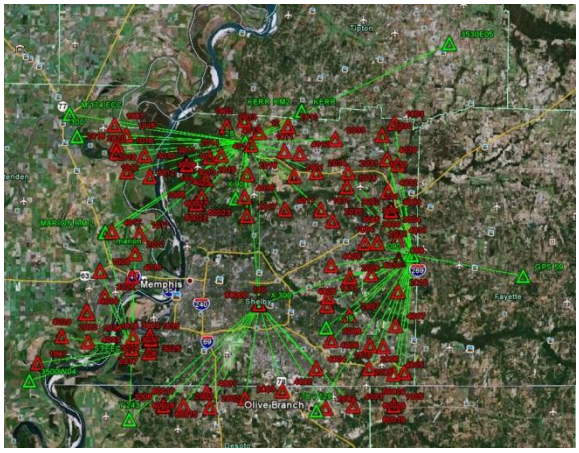
LiDAR GROUND CONTROL SURVEY REPORT



SHELBY COUNTY, TN 1m NPS LiDAR & 2-D BUILDING FEATURE EXTRACTION Shelby County, TN

U.S. GEOLOGICAL SURVEY—ROLLA, MO

FEBRUARY 2012

WOOLPERT

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SECTION 1: SURVEY REPORT

INTRODUCTION

Report Date:	February 28, 2012
Project Name:	Shelby County, TN 1m NPS LiDAR & 2-D Building Feature Extraction
Client POC Information:	USGS/NGTOC Pat Emmet, MS 666 1400 Independence Road Rolla, MO 65401 Phone: 573.308.3587 Fax: 573.308.3810 pemmett@usgs.gov
Contract Number:	G10PC00057
Task Order Number:	G12PD00127
Date of Contract:	January 18, 2012
Delivery Date:	NLT April 30, 2012

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Woolpert Project Number:	072124

This report contains a comprehensive outline of the LiDAR Ground Control Survey that supported the Shelby County, TN 1m NPS LiDAR & 2-D Building Feature Extraction Task Order. All surveys were performed in such a way as to achieve ground control accuracies that meet or exceed the National Mapping Accuracy Standards.

PROJECT AREA

This task order is for the acquisition of 798 square miles of LiDAR in and near Shelby County, Tennessee. Additionally this task requires 2-D building feature extraction (building footprint) for 560 square mile of the area of interest (AOI) in Shelby County, Tennessee.

PURPOSE

The purpose of this survey was to establish three-dimensional coordinates for ground control points (GCPs) distributed throughout the task order AOI and a minimum of 20 quality control (QC) points in each of the land cover classifications in Shelby County, TN.

The GCPs were located on open, bare earth surfaces with a level slope to enable effective assessment of swath-to-swath reproducibility and absolute accuracy. The QC points were collected uniformly dispersed over the project area in the appropriate land cover categories to verify fundamental, supplemental, and consolidated vertical accuracies throughout the task order AOI.

DATE OF SURVEY

Ground control field operations took place between January 7, 2012, and January 10, 2012.

MONUMENTATION

Prior to aerial imagery acquisition, Woolpert field crews performed a field reconnaissance to verify the existence and suitability of pre-selected existing National Geodetic Survey (NGS) control stations. These existing control stations were utilized to ensure that quality *x, y,* and *z* coordinate values were computed for each of the newly established LiDAR control stations. Recovery information sheets for the existing NGS control stations can be found in Section 4 of this report. A control diagram showing the ground control stations used to support this LiDAR mapping project can be found in Section 5 of this report.

ACCURACY STANDARDS

The data collected under this task order shall meet the National Standard for Spatial Database Accuracy (NSSDA) accuracy standards. The NSSDA standards specify that vertical accuracy be reported at the 95 percent confidence level, ($RMSE_Z$ * 1.96), for data tested by an independent source of higher accuracy.

The Fundamental Vertical Accuracy (FVA) of the LiDAR Point Cloud: 24.5 cm at a 95% confidence level, derived according to NSSDA, i.e., based on RMSEZ of 12.5 cm in the "open terrain" land cover category.

Consolidated Vertical Accuracy (CVA): 36.3 cm at a 95% confidence level, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for LiDAR Data, i.e., based on the 95% error in all land cover categories combined. This is a required accuracy

Supplemental Vertical Accuracy (SVA): shall be reported for each of the land cover classes identified within the task order AOI. The target SVA is: 36.3 cm at a 95th percentile level, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for LiDAR Data, i.e., based on the 95th percentile error for each required land cover class. These are target accuracies.

The overall accuracy of the ground control survey is expressed in terms of standard deviation, at a 95% confidence level, based on the published NGS control monuments that were used throughout the task order AOI. The standard deviation of the ground control survey is 0.024m horizontally and 0.022m vertically at the 95% confidence level.

GPS EQUIPMENT

Woolpert utilized a Trimble Navigation R8 Model 2 GNSS dual-frequency GPS receiver with an Air Link Communications Raven CDMA cellular modem with a service plan provided by Verizon as a base station. Woolpert also utilized a Trimble Navigation an R8 Model 2 and an R8 model 3 GNSS dual-frequency GPS receiver with Air Link Communications Raven CDMA cellular modems and two TSC2 data collector as rovers for this project.

METHODOLOGY

REAL-TIME KINEMATIC (RTK) GPS

The field crew utilized Real-Time Kinematic (RTK) GPS surveying throughout most of the ground control data collection process. Using RTK GPS techniques, observations were performed on 21 LiDAR control points (GCP), six of which were photo identifiable and 80 ground control quality check points. The survey was conducted using a 1-second epoch rate, in a fixed solution RTK mode, with each observation lasting between 60 to 180 seconds. Each station was occupied twice to insure the necessary horizontal and vertical accuracies were being met for this LiDAR project.

GPS DATA ANALYSIS AND PROCESSING

The field crew chief processed all session baselines each day using *Trimble Navigation's* Trimble Business Center (TBC) Version 2.60 baseline processor. Daily processing ensured the integrity of the network as it was constructed, and allowed the field crews to immediately reschedule observations of poor baselines.

The GPS base stations and geodetic control consisted of the following:

Dimension	New and Existing Control Stations
3-D BASE STATIONS	X-300, STEEL, 90, and 28
3-D CONTROL	300, 3500W04, 3530E05, GPS 59, MARION, X 90, Y 243
VERTICAL CONTROL	KERR, M 174 and X 16

Steel, 90, 28, 300, 3500W04 and GPS 59 geodetic coordinates were established by using an average location based on multiple days of results from the Online Positioning User Service (OPUS).

DATUM REFERENCE AND FINAL COORDINATES

New horizontal GPS control within the Shelby County, TN, area was based on the UTM Coordinate System Zone 16 North, referenced to North American Datum 1983, national re-adjustment of 2007 (NAD83/2007), expressed in meters. All vertical control was based on the North American Vertical Datum of 1988 (NAVD88), also expressed in meters. These coordinates for the LiDAR control survey can be found in Section 2 of this report.

QUALITY ASSURANCE

Existing NGS published control stations were surveyed to assure that there were no discrepancies in the field observation data. Close examinations of the residuals showed no distortions in orientation or scale.

SECTION 2: GROUND/GEODETIC CONTROL COORDINATE LISTINGS

COORDINATE SYSTEM: GRID

HORIZONTAL DATUM: NAD83 (2007)
VERTICAL DATUM: NAVD88
ZONE: UTM 16 North
GEOID MODEL: GEOID 09
UNITS: Meters

LiDAR GROUND CONTROL

Station Name	Northing (M)	Easting (M)	Elevation (M)	Description
1001	3919740.701	210605.986	68.591	Gravel
1002	3919891.396	232007.014	91.951	Concrete
1003	3918705.014	256661.625	119.771	Asphalt
1004	3899165.993	251192.309	112.435	PID-Corner of stop bar
1005	3872500.216	255266.476	109.61	PID-Corner of stop bar
1006	3873604.804	217319.716	85.684	PID-Corner of stop bar
1007	3881167.905	196766.253	72.632	Gravel
1008	3895965.021	207518.793	64.351	Asphalt
1009	3906455.315	223696.743	74.097	PID-Corner of asphalt/concrete pavement
1010	3882269.139	253756.335	105.401	Brick
1011	3914634.701	238438.408	84.189	Asphalt
1012	3911134.189	216200.049	68.598	Dirt
1013	3890595.939	244933.823	81.317	Asphalt
1014	3908482.224	248542.122	77.997	Gravel
1015	3918026.540	212506.285	68.66	Dirt
1016	3914683.975	215385.787	68.28	Dirt
1017	3901765.186	214202.689	67.58	Asphalt
1018	3885207.968	215396.980	73.297	PID-Corner of stop bar
1030	3911918.348	257035.505	81.562	Gravel
1031	3904899.440	244128.366	94.806	Concrete
1035	3885202.274	215423.053	73.593	PID-Tip of turn arrow

QUALITY CONTROL POINTS

Station Name	Northing (M)	Easting (M)	Elevation (M)	Description
2001	3873581.694	220580.011	84.149	Tall Grass
2002	3873108.213	224961.446	80.818	Tall Grass
2003	3874485.549	230813.254	112.066	Tall Grass

Station Name	Northing (M)	Easting (M)	Elevation (M)	Description
2004	3872481.095	244007.541	115.545	Tall Grass
2005	3877907.274	257103.661	115.255	Tall Grass
2006	3878786.338	251297.937	100.579	Tall Grass
2007	3887516.077	248357.539	83.320	Tall Grass
2008	3883538.466	245211.163	101.249	Tall Grass
2009	3893745.318	248582.826	104.463	Tall Grass
2010	3891185.302	256445.966	97.124	Tall Grass
2011	3910516.377	239897.218	94.203	Tall Grass
2012	3918720.640	239155.854	97.784	Tall Grass
2013	3918988.631	229063.719	93.448	Tall Grass
2014	3914018.799	226125.686	109.840	Tall Grass
2015	3910478.626	225396.789	84.132	Tall Grass
2016	3911054.039	232225.050	89.435	Tall Grass
2017	3904240.525	231953.222	73.621	Tall Grass
2018	3916443.714	210812.176	66.541	Tall Grass
2019	3912070.476	212437.238	69.104	Tall Grass
2020	3915218.379	210760.965	65.437	Tall Grass
2021	3898641.778	213380.035	67.353	Tall Grass
2022	3891840.429	208207.054	65.502	Tall Grass
2023	3884472.984	205212.907	63.807	Tall Grass
2030	3916802.876	254596.878	90.351	Tall Grass/Weeds
2031	3910874.574	248807.590	90.191	Tall Grass
2032	3899231.589	253279.702	100.887	Tall Grass
2033	3916349.119	246838.008	92.432	Tall Grass
2034	3911044.945	243571.525	88.896	Tall Grass
2035	3903031.973	246022.745	88.280	Tall Grass
2036	3884974.906	212654.594	64.906	Tall Grass
2037	3882361.743	215195.597	90.644	Tall Grass
3001	3904382.700	255759.271	81.702	Woods
3002	3904363.725	255723.781	81.749	Woods
3003	3904339.914	255692.525	81.909	Woods
3004	3904378.500	255667.095	81.694	Woods
3005	3904412.218	255695.752	81.541	Woods
3006	3904440.227	255741.468	81.473	Woods
3007	3904425.077	255781.971	81.336	Woods
3008	3904433.324	255814.664	81.723	Woods
3009	3912892.228	222219.492	104.490	Woods
3010	3912891.408	222277.297	104.698	Woods
3011	3912950.946	222256.771	103.846	Woods
3012	3913004.540	222258.120	106.234	Woods
3013	3913051.565	222218.983	106.886	Woods
3014	3913120.030	222174.700	105.868	Woods
3015	3913066.939	222128.254	105.530	Woods

Station Name	Northing (M)	Easting (M)	Elevation (M)	Description
3016	3912974.852	222147.381	105.880	Woods
3017	3884423.598	215476.507	86.387	Woods
3018	3884394.222	215482.799	86.135	Woods
3019	3884368.690	215455.260	87.487	Woods
3020	3884398.121	215419.414	88.850	Woods
3021	3884396.665	215347.661	90.013	Woods
3022	3884424.311	215373.240	90.019	Woods
3023	3884466.170	215473.756	86.516	Woods
3024	3884500.581	215508.723	86.269	Woods
3025	3884448.643	215542.899	87.987	Woods
4001	3875575.036	224553.042	92.731	Urban
4002	3875514.447	236992.331	107.174	Urban
4003	3872726.902	248548.318	118.431	Urban
4004	3879014.288	242637.046	109.172	Urban
4005	3877698.114	255363.661	118.116	Urban
4006	3882492.533	251578.569	105.397	Urban
4007	3885679.328	255883.771	86.787	Urban
4008	3889190.745	244696.156	81.712	Urban
4009	3895775.449	245568.130	97.680	Urban
4010	3894107.771	252125.870	103.774	Urban
4011	3905087.790	238289.661	91.697	Urban
4012	3914216.746	240944.935	87.368	Urban
4013	3915825.667	232983.968	86.518	Urban
4014	3914333.373	228004.857	94.221	Urban
4015	3907594.147	224630.655	89.120	Urban
4016	3907349.808	231686.293	73.147	Urban
4017	3902334.215	209671.176	66.383	Urban
4018	3894860.251	212767.552	66.156	Urban
4019	3889264.029	205120.757	64.601	Urban
4020	3885453.574	200881.198	62.374	Urban
4030	3912868.645	255268.437	101.620	Urban
4031	3899712.235	256566.727	110.603	Urban
4032	3907555.684	255230.750	85.764	Urban
4033	3883090.309	212357.836	64.620	Urban
8500	3872618.276	236363.286	117.735	Bare Earth
8502	3874357.685	224614.956	91.099	Bare Earth
8503	3872660.278	224597.932	81.684	Bare Earth
8504	3880719.863	212216.274	64.478	Bare Earth
8508	3901443.068	207964.002	66.273	Bare Earth
8509	3915528.532	214177.119	68.211	Bare Earth
8511	3917595.894	238348.942	86.823	Bare Earth
8512	3914749.473	239516.689	91.590	Bare Earth
8513	3911442.762	225577.765	87.601	Bare Earth

Station Name	Northing (M)	Easting (M)	Elevation (M)	Description
8514	3907335.987	228551.750	73.089	Bare Earth
8515	3903383.762	225668.947	70.441	Bare Earth
8517	3917439.107	248264.643	100.639	Bare Earth
8518	3913271.846	254213.193	109.564	Bare Earth
8519	3910417.862	257349.682	79.930	Bare Earth
8520	3910417.842	257349.723	79.873	Bare Earth
8521	3909266.827	258094.956	84.612	Bare Earth
8522	3903491.696	246522.019	86.662	Bare Earth
8523	3892894.724	245252.196	108.301	Bare Earth
8525	3887226.626	245864.235	90.142	Bare Earth
8526	3881156.418	250927.946	102.024	Bare Earth
8527	3873007.296	246163.350	113.749	Bare Earth
8528	3877168.626	254667.799	109.814	Bare Earth
8529	3908503.295	225703.803	75.124	Bare Earth

CONTROL BASE STATIONS

Station Name	Northing (M)	Easting (M)	Elevation (M)	Description
X 300	3889723.99	233544.283	89.502	CBN
STEEL	3883046.68	212364.07	64.022	BM-OPUSed
90 (090)	3897026.501	258977.766	113.103	Cont. Pt.-OPUSed
28 (028)	3916254.75	232076.719	78.783	Cont. Pt.-OPUSed

NGS CONTROL BASE STATION CHECK POINTS

Station Name	Northing (M)	Easting (M)	Elevation (M)	Description
300-RTK	3918061.58	204375.3	67.662	TSM-OPUSed
3500W04-GPS	3878333.736	195328.375	61.573	Ht. Mod.-OPUSed
3530E05-RTK	3931492.15	266097.24	106.969	Ht. Mod.
GPS 59-RTK	3893091.58	277141.687	124.651	CBN-OPUSed
KERR-RTK	3921134.028	241489.023	126.951	BM-1st Order
M 174 (ECC. PT.)	3921749.863	203241.964	67.742	BM-ECC. PT.
MARION-GPS	3902259.63	208462.332	67.129	BM-1st Order
MARION-RTK	3902259.648	208462.352	67.072	BM-1st Order
X 16-GPS	3885604.247	244467.467	117.682	BM-1st Order
X 90-RTK	3907143.548	230183.456	73.163	BM-1st Order
Y 243-GPS	3871512.688	211611.819	64.422	BM-1st Order
Y 243-RTK	3871512.679	211611.824	64.455	BM-1st Order

COORDINATE SYSTEM: GEODETIC

HORIZONTAL DATUM: WGS84
VERTICAL DATUM: NAVD88
GEOID MODEL: GEOID 09
UNITS: Meters

LiDAR GROUND CONTROL

Station Name	Latitude	Longitude	Ellips. Hgt. (M)	Description
1001	35d22'44.59136"	-90d11'08.16424"	41.123	Gravel
1002	35d23'11.00495"	-89d57'01.30113"	64.6	Concrete
1003	35d22'55.29702"	-89d40'43.89940"	92.444	Asphalt
1004	35d12'16.90330"	-89d43'59.10348"	84.943	PID-Corner of stop
1005	34d57'55.82872"	-89d40'49.79930"	82.028	PID-Corner of stop
1006	34d57'56.06889"	-90d05'45.57281"	58.327	PID-Corner of stop
1007	35d01'39.77536"	-90d19'24.70678"	45.465	Gravel
1008	35d09'50.77819"	-90d12'39.85240"	37.074	Asphalt
1009	35d15'47.30639"	-90d02'13.93667"	46.765	PID-Corner of asphalt/concrete pavement
1010	35d03'11.28411"	-89d41'59.69627"	77.805	Brick
1011	35d20'26.73241"	-89d52'40.64278"	56.864	Asphalt
1012	35d18'11.41807"	-90d07'16.03466"	41.236	Dirt
1013	35d07'33.38144"	-89d47'56.80249"	53.802	Asphalt
1014	35d17'16.59164"	-89d45'54.05463"	50.606	Gravel
1015	35d21'51.01164"	-90d09'50.79075"	41.219	Dirt
1016	35d20'05.64259"	-90d07'52.66858"	40.885	Dirt
1017	35d13'05.69833"	-90d08'23.27654"	40.268	Asphalt
1018	35d04'10.24073"	-90d07'15.57871"	45.986	PID-Corner of stop
1030	35d19'15.56444"	-89d40'21.83862"	54.16	Gravel
1031	35d15'16.40256"	-89d48'44.56996"	67.41	Concrete
1035	35d04'10.08264"	-90d07'14.54375"	46.282	PID-Tip of turn

QUALITY CONTROL POINTS

Station Name	Latitude	Longitude	Ellips. Hgt. (M)	Description
2001	34d57'58.57683"	-90d03'37.16108"	56.762	Tall Grass
2002	34d57'47.54537"	-90d00'44.05823"	53.39	Tall Grass
2003	34d58'37.85834"	-89d56'55.21204"	84.591	Tall Grass
2004	34d57'45.18838"	-89d48'13.25454"	87.991	Tall Grass
2005	35d00'52.75979"	-89d39'43.10778"	87.65	Tall Grass
2006	35d01'16.18188"	-89d43'32.88287"	72.993	Tall Grass

