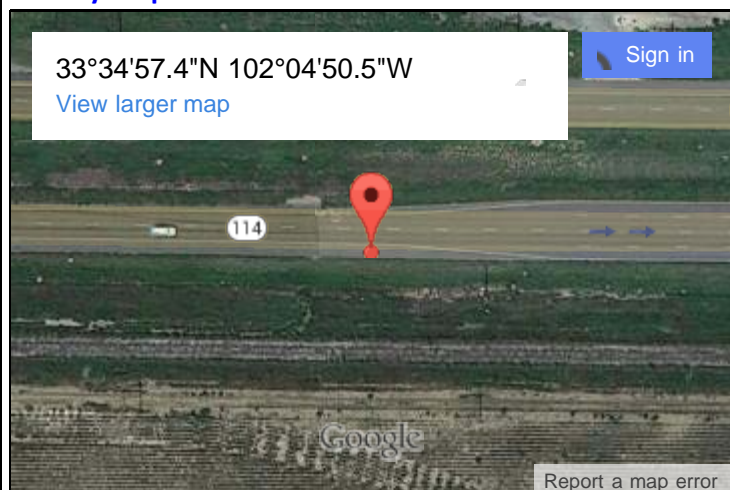
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:





## Control Station Data

**Name of Station:** BH 15-378-12

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 12

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 37' 16.97087"	7,291,273.871 US Ft	7,291,273.871 US Ft
Longitude   Easting   X:	W 102° 04' 05.71323"	882,484.461 US Ft	882,484.461 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	992.639 m	3,256.683 US Ft	3,337.362 US Ft

### Location

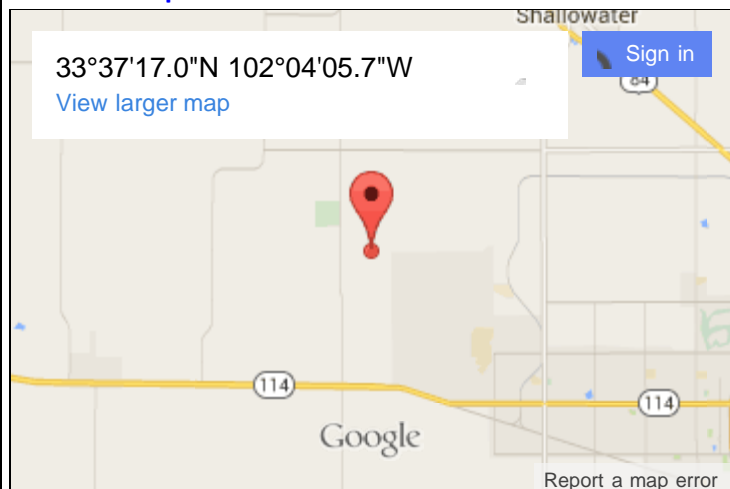
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

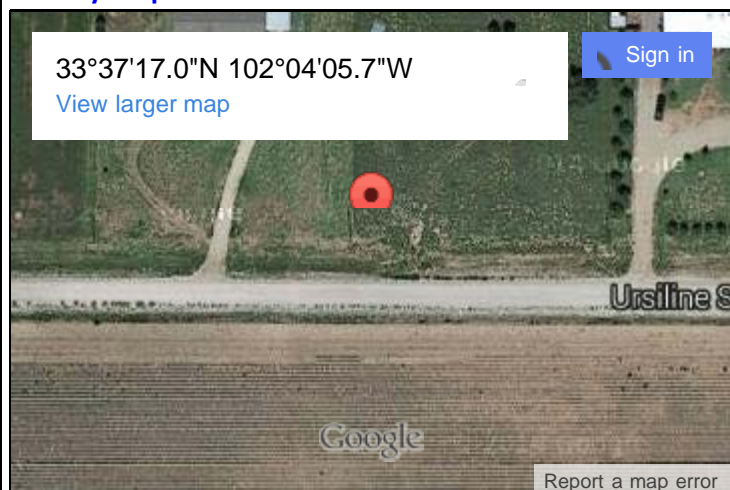
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:



**Control Station Data**



**Name of Station:** BH 15-378-13

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 13

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 26' 49.54990"	7,227,637.003 US Ft	7,227,637.003 US Ft
Longitude   Easting   X:	W 102° 02' 35.33335"	887,984.175 US Ft	887,984.175 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	986.806 m	3,237.545 US Ft	3,317.348 US Ft

**Location**

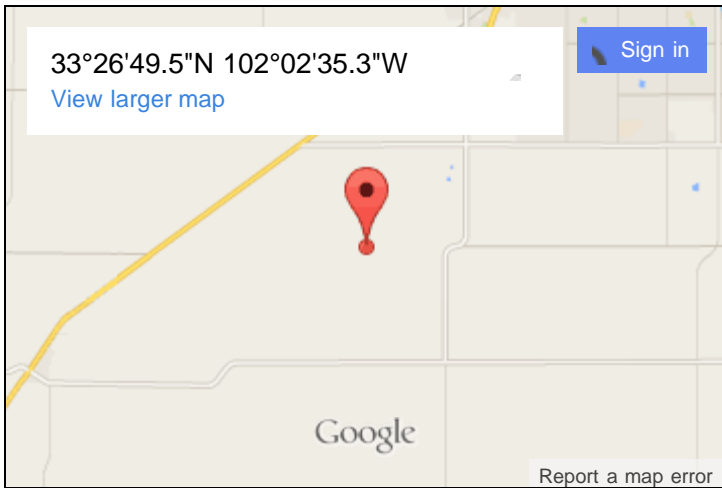
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

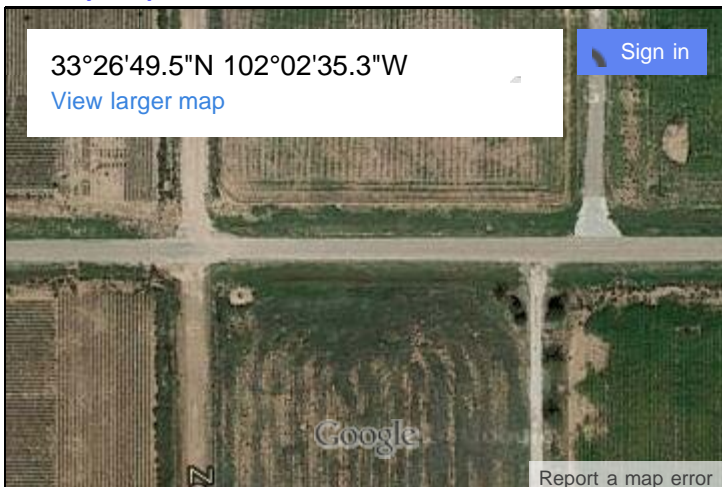
**Location Map:**



**Vicinity Photo (Looking North):**



**Vicinity Map:**



**Close Up Photo:**





**Control Station Data**



**Name of Station:** BH 15-378-14

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537814

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 31' 10.49409"	7,254,020.174 US Ft	7,254,020.174 US Ft
Longitude   Easting   X:	W 102° 02' 43.94414"	888,144.956 US Ft	888,144.956 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	983.679 m	3,227.287 US Ft	3,307.457 US Ft

**Location**

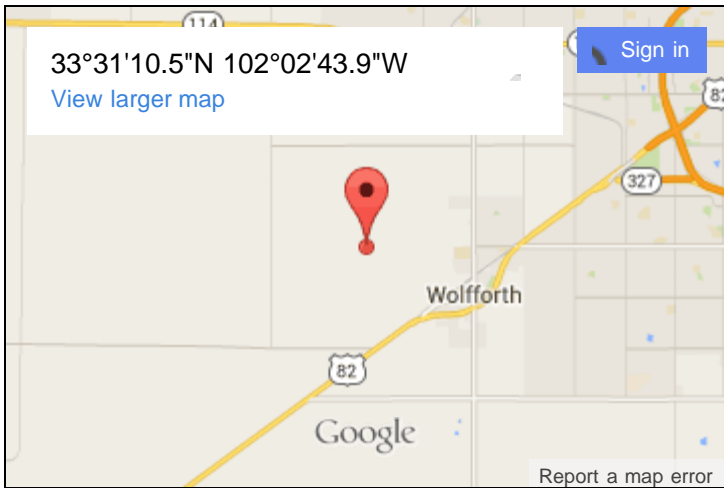
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

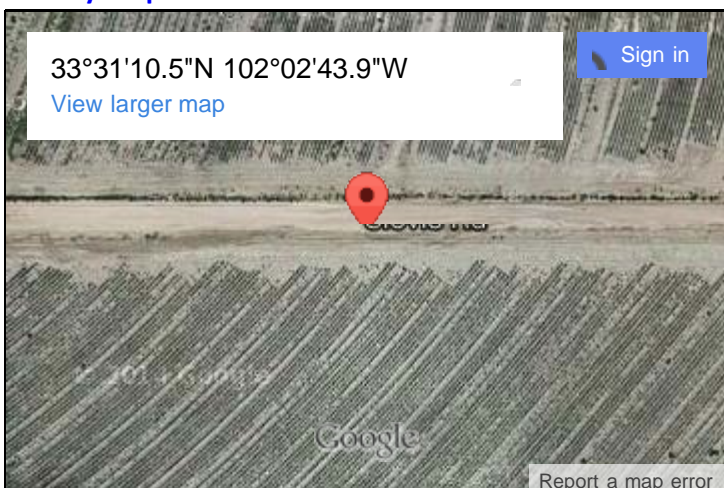
**Location Map:**



**Vicinity Photo (Looking East):**



**Vicinity Map:**



**Close Up Photo:**



## Control Station Data

Name of Station: BH 15-378-15

Establishing Group: Bohannon Huston, Inc.

Observation Date: 16-Feb-2015

BST Project #: 20150378

Project Name: Lubbock Orthophotography

## Station Data

Type/Composition: Washer

Station Height: 0.00 US Ft

Stamping: LUB 15 378 15

Horizontal Method: Real-Time Kinematic

Vertical Method: Real-Time Kinematic

## Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 37' 16.28614"	7,290,767.995 US Ft	7,290,767.995 US Ft
Longitude   Easting   X:	W 102° 01' 32.72374"	895,411.448 US Ft	895,411.448 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	985.082 m	3,231.889 US Ft	3,312.888 US Ft

## Location

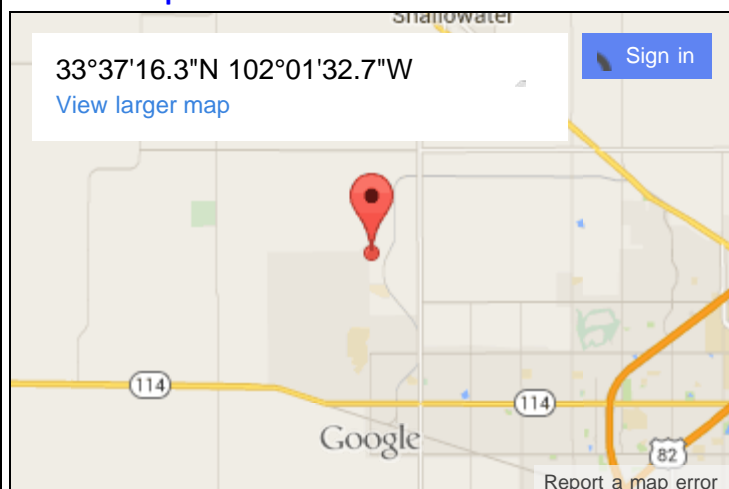
County &amp; State: Lubbock, TX

Land Grant(s): None

Note(s): PLASTIC PANEL

Section:

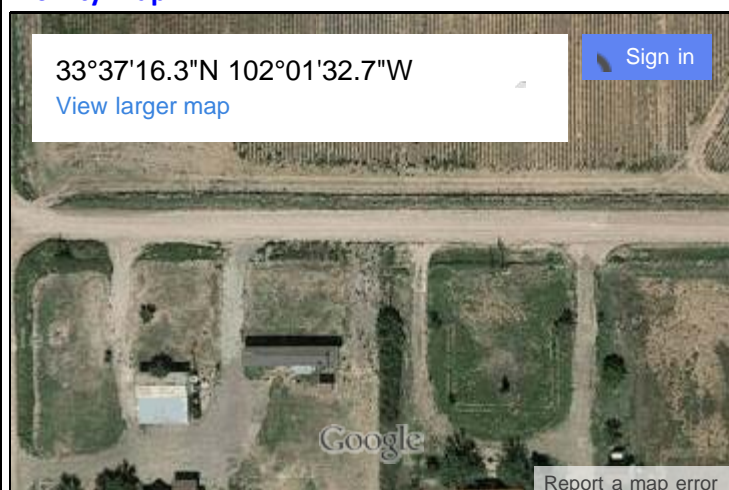
## Location Map:



## Vicinity Photo (Looking South):



## Vicinity Map:



## Close Up Photo:





### Control Station Data



**Name of Station:** BH 15-378-16

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 16

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

**Horizontal Datum:**

**Geodetic  
(NAD83)**

**Grid  
(TX83-NCF)**

**Alternate  
(TX83-NCF)**

**Latitude | Northing | Y:**

N 33° 34' 39.48161"

7,274,908.794 US Ft

7,274,908.794 US Ft

**Longitude | Easting | X:**

W 102° 01' 25.90593"

895,456.112 US Ft

895,456.112 US Ft

**Vertical Datum:**

**Ellipsoid  
(GRS80)**

**Ellipsoid  
(GRS80)**

**Orthometric  
(NAVD88, GEOID12A)**

**Elevation:**

987.116 m

3,238.562 US Ft

3,319.255 US Ft

### Location

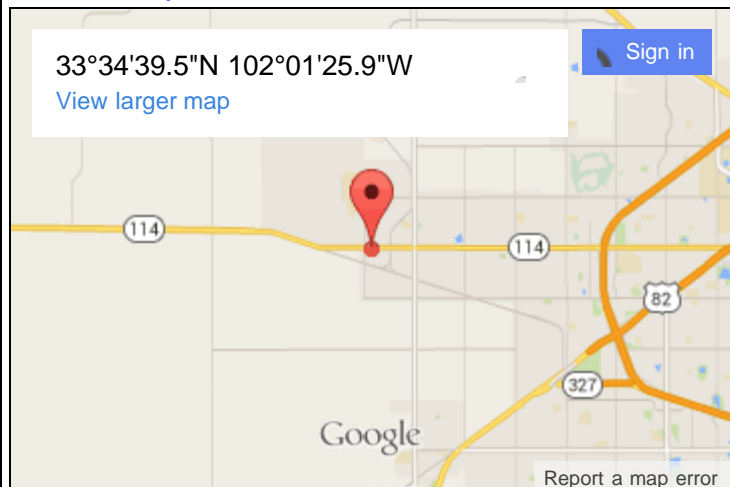
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

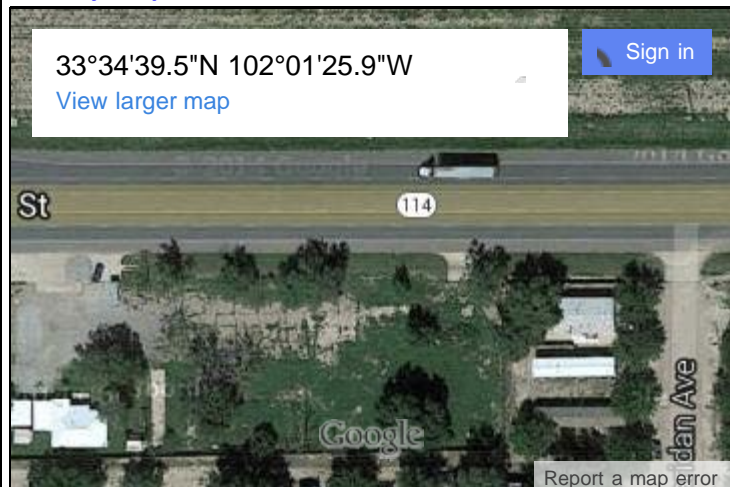
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:



**Control Station Data**



**Name of Station:** BH 15-378-17

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 17

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 25' 44.85927"	7,220,824.436 US Ft	7,220,824.436 US Ft
Longitude   Easting   X:	W 102° 00' 57.64065"	896,037.927 US Ft	896,037.927 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	981.621 m	3,220.535 US Ft	3,300.450 US Ft

**Location**

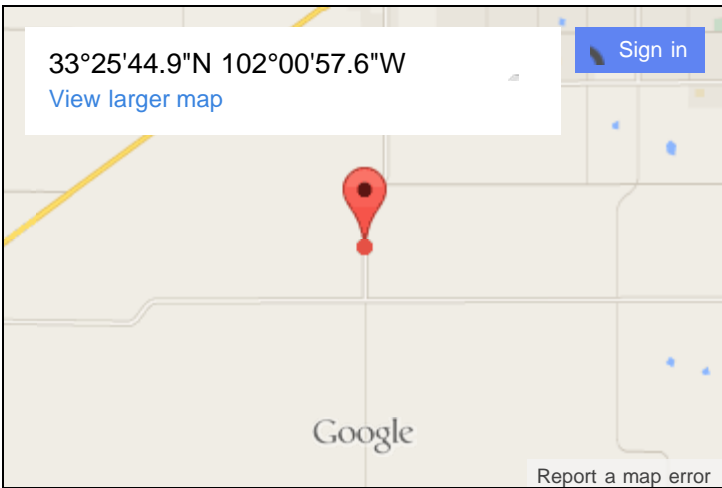
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