Station Name	Latitude	Longitude	Ellips. Hgt. (M)	Description
2007	35d05'56.62078"	-89d45'38.31246"	55.768	Tall Grass
2008	35d03'44.80596"	-89d47'38.04276"	73.697	Tall Grass
2009	35d09'18.80241"	-89d45'36.24156"	76.948	Tall Grass
2010	35d08'02.75686"	-89d40'23.07220"	69.545	Tall Grass
2011	35d18'14.58589"	-89d51'38.21496"	66.863	Tall Grass
2012	35d22'39.87403"	-89d52'16.94860"	70.473	Tall Grass
2013	35d22'38.87703"	-89d58'56.73372"	66.083	Tall Grass
2014	35d19'54.88729"	-90d00'47.02889"	82.488	Tall Grass
2015	35d17'59.40932"	-90d01'11.59097"	56.79	Tall Grass
2016	35d18'24.72739"	-89d56'42.25773"	62.1	Tall Grass
2017	35d14'43.58302"	-89d56'44.99977"	46.276	Tall Grass
2018	35d20'57.94925"	-90d10'55.80616"	39.116	Tall Grass
2019	35d18'37.89592"	-90d09'45.99083"	41.729	Tall Grass
2020	35d20'18.18184"	-90d10'56.27296"	38.026	Tall Grass
2021	35d11'23.61597"	-90d08'51.85772"	40.05	Tall Grass
2022	35d07'37.81533"	-90d12'07.44506"	38.235	Tall Grass
2023	35d03'35.89327"	-90d13'56.12745"	36.573	Tall Grass
2030	35d21'51.79943"	-89d42'03.59118"	63.017	Tall Grass/Weeds
2031	35d18'34.39965"	-89d45'46.19499"	62.825	Tall Grass
2032	35d12'20.88517"	-89d42'36.71079"	73.38	Tall Grass
2033	35d21'30.11006"	-89d47'10.19526"	65.118	Tall Grass
2034	35d18'35.13879"	-89d49'13.49207"	61.55	Tall Grass
2035	35d14'17.58912"	-89d47'27.61421"	60.856	Tall Grass
2036	35d03'59.88820"	-90d09'03.40739"	37.615	Tall Grass
2037	35d02'37.77821"	-90d07'20.00260"	63.331	Tall Grass
3001	35d15'10.09751"	-89d41'04.25525"	54.222	Woods
3002	35d15'09.45111"	-89d41'05.63784"	54.27	Woods
3003	35d15'08.65157"	-89d41'06.84792"	54.43	Woods
3004	35d15'09.88044"	-89d41'07.89445"	54.216	Woods
3005	35d15'10.99893"	-89d41'06.79774"	54.063	Woods
3006	35d15'11.94724"	-89d41'05.02054"	53.995	Woods
3007	35d15'11.49154"	-89d41'03.40325"	53.857	Woods
3008	35d15'11.78765"	-89d41'02.11969"	54.244	Woods
3009	35d19'14.48794"	-90d03'20.16680"	77.132	Woods
3010	35d19'14.51916"	-90d03'17.87960"	77.34	Woods
3011	35d19'16.42854"	-90d03'18.76408"	76.488	Woods
3012	35d19'18.16713"	-90d03'18.77615"	78.875	Woods
3013	35d19'19.65229"	-90d03'20.38144"	79.527	Woods
3014	35d19'21.82725"	-90d03'22.21643"	78.508	Woods
3015	35d19'20.05984"	-90d03'23.98860"	78.171	Woods
3016	35d19'17.09401"	-90d03'23.11968"	78.521	Woods
3017	35d03'44.89678"	-90d07'11.47487"	59.075	Woods
3018	35d03'43.95096"	-90d07'11.19058"	58.823	Woods

Station Name	Latitude	Longitude	Ellips. Hgt. (M)	Description
3019	35d03'43.09543"	-90d07'12.24471"	60.176	Woods
3020	35d03'44.01302"	-90d07'13.69419"	61.539	Woods
3021	35d03'43.89295"	-90d07'16.52109"	62.702	Woods
3022	35d03'44.81506"	-90d07'15.54682"	62.708	Woods
3023	35d03'46.27394"	-90d07'11.63589"	59.204	Woods
3024	35d03'47.42482"	-90d07'10.29985"	58.957	Woods
3025	35d03'45.77596"	-90d07'08.88844"	60.675	Woods
4001	34d59'07.11480"	-90d01'03.07599"	65.31	Urban
4002	34d59'17.06452"	-89d52'52.99028"	79.655	Urban
4003	34d57'57.25405"	-89d45'14.67322"	90.865	Urban
4004	35d01'15.76642"	-89d49'14.50269"	81.625	Urban
4005	35d00'44.46671"	-89d40'51.46884"	90.518	Urban
4006	35d03'16.60677"	-89d43'25.81152"	77.812	Urban
4007	35d05'03.72628"	-89d40'39.41772"	59.187	Urban
4008	35d06'47.60363"	-89d48'04.62093"	54.189	Urban
4009	35d10'21.89619"	-89d47'37.51239"	70.201	Urban
4010	35d09'33.72160"	-89d43'16.75035"	76.238	Urban
4011	35d15'17.08011"	-89d52'35.56080"	64.332	Urban
4012	35d20'15.53379"	-89d51'00.99130"	60.043	Urban
4013	35d21'00.14571"	-89d56'17.84548"	59.181	Urban
4014	35d20'06.93266"	-89d59'33.06975"	66.872	Urban
4015	35d16'25.14847"	-90d01'38.40018"	61.785	Urban
4016	35d16'24.12350"	-89d56'59.20307"	45.809	Urban
4017	35d13'19.45810"	-90d11'22.97472"	39.076	Urban
4018	35d09'20.41720"	-90d09'11.30235"	38.861	Urban
4019	35d06'11.07650"	-90d14'05.89453"	37.359	Urban
4020	35d04'03.08557"	-90d16'48.13829"	35.172	Urban
4030	35d19'44.82585"	-89d41'32.77140"	74.24	Urban
4031	35d12'39.36010"	-89d40'27.36157"	83.077	Urban
4032	35d16'52.51870"	-89d41'28.55171"	58.322	Urban
4033	35d02'58.49807"	-90d09'12.75530"	37.33	Urban
8500	34d57'42.57678"	-89d53'14.47311"	90.218	Bare Earth
8502	34d58'27.71162"	-90d00'59.18864"	63.676	Bare Earth
8503	34d57'32.66866"	-90d00'57.84045"	54.258	Bare Earth
8504	35d01'41.51901"	-90d09'15.37885"	37.187	Bare Earth
8508	35d12'48.79186"	-90d12'29.26452"	38.974	Bare Earth
8509	35d20'31.77420"	-90d08'41.53758"	40.804	Bare Earth
8511	35d22'02.64930"	-89d52'47.59304"	59.505	Bare Earth
8512	35d20'31.46782"	-89d51'58.11055"	64.267	Bare Earth
8513	35d18'30.84152"	-90d01'05.59665"	60.257	Bare Earth
8514	35d16'20.63406"	-89d59'03.09516"	45.753	Bare Earth
8515	35d14'09.68918"	-90d00'52.29900"	43.109	Bare Earth
8517	35d22'06.74952"	-89d46'14.93993"	73.332	Bare Earth

Station Name	Latitude	Longitude	Ellips. Hgt. (M)	Description
8518	35d19'56.96705"	-89d42'14.95945"	82.194	Bare Earth
8519	35d18'27.18476"	-89d40'07.80905"	52.508	Bare Earth
8520	35d18'27.18418"	-89d40'07.80740"	52.451	Bare Earth
8521	35d17'50.51131"	-89d39'37.10552"	57.172	Bare Earth
8522	35d14'32.94963"	-89d47'08.39326"	59.239	Bare Earth
8523	35d08'48.20588"	-89d47'46.78825"	80.801	Bare Earth
8525	35d05'44.98316"	-89d47'16.35958"	62.603	Bare Earth
8526	35d02'32.70528"	-89d43'50.02430"	74.44	Bare Earth
8527	34d58'04.20366"	-89d46'48.92144"	86.189	Bare Earth
8528	35d00'26.68997"	-89d41'18.33318"	82.219	Bare Earth
8529	35d16'55.67996"	-90d00'57.07383"	47.786	Bare Earth

CONTROL BASE STATIONS

Station Name	Latitude	Longitude	Ellips. Hgt. (M)	Description
X 300	35d06'54.49328"	-89d55'25.24386"	62.07	CBN
STEEL	35d02'57.09029"	-90d09'12.45517"	36.732	BM-OPUSed
90 (090)	35d11'14.36507"	-89d38'49.27233"	85.576	Cont. Pt.-OPUSed
28 (028)	35d21'13.18072"	-89d56'54.24978"	51.406	Cont. Pt.-OPUSed

NGS CONTROL BASE STATION CHECK POINTS

Station Name	Latitude	Longitude	Ellips. Hgt. (M)	Description
300-RTK	35d21'43.59677"	-90d15'12.53747"	40.209	TSM-OPUSed
3500W04-GPS	35d00'06.37035"	-90d20'17.61888"	34.419	Ht. Mod.-OPUSed
3530E05-RTK	35d29'58.08036"	-89d34'43.51817"	79.615	Ht. Mod.
GPS 59-RTK	35d09'21.84935"	-89d26'47.90775"	96.952	CBN-OPUSed
KERR-RTK	35d24'00.30414"	-89d50'47.34104"	99.659	BM-1st Order
M 174 (ECC. PT.)	35d23'41.91542"	-90d16'02.19747"	40.237	BM-ECC. PT.
MARION-GPS	35d13'15.77883"	-90d12'10.62499"	39.824	BM-1st Order
MARION-RTK	35d13'15.77945"	-90d12'10.62425"	39.767	BM-1st Order
X 16-GPS	35d04'51.10873"	-89d48'09.66127"	90.141	BM-1st Order
X 90-RTK	35d16'15.98324"	-89d57'58.36693"	45.827	BM-1st Order
Y 243-GPS	34d56'42.46300"	-90d09'27.72066"	37.11	BM-1st Order
Y 243-RTK	34d56'42.46272"	-90d09'27.72044"	37.143	BM-1st Order

SECTION 3: GROUND/GEODETIC CONTROL LOGS AND PHOTOS

This section contains the station recovery information sheets and photographs for the geodetic control and PID ground control stations recovered or established for the project. The stations appear as they are ordered in the final coordinate listing of Section 2.
The data is assimilated on the following pages.

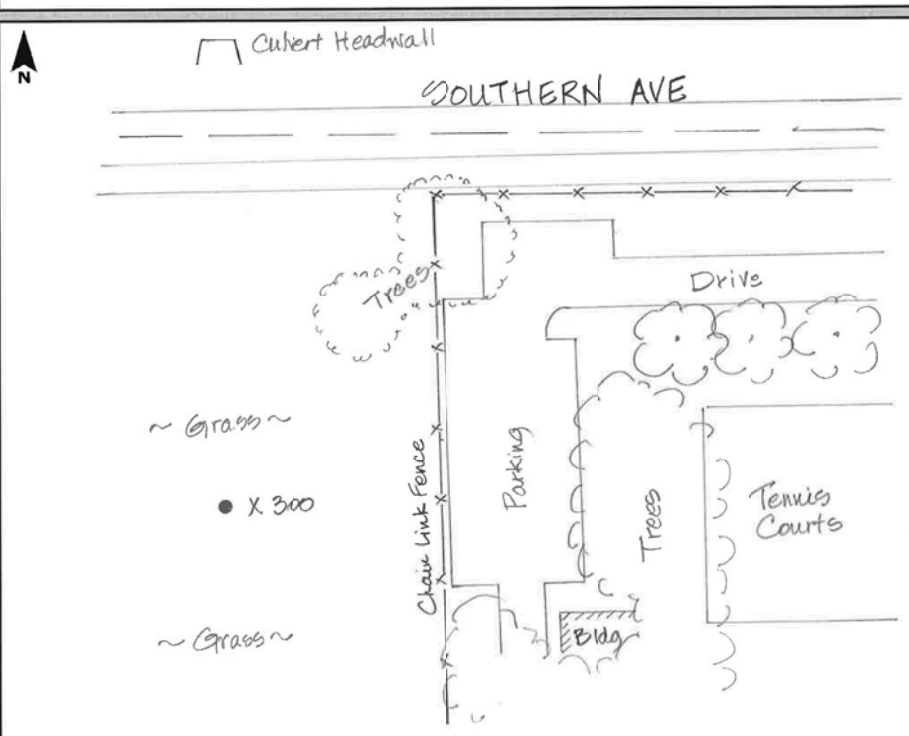
GEODETIC CONTROL LOGS AND PHOTOS

Geodetic Control Base Station:X 300
PID: FE2200
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby Co, TN	Project Number: 72124	Survey Date: 1/7/2012
Station Name:	X 300	Operator Name:	Brett Harmon
Latitude:	35-06-54.49 N	Julian Day: 007	Session No. NA
Longitude:	089-55-25.24 W	Start Time: NA	End Time: NA
Ellip. Height:	62.070	Data File Name:	72124 LiDAR
Type of Mark:	5/8 Rod w/o sleeve - 8.92m deep	Type of Reciever:	Trimble R8-2 Internal
Stamping on Mark:	X 300 1983	Type of Antenna:	Trimble R8-2 Internal
Weather Condition:	Cloudy/Overcast	Antenna Height:	2.00 M to bottom of antenna mount



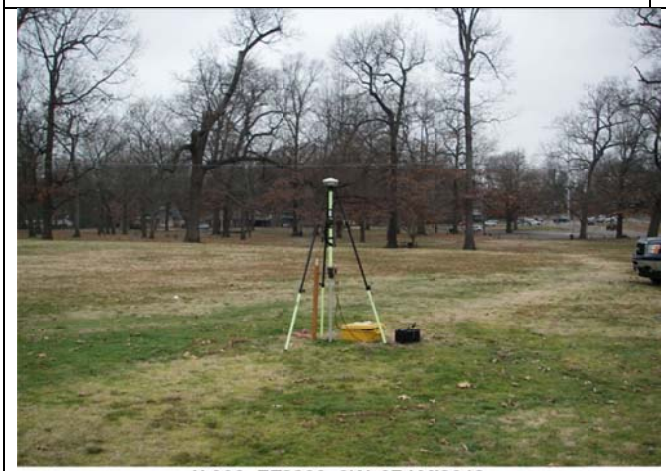
Geodectic Control Base Station: X 300
PID: FE2200
Photos

X 300, FE2200, 2, 07JAN2012

X 300, FE2200, 3E, 07JAN2012

X 300, FE2200, 3N, 07JAN2012

X 300, FE2200, 3S, 07JAN2012



X 300, FE2200, 3W, 07JAN2012

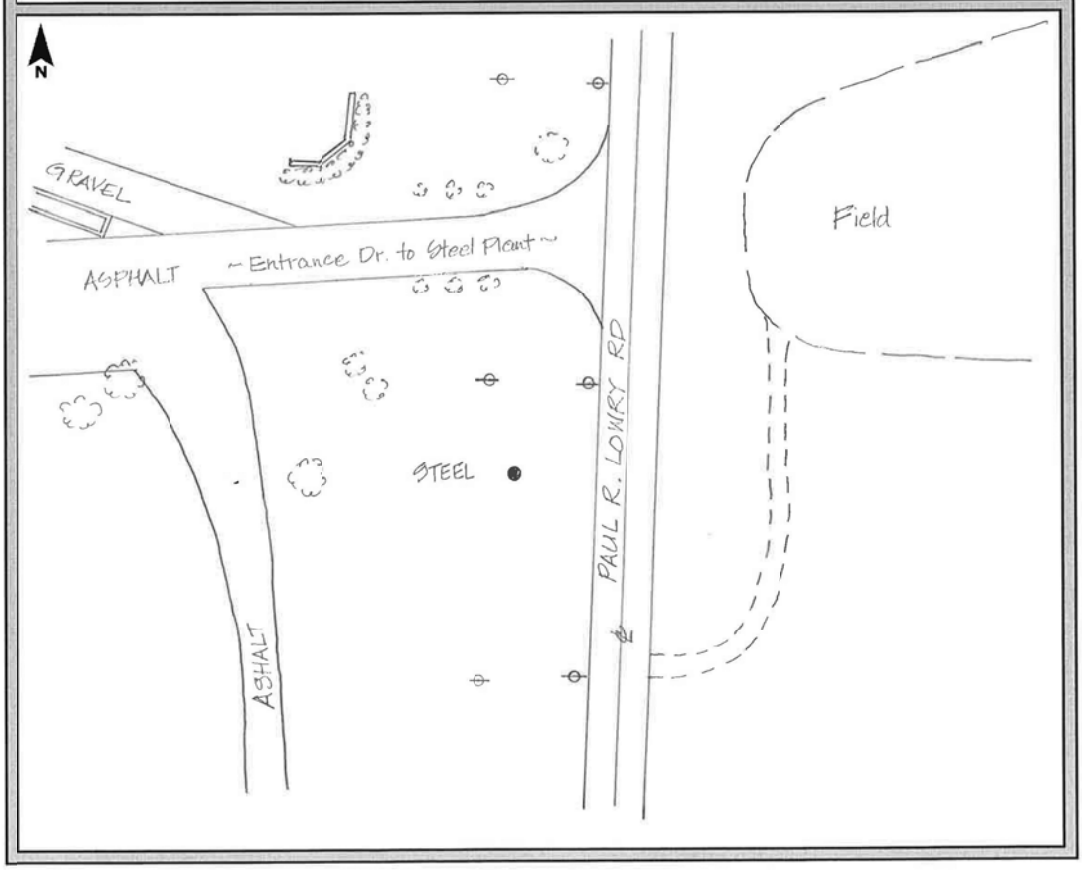
Not used

Geodetic Control Base Station: STEEL
PID: AJ2678
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby Co., TN	Project Number: 72124	Survey Date: 1/9/2012
Station Name:	STEEL	Operator Name:	Brett Harmon
Latitude:	35-02-57.09 N	Julian Day: 009	Session No. NA
Longitude:	090-09-12.45 W	Start Time: NA	End Time: NA
Ellip. Height:	86.732	Data File Name:	72124 LiDAR
Type of Mark:	Alum disk in conc. mon.	Type of Reciever:	Trimble R8-2 Internal
Stamping on Mark:	TN1620	Type of Antenna:	Trimble R8-2 Internal
Weather Condition:	Cloudy	Antenna Height:	2.00 M to bottom of antenna mount