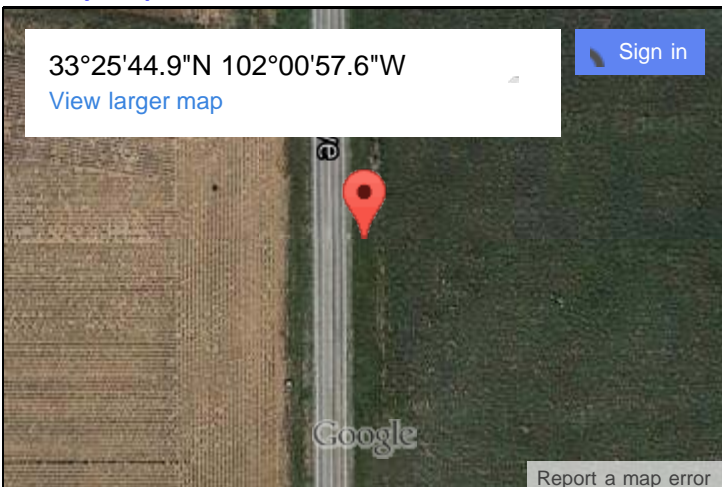
**Location Map:**



**Vicinity Photo (Looking North):**



**Vicinity Map:**



**Close Up Photo:**





**Control Station Data**



**Name of Station:** BH 15-378-18

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537818

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 30' 41.40899"	7,250,622.980 US Ft	7,250,622.980 US Ft
Longitude   Easting   X:	W 102° 00' 02.17962"	901,733.856 US Ft	901,733.856 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	977.344 m	3,206.502 US Ft	3,286.919 US Ft

**Location**

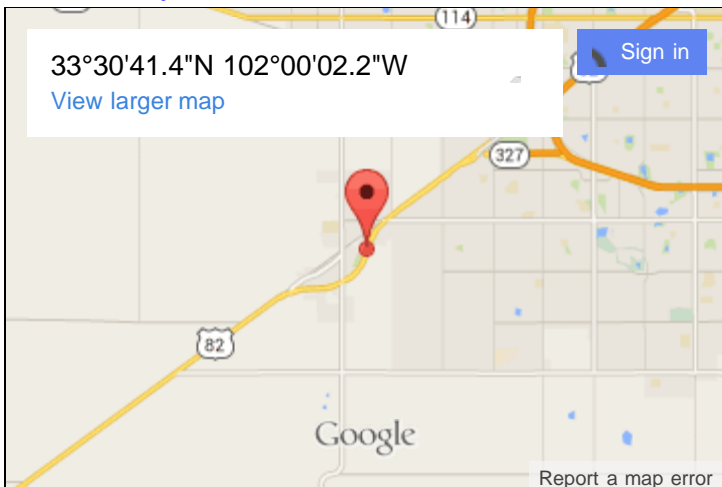
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

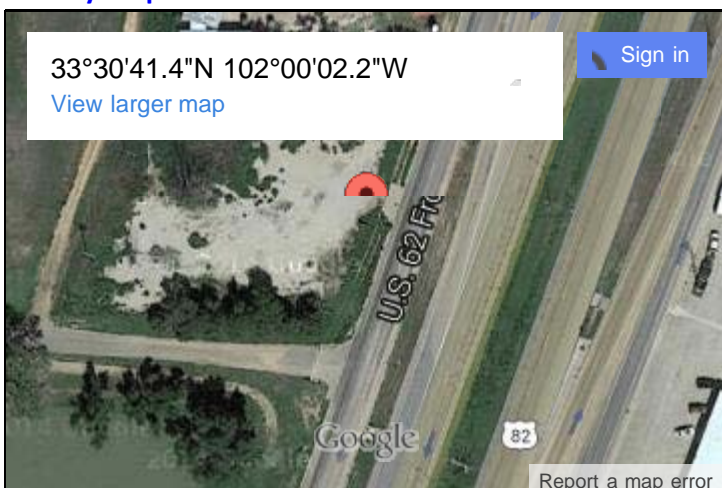
**Location Map:**



**Vicinity Photo (Looking North):**



**Vicinity Map:**



**Close Up Photo:**



### Control Station Data

**Name of Station:** BH 15-378-19

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 19

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

**Horizontal Datum:**

**Geodetic (NAD83)**

**Grid (TX83-NCF)**

**Alternate (TX83-NCF)**

**Latitude | Northing | Y:**

N 33° 34' 13.99708"

7,271,740.348 US Ft

7,271,740.348 US Ft

**Longitude | Easting | X:**

W 101° 57' 54.77337"

913,223.389 US Ft

913,223.389 US Ft

**Vertical Datum:**

**Ellipsoid (GRS80)**

**Ellipsoid (GRS80)**

**Orthometric (NAVD88, GEOID12A)**

**Elevation:**

975.616 m

3,200.833 US Ft

3,281.823 US Ft

### Location

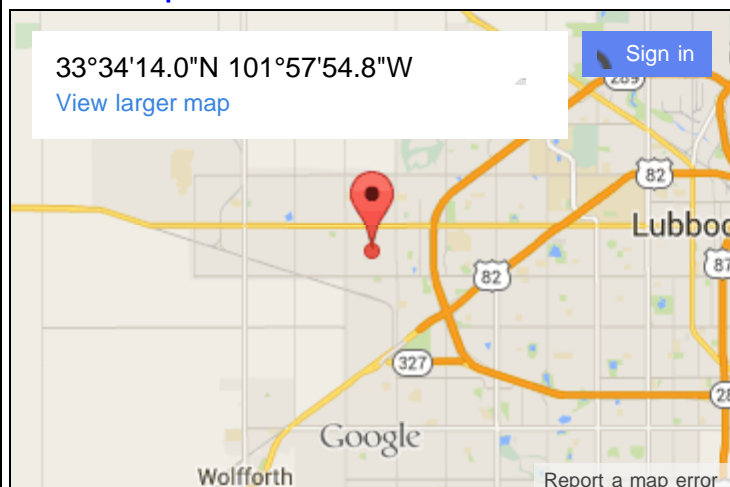
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PK NAIL WITH ALUM WASHER

**Section:**

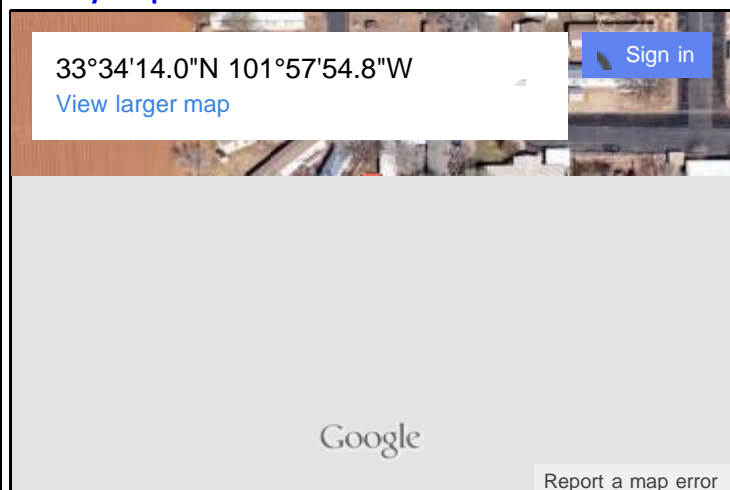
### Location Map:



### Vicinity Photo (Looking East):



### Vicinity Map:



### Close Up Photo:





**Control Station Data**



**Name of Station:** BH 15-378-20

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 16-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537820

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 40' 45.02833"	7,311,262.257 US Ft	7,311,262.257 US Ft
Longitude   Easting   X:	W 101° 58' 02.01593"	913,915.141 US Ft	913,915.141 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	974.151 m	3,196.026 US Ft	3,277.799 US Ft

**Location**

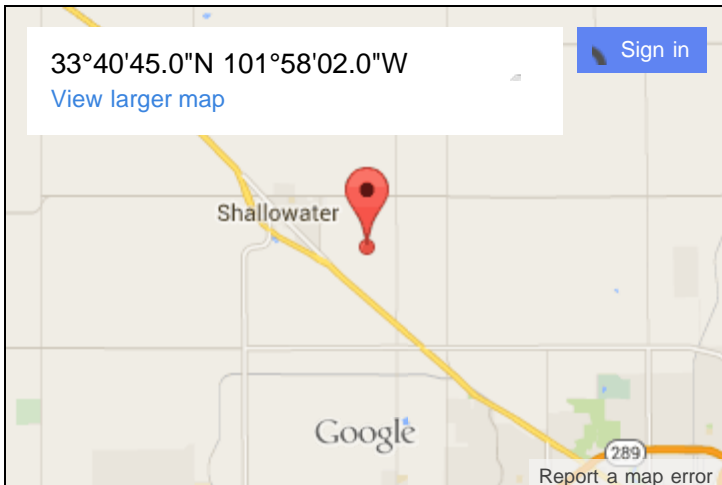
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

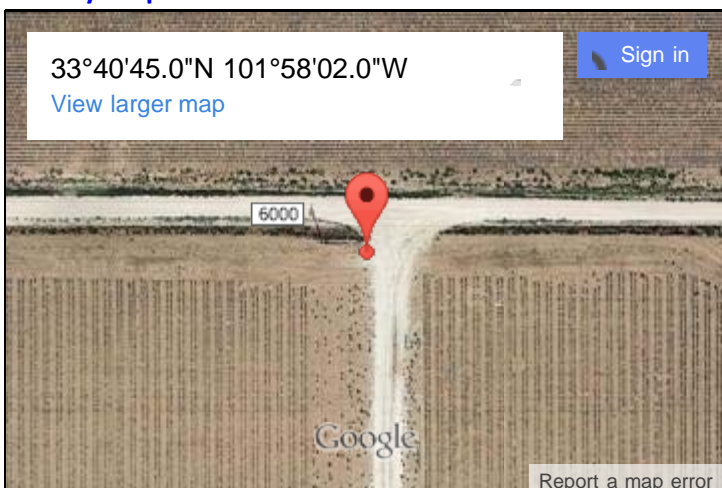
**Location Map:**



**Vicinity Photo (Looking North):**



**Vicinity Map:**



**Close Up Photo:**



**Control Station Data**



**Name of Station:** BH 15-378-21

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537821

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 31' 11.92097"	7,253,241.065 US Ft	7,253,241.065 US Ft
Longitude   Easting   X:	W 101° 57' 16.55085"	915,850.525 US Ft	915,850.525 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	974.667 m	3,197.719 US Ft	3,278.388 US Ft

**Location**

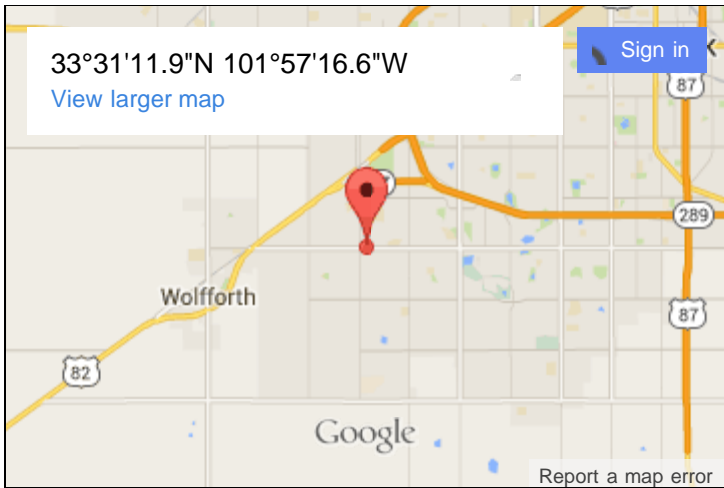
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

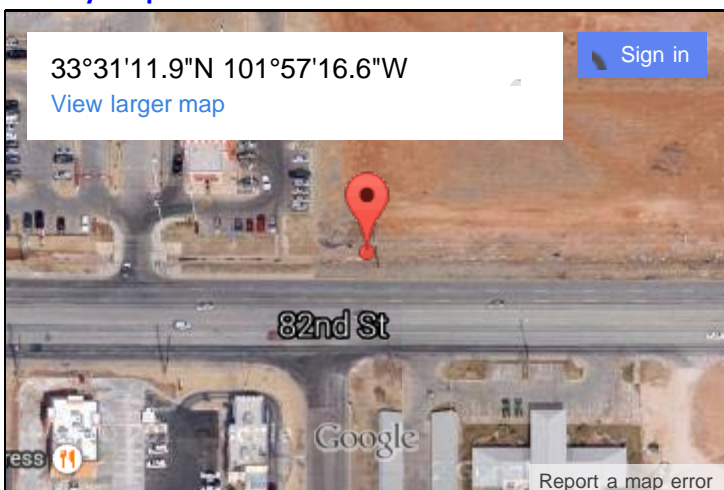
**Location Map:**



**Vicinity Photo (Looking East):**



**Vicinity Map:**



**Close Up Photo:**





### Control Station Data

**Name of Station:** BH 15-378-22

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 16-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 22

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 36' 55.17882"	7,287,802.461 US Ft	7,287,802.461 US Ft
Longitude   Easting   X:	W 101° 56' 35.57094"	920,454.800 US Ft	920,454.800 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	968.793 m	3,178.449 US Ft	3,259.940 US Ft

### Location

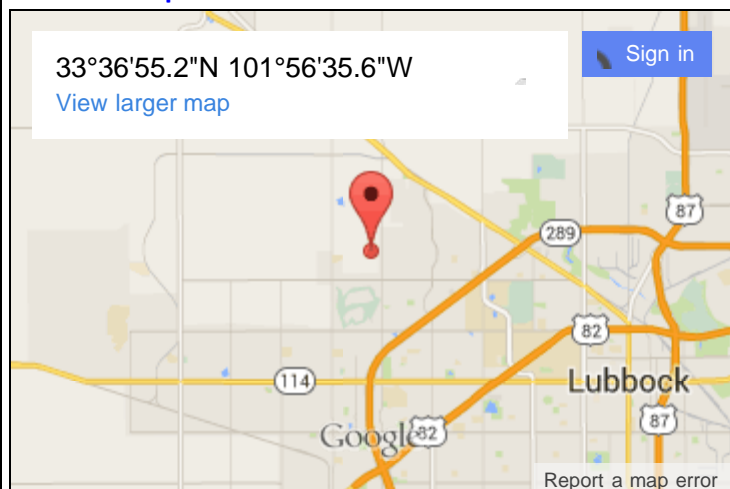
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:



**Control Station Data**



**Name of Station:** BH 15-378-23

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537823

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 25' 43.22840"	7,219,593.428 US Ft	7,219,593.428 US Ft
Longitude   Easting   X:	W 101° 54' 35.87733"	928,367.248 US Ft	928,367.248 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	961.515 m	3,154.571 US Ft	3,235.068 US Ft

**Location**

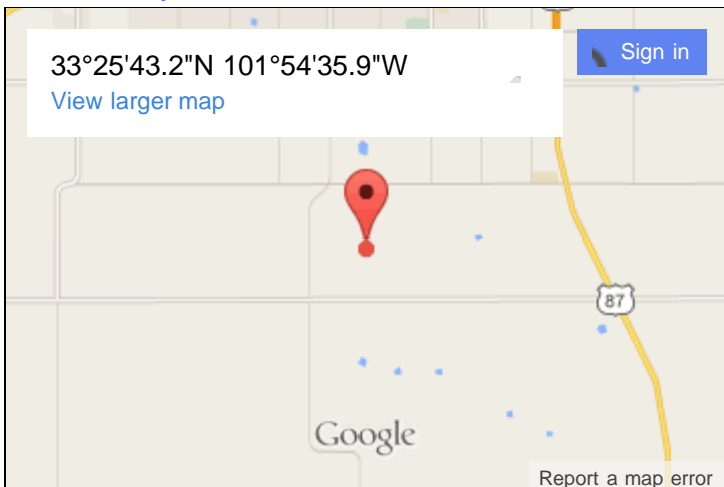
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