Geodectic Control Base Station: STEEL
PID: AJ2678
Photos

STEEL, AJ2678, 1, 01MAR2012


STEEL, AJ2678, 2, 01MAR2012


STEEL, AJ2678, 3E, 01MAR2012


STEEL, AJ2678, 3N, 01MAR2012


STEEL, AJ2678, 3S, 01MAR2012

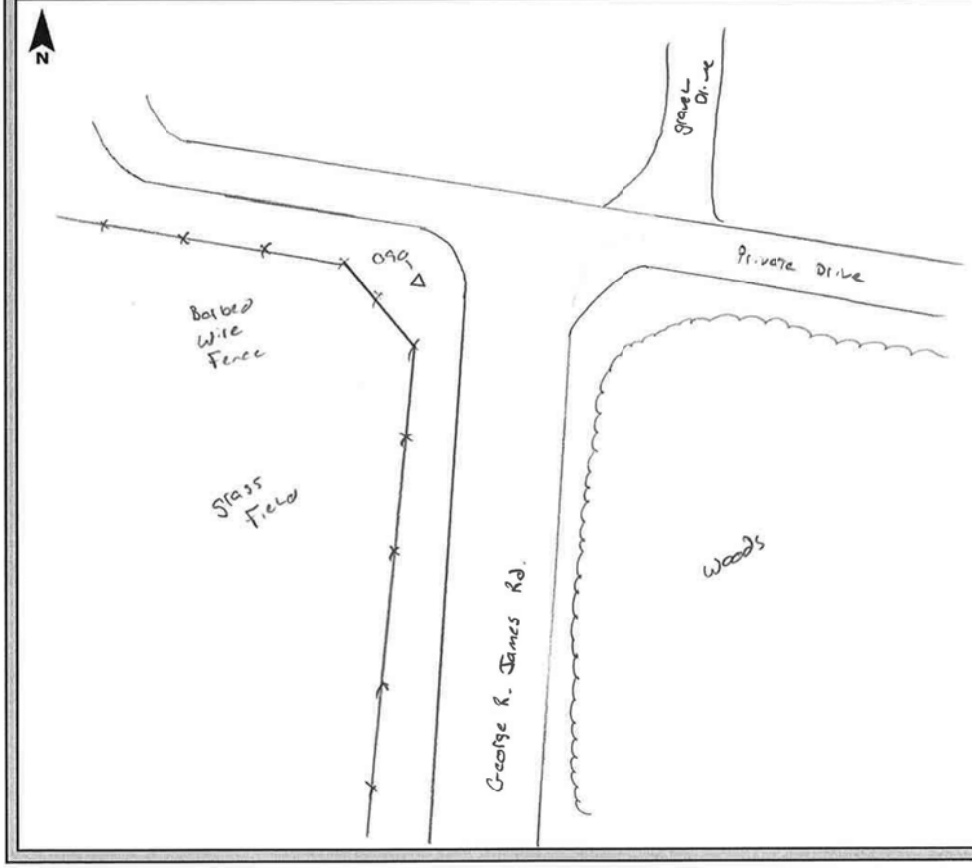

STEEL, AJ2678, 3W, 01MAR2012

Geodetic Control Base Station: 90 (090)
PID: AJ2611
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN.	**Project Number:** 72124	**Survey Date:** 1-8-2012
Station Name:	090	**Operator Name:**	Brett Harmon
Latitude:	35-06-15.98	**Julian Day:** 8	**Session No.** N/A
Longitude:	89-57-58.36	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	45.827	**Data File Name:**	72124 Lidar
Type of Mark:	Conc. mon. DM	**Type of Reciever:**	Trimble R8-2 Internal
Stamping on Mark:	090	**Type of Antenna:**	Trimble R8-2 Internal
Weather Condition:	Cloudy 50°	**Antenna Height:** 2.000m	to bottom of artenna mount



Geodectic Control Base Station: 90 (090)
PID: AJ2611
Photos

90, AJ2611, 1, 07JAN2012

90, AJ2611, 2, 07JAN2012

90, AJ2611, 3N, 07JAN2012

90, AJ2611, 3S, 07JAN2012

90, AJ2611, 3W, 07JAN2012

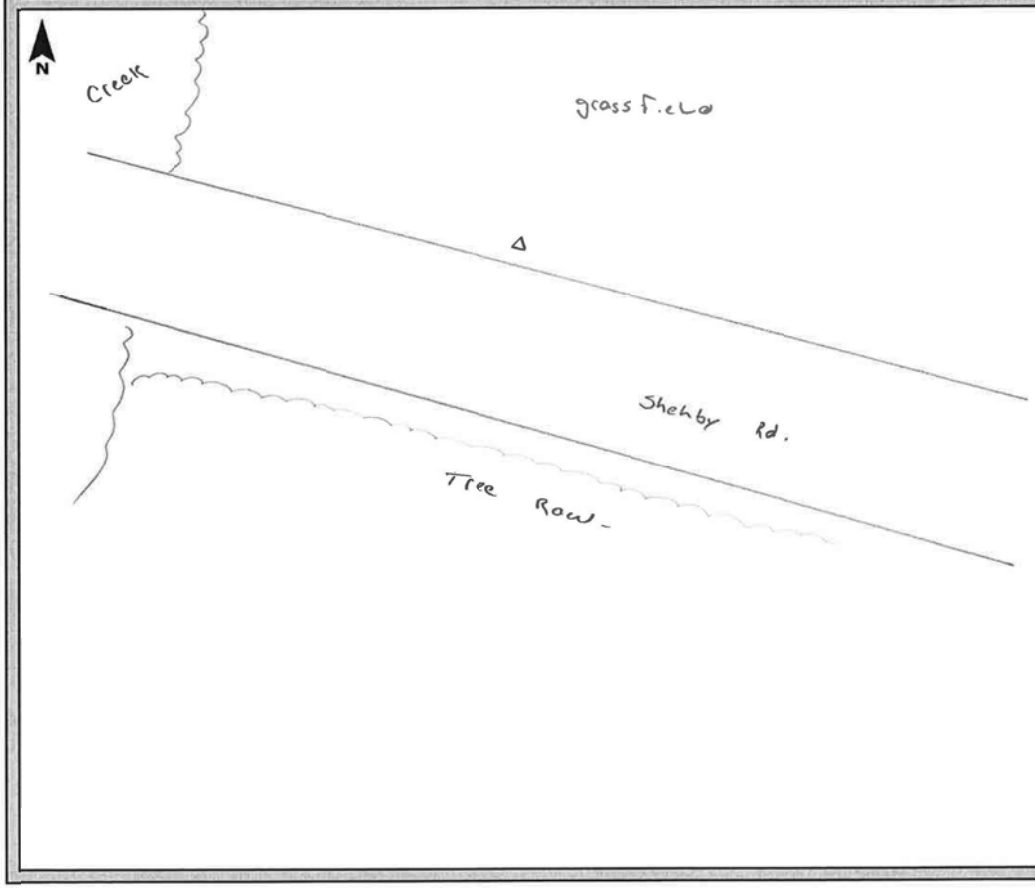
Not used

Geodetic Control Base Station: 28 (028)
PID: AJ2572
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN.	**Project Number:** 72124	**Survey Date:** 1-7-2012
Station Name:	028	**Operator Name:**	Brett Harmon
Latitude:	35-21-13.18	**Julian Day:** 7	**Session No.** N/A
Longitude:	89-56-54.25	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	51.397	**Data File Name:**	72124 Lidar
Type of Mark:	Conc. mon RM	**Type of Reciever:**	Trimble R8-2 Internal
Stamping on Mark:	028	**Type of Antenna:**	Trimble R8-2 Internal
Weather Condition:	Cloudy 52°	**Antenna Height:**	2.000m to bottom of antenna mount



Geodectic Control Base Station: 28 (028)
PID: AJ2572
Photos

28, AJ2572, 1, 07JAN2012

28, AJ2572, 2, 07JAN2012

28, AJ2572, 3E, 07JAND2012

28, AJ2572, 3N, 07JAN2012

28, AJ2572, 3S, 07JAND2012

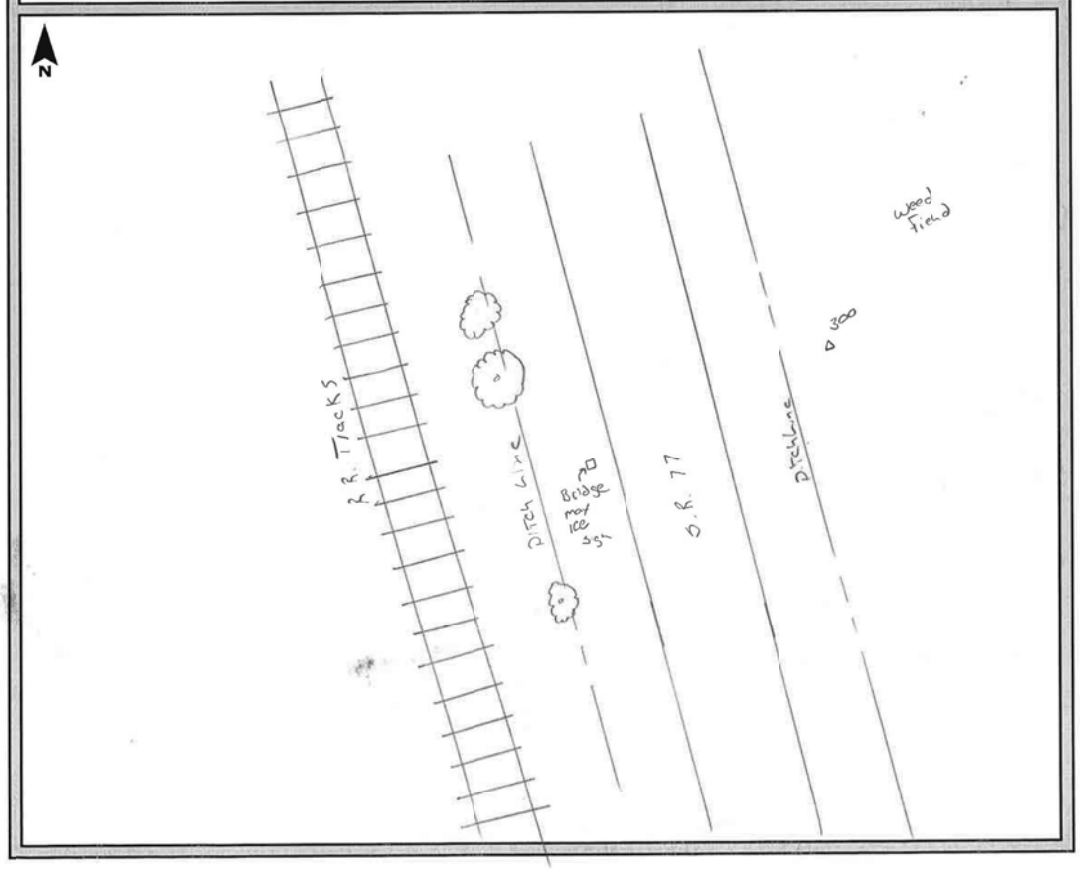
Not used

Geodetic Control Check Point: TSM 300 (set by Woolpert)
PID: None
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN. Lidar	**Project Number:** 72124	**Survey Date:** 1-10-12
Station Name:	300	**Operator Name:**	Brett Harmon
Latitude:	35-21-41.62	**Julian Day:** 10	**Session No.** N/A
Longitude:	90-15-12.57	**Start Time:** 10:45	**End Time:** 1:15
Ellip. Height:	-30.177 SFT	**Data File Name:**	36930100
Type of Mark:	TSM Dan spike	**Type of Reciever:**	Trimble R8 Internal
Stamping on Mark:	N/A	**Type of Antenna:**	Trimble R8 Internal
Weather Condition:	Cloudy Breezy 55°	**Antenna Height:** 2.000m	to bottom of antenna mount



Geodectic Control Check Point: TSM 300 (set by Woolpert)
PID: None
Photos


300, TSM, 2, 10JAN2012


300, TSM, 3E, 10JAN2012


300, TSM, 3N, 10JAN2012


300, TSM, 3S, 10JAN2012


300, TSM, 3W, 10JAN2012

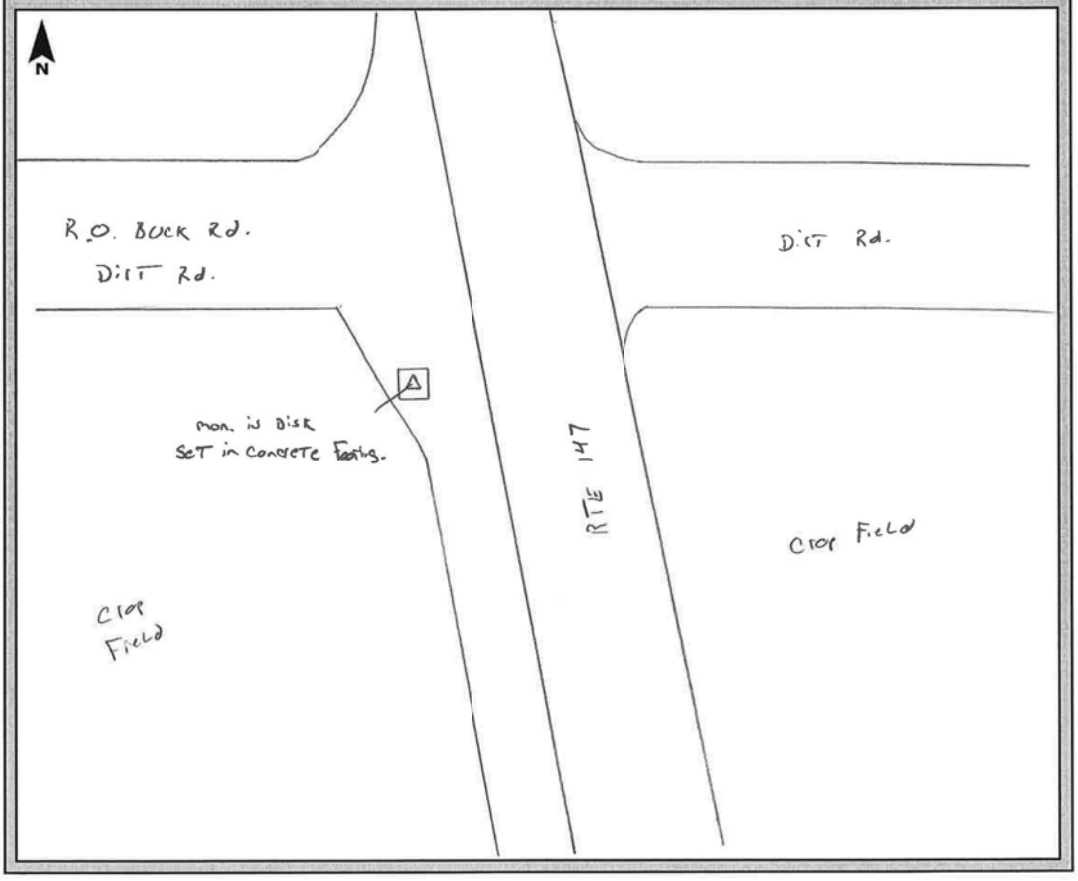
Not used

Geodetic Control Check Point: 3500W04
PID: DH3687
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby Co. TN	**Project Number:** 72124	**Survey Date:** 1-9-2012
Station Name:	3500 W04	**Operator Name:**	Brett Harmon
Latitude:	35-00-06.37	**Julian Day:** 9	**Session No.** N/A
Longitude:	90-20-17.62	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	34.419	**Data File Name:**	72124J00
Type of Mark:	Conc. mon.	**Type of Reciever:**	Trimble R8-2 Internal
Stamping on Mark:	3500W04	**Type of Antenna:**	Trimble R8-2 Internal
Weather Condition:	Cloudy 50°	**Antenna Height:** 2.000m	to bottom of antenna mount



Geodectic Control Check Point: 3500W04
PID: DH3687
Photos

3500W04, DH3687, 1, 09JAN2012

3500W04, DH3687, 3E, 09JAN2012

3500W04, DH3687, 3N, 09JAN2012

3500W04, DH3687, 3S, 09JAN2012

3500W04, DH3687, 3W, 09JAN2012

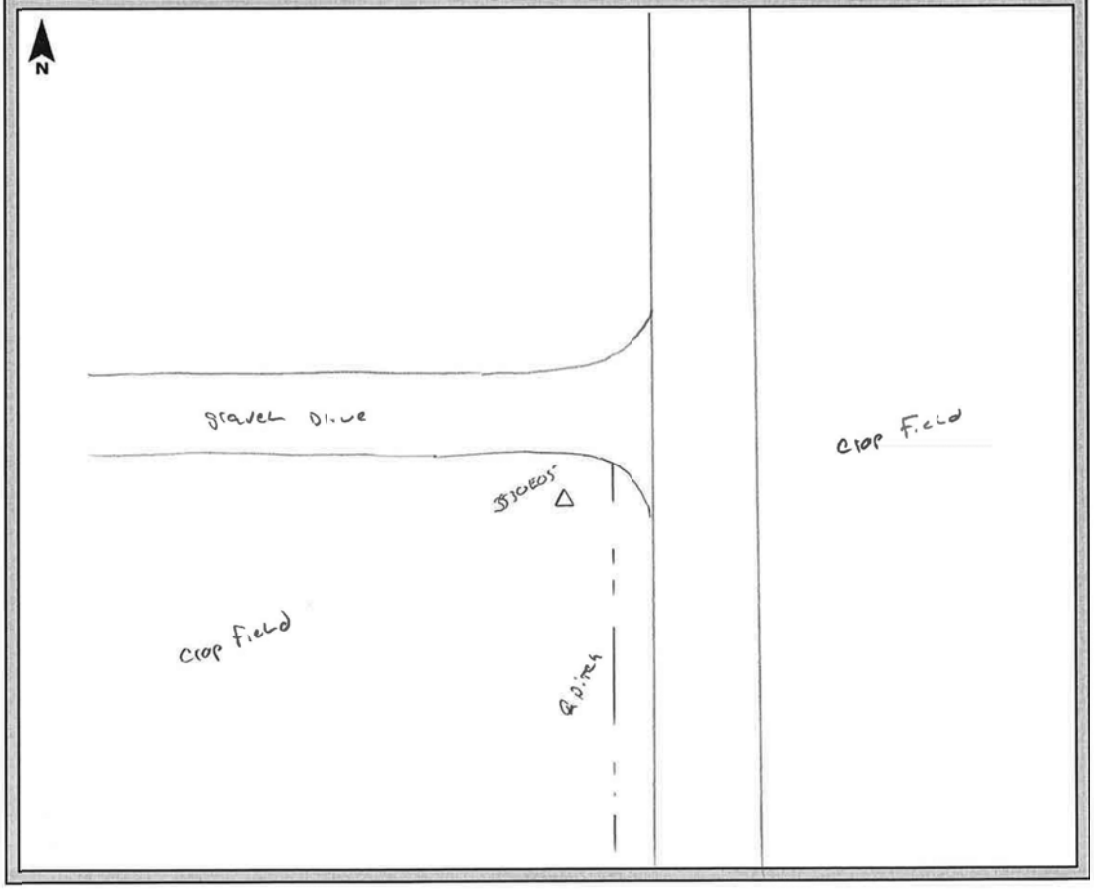
Not used

Geodetic Control Check Point: 3530E05
PID: DH3692
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN	**Project Number:** 72124	**Survey Date:** 1-7-2012
Station Name:	3530E05	**Operator Name:**	Brett Harmon
Latitude:	35-09-21.85	**Julian Day:** 7	**Session No.** N/A
Longitude:	89-26-17.91	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	96.952	**Data File Name:**	72124Lidar
Type of Mark:	Deep Rod	**Type of Reciever:**	Trimble R3-2 Internal
Stamping on Mark:	3530E05	**Type of Antenna:**	Trimble R3-2 Internal
Weather Condition:	Cloudy 50°	**Antenna Height:** 2.000m	to bottom of antenna mount