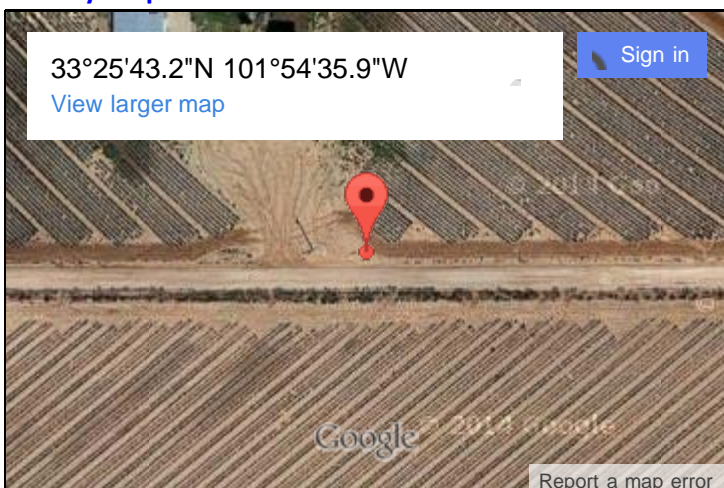
**Location Map:**



**Vicinity Photo (Looking West):**



**Vicinity Map:**



**Close Up Photo:**





### Control Station Data

**Name of Station:** BH 15-378-24

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537824

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

**Horizontal Datum:**

**Geodetic (NAD83)**

**Grid (TX83-NCF)**

**Alternate (TX83-NCF)**

**Latitude | Northing | Y:**

N 33° 34' 14.83345"

7,271,281.047 US Ft

7,271,281.047 US Ft

**Longitude | Easting | X:**

W 101° 54' 38.34205"

929,836.932 US Ft

929,836.932 US Ft

**Vertical Datum:**

**Ellipsoid (GRS80)**

**Ellipsoid (GRS80)**

**Orthometric (NAVD88, GEOID12A)**

**Elevation:**

962.994 m

3,159.422 US Ft

3,240.746 US Ft

### Location

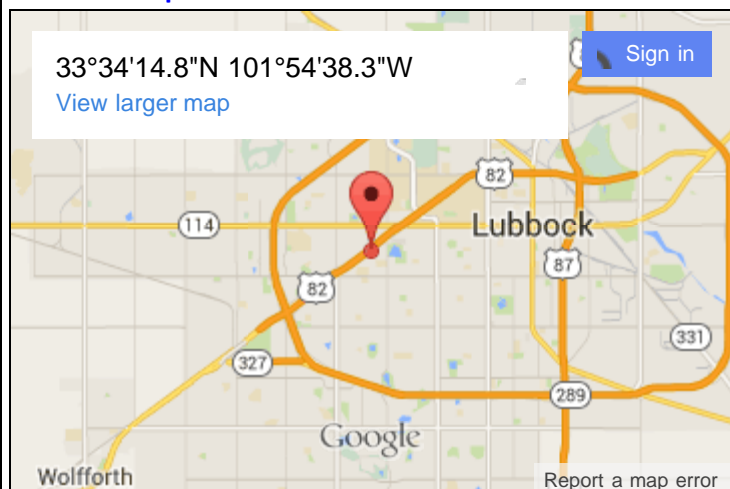
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

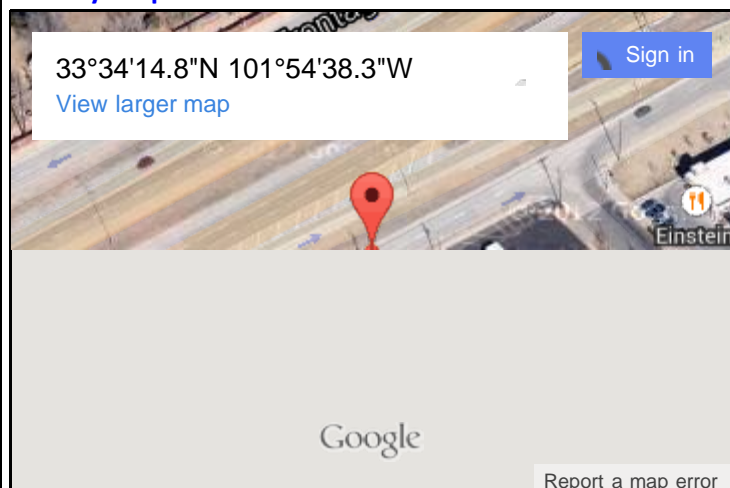
### Location Map:



### Vicinity Photo (Looking East):



### Vicinity Map:



### Close Up Photo:



### Control Station Data



**Name of Station:** BH 15-378-25

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 16-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537825

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 41' 36.76619"	7,315,919.089 US Ft	7,315,919.089 US Ft
Longitude   Easting   X:	W 101° 54' 35.94123"	931,489.601 US Ft	931,489.601 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	983.045 m	3,225.207 US Ft	3,307.388 US Ft

### Location

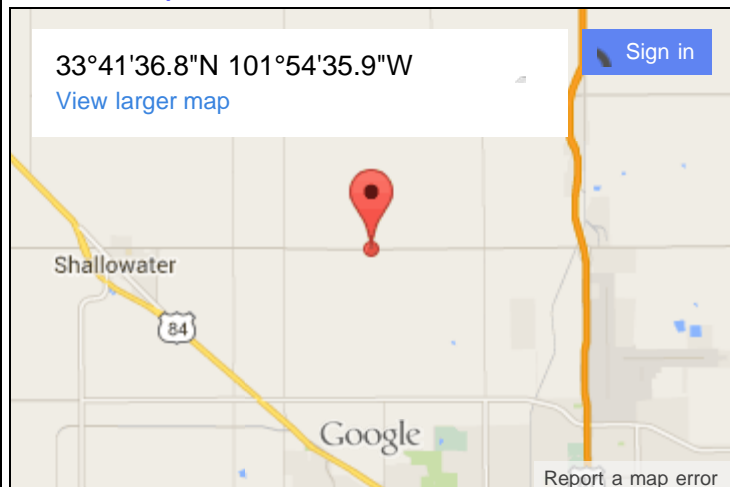
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:





**Control Station Data**

**Name of Station:** BH 15-378-26

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537826

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 29' 26.32651"	7,242,020.552 US Ft	7,242,020.552 US Ft
Longitude   Easting   X:	W 101° 53' 56.03270"	932,471.494 US Ft	932,471.494 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	960.603 m	3,151.578 US Ft	3,232.410 US Ft

**Location**

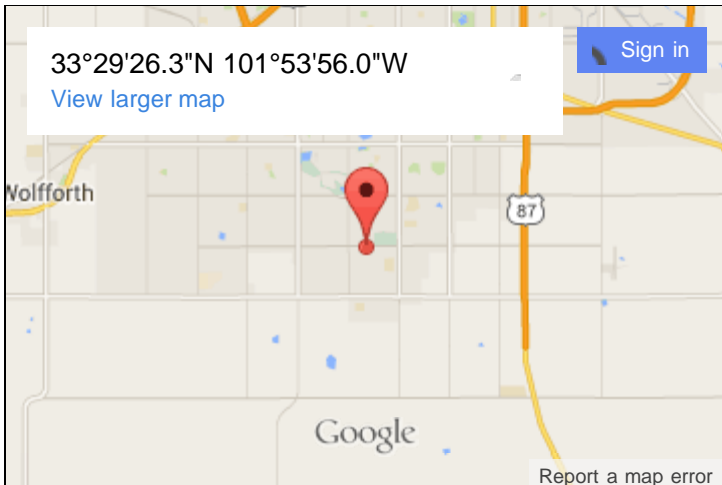
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

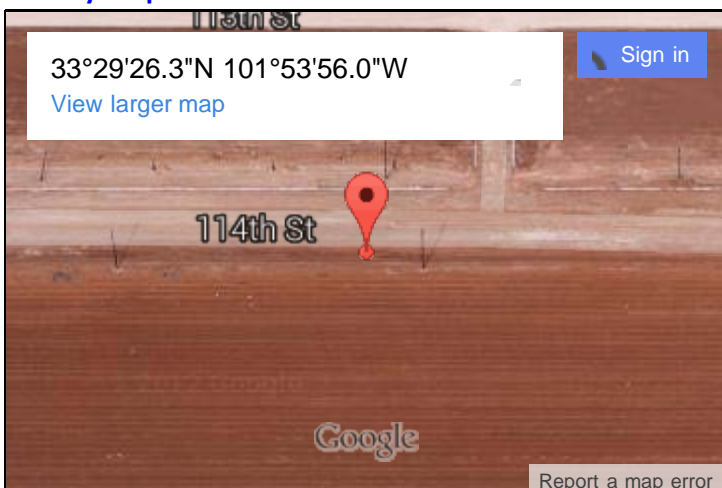
**Location Map:**



**Vicinity Photo (Looking North):**



**Vicinity Map:**



**Close Up Photo:**



**Control Station Data**

**Name of Station:** BH 15-378-27

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537827

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 36' 31.87706"	7,284,793.910 US Ft	7,284,793.910 US Ft
Longitude   Easting   X:	W 101° 52' 37.07222"	940,537.151 US Ft	940,537.151 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	956.060 m	3,136.675 US Ft	3,218.480 US Ft

**Location**

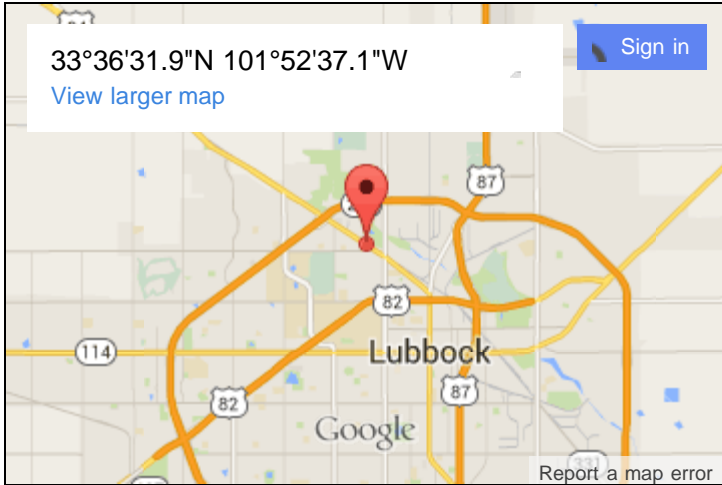
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PK NAIL WITH ALUM WASHER IN ROAD

**Section:**

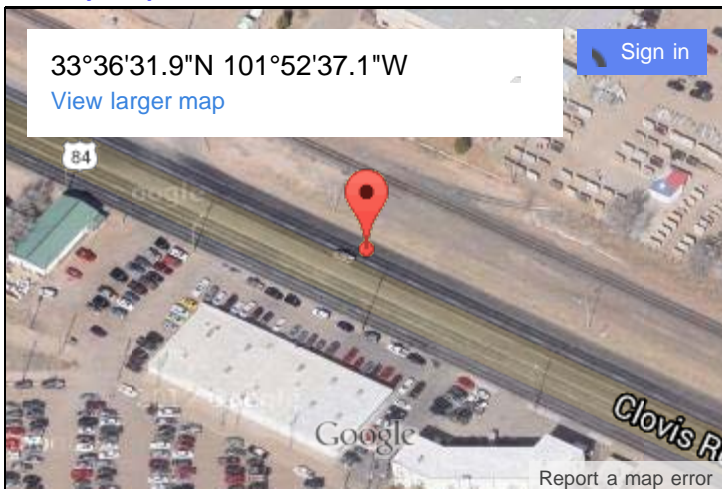
**Location Map:**



**Vicinity Photo (Looking East):**



**Vicinity Map:**



**Close Up Photo:**





## Control Station Data

**Name of Station:** BH 15-378-28

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 28

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 35' 11.13363"	7,276,400.302 US Ft	7,276,400.302 US Ft
Longitude   Easting   X:	W 101° 51' 09.65587"	947,665.871 US Ft	947,665.871 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	950.077 m	3,117.043 US Ft	3,198.822 US Ft

### Location

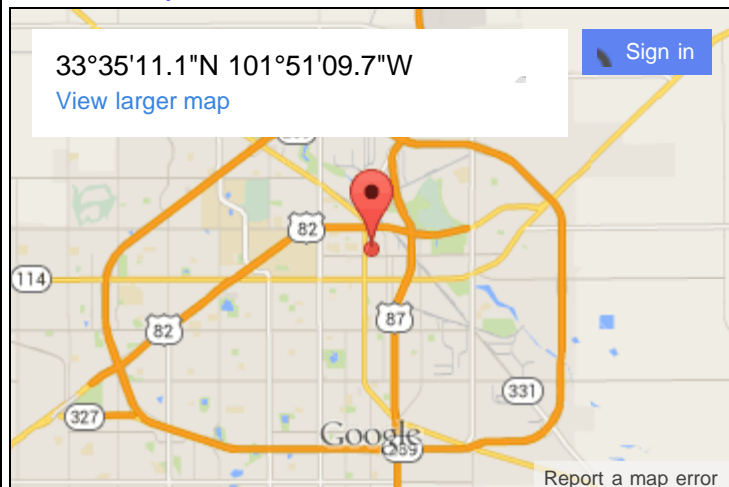
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

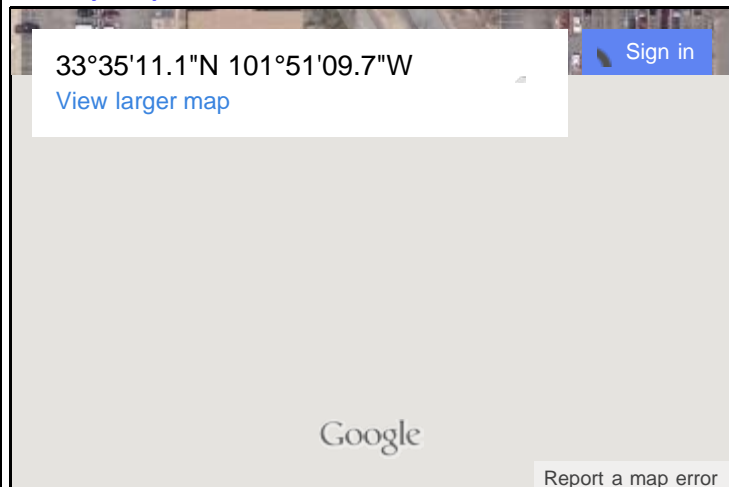
### Location Map:



### Vicinity Photo (Looking South):



### Vicinity Map:



### Close Up Photo:



### Control Station Data



**Name of Station:** BH 15-378-29

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 19-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 29

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 45' 06.64485"	7,336,580.258 US Ft	7,336,580.258 US Ft
Longitude   Easting   X:	W 101° 51' 16.62662"	948,998.236 US Ft	948,998.236 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	983.310 m	3,226.077 US Ft	3,308.974 US Ft

### Location

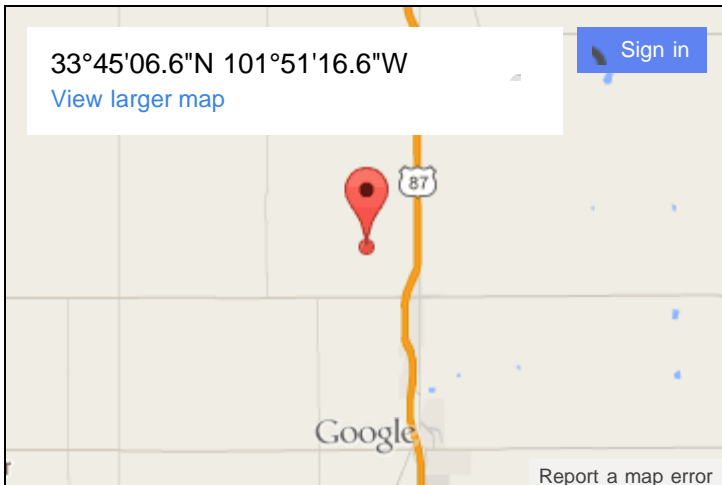
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

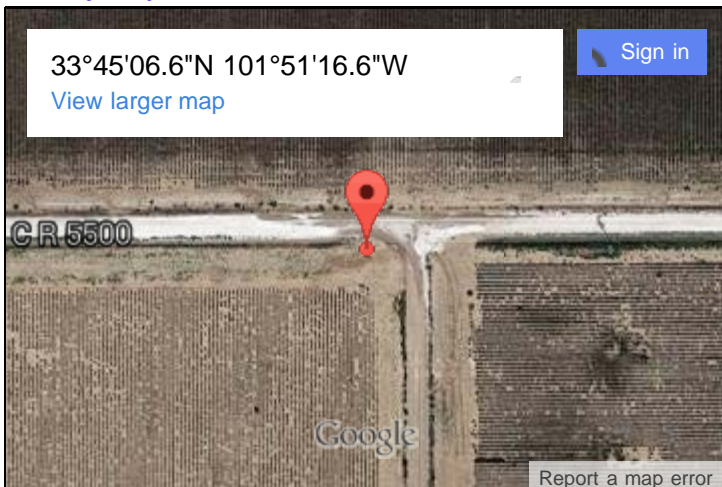
### Location Map:



### Vicinity Photo (Looking East):



### Vicinity Map:



### Close Up Photo:





**Control Station Data**



**Name of Station:** BH 15-378-30

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 19-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 30

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 42' 30.48971"	7,320,475.707 US Ft	7,320,475.707 US Ft
Longitude   Easting   X:	W 101° 49' 14.11723"	958,838.125 US Ft	958,838.125 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	975.796 m	3,201.423 US Ft	3,284.209 US Ft