Geodectic Control Check Point: 3500W04
PID: DH3687
Photos

3530E05, DH3692, 1, 08JAN2012

3530E05, DH3692, 2, 08JAN2012

3530E05, DH3692, 3E, 08JAN2012

3530E05, DH3692, 3N, 08JAN2012

3530E05, DH3692, 3S, 08JAN2012

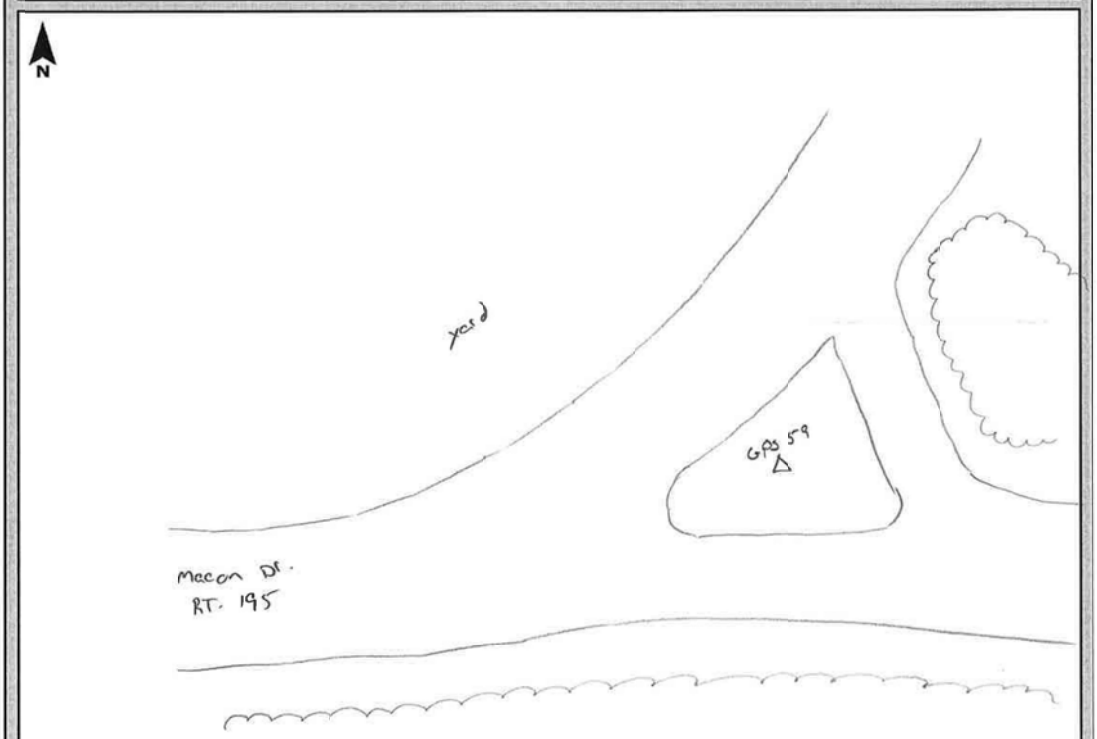
3530E05, DH3692, 3W, 08JAN2012

Geodetic Control Check Point: GPS 59
PID: FE2753
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN.	**Project Number:** 72124	**Survey Date:** 1-7-2012
Station Name:	GPS 59	**Operator Name:**	Brett Harmon
Latitude:	35-09-21.84	**Julian Day:** 7	**Session No.** N/A
Longitude:	89-26-17.71	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	96.952	**Data File Name:**	72124 Lidar
Type of Mark:	Deep Rod	**Type of Reciever:**	Trimble R8-2 Internal
Stamping on Mark:	GPS 59	**Type of Antenna:**	Trimble R8-2 Internal
Weather Condition:	Cloudy D: 22°	**Antenna Height:** 2.000m	to bottom of antenna mount



Geodectic Control Check Point: GPS 59
PID: FE2753
Photos


GPS 59, FE2753, 1, 07JAND2012


GPS 59, FE2753, 2, 07JAN2012


GPS 59, FE2753, 3E, 07JAN2012


GPS 59, FE2753, 3N, 07JAN2012


GPS 59, FE2753, 3S, 07JAN2012

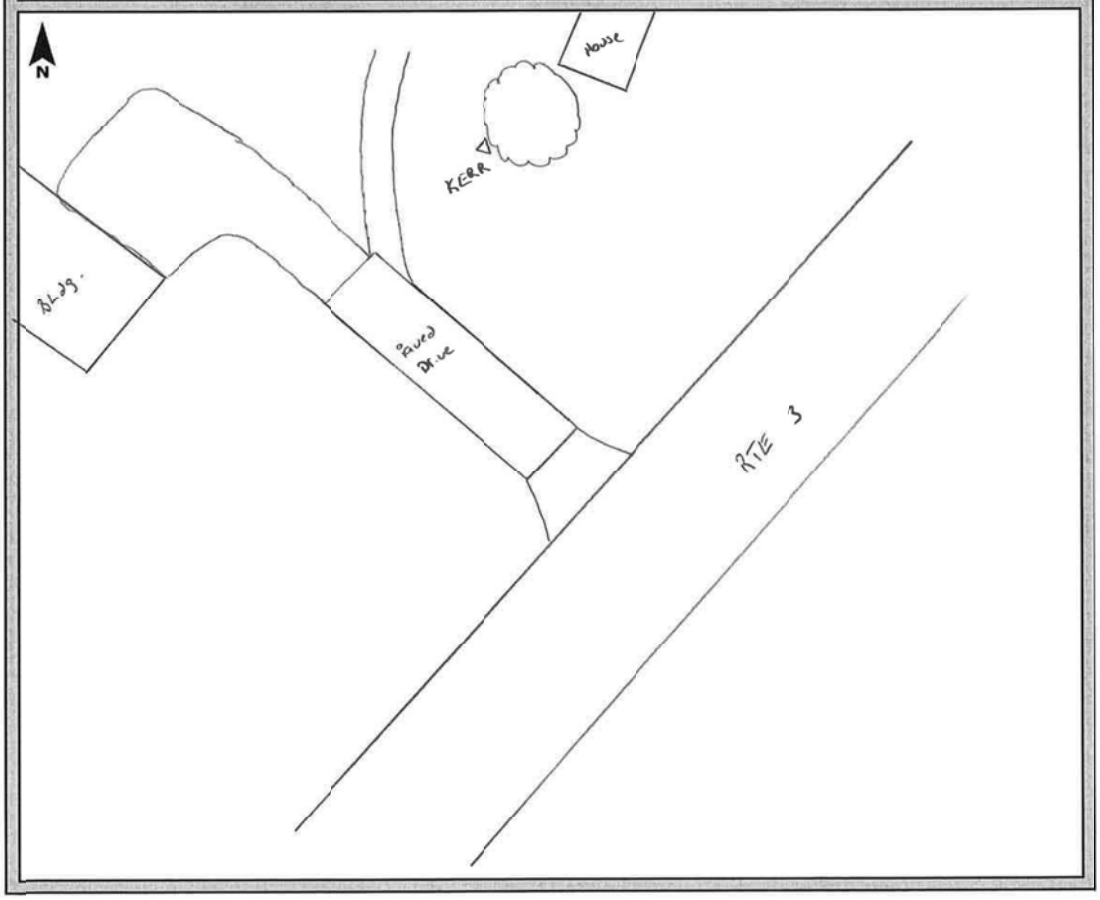
GPS 59, FE2753, 3W, 07JAN2012

Geodetic Control Check Point: KERR
PID: FE1371
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN.	**Project Number:**	72124
Station Name:	KERR	**Operator Name:**	Brett Harmon
Latitude:	35-24-00.30	**Julian Day:**	8
Longitude:	89-50-47.34	**Start Time:**	N/A
Ellip. Height:	99.659	**Data File Name:**	72124 Lidar
Type of Mark:	Concrete Mon BM	**Type of Reciever:**	Trimble R8-2 Internal
Stamping on Mark:	KERR	**Type of Antenna:**	Trimble R8-2 Internal
Weather Condition:	Sunny 50°	**Antenna Height:**	2.000m to bottom of antenna mount



Geodectic Control Check Point: KERR
PID: FE1371
Photos


KERR, FE1371, 1, 08JAN2012


KERR, FE1371, 2, 08JAN2012


KERR, FE1371, 3E, 08JAN2012


KERR, FE1371, 3N, 08JAN2012


KERR, FE1371, 3S, 08JAN2012

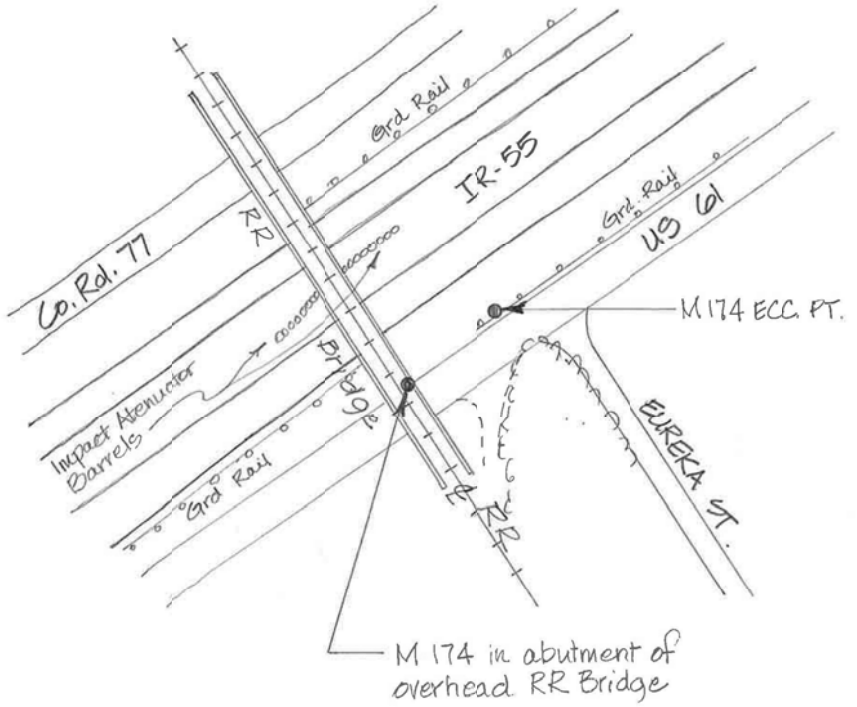

KERR, FE1371, 3W, 08JAN2012

Geodetic Control Check Point: M 174
PID: FF0126
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby Co., TN	Project Number:	72124 Survey Date: 1/9/2012
Station Name:	M 174 & M 174 ECC. PT.	Operator Name:	Brett Harmon
ECC. PT. Latitude:	35-23-41.91 N	Julian Day:	009 Session No. NA
ECC. PT. Longitude:	090-16-02.19 W	Start Time:	NA End Time: NA
ECC. PT. Ellip. Height:	40.237	Data File Name:	72124 LiDAR
Type of Mark:	BM disk set in bridge abut & PK Nail	Type of Reciever:	Trimble R8-2 Internal
Stamping on Mark:	M 174 1956	Type of Antenna:	Trimble R8-2 Internal
Weather Condition:	Cloudy	Antenna Height:	2.00m to bottom of antenna mount



Geodectic Control Check Point: M 174
PID: FF0126
Photos

M 174, FF0126, 1, 09JAN2012

M 174, FF0126, 2, 09JAN2012

M 174, FF0126, 3W, 09JAN2012

Geodectic Control Check Point: M 174 (continued)
PID: FF0126
Photos


M_174, FF0126, 1, 01MAR2012


M_174, FF0126, 2, 01MAR2012


M_174, FF0126, 3NW, 01MAR2012


M_174, FF0126, 3SE, 01MAR2012


M_174, FF0126, 3SW, 01MAR2012

Not used

Geodetic Control Check Point: Eccentric Point for M 174
PID: None
Field Book Log

Geodectic Control Check Point: Eccentric Point for M 174
PID: None
Photos

M 174, ECC-PT, 2, 09JAN2012

M 174, ECC-PT, 3N, 09JAN2012

M 174, ECC-PT, 3S, 09JAN2012

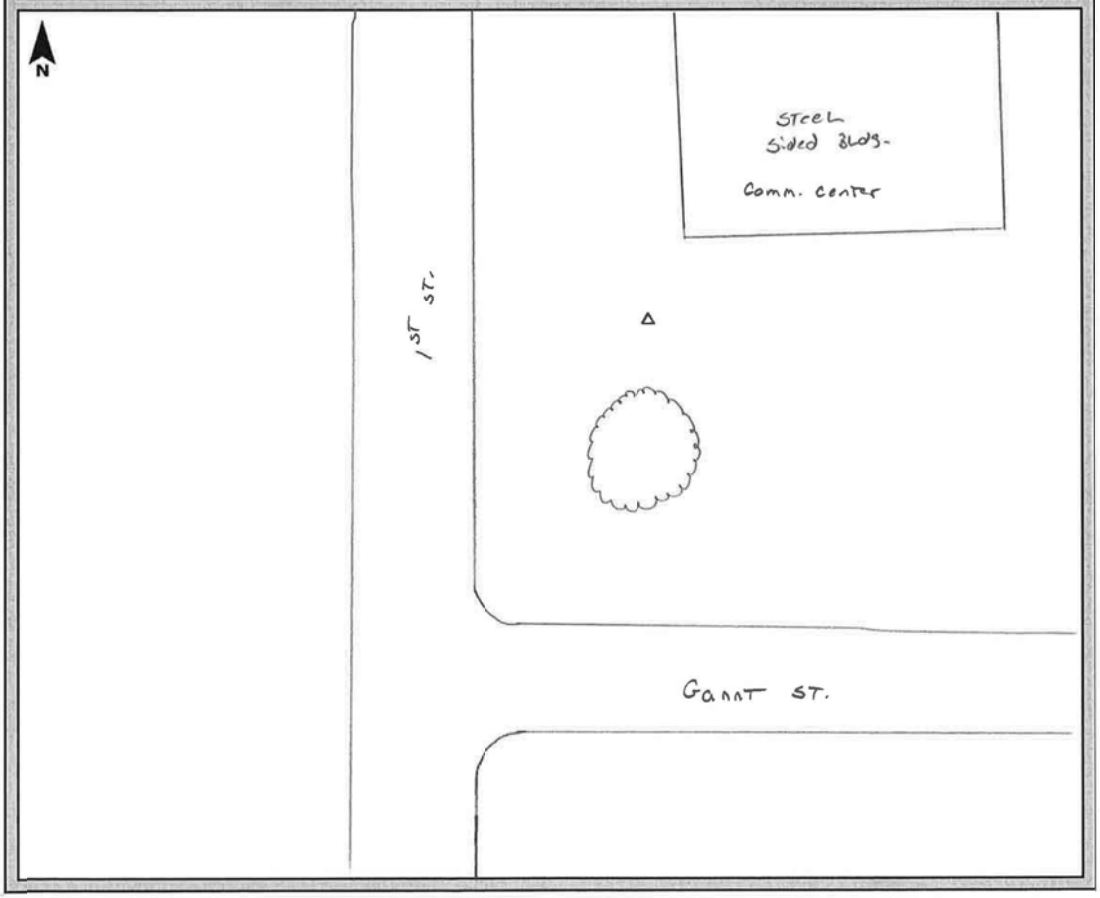
M 174, ECC-PT, 3W, 09JAN2012

Geodetic Control Check Point: MARION
PID: FF0153
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby Co TN.	**Project Number:** 72124	**Survey Date:** 1-9-2012
Station Name:	Marion	**Operator Name:**	Brett Harmon
Latitude:	35-13-15.53	**Julian Day:** 9	**Session No.** N/A
Longitude:	90-12-05.48	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	39.87J	**Data File Name:**	72124
Type of Mark:	Conc. Mon.	**Type of Reciever:**	Trimble R8-2 Internal
Stamping on Mark:	Marion	**Type of Antenna:**	Trimble R8-2 Internal
Weather Condition:	Sunny 50°	**Antenna Height:** 2.000m	to bottom of antenna mount



Geodectic Control Check Point: MARION
PID: FF0153
Photos

MARION, FF0153, 1, 09JAN2012

MARION, FF0153, 2, 09JAN2012

MARION, FF0153, 3E, 09JAN2012

MARION, FF0153, 3N, 09JAN2012

MARION, FF0153, 3S, 09JAN2012

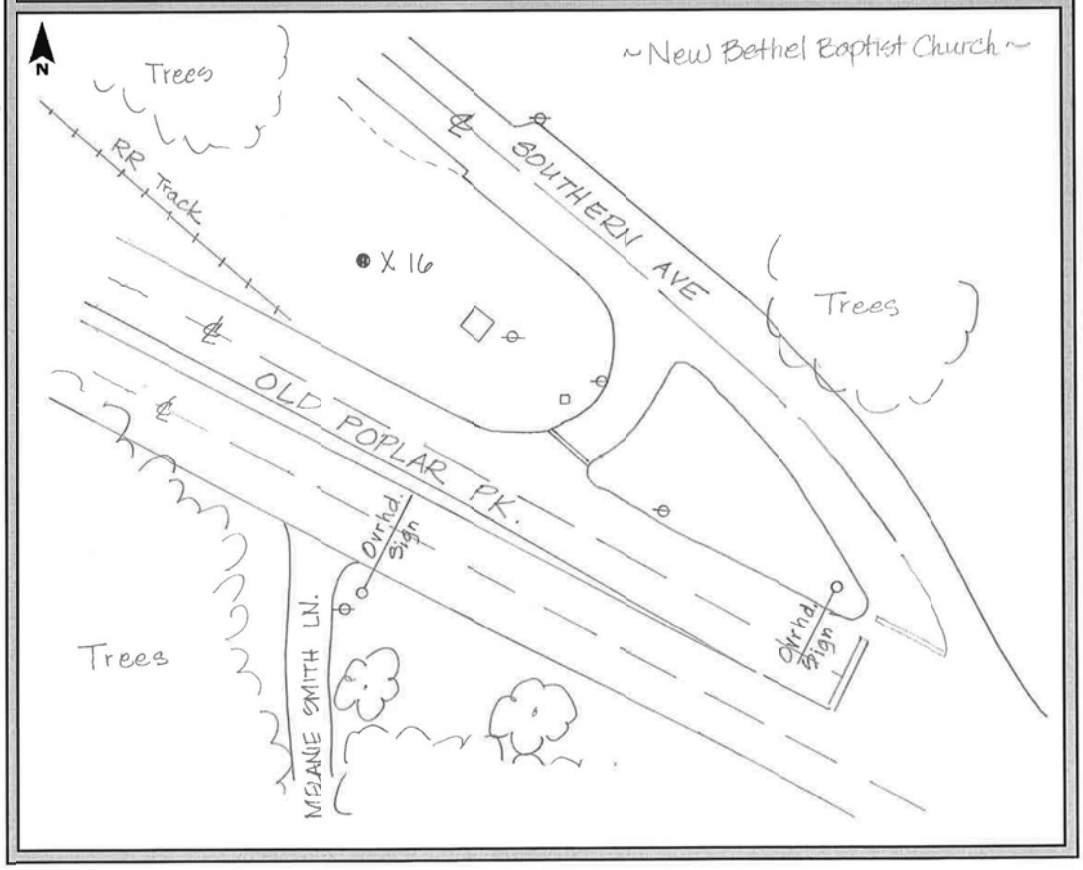
MARION, FF0153, 3W, 09JAN2012

Geodetic Control Check Point: X 16
PID: FE1126
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby Co., TN	Project Number:	72124 Survey Date: 1/6/2012
Station Name:	X 16	Operator Name:	Brett Harmon
Latitude:	35-04-51.10 N	Julian Day:	006 Session No. NA
Longitude:	089-48-09.66 W	Start Time:	NA End Time: NA
Ellip. Height:	90.141	Data File Name:	72124 LiDAR
Type of Mark:	BM disk in conc. mon.	Type of Reciever:	Trimble R8-2 Internal
Stamping on Mark:	X 16 1934	Type of Antenna:	Trimble R8-2 Internal
Weather Condition:	Cloudy/Overcast	Antenna Height:	2.00m to bottom of artenna mount