**Location**

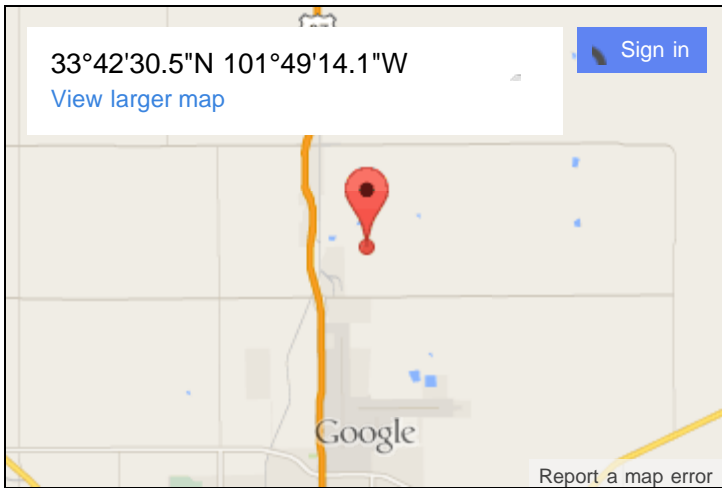
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

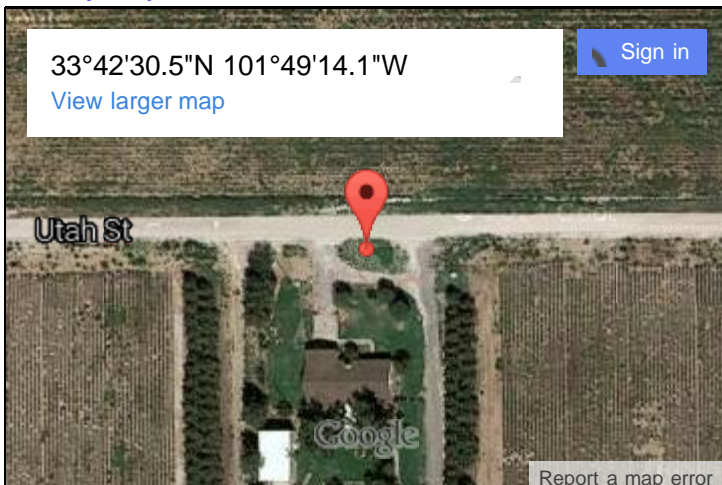
**Location Map:**



**Vicinity Photo (Looking South):**



**Vicinity Map:**



**Close Up Photo:**



## Control Station Data

**Name of Station:** BH 15-378-31

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 31

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 26' 13.81297"	7,221,587.577 US Ft	7,221,587.577 US Ft
Longitude   Easting   X:	W 101° 47' 50.88773"	962,767.487 US Ft	962,767.487 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	937.147 m	3,074.623 US Ft	3,155.836 US Ft

### Location

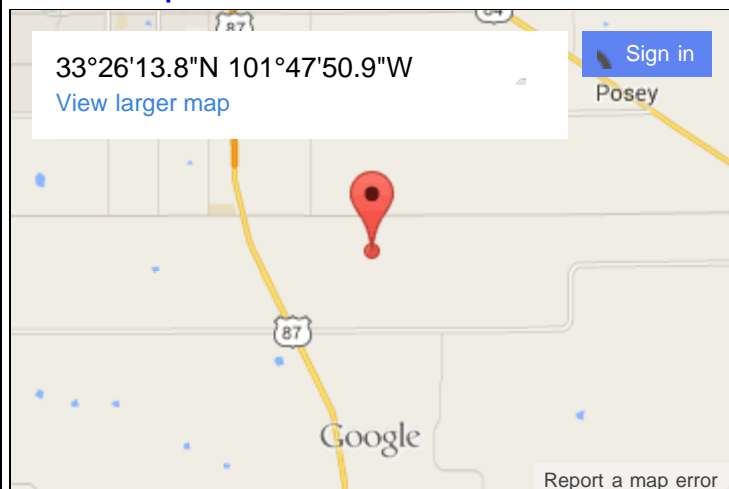
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

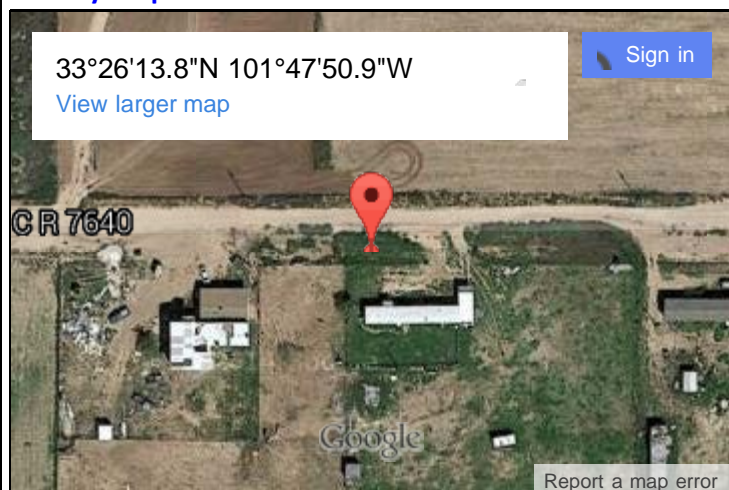
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:





**Control Station Data**



**Name of Station:** BH 15-378-32

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 32

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 31' 17.52880"	7,252,155.132 US Ft	7,252,155.132 US Ft
Longitude   Easting   X:	W 101° 47' 07.97911"	967,361.503 US Ft	967,361.503 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	936.423 m	3,072.247 US Ft	3,153.986 US Ft

**Location**

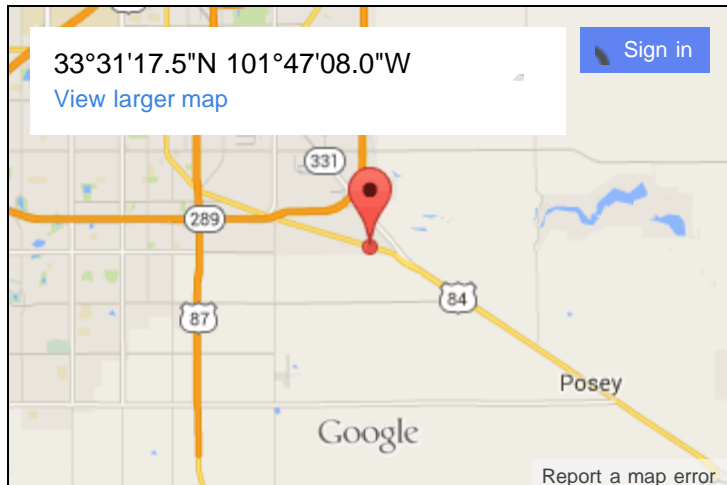
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

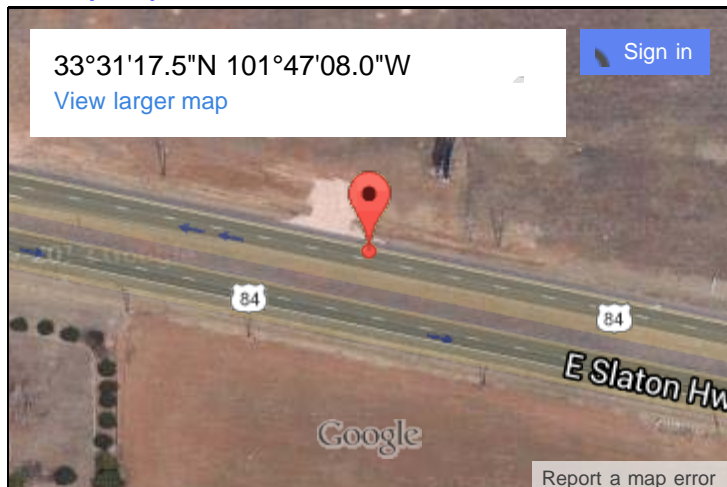
**Location Map:**



**Vicinity Photo (Looking South):**



**Vicinity Map:**



**Close Up Photo:**



## Control Station Data

**Name of Station:** BH 15-378-33

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537833

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

**Horizontal Datum:**

**Geodetic  
(NAD83)**

**Grid  
(TX83-NCF)**

**Alternate  
(TX83-NCF)**

**Latitude | Northing | Y:**

N 33° 33' 48.00096"

7,267,372.265 US Ft

7,267,372.265 US Ft

**Longitude | Easting | X:**

W 101° 47' 14.06484"

967,322.375 US Ft

967,322.375 US Ft

**Vertical Datum:**

**Ellipsoid  
(GRS80)**

**Ellipsoid  
(GRS80)**

**Orthometric  
(NAVD88, GEOID12A)**

**Elevation:**

939.979 m

3,083.914 US Ft

3,165.900 US Ft

### Location

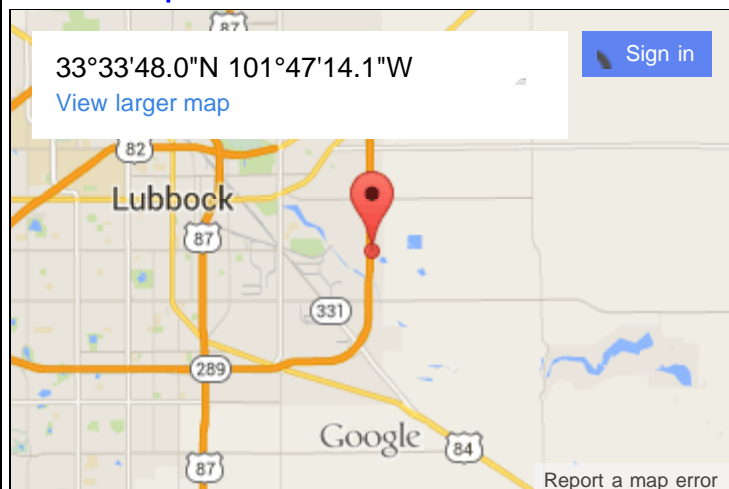
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PK NAIL WITH ALUM WASHER IN ROAD

**Section:**

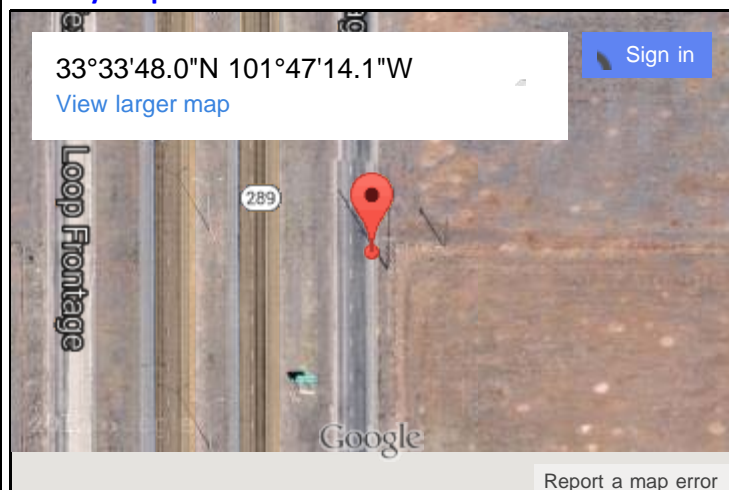
### Location Map:



### Vicinity Photo (Looking South):



### Vicinity Map:



### Close Up Photo:





### Control Station Data

**Name of Station:** BH 15-378-34

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537834

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

**Horizontal Datum:**

**Geodetic (NAD83)**

**Grid (TX83-NCF)**

**Alternate (TX83-NCF)**

**Latitude | Northing | Y:**

N 33° 37' 12.06690"

7,287,857.284 US Ft

7,287,857.284 US Ft

**Longitude | Easting | X:**

W 101° 46' 24.64056"

972,144.975 US Ft

972,144.975 US Ft

**Vertical Datum:**

**Ellipsoid (GRS80)**

**Ellipsoid (GRS80)**

**Orthometric (NAVD88, GEOID12A)**

**Elevation:**

947.146 m

3,107.429 US Ft

3,189.844 US Ft

### Location

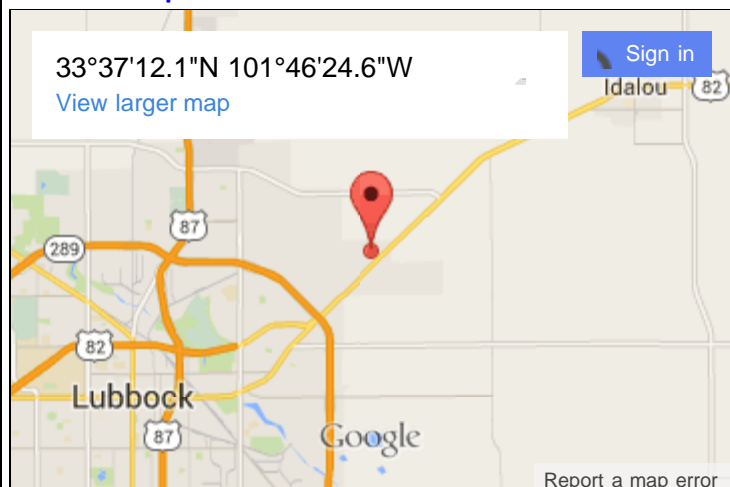
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

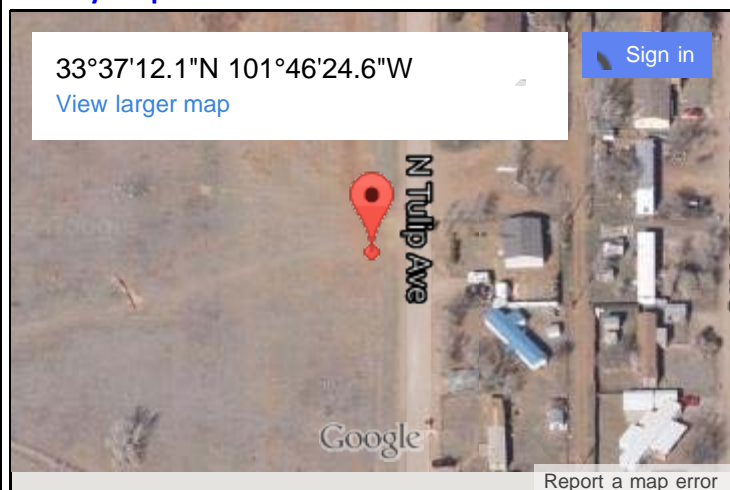
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:



### Control Station Data

**Name of Station:** BH 15-378-35

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 19-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 3.25" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537835 2015

**Horizontal Method:** OPUS

**Vertical Method:** OPUS

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 28' 26.86548"	7,234,634.668 US Ft	7,234,634.668 US Ft
Longitude   Easting   X:	W 101° 45' 21.81785"	975,809.732 US Ft	975,809.732 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	935.476 m	3,069.141 US Ft	3,150.752 US Ft

### Location

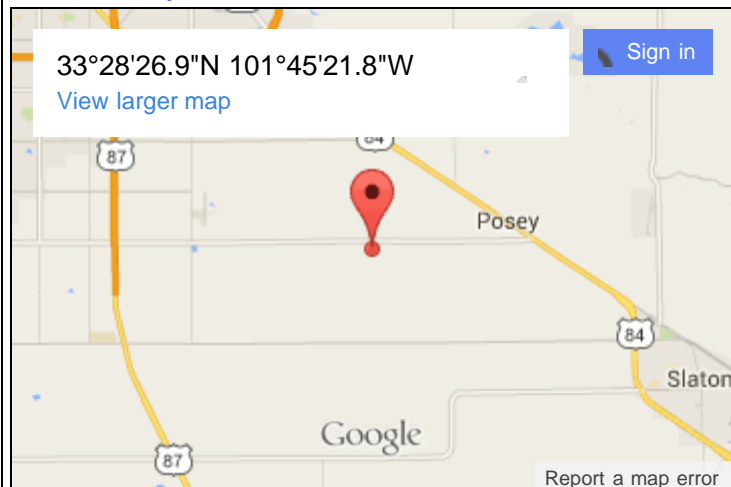
**County & State:** Lubbock, TX

**Land Grant(s):** None

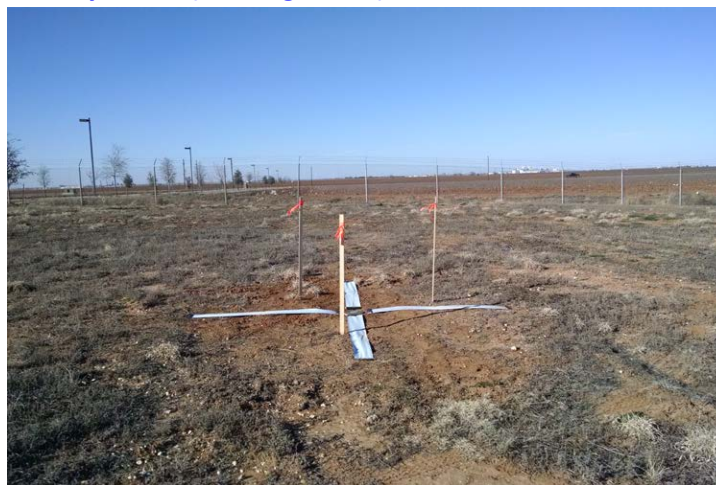
**Note(s):** SET IN 8" CONCRETE TUBE BY 18" DEEP; PLASTIC PANEL