Geodectic Control Check Point: X 16
PID: FE1126
Photos

X 16, FE1126, 2, 06JAN2012

X 16, FE1126, 3E, 06JAN2012

X 16, FE1126, 3N, 06JAN2012

X 16, FE1126, 3S, 06JAN2012

X 16, FE1126, 3W, 06JAN2012

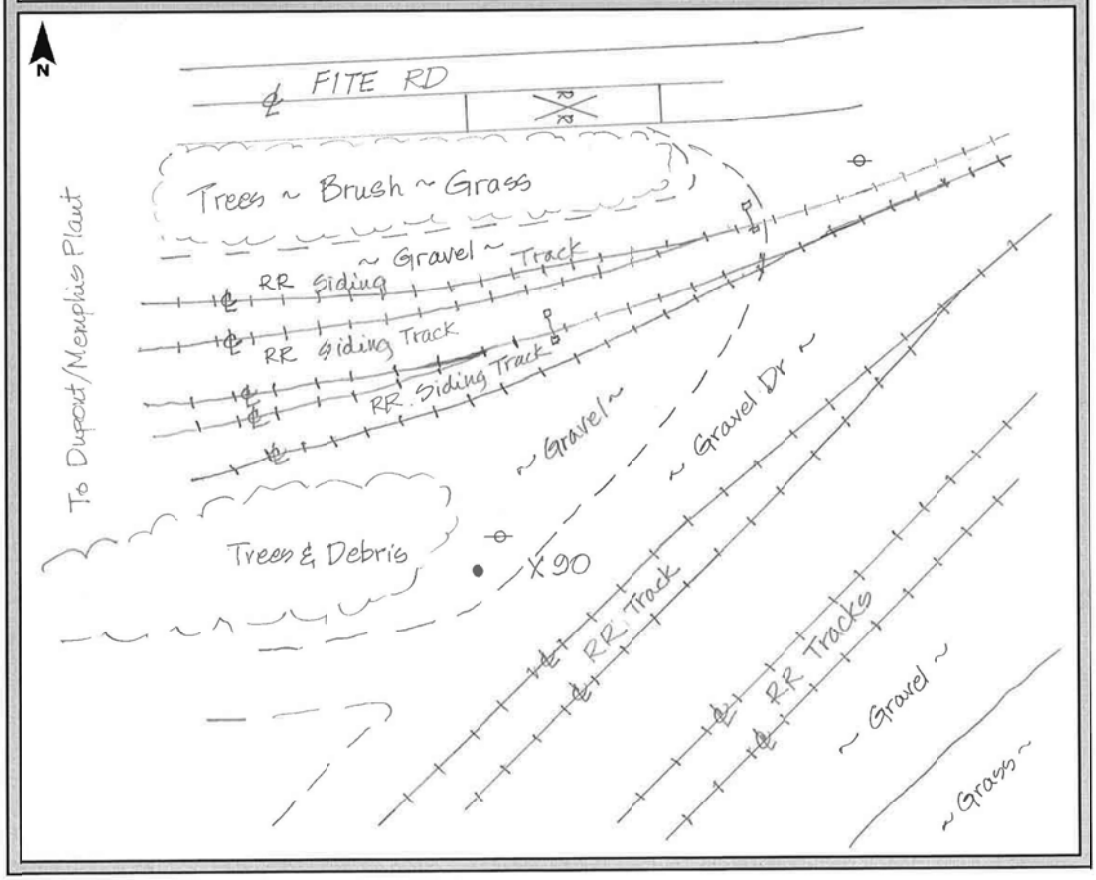
Not used

Geodetic Control Check Point: X 90
PID: FE1410
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby Co., TN	Project Number: 72124	Survey Date: 1/8/2012
Station Name:	X 90	Operator Name:	Brett Harmon
Latitude:	35-16-15.98 N	Julian Day: 008	Session No. NA
Longitude:	089-57-58.36 W	Start Time: NA	End Time: NA
Ellip. Height:	45.827	Data File Name:	72124.LiDAR
Type of Mark:	BM disk in conc. mon.	Type of Reciever:	Trimble R8-2 Internal
Stamping on Mark:	X 90 1957	Type of Antenna:	Trimble R8-2 Internal
Weather Condition:	Cloudy	Antenna Height: 2.00m	to bottom of antenna mount



Geodectic Control Check Point: X 90
PID: FE1410
Photos


X 90, FE1410, 1, 14FEB2012


X 90, FE1410, 2, 14FEB2012


X 90, FE1410, 3E, 14FEB2012


X 90, FE1410, 3N, 14FEB2012


X 90, FE1410, 3S, 14FEB2012

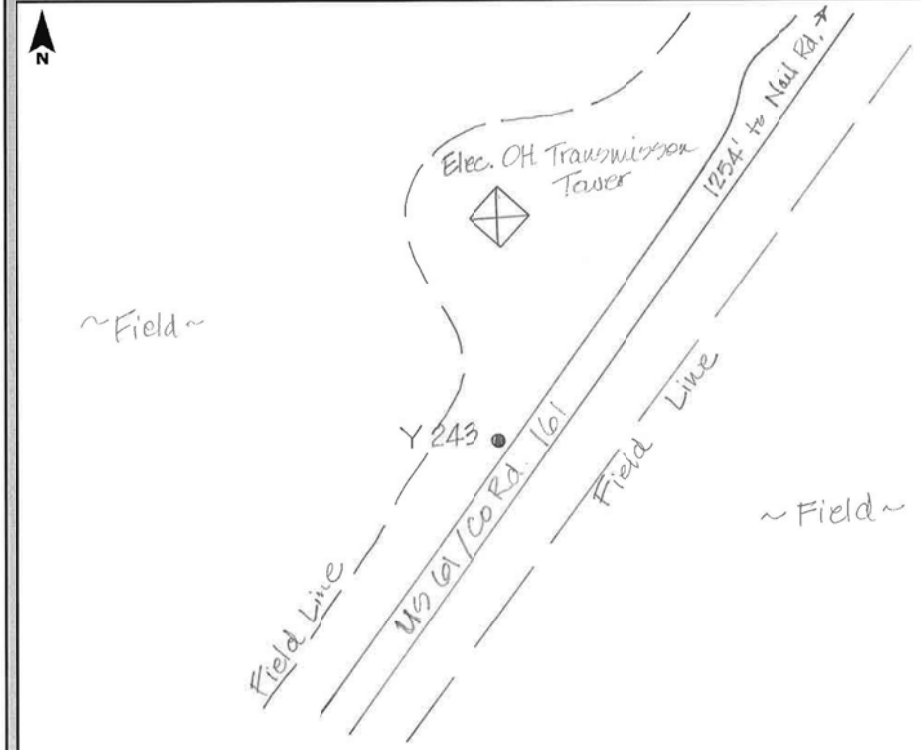

X 90, FE1410, 3W, 14FEB2012

Geodetic Control Check Point: Y 243
PID: EH0143
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	ShelbyCo, TN	Project Number:	72124 Survey Date: 1/10/2012
Station Name:	Y 243	Operator Name:	Brett Harmon
Latitude:	34-56-42.46N	Julian Day:	010 Session No. NA
Longitude:	090-04-27.72W	Start Time:	NA End Time: NA
Ellip. Height:	37.143	Data File Name:	72124 LiDAR
Type of Mark:	Disk on top Dbl. Conc. Culv.	Type of Reciever:	Trimble R8-2 Internal
Stamping on Mark:	Y 243 1974	Type of Antenna:	Trimble R8-2 Internal
Weather Condition:	Overcast	Antenna Height:	2.00m to bottom of antenna mount



Geodectic Control Check Point: Y 243
PID: EH0143
Photos

Y 243, EH0143, 1, 10JAN2012


Y 243, EH0143, 2, 10JAN2012


Y 243, EH0143, 3E, 10JAN2012

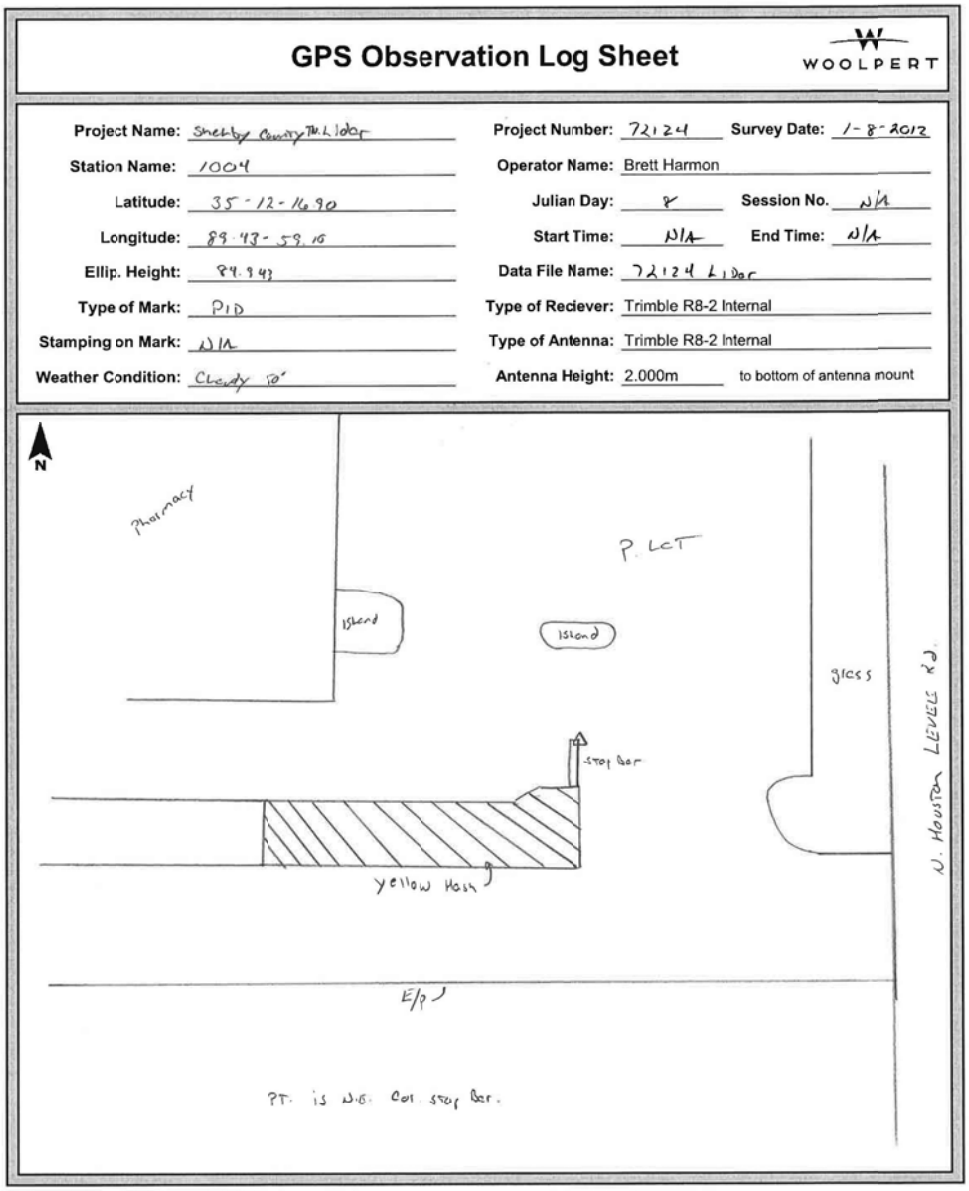

Y 243, EH0143, 3N, 10JAN2012


Y 243, EH0143, 3S, 10JAN2012


Y 243, EH0143, 3W, 10JAN2012

GROUND CONTROL PID LOGS AND PHOTOS

Ground Control PID Point: 1004
Description: Corner of stop bar
Observation Log



GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN Lidar	Project Number: 72124	Survey Date: 1-8-2012
Station Name:	1004	Operator Name:	Brett Harmon
Latitude:	35-12-16.90	Julian Day: 8	Session No. N/A
Longitude:	89-43-59.16	Start Time: N/A	End Time: N/A
Ellip. Height:	84.943	Data File Name:	72124 Lidar
Type of Mark:	PID	Type of Reciever:	Trimble R8-2 Internal
Stamping on Mark:	N/A	Type of Antenna:	Trimble R8-2 Internal
Weather Condition:	Cloudy 50°	Antenna Height:	2.000m to bottom of antenna mount

Ground Control PID Point: 1004
Description: Corner of stop bar
Photos

1004, PID, COR-STOP-BAR, 2, 08JAN2012

1004, PID, COR-STOP-BAR, 3W, 08JAN2012

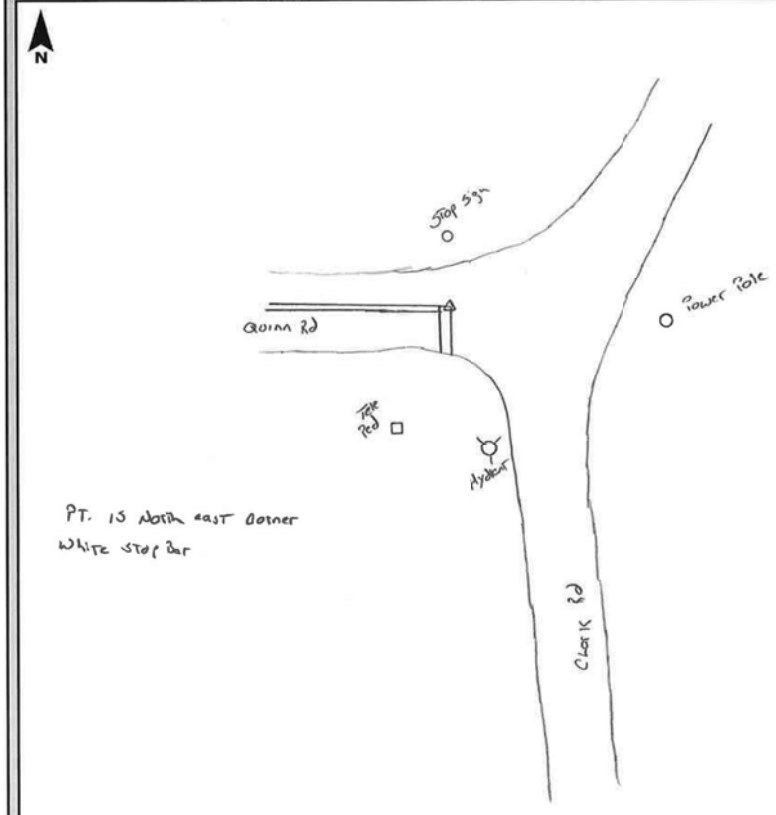
1004, PID, COR-STOP-BAR, 3W, 08JAN2012

Ground Control PID Point: 1005
Description: Corner of stop bar
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN.	**Project Number:** 72124	**Survey Date:** 1-7-2012
Station Name:	1005	**Operator Name:** ~~Brett Harmon~~ John Owens	
Latitude:	34-57-55.82	**Julian Day:** 7	**Session No.** N/A
Longitude:	89-40-49.799	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	82.028 m	**Data File Name:** 72124J	
Type of Mark:	PID	**Type of Reciever:** Trimble R8 Internal	
Stamping on Mark:	N/A	**Type of Antenna:** Trimble R8 Internal	
Weather Condition:	Cloudy 50°	**Antenna Height:** 2.000m	to bottom of antenna mount



Ground Control PID Point: 1005
Description: Corner of stop bar
Photos

1005, PID, COR-STOP-BAR, 2, 06JAN2012

1005, PID, COR-STOP-BAR, 3E, 06JAN2012

1005, PID, COR-STOP-BAR, 3N, 06JAN2012

1005, PID, COR-STOP-BAR, 3S, 06JAN2012

1005, PID, COR-STOP-BAR, 3W, 06JAN2012

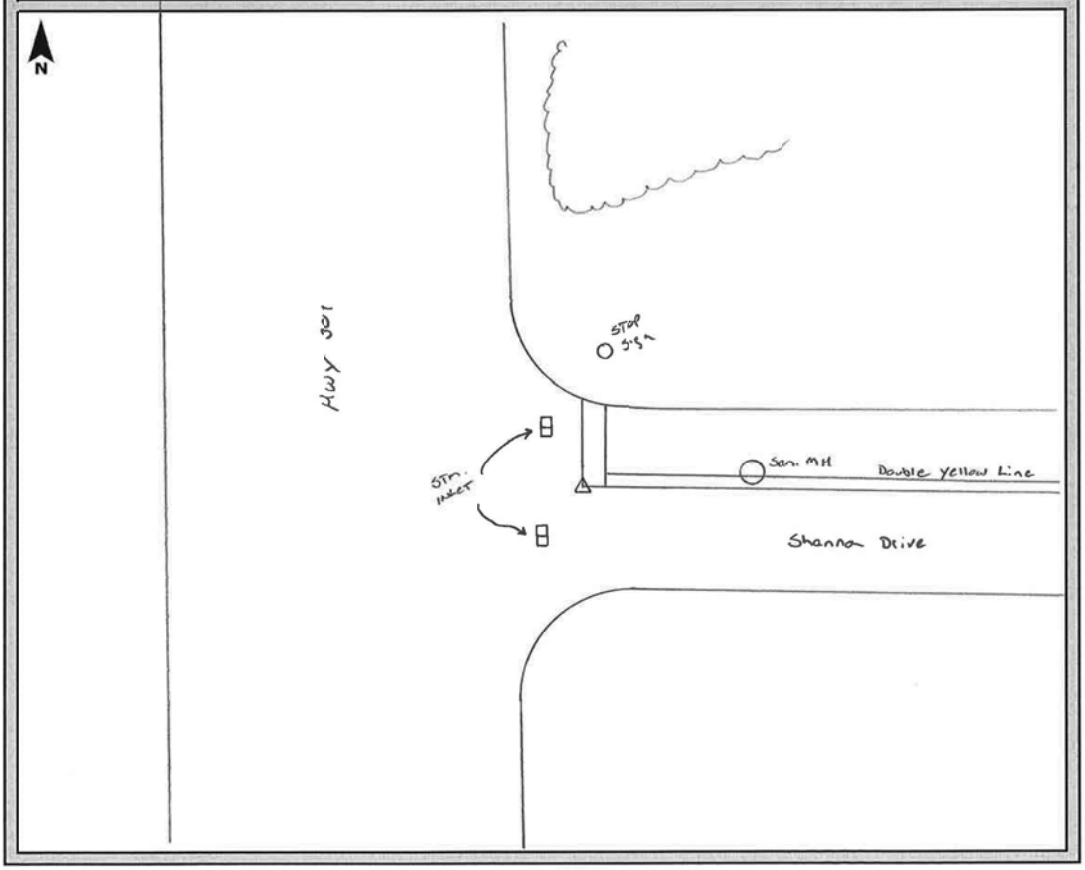
Not used

Ground Control PID Point: 1006
Description: Corner of stop bar
Observation Log

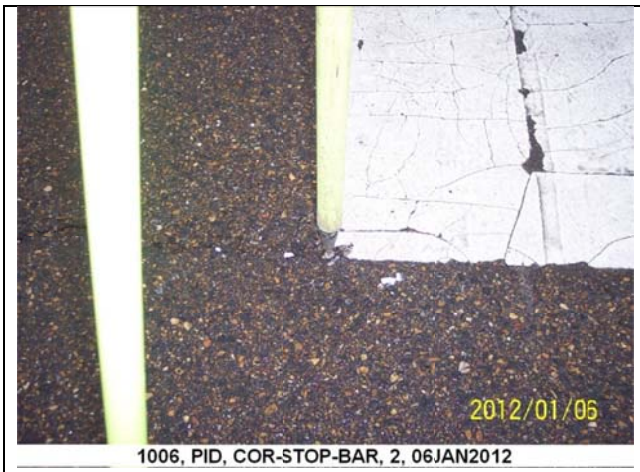
GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN.	**Project Number:** 72124	**Survey Date:** 1-7-2012
Station Name:	1006	**Operator Name:**	John Owens.
Latitude:	34-57-56.07	**Julian Day:** 7	**Session No.** N/A
Longitude:	90-05-45.57	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	58.327 M	**Data File Name:**	72124JDO
Type of Mark:	PID	**Type of Reciever:**	R8-3
Stamping on Mark:	N/A	**Type of Antenna:**	R8-3
Weather Condition:	Cloudy 50°	**Antenna Height:** 20	to bottom of artenna mount