**Section:**

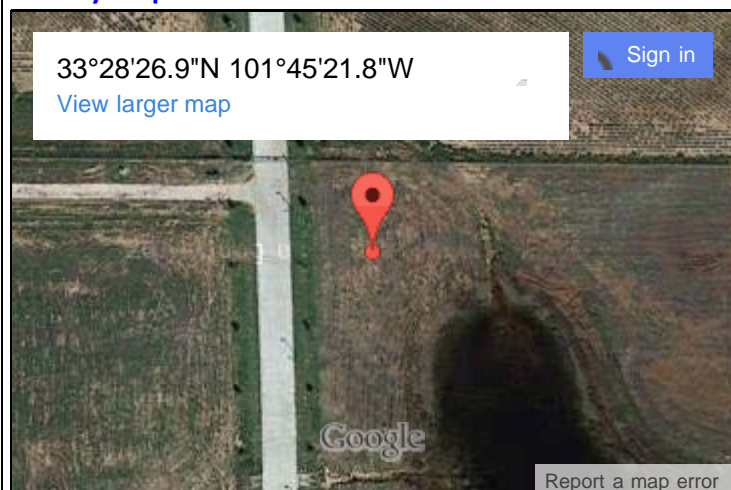
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:





## Control Station Data

**Name of Station:** BH 15-378-36

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 19-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 36

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 42' 31.55957"	7,320,039.114 US Ft	7,320,039.114 US Ft
Longitude   Easting   X:	W 101° 45' 48.32309"	976,217.512 US Ft	976,217.512 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	969.221 m	3,179.852 US Ft	3,262.887 US Ft

### Location

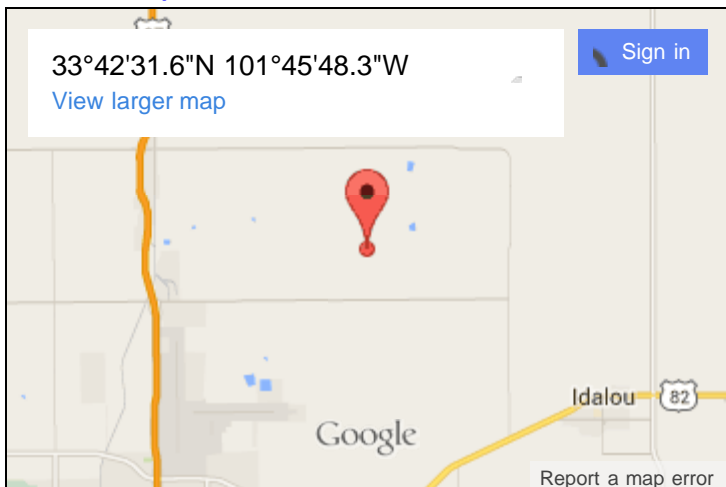
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

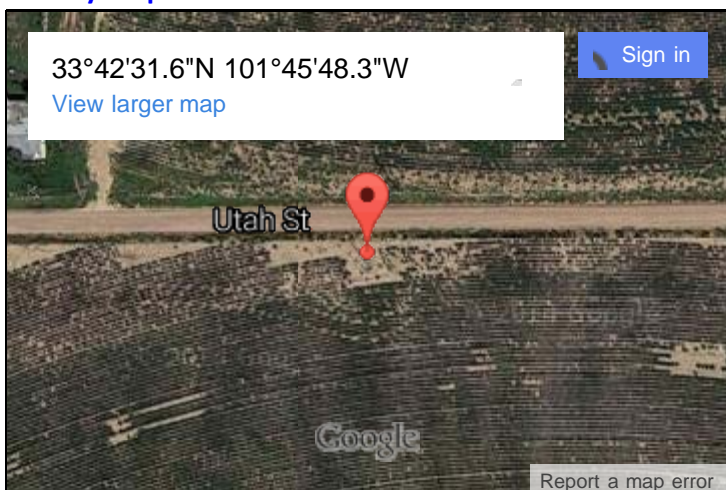
### Location Map:



### Vicinity Photo (Looking South):



### Vicinity Map:



### Close Up Photo:



## Control Station Data

**Name of Station:** BH 15-378-37

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 37

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 29' 28.96415"	7,240,442.897 US Ft	7,240,442.897 US Ft
Longitude   Easting   X:	W 101° 42' 23.24661"	991,119.270 US Ft	991,119.270 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	940.036 m	3,084.100 US Ft	3,166.041 US Ft

### Location

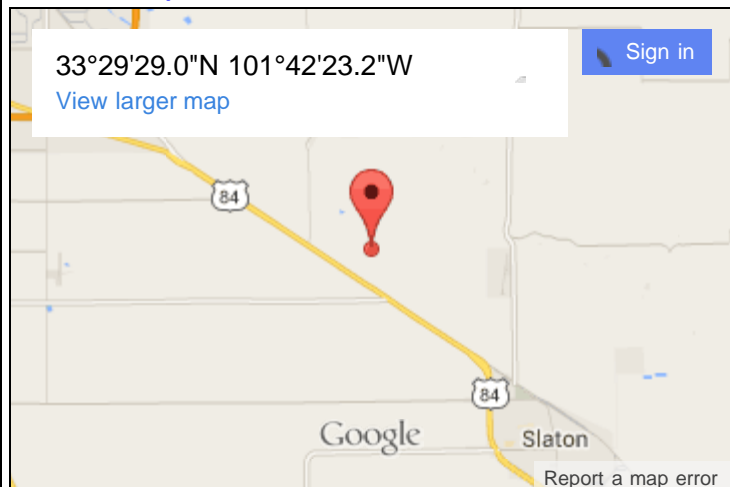
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

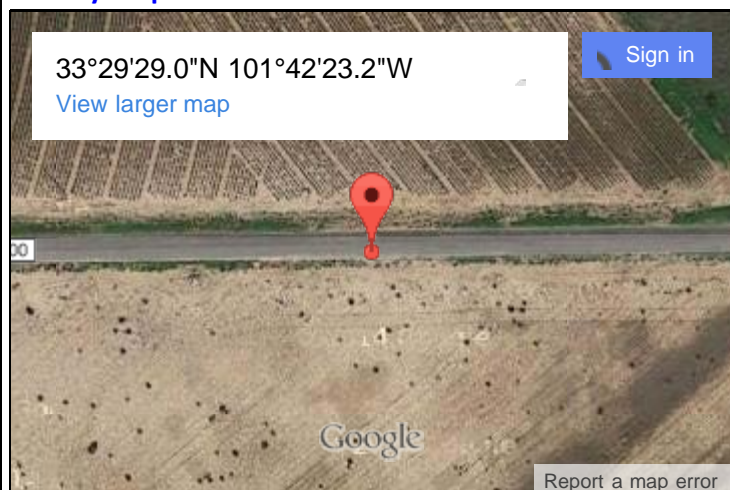
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:





**Control Station Data**



**Name of Station:** BH 15-378-38

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537838

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 32' 44.01298"	7,260,139.823 US Ft	7,260,139.823 US Ft
Longitude   Easting   X:	W 101° 42' 20.28556"	991,971.363 US Ft	991,971.363 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	928.145 m	3,045.088 US Ft	3,127.306 US Ft

**Location**

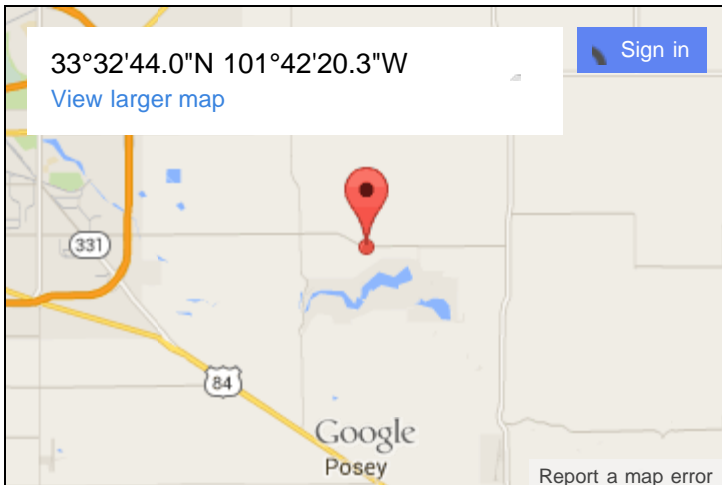
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PK NAIL AND ALUM WASHER IN ROAD

**Section:**

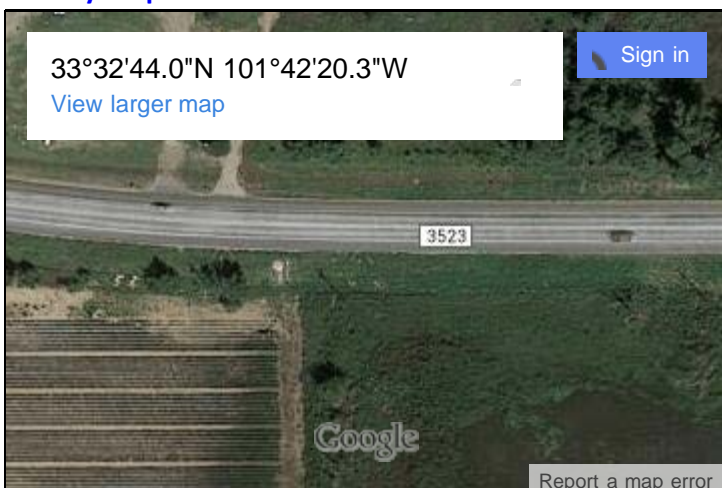
**Location Map:**



**Vicinity Photo (Looking West):**



**Vicinity Map:**



**Close Up Photo:**



## Control Station Data

**Name of Station:** BH 15-378-39

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537839

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 38' 09.29419"	7,293,003.487 US Ft	7,293,003.487 US Ft
Longitude   Easting   X:	W 101° 42' 20.96954"	992,916.630 US Ft	992,916.630 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	940.603 m	3,085.963 US Ft	3,168.756 US Ft

### Location

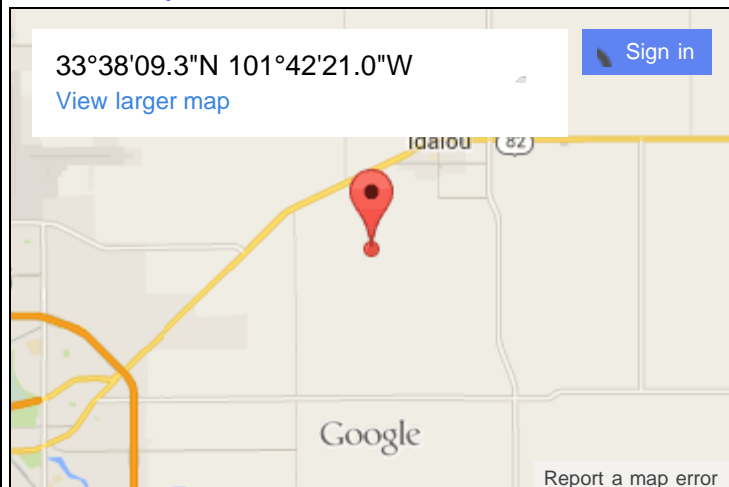
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

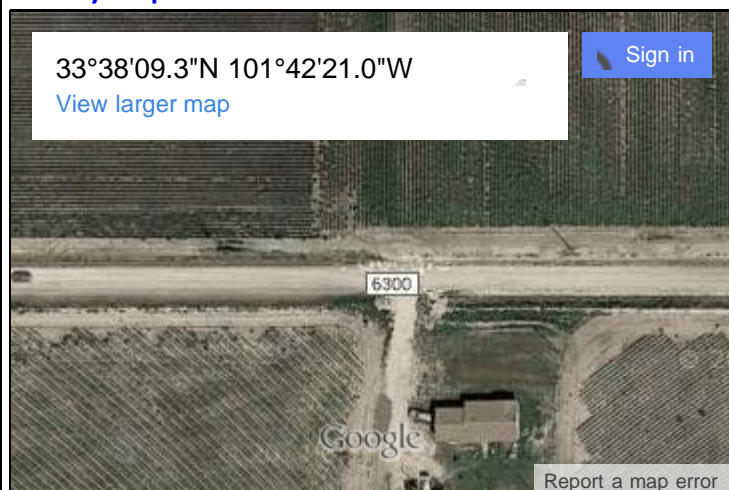
### Location Map:



### Vicinity Photo (Looking East):



### Vicinity Map:



### Close Up Photo:





## Control Station Data

**Name of Station:** BH 15-378-51

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 16-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537851

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 39' 01.65048"	7,300,036.416 US Ft	7,300,036.416 US Ft
Longitude   Easting   X:	W 101° 53' 18.24836"	937,544.819 US Ft	937,544.819 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	961.123 m	3,153.285 US Ft	3,235.301 US Ft

### Location

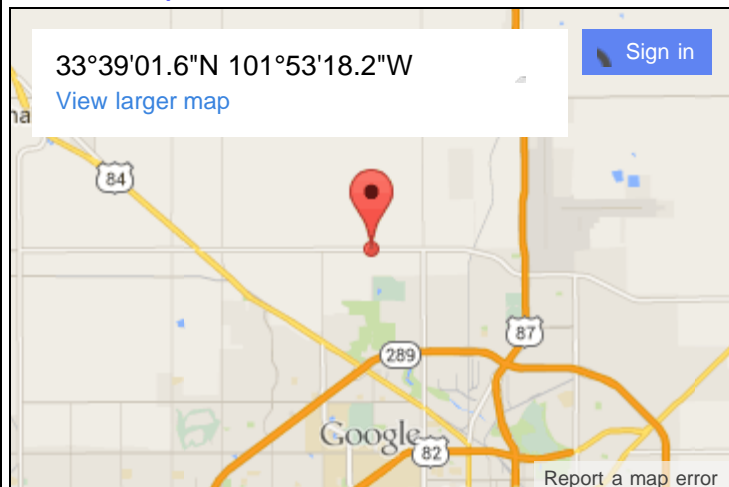
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

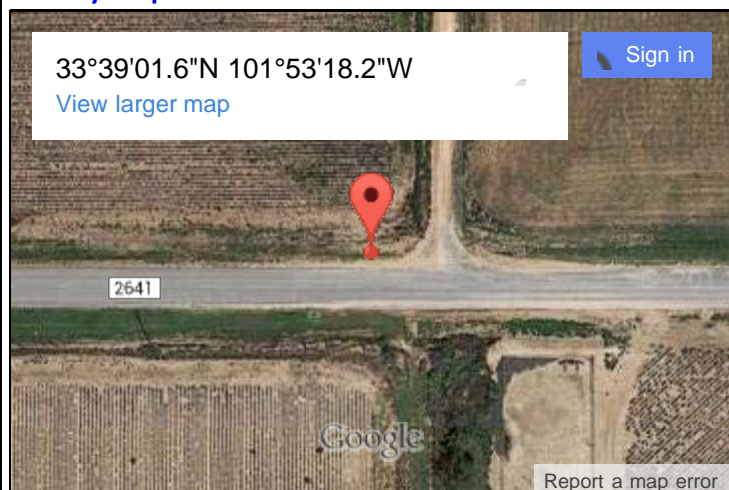
### Location Map:



### Vicinity Photo (Looking East):



### Vicinity Map:



### Close Up Photo:



**Control Station Data**



**Name of Station:** BH 15-378-52

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 16-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537852

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 39' 01.69823"	7,300,717.809 US Ft	7,300,717.809 US Ft
Longitude   Easting   X:	W 101° 57' 23.96604"	916,785.162 US Ft	916,785.162 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	968.398 m	3,177.151 US Ft	3,258.775 US Ft

**Location**

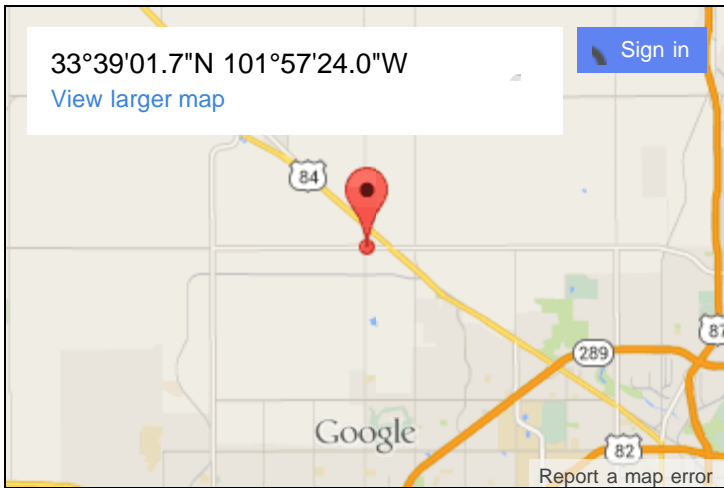
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