Ground Control PID Point: 1006
Description: Corner of stop bar
Photos



1006, PID, COR-STOP-BAR, 2, 06JAN2012

1006, PID, COR-STOP-BAR, 3E, 06JAN2012

1006, PID, COR-STOP-BAR, 3N, 06JAN2012

1006, PID, COR-STOP-BAR, 3S, 06JAN2012

1006, PID, COR-STOP-BAR, 3W, 06JAN2012

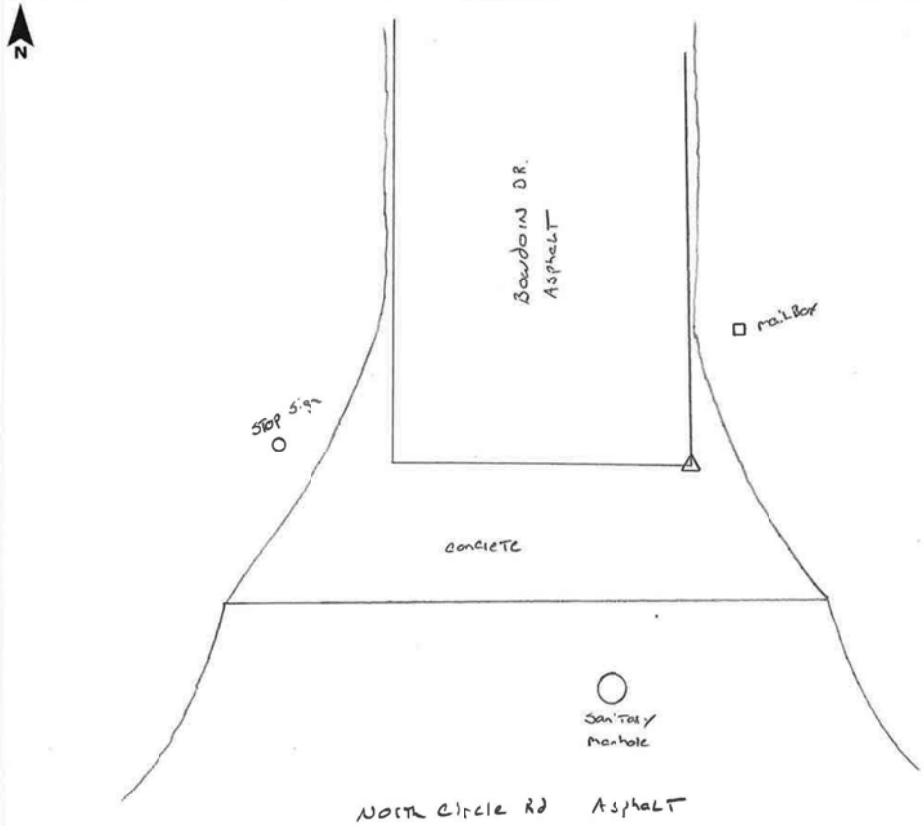
Not used

Ground Control PID Point: 1009
Description: Corner of asphalt/concrete pavement
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN.	**Project Number:** 72124	**Survey Date:** 1-8-12
Station Name:	1009	**Operator Name:**	John Owens
Latitude:	35° 15' 47.30	**Julian Day:** 8	**Session No.** N/A
Longitude:	90-02-13.94	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	46.765 m	**Data File Name:**	72124JD0
Type of Mark:	PID	**Type of Reciever:**	R8-3
Stamping on Mark:	N/A	**Type of Antenna:**	R8-3
Weather Condition:	Cloudy 50°	**Antenna Height:** 2.0	to bottom of antenna mount



Ground Control PID Point: 1009
Description: Corner of asphalt/concrete pavement
Photos

1009, PID, COR-ASPH-CONC, 2, 07JAN2012

1009, PID, COR-ASPH-CONC, 3E, 07JAN2012

1009, PID, COR-ASPH-CONC, 3N, 07JAN2012

1009, PID, COR-ASPH-CONC, 3S, 07JAN2012

1009, PID, COR-ASPH-CONC, 3W, 07JAN2012

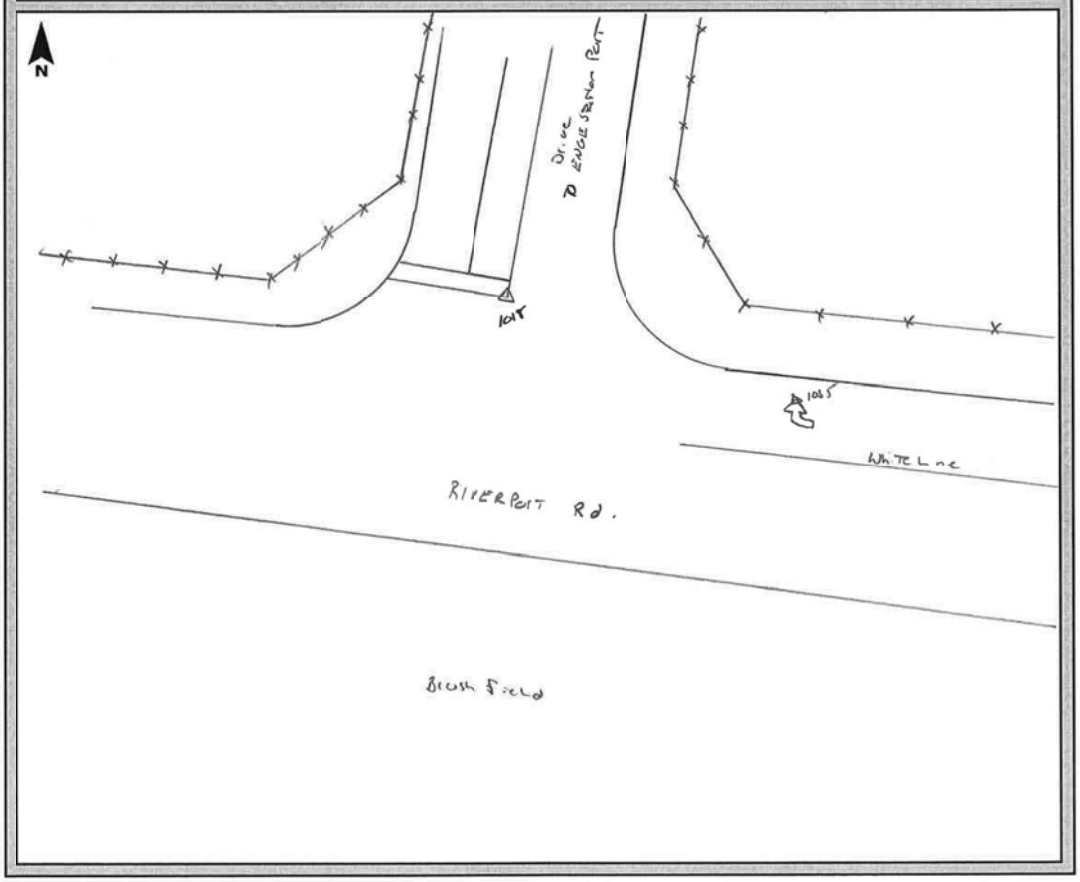
Not used

Ground Control PID Point: 1018
Description: Corner of stop bar
Observation Log

GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County	**Project Number:** 72124	**Survey Date:** 1-9-2012
Station Name:	1018	**Operator Name:**	Brett Harmon
Latitude:	35-04-10.24	**Julian Day:** 9	**Session No.** N/A
Longitude:	90-07-15.57	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	45.986	**Data File Name:**	72124 LiDar
Type of Mark:	PID	**Type of Reciever:**	Trimble R8-2 Internal
Stamping on Mark:	N/A	**Type of Antenna:**	Trimble R8-2 Internal
Weather Condition:	Drizzle 45°	**Antenna Height:** 2.000m	to bottom of antenna mount



Ground Control PID Point: 1018
Description: Corner of stop bar
Photos

1018, PID, COR-STOP-BAR, 2, 09JAN2012

1018, PID, COR-STOP-BAR, 3S, 09JAN2012

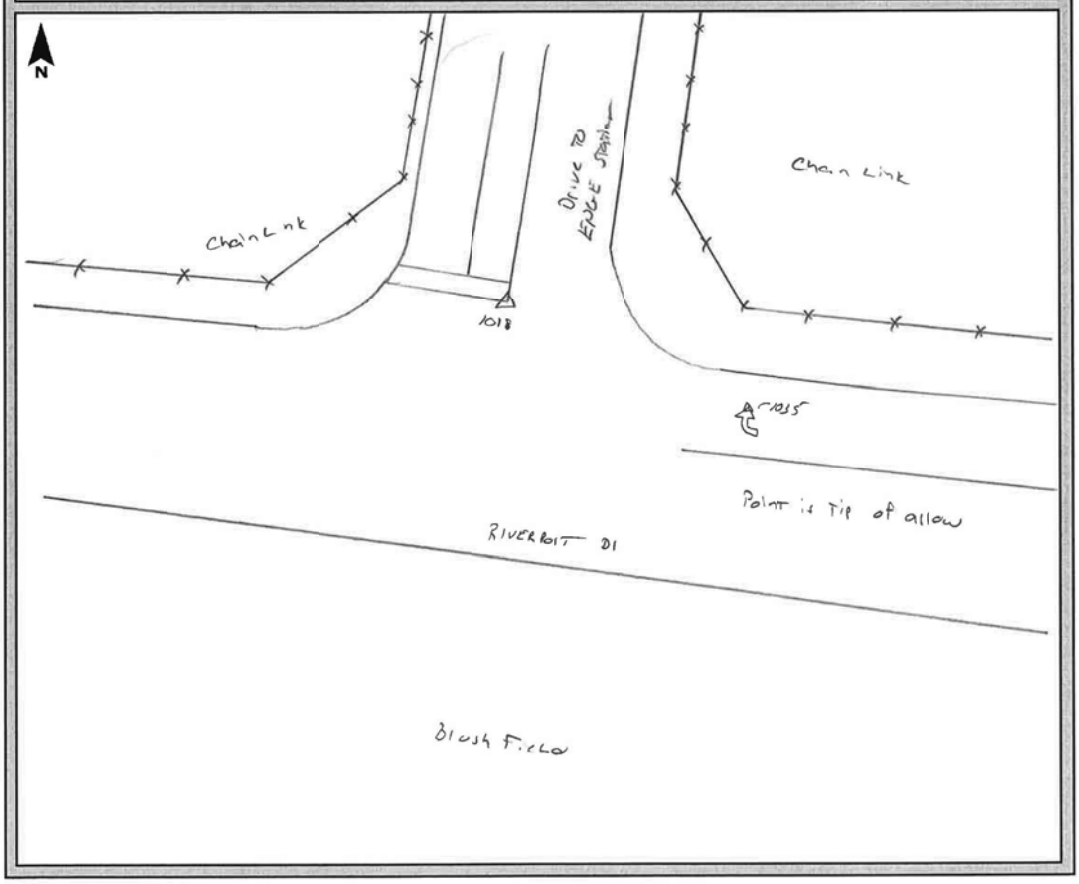
1018, PID, COR-STOP-BAR, 3W, 09JAN2012

Ground Control PID Point: 1035
Description: Tip of turn arrow
Observation Log

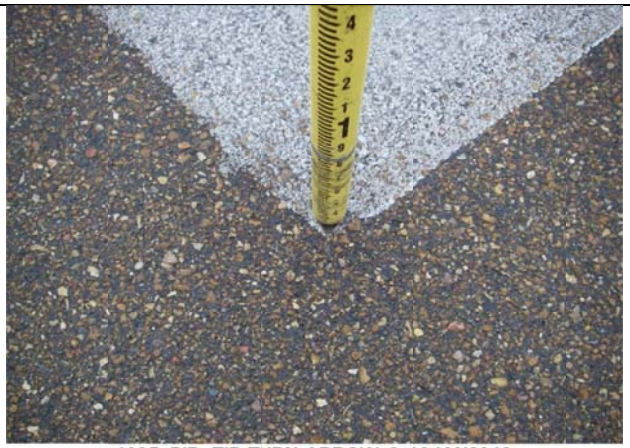
GPS Observation Log Sheet

WOOLPERT

Project Name:	Shelby County TN	**Project Number:** 72124	**Survey Date:** 1-9-2012
Station Name:	1035	**Operator Name:**	Brett Harmon
Latitude:	35-04-10.08	**Julian Day:** 9	**Session No.** N/A
Longitude:	90-07-14.54	**Start Time:** N/A	**End Time:** N/A
Ellip. Height:	46.282	**Data File Name:**	72124 LiDar
Type of Mark:	PID	**Type of Reciever:**	Trimble R8-2 Internal
Stamping on Mark:	N/A	**Type of Antenna:**	Trimble R8-2 Internal
Weather Condition:	Drizzle 45°	**Antenna Height:** 2.000m	to bottom of artenna mount



Ground Control PID Point: 1035
Description: Tip of turn arrow
Photos



1035, PID, TIP-TURN-ARROW, 2, 09JAN2012

1035, PID, TIP-TURN-ARROW, 3E, 09JAN2012

1035, PID, TIP-TURN-ARROW, 3S, 09JAN2012

SECTION 4: EXISTING NGS DATA SHEETS

This section contains the published National Geodetic Survey (NGS) Data Sheets used in the final control network for this project.

The NGS Data Sheet

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

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4.2
1       National Geodetic Survey,    Retrieval Date = DECEMBER 27, 2011
 FE2200 ***********************************************************************
 FE2200  CBN         -  This is a Cooperative Base Network Control Station.
 FE2200  DESIGNATION -  X 300
 FE2200  PID         -  FE2200
 FE2200  STATE/COUNTY-  TN/SHELBY
 FE2200  USGS QUAD   -  SOUTHEAST MEMPHIS (1993)
 FE2200
 FE2200                          *CURRENT SURVEY CONTROL
 FE2200
 FE2200* NAD 83(2007)-  35 06 54.49329(N)     089 55 25.24383(W)      ADJUSTED
 FE2200* NAVD 88     -         89.501   (meters)      293.64   (feet)  ADJUSTED
 FE2200
 FE2200  EPOCH DATE  -         2002.00
 FE2200  X           -       6,957.511  (meters)                       COMP
 FE2200  Y           -  -5,223,135.836  (meters)                       COMP
 FE2200  Z           -   3,648,358.630  (meters)                       COMP
 FE2200  LAPLACE CORR-           -1.14   (seconds)                      DEFLEC09
 FE2200  ELLIP HEIGHT-           61.993  (meters)           (10/16/11)  ADJUSTED
 FE2200  GEOID HEIGHT-          -27.45   (meters)                       GEOID09
 FE2200  DYNAMIC HT  -           89.419  (meters)       293.37  (feet)  COMP
 FE2200  MODELED GRAV-      979,716.6    (mgal)                         NAVD 88
 FE2200
 FE2200  HORZ ORDER  -  A
 FE2200  VERT ORDER  -  FIRST     CLASS II
 FE2200  ELLP ORDER  -  THIRD     CLASS II
 FE2200
 FE2200.The horizontal coordinates were established by GPS observations
 FE2200.and adjusted by the National Geodetic Survey in October 2011.
 FE2200
 FE2200.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 FE2200.See National Readjustment for more information.
 FE2200.The horizontal coordinates are valid at the epoch date displayed above.
 FE2200.The epoch date for horizontal control is a decimal equivalence
 FE2200.of Year/Month/Day.
 FE2200
 FE2200.The orthometric height was determined by differential leveling and
 FE2200.adjusted in June 1991.
 FE2200.WARNING-GPS observations at this control monument resulted in a GPS
 FE2200.derived orthometric height which differed from the leveled height by
 FE2200.more than one decimeter (0.1 meter).
 FE2200
 FE2200.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 FE2200
 FE2200.The Laplace correction was computed from DEFLEC09 derived deflections.
 FE2200
 FE2200.The ellipsoidal height was determined by GPS observations
 FE2200.and is referenced to NAD 83.
 FE2200
 FE2200.The geoid height was determined by GEOID09.
 FE2200
 FE2200.The dynamic height is computed by dividing the NAVD 88
 FE2200.geopotential number by the normal gravity value computed on the
 FE2200.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 FE2200.degrees latitude (g = 980.6199 gals.).
 FE2200
 FE2200.The modeled gravity was interpolated from observed gravity values.
 FE2200
 FE2200;                    North          East      Units Scale Factor Converg.
 FE2200;SPC TN       -     93,911.391   242,403.314   MT  1.00002654   -2 17 49.5
 FE2200;SPC TN       -    308,107.62    795,284.87    sFT 1.00002654   -2 17 49.5
 FE2200;UTM  16      - 3,889,723.991   233,544.284   MT  1.00047510   -1 40 57.9
 FE2200;UTM  15      - 3,890,143.502   780,371.542   MT  1.00056891   +1 46 14.6
 FE2200
 FE2200!             -  Elev Factor  x  Scale Factor =  Combined Factor
 FE2200!SPC TN       -   0.99999027  x   1.00002654  =   1.00001681
 FE2200!UTM  16      -   0.99999027  x   1.00047510  =   1.00046536
 FE2200!UTM  15      -   0.99999027  x   1.00056891  =   1.00055917
 FE2200
```

DATASHEETS