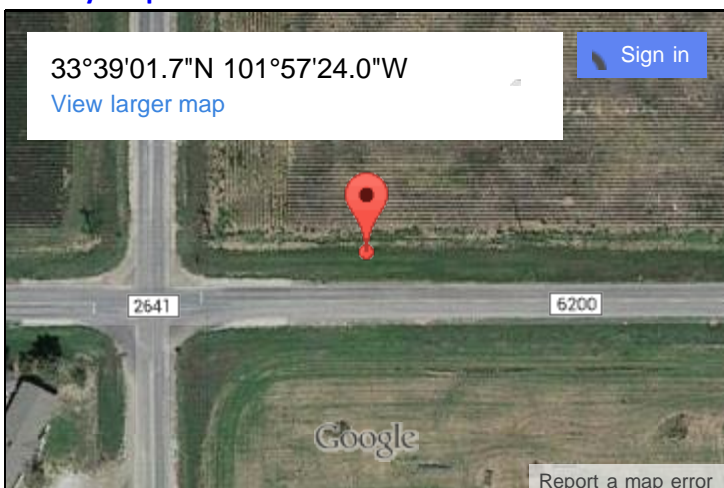
**Location Map:**



**Vicinity Photo (Looking North):**



**Vicinity Map:**



**Close Up Photo:**





**Control Station Data**



**Name of Station:** BH 15-378-54

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537854

**Horizontal Method:** OPUS

**Vertical Method:** OPUS

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 26' 49.55912"	7,225,737.712 US Ft	7,225,737.712 US Ft
Longitude   Easting   X:	W 101° 51' 11.93126"	945,855.594 US Ft	945,855.594 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	949.047 m	3,113.665 US Ft	3,194.597 US Ft

**Location**

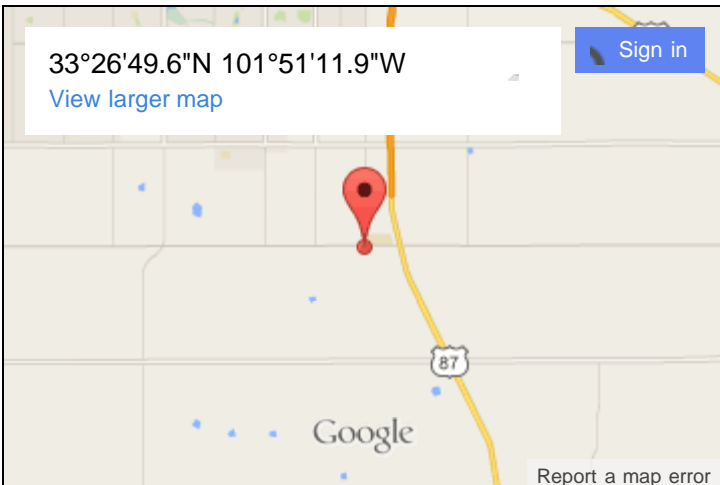
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

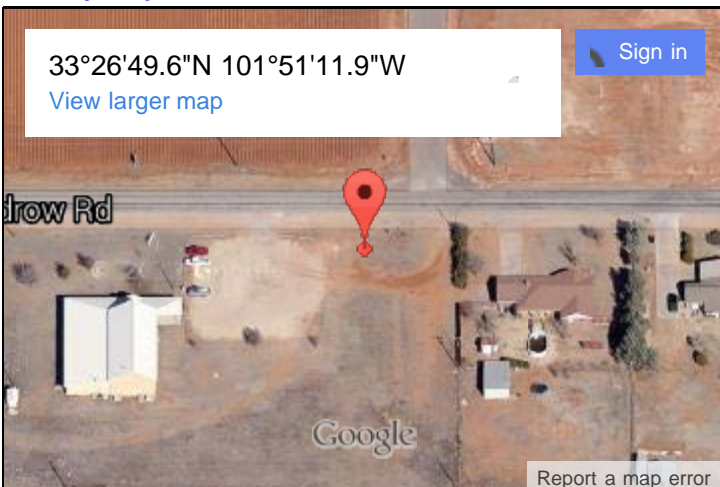
**Location Map:**



**Vicinity Photo (Looking West):**



**Vicinity Map:**



**Close Up Photo:**



### Control Station Data

**Name of Station:** BH 15-378-55

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 55

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 26' 49.44328"	7,227,201.295 US Ft	7,227,201.295 US Ft
Longitude   Easting   X:	W 102° 00' 05.72299"	900,652.723 US Ft	900,652.723 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	982.926 m	3,224.817 US Ft	3,304.850 US Ft

### Location

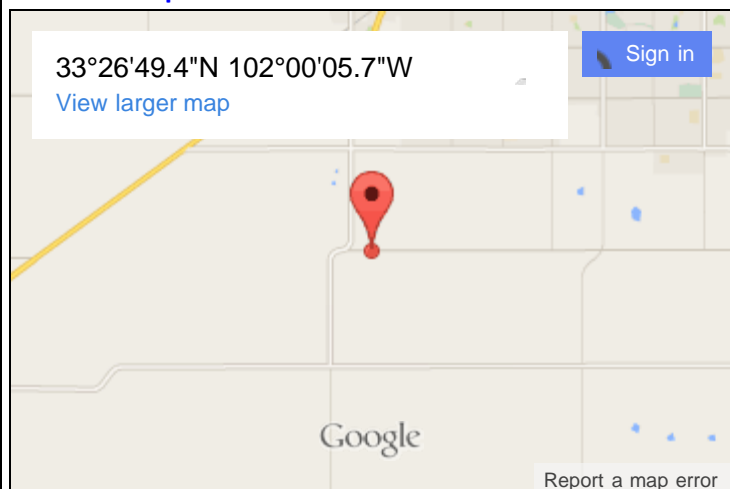
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

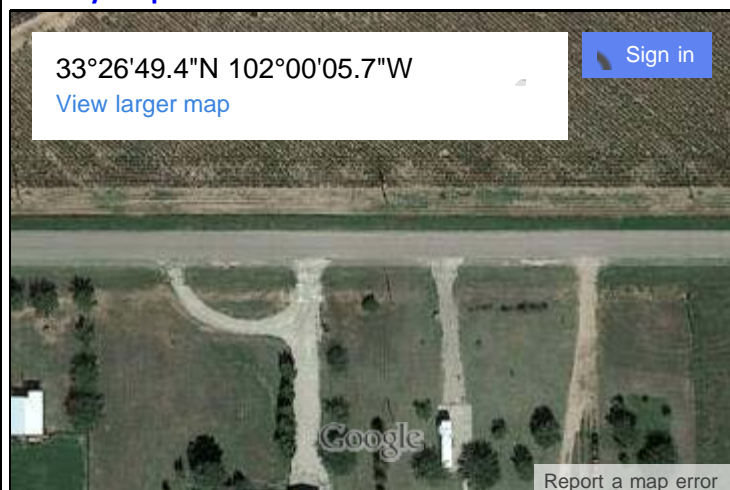
### Location Map:



### Vicinity Photo (Looking South):



### Vicinity Map:



### Close Up Photo:





**Control Station Data**

**Name of Station:** BH 15-378-57

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537857

**Horizontal Method:** OPUS

**Vertical Method:** OPUS

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 31' 11.89197"	7,251,043.601 US Ft	7,251,043.601 US Ft
Longitude   Easting   X:	W 101° 43' 41.39760"	984,823.825 US Ft	984,823.825 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	931.904 m	3,057.422 US Ft	3,139.403 US Ft

**Location**

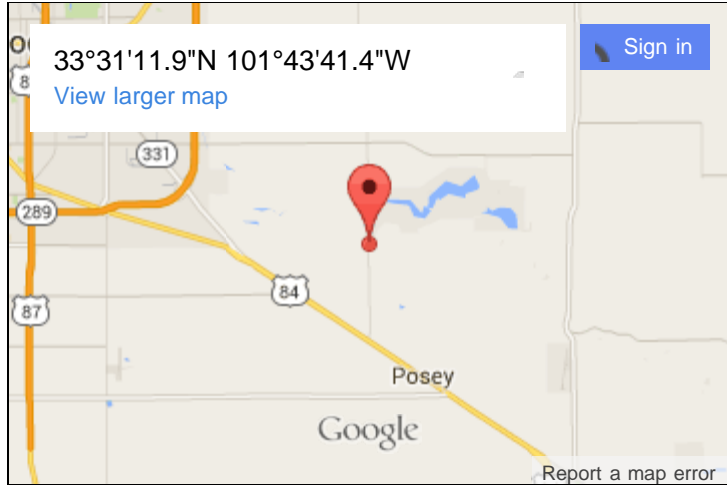
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

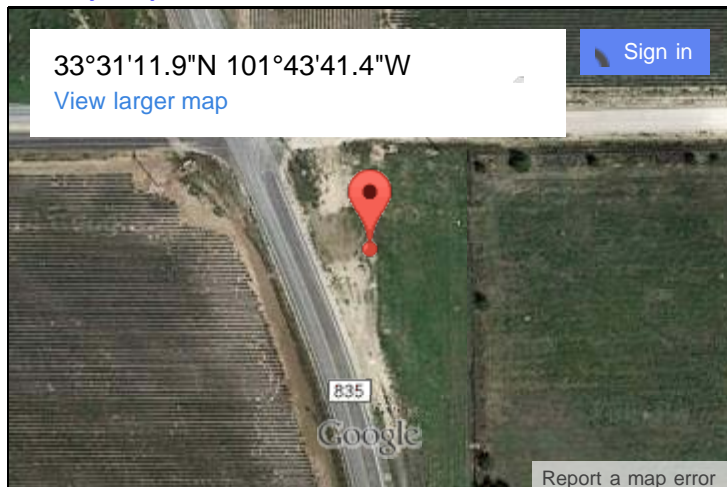
**Location Map:**



**Vicinity Photo (Looking South):**



**Vicinity Map:**



**Close Up Photo:**



# Control Station Data Bohannon Huston

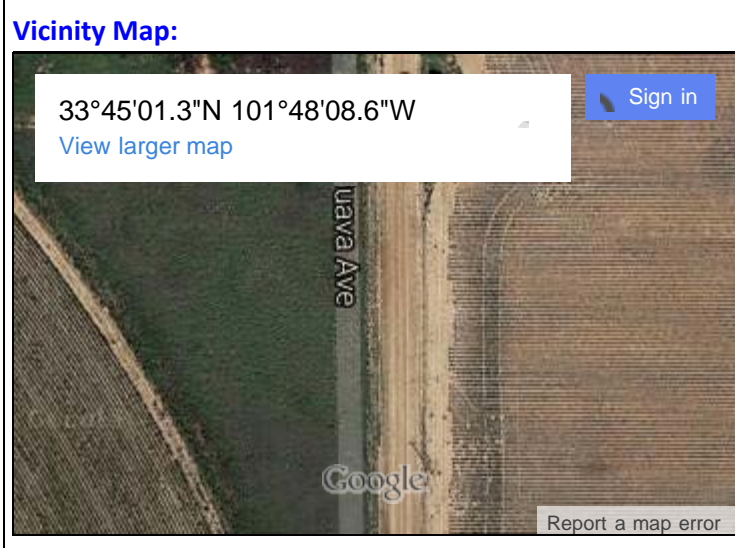
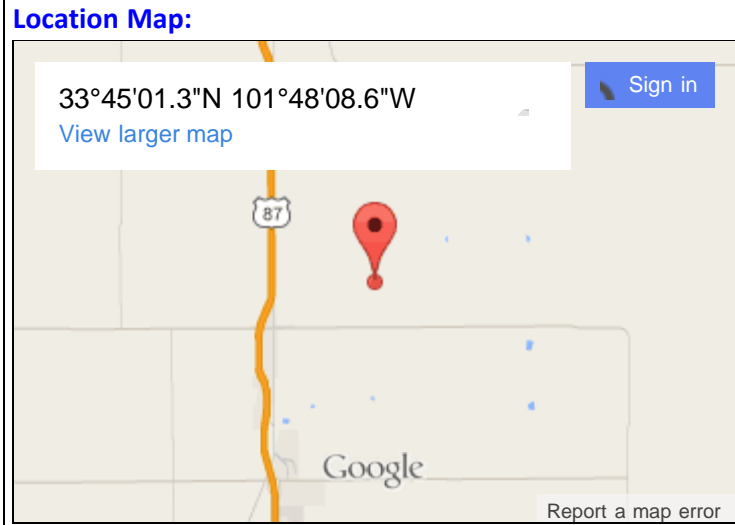
**Name of Station:** BH 15-378-58  
**Establishing Group:** Bohannon Huston, Inc. **BST Project #:** 20150378  
**Observation Date:** 19-Feb-2015 **Project Name:** Lubbock Orthophotography

**Station Data**  
**Type/Composition:** 2" Aluminum Cap **Horizontal Method:** Real-Time Kinematic  
**Station Height:** 0.00 US Ft **Vertical Method:** Real-Time Kinematic  
**Stamping:** LUB 1537858

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 45' 01.31451"	7,335,538.764 US Ft	7,335,538.764 US Ft
Longitude   Easting   X:	W 101° 48' 08.57967"	964,850.845 US Ft	964,850.845 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	981.645 m	3,220.615 US Ft	3,303.782 US Ft

**Location**  
**County & State:** Lubbock, TX **Section:**  
**Land Grant(s):** None  
**Note(s):** PLASTIC PANEL





## Control Station Data

**Name of Station:** BH 15-378-59

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 18-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 59

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 33' 02.15828"	7,263,386.726 US Ft	7,263,386.726 US Ft
Longitude   Easting   X:	W 101° 51' 15.44627"	946,760.140 US Ft	946,760.140 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	954.364 m	3,131.110 US Ft	3,212.652 US Ft

### Location

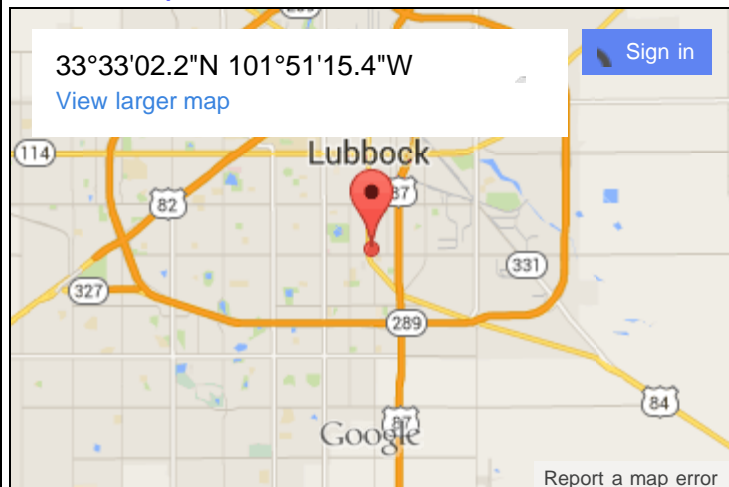
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

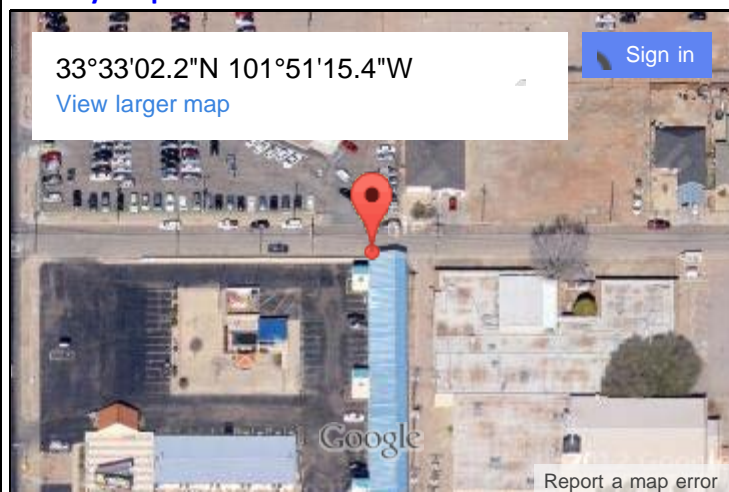
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:



### Control Station Data

**Name of Station:** BH 15-378-61

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Washer

**Station Height:** 0.00 US Ft

**Stamping:** LUB 15 378 61

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 28' 35.00950"	7,236,051.871 US Ft	7,236,051.871 US Ft
Longitude   Easting   X:	W 101° 49' 06.16379"	956,842.714 US Ft	956,842.714 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	940.698 m	3,086.274 US Ft	3,167.585 US Ft