```
FE2200                          SUPERSEDED SURVEY CONTROL
FE2200
FE2200  NAD 83(2007)-  35 06 54.49351(N)     089 55 25.24440(W) AD(       ) 0
FE2200  ELLIP H (02/10/07)    61.997   (m)                        GP(       )
FE2200  NAD 83(1995)-  35 06 54.49324(N)     089 55 25.24442(W) AD(       ) A
FE2200  ELLIP H (08/03/04)    61.976   (m)                        GP(       ) 4 1
FE2200  NAVD 88 (02/01/05)    89.4     (m)           293.      (f) GPS OBS
FE2200  NAVD 88 (08/03/04)    89.50    (m)           293.6     (f) LEVELING    3
FE2200
FE2200.Superseded values are not recommended for survey control.
FE2200.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FE2200.See file dsdata.txt to determine how the superseded data were derived.
FE2200
FE2200 U.S. NATIONAL GRID SPATIAL ADDRESS: 16SBD3354489723(NAD 83)
FE2200 MARKER: I = METAL ROD
FE2200 SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
FE2200 SP SET: STAINLESS STEEL ROD
FE2200 STAMPING: X 300 1983
FE2200 MARK LOGO: NGS
FE2200 PROJECTION: FLUSH
FE2200 MAGNETIC: N = NO MAGNETIC MATERIAL
FE2200 STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
FE2200 SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
FE2200+SATELLITE: SATELLITE OBSERVATIONS - October 10, 2003
FE2200 ROD/PIPE-DEPTH: 8.92 meters
FE2200
FE2200  HISTORY     - Date     Condition        Report By
FE2200  HISTORY     - 1983     MONUMENTED       NGS
FE2200  HISTORY     - 20020708 GOOD             TN1620
FE2200  HISTORY     - 20031010 GOOD             TNDT
FE2200
FE2200                          STATION DESCRIPTION
FE2200
FE2200'DESCRIBED BY NATIONAL GEODETIC SURVEY 1983
FE2200'IN MEMPHIS.
FE2200'IN MEMPHIS, 4.5 KM (2.8 MI) WEST ALONG PARK AVENUE FROM THE WHITE
FE2200'STATION POST OFFICE TO THE JUNCTION OF CHERRY ROAD, THENCE 1.0 KM
FE2200'(0.6 MI) NORTH ALONG CHERRY ROAD TO THE JUNCTION OF SOUTHERN ROAD,
FE2200'THENCE 0.5 KM (0.3 MI) WEST ALONG SOUTHERN ROAD TO THE MARK ON THE
FE2200'LEFT AT A TENNIS AND BASEBALL COMPLEX, 60.38 METERS (198.1 FT) SOUTH
FE2200'OF THE CENTERLINE OF THE ROAD, 53.04 METERS (174.0 FT) NORTHWEST OF
FE2200'THE NORTHWEST CORNER OF THE OFFICE BUILDING OF THE TENNIS COURTS,
FE2200'46.79 METERS (153.5 FT) NORTHWEST OF A POWERLINE POLE WITH 2
FE2200'TRANSFORMERS, 9.14 METERS (30.0 FT) SOUTHWEST OF A GUY WIRE ANCHOR FOR
FE2200'A LIGHTPOLE FOR THE BASEBALL FIELD, 0.88 METER (2.9 FT) EAST OF A
FE2200'LIGHTPOLE FOR THE BASEBALL DIAMOND, AND 0.30 METER (1.0 FT) NORTH OF
FE2200'A CHAIN LINK FENCE AROUND THE BASEBALL FIELD.
FE2200'THE MARK IS 0.61 METERS  E FROM A WITNESS POST.
FE2200'THE MARK IS 0.61 M ABOVE ROAD.
FE2200
FE2200                          STATION RECOVERY (2002)
FE2200
FE2200'RECOVERY NOTE BY CITY OF MEMPHIS TENNESSEE 2002 (SB)
FE2200'RECOVERED IN GOOD CONDITION.
FE2200
FE2200                          STATION RECOVERY (2003)
FE2200
FE2200'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
FE2200'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:02
```

The NGS Data Sheet

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

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4.2
1        National Geodetic Survey,   Retrieval Date = JANUARY  9, 2012
 AJ2678 ***********************************************************************
 AJ2678  DESIGNATION -  STEEL
 AJ2678  PID         -  AJ2678
 AJ2678  STATE/COUNTY-  TN/SHELBY
 AJ2678  USGS QUAD   -  FLETCHER LAKE (1993)
 AJ2678
 AJ2678                          *CURRENT SURVEY CONTROL
 AJ2678
 AJ2678* NAD 83(2007)-  35 02 57.09032(N)     090 09 12.45513(W)      ADJUSTED
 AJ2678* NAVD 88     -         64.01    (meters)      210.0     (feet)  LEVELING
 AJ2678
 AJ2678  EPOCH DATE  -          2002.00
 AJ2678  X           -     -14,000.735  (meters)                       COMP
 AJ2678  Y           -  -5,227,305.995  (meters)                       COMP
 AJ2678  Z           -   3,642,357.072  (meters)                       COMP
 AJ2678  LAPLACE CORR-           -1.12   (seconds)                      DEFLEC09
 AJ2678  ELLIP HEIGHT-           36.706  (meters)           (02/10/07)  ADJUSTED
 AJ2678  GEOID HEIGHT-          -27.29   (meters)                       GEOID09
 AJ2678
 AJ2678  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AJ2678  Type    PID    Designation                        North   East  Ellip
 AJ2678  ----------------------------------------------------------------------
 AJ2678  NETWORK AJ2678 STEEL                               0.76   0.57   1.71
 AJ2678  ----------------------------------------------------------------------
 AJ2678  VERT ORDER  -  THIRD ?
 AJ2678
 AJ2678.The horizontal coordinates were established by GPS observations
 AJ2678.and adjusted by the National Geodetic Survey in February 2007.
 AJ2678
 AJ2678.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AJ2678.See National Readjustment for more information.
 AJ2678.The horizontal coordinates are valid at the epoch date displayed above.
 AJ2678.The epoch date for horizontal control is a decimal equivalence
 AJ2678.of Year/Month/Day.
 AJ2678
 AJ2678.The orthometric height was determined by differential leveling.
 AJ2678.The vertical network tie was performed by a horz. field party for horz.
 AJ2678.obs reductions. Reset procedures were used to establish the elevation.
 AJ2678
 AJ2678.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ2678
 AJ2678.The Laplace correction was computed from DEFLEC09 derived deflections.
 AJ2678
 AJ2678.The ellipsoidal height was determined by GPS observations
 AJ2678.and is referenced to NAD 83.
 AJ2678
 AJ2678.The geoid height was determined by GEOID09.
 AJ2678
 AJ2678;                    North          East      Units Scale Factor Converg.
 AJ2678;SPC TN       -     87,465.785    221,163.332   MT  1.00004150   -2 25 53.8
 AJ2678;SPC TN       -    286,960.66     725,600.03    sFT  1.00004150   -2 25 53.8
 AJ2678;UTM  15      - 3,882,203.863     759,632.613    MT  1.00043086   +1 38 08.2
 AJ2678
 AJ2678!             -  Elev Factor   x  Scale Factor =   Combined Factor
 AJ2678!SPC TN       -   0.99999424   x   1.00004150   =   1.00003574
 AJ2678!UTM  15      -   0.99999424   x   1.00043086   =   1.00042510
 AJ2678
 AJ2678                          SUPERSEDED SURVEY CONTROL
 AJ2678
 AJ2678  NAD 83(1995)-  35 02 57.08987(N)     090 09 12.45507(W) AD(       ) 1
 AJ2678  ELLIP H (04/26/01)    36.771   (m)                        GP(       ) 4 1
 AJ2678  NAVD 88 (04/26/01)    64.0     (m)           210.      (f) GPS OBS
 AJ2678
 AJ2678.Superseded values are not recommended for survey control.
 AJ2678.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AJ2678.See file dsdata.txt to determine how the superseded data were derived.
 AJ2678
 AJ2678 U.S. NATIONAL GRID SPATIAL ADDRESS: 15SYU5963282203(NAD 83)
```

```
AJ2678 MARKER: DD = SURVEY DISK
AJ2678 SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AJ2678 MARK LOGO: TN1620
AJ2678 MAGNETIC: O = OTHER; SEE DESCRIPTION
AJ2678 STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AJ2678+STABILITY: SURFACE MOTION
AJ2678 SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ2678+SATELLITE: SATELLITE OBSERVATIONS - January 28, 2008
AJ2678
AJ2678  HISTORY      - Date     Condition        Report By
AJ2678  HISTORY      - 1999     MONUMENTED       TN1620
AJ2678  HISTORY      - 20030407 GOOD             TN1620
AJ2678  HISTORY      - 20080128 GOOD             TN1620
AJ2678
AJ2678                           STATION DESCRIPTION
AJ2678
AJ2678'DESCRIBED BY CITY OF MEMPHIS TENNESSEE 1999 (KG)
AJ2678'THE STATION IS LOCATED IN SOUTHWEST SHELBY COUNTY APPROXIMATELY 2.00
AJ2678'MILES (3.22 KM) SOUTH OF ALLEN STEAM PLANT IN THE PIDGEON INDUSTRIAL
AJ2678'PARK.
AJ2678'TO REACH THE STATION FROM THE INTERSECTION OF WEST PLANT ROAD AND
AJ2678'RIVERPORT ROAD PROCEED WEST ON RIVERPORT ROAD APPROXIMATELY 0.75 MILE
AJ2678'(1.21 KM) TO WHERE RIVERPORT ROAD TURNS SOUTH AND BECOMES PAUL R.
AJ2678'LOWERY ROAD, CONTINUE SOUTH ON PAUL R.  LOWERY APPROXIMATELY 1.30 MILE
AJ2678'(2.09 KM) TO DRIVE ENTRANCE TO STEEL PLANT.  THE STATION IS ON THE
AJ2678'RIGHT.
AJ2678'THE STATION IS A CAST ALUMINUM CAP WITH A CROSS MARK SET ON A 1/2 INCH
AJ2678'REBAR ENCASED IN A 6 INCH ROUND, 36 INCH LONG CONCRETE MONUMENT SET IN
AJ2678'THE GROUND.  THE STATION IS LOCATED 143.00 FEET (43.59 M) SOUTH OF THE
AJ2678'ASPHALT DRIVEWAY TO STEEL PLANT, 67.00 FEET (20.42 M) WEST OF THE
AJ2678'CENTERLINE OF PAUL R.  LOWERY ROAD, 74.20 FEET (22.62 M) NORTH OF A
AJ2678'SEWER MANHOLE, 56.20 FEET (17.13 M) SOUTHEAST OF A WOOD POWER POLE NO.
AJ2678'265635.  THE CAP AND CONCRETE ARE SET FLUSH WITH THE GROUND.
AJ2678
AJ2678                           STATION RECOVERY (2003)
AJ2678
AJ2678'RECOVERY NOTE BY CITY OF MEMPHIS TENNESSEE 2003 (DA)
AJ2678'RECOVERED IN GOOD CONDITION.
AJ2678
AJ2678                           STATION RECOVERY (2008)
AJ2678
AJ2678'RECOVERY NOTE BY CITY OF MEMPHIS TENNESSEE 2008 (KG)
AJ2678'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:01
```

The NGS Data Sheet

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

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.6
1        National Geodetic Survey,   Retrieval Date = MARCH  1, 2012
 AJ2611 ***********************************************************************
 AJ2611  DESIGNATION -  90
 AJ2611  PID         -  AJ2611
 AJ2611  STATE/COUNTY-  TN/SHELBY
 AJ2611  USGS QUAD   -  EADS (1983)
 AJ2611
 AJ2611                         *CURRENT SURVEY CONTROL
 AJ2611
 AJ2611* NAD 83(2007)-  35 11 14.36503(N)     089 38 49.27235(W)      ADJUSTED
 AJ2611* NAVD 88     -       113.1     (meters)      371.      (feet)  GPS OBS
 AJ2611
 AJ2611  EPOCH DATE  -         2002.00
 AJ2611  X           -      32,149.509 (meters)                        COMP
 AJ2611  Y           -  -5,218,449.792 (meters)                        COMP
 AJ2611  Z           -   3,654,920.402 (meters)                        COMP
 AJ2611  LAPLACE CORR-           -0.84  (seconds)                       DEFLEC09
 AJ2611  ELLIP HEIGHT-           85.553 (meters)           (02/10/07)  ADJUSTED
 AJ2611  GEOID HEIGHT-          -27.56  (meters)                        GEOID09
 AJ2611
 AJ2611  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AJ2611  Type     PID    Designation                      North    East  Ellip
 AJ2611  ----------------------------------------------------------------------
 AJ2611  NETWORK AJ2611 90                                  0.86    0.65   1.78
 AJ2611  ----------------------------------------------------------------------
 AJ2611
 AJ2611.The horizontal coordinates were established by GPS observations
 AJ2611.and adjusted by the National Geodetic Survey in February 2007.
 AJ2611
 AJ2611.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AJ2611.See National Readjustment for more information.
 AJ2611
 AJ2611.The horizontal coordinates are valid at the epoch date displayed above
 AJ2611.which is a decimal equivalence of Year/Month/Day.
 AJ2611
 AJ2611.The orthometric height was determined by GPS observations and a
 AJ2611.high-resolution geoid model.
 AJ2611
 AJ2611.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ2611
 AJ2611.The Laplace correction was computed from DEFLEC09 derived deflections.
 AJ2611
 AJ2611.The ellipsoidal height was determined by GPS observations
 AJ2611.and is referenced to NAD 83.
 AJ2611
 AJ2611.The geoid height was determined by GEOID09.
 AJ2611
 AJ2611;                    North         East      Units Scale Factor Converg.
 AJ2611;SPC TN       -    100,939.351   267,903.730   MT  1.00001165   -2 08 06.4
 AJ2611;SPC TN       -    331,165.19    878,947.49    sFT 1.00001165   -2 08 06.4
 AJ2611;UTM  16      - 3,897,026.500    258,977.766   MT  1.00031599   -1 31 33.9
 AJ2611
 AJ2611!             -  Elev Factor  x  Scale Factor =  Combined Factor
 AJ2611!SPC TN       -   0.99998657  x   1.00001165  =   0.99999822
 AJ2611!UTM  16      -   0.99998657  x   1.00031599  =   1.00030256
 AJ2611
 AJ2611                          SUPERSEDED SURVEY CONTROL
 AJ2611
 AJ2611  NAD 83(1995)-  35 11 14.36466(N)     089 38 49.27223(W) AD(       ) 1
 AJ2611  ELLIP H (04/26/01)   85.620   (m)                        GP(       ) 4 1
 AJ2611  NAVD 88 (04/26/01)  113.1     (m)           371.      (f) GPS OBS
 AJ2611
 AJ2611.Superseded values are not recommended for survey control.
 AJ2611.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AJ2611.See file dsdata.txt to determine how the superseded data were derived.
 AJ2611
 AJ2611_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SBD5897797026(NAD 83)
 AJ2611
 AJ2611 MARKER: DD = SURVEY DISK
```

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AJ2611_SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL
AJ2611+WITH SETTING: INFORMATION.
AJ2611_STAMPING: 090
AJ2611_MARK LOGO: MLGW
AJ2611_PROJECTION: FLUSH
AJ2611_MAGNETIC: O = OTHER; SEE DESCRIPTION
AJ2611_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AJ2611_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ2611+SATELLITE: SATELLITE OBSERVATIONS - April 18, 2007
AJ2611_ROD/PIPE-DEPTH:  0.8 meters
AJ2611
AJ2611  HISTORY     - Date     Condition        Report By
AJ2611  HISTORY     - 1993     MONUMENTED       MLGW
AJ2611  HISTORY     - 20070418 GOOD             TN1620
AJ2611
AJ2611                          STATION DESCRIPTION
AJ2611
AJ2611'DESCRIBED BY MEMPHIS LIGHT GAS AND WATER 1993
AJ2611'THE STATION IS LOCATED IN EASTERN SHELBY COUNTY APPROXIMATELY 1.10
AJ2611'MILE (1.77 KM) SOUTHEAST OF ARLINGTON TENNESSEE CITY LIMITS AT THE
AJ2611'SHELBY-FAYETTE COUNTY LINE.
AJ2611'TO REACH THE STATION FROM THE INTERSECTION OF COLLIERVILLE-ARLINGTON
AJ2611'ROAD AND GEORGE R JAMES ROAD PROCEED EAST ON GEORGE R JAMES ROAD FOR
AJ2611'APPROXIMATELY 0.85 MILES (1.37 KM) TO A 90 DEGREE TURN NORTH IN GEORGE
AJ2611'R.  JAMES ROAD, CONTINUE NORTH FOR 0.40 MILES (0.64 KM) TO COBURN
AJ2611'ROAD.  THE STATION IS ON THE LEFT.
AJ2611'THE STATION IS A STAINLESS STEEL CAP WITH A PUNCHMARK SET ON A 2 INCH
AJ2611'GALVANIZED PIPE ENCASED IN A 8 INCH ROUND TUBE FILLED WITH CONCRETE TO
AJ2611'A DEPTH OF 30 INCHES.  THE STATION IS LOCATED 74.30 FEET (22.65 M)
AJ2611'SOUTHWEST OF A WOOD POWER POLE NO.  181075, 48.00 FEET (14.63 M)
AJ2611'SOUTHWEST OF A RR SPIKE AT THE INTERSECTION, 46.40 FEET (14.14 M) WEST
AJ2611'OF A FIRE HYDRANT, 43.40 FEET (13.23 M) SOUTHWEST OF A WATER VALUE,
AJ2611'40.00 FEET (12.19 M) SOUTH OF THE CENTERLINE OF COBURN ROAD, 27.00
AJ2611'FEET (8.23 M) WEST OF THE CENTERLINE OF GEORGE R JAMES ROAD. THE CAP
AJ2611'AND CONCRETE ARE SET FLUSH WITH THE GROUND.
AJ2611
AJ2611                          STATION RECOVERY (2007)
AJ2611
AJ2611'RECOVERY NOTE BY CITY OF MEMPHIS TENNESSEE 2007 (DA)
AJ2611'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:06
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The NGS Data Sheet

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

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.6
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 29, 2012
 AJ2572 ***********************************************************************
 AJ2572  DESIGNATION -  28
 AJ2572  PID         -  AJ2572
 AJ2572  STATE/COUNTY-  TN/SHELBY
 AJ2572  USGS QUAD   -  MILLINGTON (1997)
 AJ2572
 AJ2572                          *CURRENT SURVEY CONTROL
 AJ2572
 AJ2572* NAD 83(2007)-  35 21 13.18071(N)     089 56 54.24980(W)      ADJUSTED
 AJ2572* NAVD 88     -        78.8     (meters)      259.      (feet)  GPS OBS
 AJ2572
 AJ2572  EPOCH DATE  -         2002.00
 AJ2572  X           -     4,689.902  (meters)                        COMP
 AJ2572  Y           -  -5,207,862.457  (meters)                     COMP
 AJ2572  Z           -   3,669,967.686  (meters)                     COMP
 AJ2572  LAPLACE CORR-           0.62   (seconds)                     DEFLEC09
 AJ2572  ELLIP HEIGHT-          51.415  (meters)           (02/10/07) ADJUSTED
 AJ2572  GEOID HEIGHT-         -27.34   (meters)                      GEOID09
 AJ2572
 AJ2572  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AJ2572  Type    PID    Designation                      North    East   Ellip
 AJ2572  ----------------------------------------------------------------------
 AJ2572  NETWORK AJ2572 28                                 1.02    0.84    2.20
 AJ2572  ----------------------------------------------------------------------
 AJ2572
 AJ2572.The horizontal coordinates were established by GPS observations
 AJ2572.and adjusted by the National Geodetic Survey in February 2007.
 AJ2572
 AJ2572.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AJ2572.See National Readjustment for more information.
 AJ2572
 AJ2572.The horizontal coordinates are valid at the epoch date displayed above
 AJ2572.which is a decimal equivalence of Year/Month/Day.
 AJ2572
 AJ2572.The orthometric height was determined by GPS observations and a
 AJ2572.high-resolution geoid model.
 AJ2572
 AJ2572.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ2572
 AJ2572.The Laplace correction was computed from DEFLEC09 derived deflections.
 AJ2572
 AJ2572.The ellipsoidal height was determined by GPS observations
 AJ2572.and is referenced to NAD 83.
 AJ2572
 AJ2572.The geoid height was determined by GEOID09.
 AJ2572
 AJ2572;                    North          East     Units Scale Factor Converg.
 AJ2572;SPC TN       -   120,443.619   241,218.589   MT  0.99998332   -2 18 41.6
 AJ2572;SPC TN       -   395,159.44    791,397.99    sFT 0.99998332   -2 18 41.6
 AJ2572;UTM  16      - 3,916,254.750   232,076.718   MT  1.00048472   -1 42 25.3
 AJ2572;UTM  15      - 3,916,539.202   777,303.540   MT  1.00054777   +1 46 00.6
 AJ2572
 AJ2572!             -  Elev Factor  x  Scale Factor =  Combined Factor
 AJ2572!SPC TN       -   0.99999193  x   0.99998332  =   0.99997525
 AJ2572!UTM  16      -   0.99999193  x   1.00048472  =   1.00047665
 AJ2572!UTM  15      -   0.99999193  x   1.00054777  =   1.00053970
 AJ2572
 AJ2572                          SUPERSEDED SURVEY CONTROL
 AJ2572
 AJ2572  NAD 83(1995)-  35 21 13.18041(N)     089 56 54.24965(W) AD(       ) 1
 AJ2572  ELLIP H (04/26/01)   51.473  (m)                         GP(       ) 4 1
 AJ2572  NAVD 88 (04/26/01)   78.8    (m)          259.      (f) GPS OBS
 AJ2572
 AJ2572.Superseded values are not recommended for survey control.
 AJ2572.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AJ2572.See file dsdata.txt to determine how the superseded data were derived.
 AJ2572
 AJ2572 U.S. NATIONAL GRID SPATIAL ADDRESS: 16SBE3207616254(NAD 83)
```