### Location

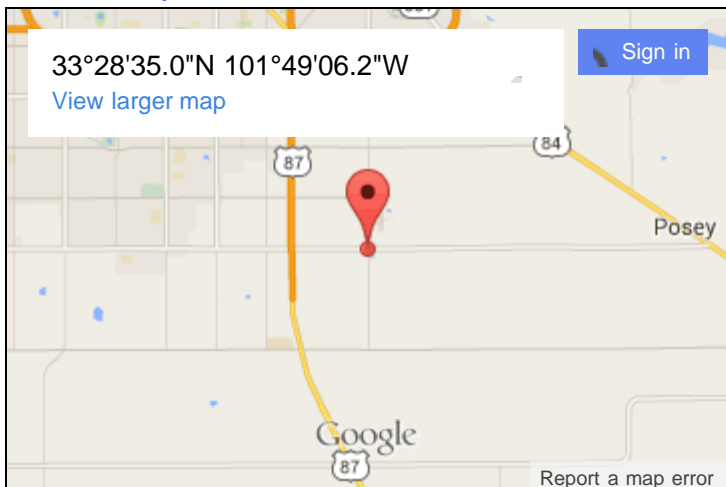
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):**

**Section:**

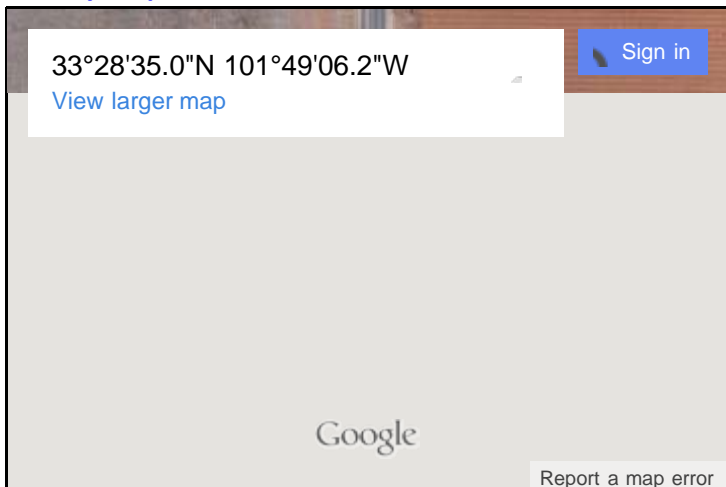
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:





**Control Station Data**



**Name of Station:** BH 15-378-62

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 16-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

**Station Data**

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537862

**Horizontal Method:** OPUS

**Vertical Method:** OPUS

**Coordinate Data**

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 38' 09.73776"	7,295,824.743 US Ft	7,295,824.743 US Ft
Longitude   Easting   X:	W 101° 59' 31.30771"	905,852.148 US Ft	905,852.148 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	981.477 m	3,220.062 US Ft	3,301.371 US Ft

**Location**

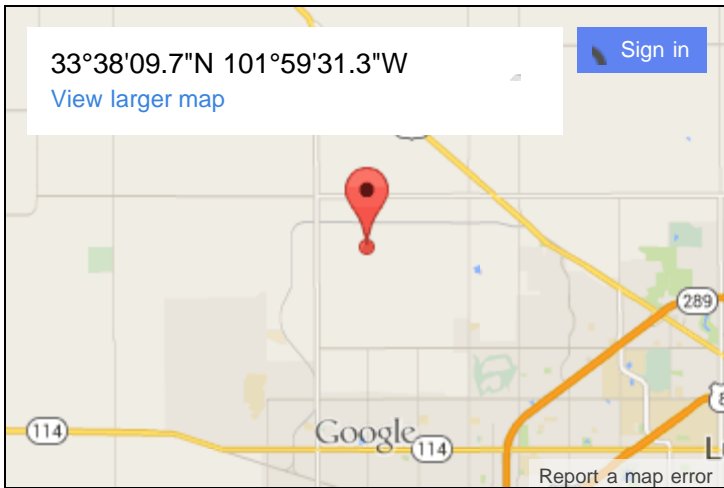
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

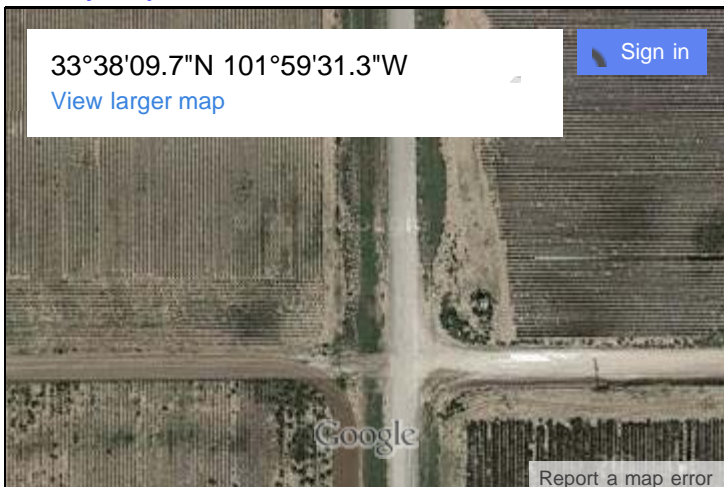
**Location Map:**



**Vicinity Photo (Looking East):**



**Vicinity Map:**



**Close Up Photo:**



## Control Station Data

**Name of Station:** BH 15-378-65

**Establishing Group:** Bohannon Huston, Inc.

**Observation Date:** 17-Feb-2015

**BST Project #:** 20150378

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** 2" Aluminum Cap

**Station Height:** 0.00 US Ft

**Stamping:** LUB 1537865

**Horizontal Method:** Real-Time Kinematic

**Vertical Method:** Real-Time Kinematic

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 30' 44.92204"	7,249,510.043 US Ft	7,249,510.043 US Ft
Longitude   Easting   X:	W 101° 51' 10.59414"	946,727.928 US Ft	946,727.928 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	956.475 m	3,138.033 US Ft	3,219.319 US Ft

### Location

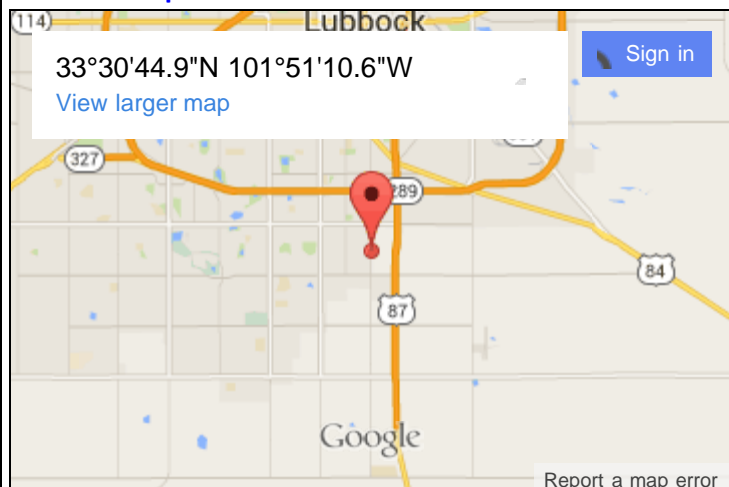
**County & State:** Lubbock, TX

**Land Grant(s):** None

**Note(s):** PLASTIC PANEL

**Section:**

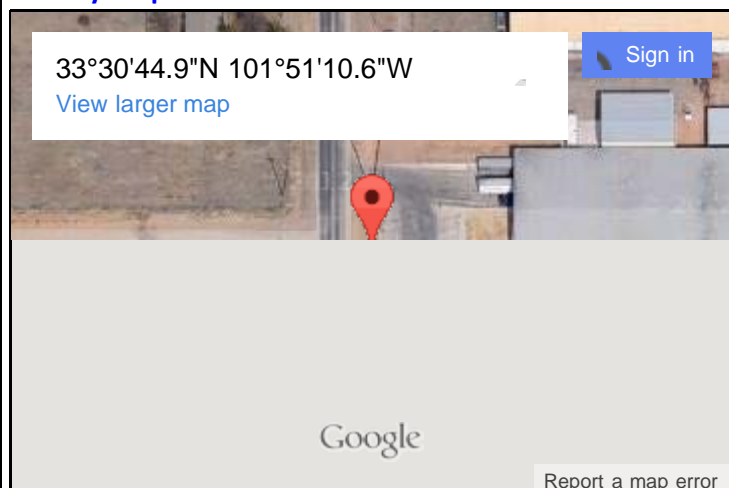
### Location Map:



### Vicinity Photo (Looking South):



### Vicinity Map:



### Close Up Photo:





## Control Station Data

Name of Station: BH2015037800000807

Establishing Group:

BST Project #: 20150378

Observation Date: 19-Feb-2015

Project Name: Lubbock Orthophotography

## Station Data

Type/Composition: 3.25" Aluminum Cap

Horizontal Method: OPUS

Station Height: -0.20 US Ft

Vertical Method: OPUS

Stamping: CITY OF LUBBOCK GEODETIC MONUMENT 007

## Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 38' 38.67330"	7,297,041.942 US Ft	7,297,041.942 US Ft
Longitude   Easting   X:	W 101° 49' 08.73756"	958,552.184 US Ft	958,552.184 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	966.146 m	3,169.763 US Ft	3,252.133 US Ft

## Location

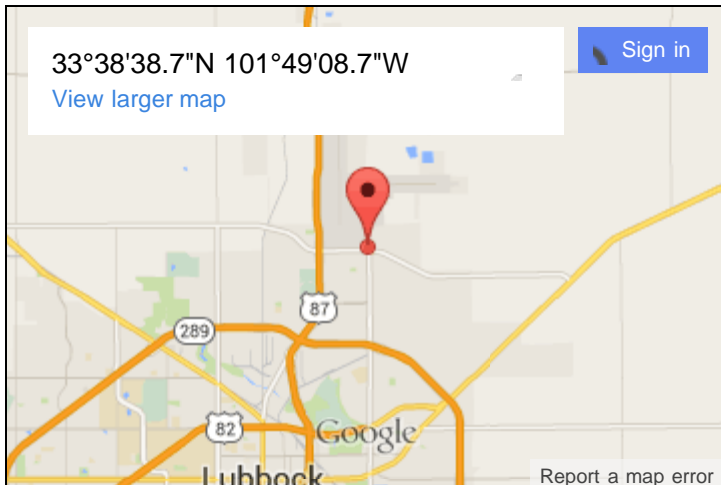
County &amp; State: Lubbock, TX

Section:

Land Grant(s): None

Note(s):

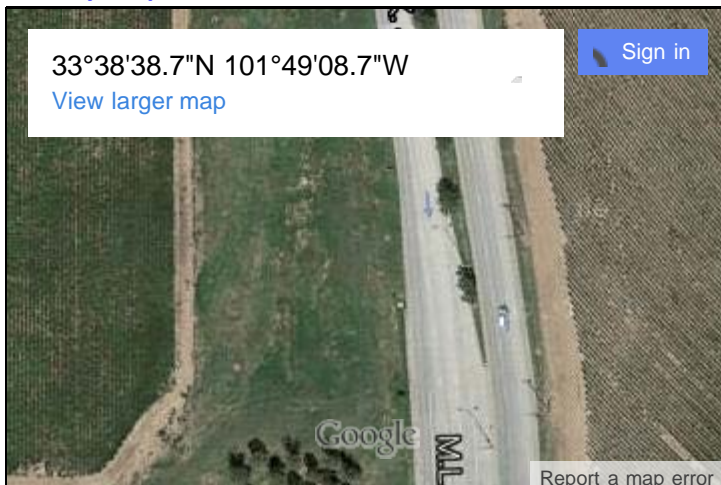
## Location Map:



## Vicinity Photo (Looking South):



## Vicinity Map:



## Close Up Photo:



## Control Station Data

Name of Station: BH2015037800002009

Establishing Group: Professional Land Surveyor

BST Project #: 20150378

Observation Date: 17-Feb-2015

Project Name: Lubbock Orthophotography

## Station Data

Type/Composition: Washer

Horizontal Method: OPUS

Station Height: 0.00 US Ft

Vertical Method: OPUS

Stamping: 2009

## Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 32' 03.40106"	7,259,522.487 US Ft	7,259,522.487 US Ft
Longitude   Easting   X:	W 102° 03' 39.14131"	883,656.007 US Ft	883,656.007 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	984.408 m	3,229.679 US Ft	3,309.833 US Ft

## Location

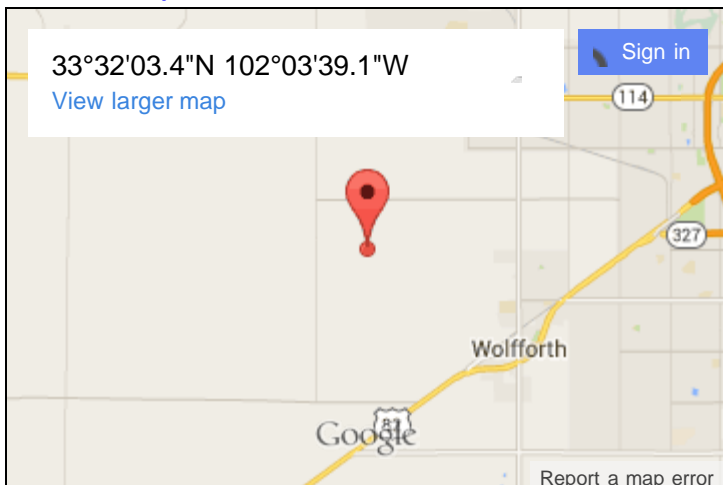
County &amp; State: Lubbock, TX

Section:

Land Grant(s): None

Note(s): BHI AFFIXED ALUMINUM WASHER STAMPED 2009; PLASTIC PANEL

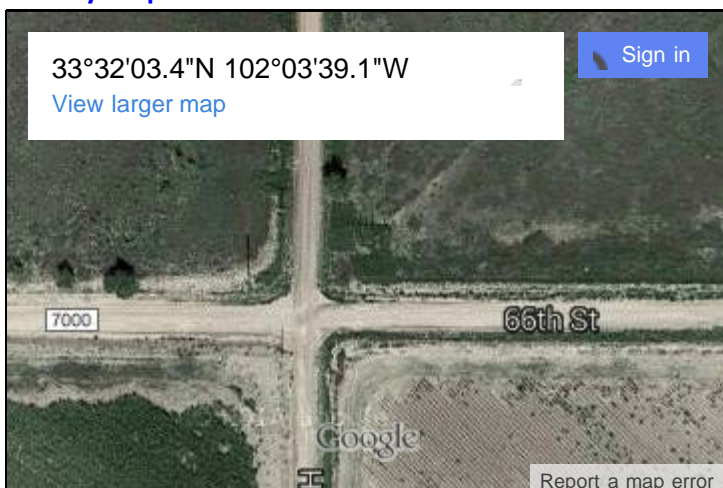
## Location Map:



## Vicinity Photo (Looking North):



## Vicinity Map:



## Close Up Photo:





### Control Station Data



**Name of Station:** BH2015037800002024

**Establishing Group:** Professional Land Surveyor

**BST Project #:** 20150378

**Observation Date:** 18-Feb-2015

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Nail (w/o Washer)

**Horizontal Method:** Real-Time Kinematic

**Station Height:** 0.00 US Ft

**Vertical Method:** Real-Time Kinematic

**Stamping:**

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 33' 37.08253"	7,265,716.236 US Ft	7,265,716.236 US Ft
Longitude   Easting   X:	W 101° 43' 43.29295"	985,114.381 US Ft	985,114.381 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	934.597 m	3,066.255 US Ft	3,148.465 US Ft

### Location

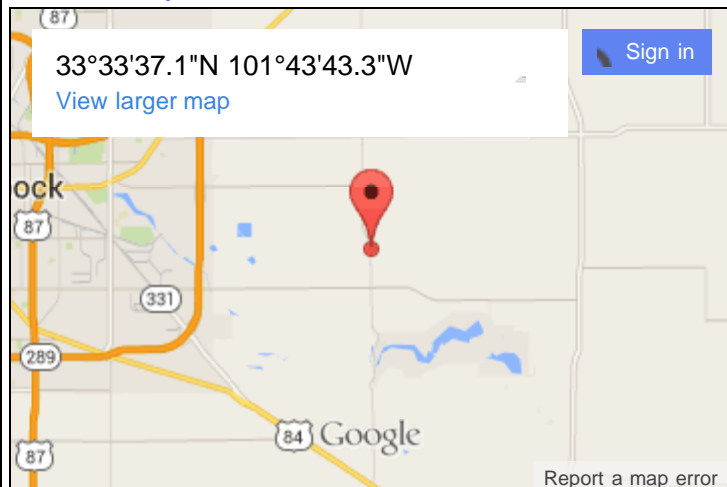
**County & State:** Lubbock, TX

**Section:**

**Land Grant(s):** None

**Note(s):** RAIL ROAD SPIKE IN ROAD

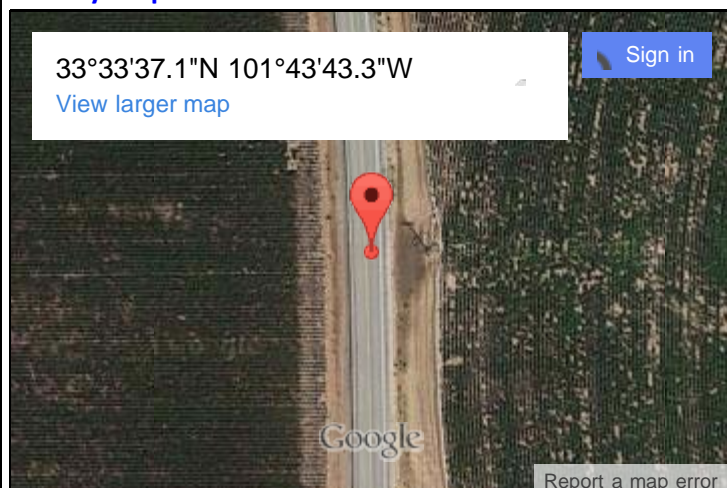
### Location Map:



### Vicinity Photo (Looking South):



### Vicinity Map:



### Close Up Photo:



## Control Station Data

**Name of Station:** BH2015037800009099

**Establishing Group:**

**BST Project #:** 20150378

**Observation Date:** 18-Feb-2015

**Project Name:** Lubbock Orthophotography

### Station Data

**Type/Composition:** Rebar

**Horizontal Method:** Real-Time Kinematic

**Station Height:** 0.00 US Ft

**Vertical Method:** Real-Time Kinematic

**Stamping:**

### Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 33' 00.47110"	7,263,218.252 US Ft	7,263,218.252 US Ft
Longitude   Easting   X:	W 101° 51' 16.17384"	946,693.155 US Ft	946,693.155 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	954.551 m	3,131.722 US Ft	3,213.244 US Ft

### Location

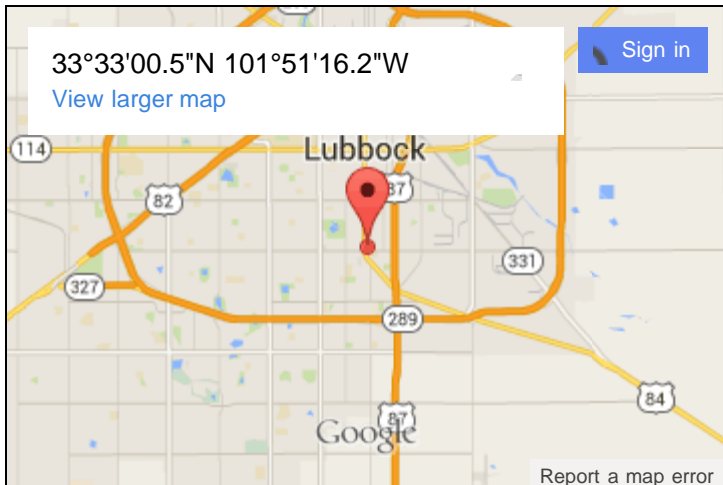
**County & State:** Lubbock, TX

**Section:**

**Land Grant(s):** None

**Note(s):**

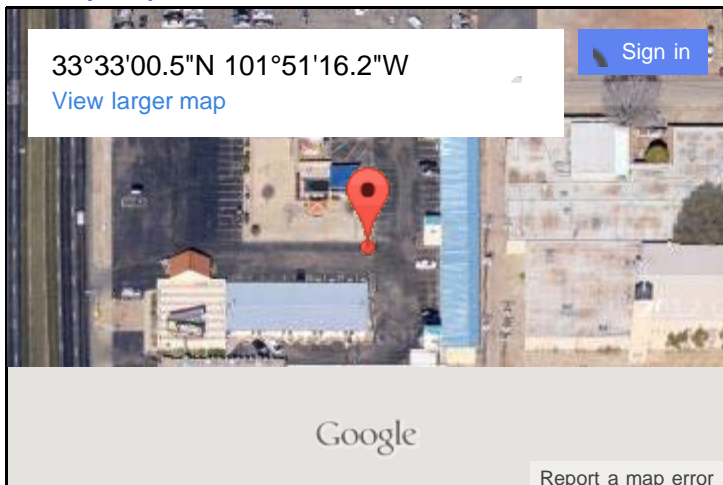
### Location Map:



### Vicinity Photo (Looking North):



### Vicinity Map:



### Close Up Photo:





## Control Station Data

Name of Station: BH2015037800081067

Establishing Group: Professional Land Surveyor

BST Project #: 20150378

Observation Date: 17-Feb-2015

Project Name: Lubbock Orthophotography

## Station Data

Type/Composition: Nail (w/o Washer)

Horizontal Method: Real-Time Kinematic

Station Height: 0.00 US Ft

Vertical Method: Real-Time Kinematic

Stamping:

## Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 27' 41.13982"	7,231,972.479 US Ft	7,231,972.479 US Ft
Longitude   Easting   X:	W 101° 57' 25.00461"	914,434.344 US Ft	914,434.344 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	976.006 m	3,202.114 US Ft	3,282.599 US Ft

## Location

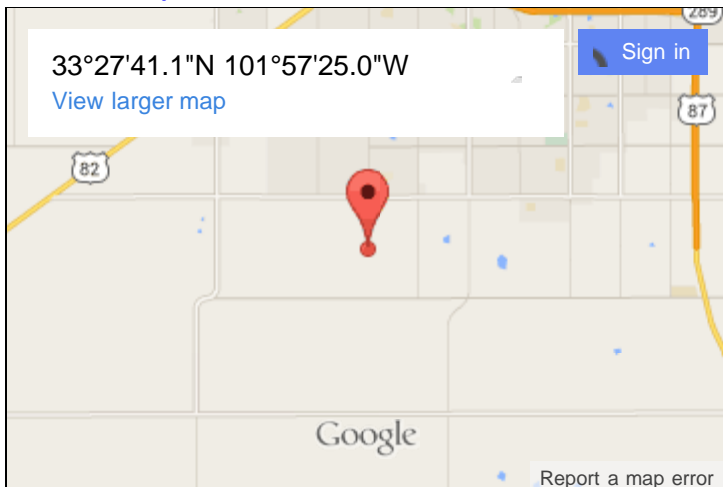
County &amp; State: Lubbock, TX

Section:

Land Grant(s): None

Note(s): RAIL ROAD SPIKE IN ROAD

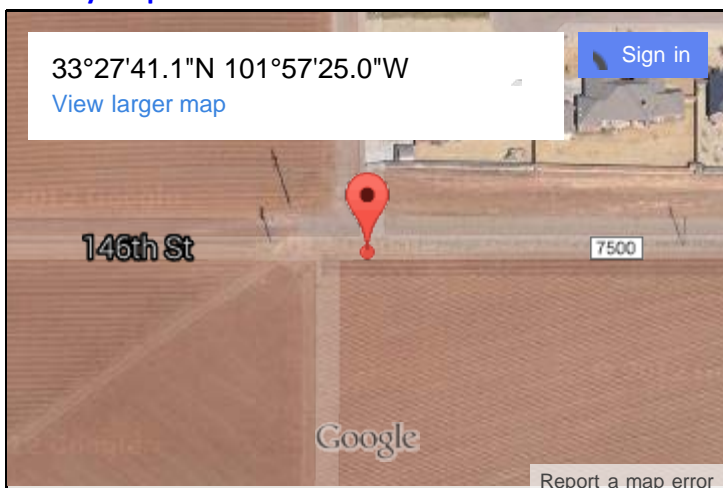
## Location Map:



## Vicinity Photo (Looking North):



## Vicinity Map:



## Close Up Photo:



## Control Station Data

Name of Station: BH2015037800081387

Establishing Group: Bohannon Huston, Inc.

BST Project #: 20150378

Observation Date: 16-Feb-2015

Project Name: Lubbock Orthophotography

## Station Data

Type/Composition: Nail (w/o Washer)

Horizontal Method: Real-Time Kinematic

Station Height: 0.00 US Ft

Vertical Method: Real-Time Kinematic

Stamping:

## Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 41' 37.67282"	7,315,466.592 US Ft	7,315,466.592 US Ft
Longitude   Easting   X:	W 101° 51' 15.88432"	948,386.547 US Ft	948,386.547 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	970.301 m	3,183.397 US Ft	3,265.851 US Ft

## Location

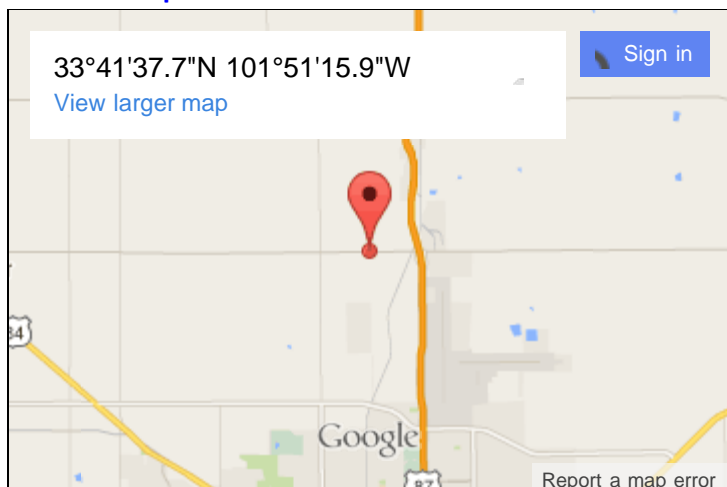
County &amp; State: Lubbock, TX

Section:

Land Grant(s): None

Note(s): RAIL ROAD SPIKE

## Location Map:



## Vicinity Photo (Looking North):



## Vicinity Map:



## Close Up Photo:





## Control Station Data

Name of Station: BH2015037800081411

Establishing Group:

BST Project #: 20150378

Observation Date: 19-Feb-2015

Project Name: Lubbock Orthophotography

## Station Data

Type/Composition: Nail (w/o Washer)

Horizontal Method: Real-Time Kinematic

Station Height: 0.00 US Ft

Vertical Method: Real-Time Kinematic

Stamping:

## Coordinate Data

Horizontal Datum:	Geodetic (NAD83)	Grid (TX83-NCF)	Alternate (TX83-NCF)
Latitude   Northing   Y:	N 33° 40' 50.24163"	7,309,837.707 US Ft	7,309,837.707 US Ft
Longitude   Easting   X:	W 101° 46' 01.47652"	974,788.479 US Ft	974,788.479 US Ft
Vertical Datum:	Ellipsoid (GRS80)	Ellipsoid (GRS80)	Orthometric (NAVD88, GEOID12A)
Elevation:	960.672 m	3,151.804 US Ft	3,234.631 US Ft

## Location

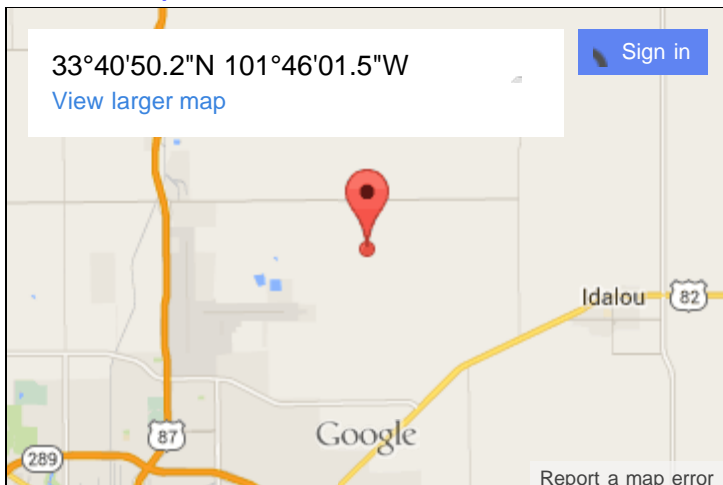
County &amp; State: Lubbock, TX

Section:

Land Grant(s): None

Note(s): RAILROAD SPIKE

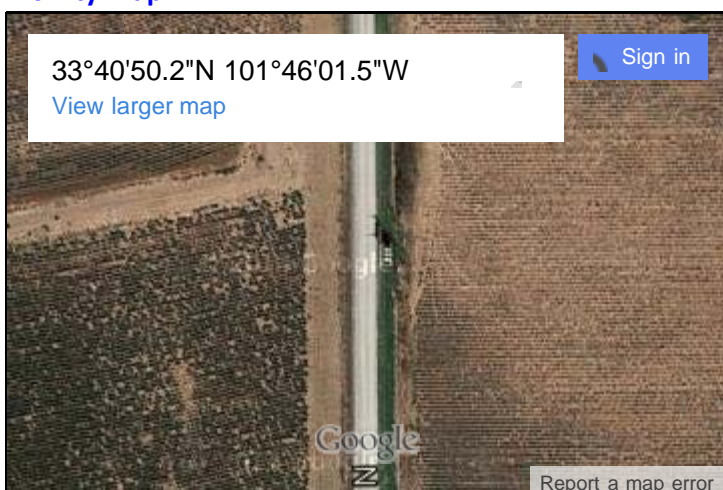
## Location Map:



## Vicinity Photo (Looking East):



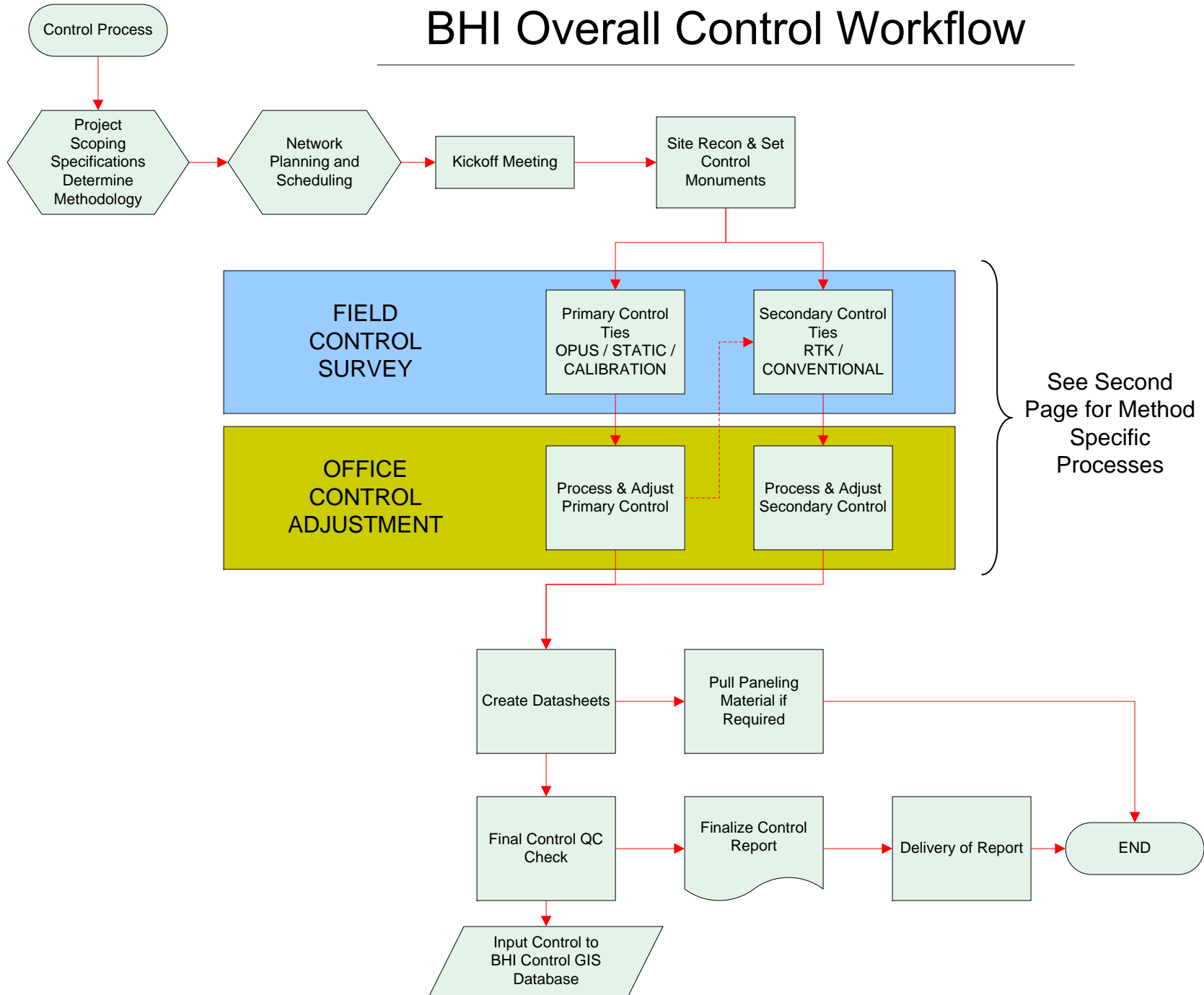
## Vicinity Map:



## Close Up Photo:



# BHI Overall Control Workflow



See Second Page for Method Specific Processes



# OPUS - RTK PROCESS