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AJ2572
AJ2572 MARKER: DD = SURVEY DISK
AJ2572 SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL
AJ2572+WITH SETTING: INFORMATION.
AJ2572 STAMPING: 028
AJ2572 MARK LOGO: MLGW
AJ2572 PROJECTION: FLUSH
AJ2572 MAGNETIC: O = OTHER; SEE DESCRIPTION
AJ2572 STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AJ2572 SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ2572+SATELLITE: SATELLITE OBSERVATIONS - May 01, 2007
AJ2572 ROD/PIPE-DEPTH:  0.8 meters
AJ2572
AJ2572  HISTORY     - Date     Condition        Report By
AJ2572  HISTORY     - 1993     MONUMENTED       MLGW
AJ2572  HISTORY     - 20070501 GOOD             TN1620
AJ2572
AJ2572                          STATION DESCRIPTION
AJ2572
AJ2572'DESCRIBED BY MEMPHIS LIGHT GAS AND WATER 1993
AJ2572'THE STATION IS LOCATED IN NORTHWEST SHELBY COUNTY APPROXIMATELY 0.80
AJ2572'MILE (1.29 KM) WEST OF MILLINGTON TENNESSEE IN THE LOCKE-CUBA
AJ2572'COMMUNITY.
AJ2572'TO REACH THE STATION FROM THE INTERSECTION OF HIGHWAY 51 (HWY-51) AND
AJ2572'SHELBY ROAD IN MILLINGTON, PROCEED WEST ON SHELBY ROAD APPROXIMATELY
AJ2572'0.20 MILE (0.32 KM) TO EPPERSON ROAD, CONTINUE WEST, PASSING EPPERSON
AJ2572'ROAD ON SHELBY ROAD APPROXIMATELY 0.50 MILE (0.80 KM) TO BEAR CREEK
AJ2572'DRAINAGE CANAL.  THE STATION IS ON THE RIGHT.
AJ2572'THE STATION IS A STAINLESS STEEL CAP WITH A PUNCHMARK SET ON A 2 INCH
AJ2572'GALVANIZED PIPE ENCASED IN A 8 INCH ROUND TUBE FILLED WITH CONCRETE TO
AJ2572'A DEPTH OF 30 INCHES.  THE STATION IS LOCATED 0.25 MILE (0.40 KM) EAST
AJ2572'OF SHAKE RAG ROAD, 220.00 FEET (67.06 M) EAST OF THE EAST END OF
AJ2572'CONCRETE BRIDGE OVER BEAR CREEK DRAINAGE CANAL, BRIDGE NO.
AJ2572'79-1462-1.55, 25.00 FEET (7.62 M) SOUTH OF THE CENTERLINE OF SHELBY
AJ2572'ROAD.  THE CAP AND CONCRETE ARE SET FLUSH WITH THE GROUND.
AJ2572
AJ2572                          STATION RECOVERY (2007)
AJ2572
AJ2572'RECOVERY NOTE BY CITY OF MEMPHIS TENNESSEE 2007 (KG)
AJ2572'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:02
```

The NGS Data Sheet

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

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4.2
1        National Geodetic Survey,    Retrieval Date = JANUARY   9, 2012
 DH3687 ***********************************************************************
 DH3687  HT_MOD      -  This is a Height Modernization Survey Station.
 DH3687  DESIGNATION -  3500W04
 DH3687  PID         -  DH3687
 DH3687  STATE/COUNTY-  AR/CRITTENDEN
 DH3687  USGS QUAD   -  EDMONDSON (1981)
 DH3687
 DH3687                          *CURRENT SURVEY CONTROL
 DH3687
 DH3687* NAD 83(2007)-  35 00 06.37033(N)     090 20 17.61871(W)      ADJUSTED
 DH3687* NAVD 88     -         61.53    (meters)      201.9    (feet)  GPS OBS
 DH3687
 DH3687  EPOCH DATE  -         2002.00
 DH3687  X           -     -30,875.484  (meters)                       COMP
 DH3687  Y           -  -5,230,251.279  (meters)                       COMP
 DH3687  Z           -   3,638,047.447  (meters)                       COMP
 DH3687  LAPLACE CORR-           -1.14   (seconds)                      DEFLEC09
 DH3687  ELLIP HEIGHT-           34.395  (meters)           (02/10/07)  ADJUSTED
 DH3687  GEOID HEIGHT-          -27.15   (meters)                       GEOID09
 DH3687
 DH3687  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 DH3687  Type     PID     Designation                      North    East  Ellip
 DH3687  ----------------------------------------------------------------------
 DH3687  NETWORK DH3687 3500W04                             1.31    1.00   3.61
 DH3687  ----------------------------------------------------------------------
 DH3687
 DH3687.The horizontal coordinates were established by GPS observations
 DH3687.and adjusted by the National Geodetic Survey in February 2007.
 DH3687
 DH3687.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 DH3687.See National Readjustment for more information.
 DH3687.The horizontal coordinates are valid at the epoch date displayed above.
 DH3687.The epoch date for horizontal control is a decimal equivalence
 DH3687.of Year/Month/Day.
 DH3687
 DH3687.The orthometric height was determined by GPS observations and a
 DH3687.high-resolution geoid model using precise GPS observation and
 DH3687.processing techniques.
 DH3687
 DH3687.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DH3687
 DH3687.The Laplace correction was computed from DEFLEC09 derived deflections.
 DH3687
 DH3687.The ellipsoidal height was determined by GPS observations
 DH3687.and is referenced to NAD 83.
 DH3687
 DH3687.The geoid height was determined by GEOID09.
 DH3687
 DH3687;                   North         East      Units Scale Factor Converg.
 DH3687;SPC AR N     -     75,437.767    551,687.776   MT  0.99998725   +0 58 01.1
 DH3687;SPC AR N     -    247,498.74   1,809,995.65    sFT  0.99998725   +0 58 01.1
 DH3687;UTM  15      - 3,876,477.245    742,916.048    MT  1.00032731   +1 31 39.2
 DH3687
 DH3687!             -  Elev Factor   x  Scale Factor =   Combined Factor
 DH3687!SPC AR N     -   0.99999460   x   0.99998725  =   0.99998185
 DH3687!UTM  15      -   0.99999460   x   1.00032731  =   1.00032191
 DH3687
 DH3687                          SUPERSEDED SURVEY CONTROL
 DH3687
 DH3687  NAD 83(1997)-  35 00 06.37022(N)     090 20 17.61851(W) AD(       ) 1
 DH3687  ELLIP H (05/31/05)    34.385   (m)                        GP(       ) 4 2
 DH3687
 DH3687.Superseded values are not recommended for survey control.
 DH3687.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DH3687.See file dsdata.txt to determine how the superseded data were derived.
 DH3687
 DH3687_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SYU4291676477(NAD 83)
 DH3687_MARKER: DD = SURVEY DISK
```

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DH3687 SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DH3687 STAMPING: 3500W04 2003
DH3687 MARK LOGO: USACE
DH3687 PROJECTION: FLUSH
DH3687 MAGNETIC: O = OTHER; SEE DESCRIPTION
DH3687 STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DH3687+STABILITY: SURFACE MOTION
DH3687 SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DH3687+SATELLITE: SATELLITE OBSERVATIONS - July 07, 2010
DH3687
DH3687  HISTORY     - Date     Condition        Report By
DH3687  HISTORY     - 20030505 MONUMENTED       USACE
DH3687  HISTORY     - 20030723 GOOD             EMCINC
DH3687  HISTORY     - 20100707 GOOD             USACE
DH3687
DH3687                          STATION DESCRIPTION
DH3687
DH3687'DESCRIBED BY EMC INCORPORATED 2003 (MG)
DH3687'TO REACH MARK FROM THE INTERSECTION OF U.S. HIGHWAY 79 AND ARKANSAS
DH3687'STATE HIGHWAY 50,  LOCATED 4.5 MILES NORTHEAST OF HUGHES, ARKANSAS,
DH3687'PROCESS NORTHEAST THEN EAST ALONG  ARKANSAS STATE HIGHWAY 50 FOR 4.2
DH3687'MILES TO ITS INTERSECTION WITH HIGHWAY 147. TURN RIGHT  AND PROCEED
DH3687'SOUTH ALONG HIGHWAY 147 FOR 1.6 MILES TO A GRAVELED FIELD ROAD AND THE
DH3687'MARK ON THE RIGHT.  MARK IS LOCATED ON A 30-INCH BY 30-INCH CONCRETE
DH3687'FOUNDATION THAT  ONCE SUPPORTED A GAS STATION SIGN.  MARK IS 35.2 FEET
DH3687'WEST OF THE CENTERLINE OF HIGHWAY  147, 53.0 FEET SOUTH OF THE
DH3687'CENTERLINE OF A GRAVEL ROAD, 1.8 FEET EAST OF A TWO AND  ONE-HALF INCH
DH3687'IRON PIPE AND 2.0 FEET WEST OF A TWO AND ONE-HALF INCH IRON PIPE. A
DH3687'U.S. ARMY  CORPS OF ENGINEERS BRASS DISK STAMPED 3500W04 SET FLUSH.
DH3687'CONCRETE FOUNDATION  PROJECTS 6 INCHES ABOVE GROUND LEVEL. MARK IS 1.7
DH3687'FEET NORTH OF A CARSONITE WITNESS  POST.
DH3687
DH3687                          STATION RECOVERY (2010)
DH3687
DH3687'RECOVERY NOTE BY US ARMY CORPS OF ENGINEERS 2010 (POP)
DH3687'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:02
```

The NGS Data Sheet

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

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4.2
1        National Geodetic Survey,    Retrieval Date = JANUARY  8, 2012
 DH3692 ***********************************************************************
 DH3692  HT MOD      -  This is a Height Modernization Survey Station.
 DH3692  DESIGNATION -  3530E05
 DH3692  PID         -  DH3692
 DH3692  STATE/COUNTY-  TN/TIPTON
 DH3692  USGS QUAD   -  MASON (1973)
 DH3692
 DH3692                          *CURRENT SURVEY CONTROL
 DH3692
 DH3692* NAD 83(2007)-  35 29 58.08082(N)     089 34 43.51780(W)      ADJUSTED
 DH3692* NAVD 88     -       107.02   (meters)      351.1    (feet)  GPS OBS
 DH3692
 DH3692  EPOCH DATE  -         2002.00
 DH3692  X           -      38,219.693  (meters)                      COMP
 DH3692  Y           -  -5,198,369.905  (meters)                      COMP
 DH3692  Z           -   3,683,166.081  (meters)                      COMP
 DH3692  LAPLACE CORR-          -2.19   (seconds)                     DEFLEC09
 DH3692  ELLIP HEIGHT-          79.657  (meters)          (02/10/07)  ADJUSTED
 DH3692  GEOID HEIGHT-         -27.35   (meters)                      GEOID09
 DH3692
 DH3692  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 DH3692  Type     PID     Designation                      North    East  Ellip
 DH3692  ----------------------------------------------------------------------
 DH3692  NETWORK DH3692 3530E05                             1.10    0.96   1.71
 DH3692  ----------------------------------------------------------------------
 DH3692
 DH3692.The horizontal coordinates were established by GPS observations
 DH3692.and adjusted by the National Geodetic Survey in February 2007.
 DH3692
 DH3692.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 DH3692.See National Readjustment for more information.
 DH3692.The horizontal coordinates are valid at the epoch date displayed above.
 DH3692.The epoch date for horizontal control is a decimal equivalence
 DH3692.of Year/Month/Day.
 DH3692
 DH3692.The orthometric height was determined by GPS observations and a
 DH3692.high-resolution geoid model using precise GPS observation and
 DH3692.processing techniques.
 DH3692
 DH3692.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 DH3692
 DH3692.The Laplace correction was computed from DEFLEC09 derived deflections.
 DH3692
 DH3692.The ellipsoidal height was determined by GPS observations
 DH3692.and is referenced to NAD 83.
 DH3692
 DH3692.The geoid height was determined by GEOID09.
 DH3692
 DH3692;                    North          East      Units Scale Factor Converg.
 DH3692;SPC TN       -    135,317.561    275,383.202   MT  0.99996535   -2 05 42.5
 DH3692;SPC TN       -    443,954.36     903,486.39    sFT  0.99996535   -2 05 42.5
 DH3692;UTM  16      - 3,931,492.161    266,097.247    MT  1.00027426   -1 29 53.3
 DH3692
 DH3692!             -  Elev Factor   x  Scale Factor =   Combined Factor
 DH3692!SPC TN       -   0.99996750   x   0.99996535  =   0.99995285
 DH3692!UTM  16      -   0.99996750   x   1.00027426  =   1.00026175
 DH3692
 DH3692                          SUPERSEDED SURVEY CONTROL
 DH3692
 DH3692  NAD 83(1995)-  35 29 58.08079(N)     089 34 43.51755(W) AD(       ) 1
 DH3692  ELLIP H (05/31/05)    79.661  (m)                         GP(       ) 4 2
 DH3692
 DH3692.Superseded values are not recommended for survey control.
 DH3692.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DH3692.See file dsdata.txt to determine how the superseded data were derived.
 DH3692
 DH3692_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SBE6609731492(NAD 83)
 DH3692_MARKER: DD = SURVEY DISK
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DATASHEETS

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DH3692_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DH3692_STAMPING: 3530E05 2003
DH3692_MARK LOGO: USACE
DH3692_PROJECTION: RECESSED 12 CENTIMETERS
DH3692_MAGNETIC: O = OTHER; SEE DESCRIPTION
DH3692_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DH3692+STABILITY: SURFACE MOTION
DH3692_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DH3692+SATELLITE: SATELLITE OBSERVATIONS - July 07, 2003
DH3692
DH3692  HISTORY     - Date     Condition        Report By
DH3692  HISTORY     - 20030429 MONUMENTED       USACE
DH3692  HISTORY     - 20030707 GOOD             EMCINC
DH3692
DH3692                          STATION DESCRIPTION
DH3692
DH3692'DESCRIBED BY EMC INCORPORATED 2003 (MG)
DH3692'MARK IS LOCATED 6.0 MILES SOUTHEAST OF COVINGTON, TENNESSEE. TO REACH
DH3692'MARK FROM THE  JUNCTION OF U.S. HIGHWAY 51 AND STATE HIGHWAY 54 IN
DH3692'COVINGTON, TENNESSEE, PROCEED EAST  ALONG HIGHWAY 54 FOR 1.0 MILES TO
DH3692'ITS JUNCTION WITH STATE HIGHWAY 179. TURN RIGHT AND  PROCEED SOUTHEST
DH3692'ALONG HIGHWAY 179 FOR 4.4 MILES TO ITS INTERSECTION WITH TABERNACLE
DH3692'ROAD. TURN RIGHT AND PROCEED SOUTH ALONG TABERNACLE ROAD FOR 1.6 MILES
DH3692'TO A GRAVEL  DRIVEWAY LEADING TO A SMALL FRAME HOUSE AT 1597
DH3692'TABERNACLE ROAD AND THE MARK ON THE  RIGHT. MARK IS LOCATED 22.0 FEET
DH3692'WEST OF THE CENTERLINE OF TABERNACLE ROAD, 17.0 FEET  SOUTH OF THE
DH3692'CENTERLINE OF GRAVEL DRIVEWAY, 57.4 FEET SOUTHEAST OF A POWER POLE AND
DH3692'70.0 FEET SOUTHWEST OF TELEPHONE JUNCTION BOX 178 EAST 43. A MEMPHIS
DH3692'CORPS OF ENGINEERS  MAGNETIZED DISK ATTACHED TO A 7-FOOT ALUMINUM ROD
DH3692'UNDER AN ACCESS COVER. DISK AND  ACCESS COVER STAMPED 3530E05 2003.
DH3692'DISK IS RECESSED 12 CENTIMETERS UNDER ACCESS COVER.

*** retrieval complete.
Elapsed Time = 00:00:01
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The NGS Data Sheet

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

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4.2
1       National Geodetic Survey,    Retrieval Date = JANUARY 17, 2012
 FE2753 ***********************************************************************
 FE2753  CBN         -  This is a Cooperative Base Network Control Station.
 FE2753  DESIGNATION -  GPS 59
 FE2753  PID         -  FE2753
 FE2753  STATE/COUNTY-  TN/FAYETTE
 FE2753  USGS QUAD   -  MACON (1983)
 FE2753
 FE2753                        *CURRENT SURVEY CONTROL
 FE2753
 FE2753* NAD 83(2007)-  35 09 21.84902(N)     089 26 47.90689(W)      ADJUSTED
 FE2753* NAVD 88     -       124.5     (meters)      408.      (feet)  GPS OBS
 FE2753
 FE2753  EPOCH DATE  -         2002.00
 FE2753  X           -       50,419.028 (meters)                       COMP
 FE2753  Y           -  -5,220,312.026 (meters)                       COMP
 FE2753  Z           -   3,652,092.475 (meters)                       COMP
 FE2753  LAPLACE CORR-           -0.80  (seconds)                      DEFLEC09
 FE2753  ELLIP HEIGHT-           96.903 (meters)           (10/16/11) ADJUSTED
 FE2753  GEOID HEIGHT-          -27.70  (meters)                       GEOID09
 FE2753  HORZ ORDER  -  A
 FE2753  ELLP ORDER  -  THIRD     CLASS II
 FE2753
 FE2753.The horizontal coordinates were established by GPS observations
 FE2753.and adjusted by the National Geodetic Survey in October 2011.
 FE2753
 FE2753.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 FE2753.See National Readjustment for more information.
 FE2753.The horizontal coordinates are valid at the epoch date displayed above.
 FE2753.The epoch date for horizontal control is a decimal equivalence
 FE2753.of Year/Month/Day.
 FE2753
 FE2753.The orthometric height was determined by GPS observations and a
 FE2753.high-resolution geoid model.
 FE2753
 FE2753.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 FE2753
 FE2753.The Laplace correction was computed from DEFLEC09 derived deflections.
 FE2753
 FE2753.The ellipsoidal height was determined by GPS observations
 FE2753.and is referenced to NAD 83.
 FE2753
 FE2753.The geoid height was determined by GEOID09.
 FE2753
 FE2753;                    North          East     Units Scale Factor Converg.
 FE2753;SPC TN       -    96,812.687   286,020.338   MT  1.00001790   -2 01 04.1
 FE2753;SPC TN       -   317,626.29    938,385.06    sFT 1.00001790   -2 01 04.1
 FE2753;UTM  16      - 3,893,091.569   277,141.709   MT  1.00021213   -1 24 33.7
 FE2753
 FE2753!             -  Elev Factor  x  Scale Factor =   Combined Factor
 FE2753!SPC TN       -   0.99998479  x   1.00001790  =   1.00000269
 FE2753!UTM  16      -   0.99998479  x   1.00021213  =   1.00019692
 FE2753
 FE2753                          SUPERSEDED SURVEY CONTROL
 FE2753
 FE2753  NAD 83(2007)-  35 09 21.84891(N)     089 26 47.90709(W) AD(       ) 0
 FE2753  ELLIP H (02/10/07)    96.882  (m)                         GP(       )
 FE2753  ELLIP H (08/03/04)    96.829  (m)                         GP(       ) 4 1
 FE2753  NAD 83(1995)-  35 09 21.84872(N)     089 26 47.90713(W) AD(       ) B
 FE2753  ELLIP H (12/14/95)    96.964  (m)                         GP(       ) 1 2
 FE2753  NAD 83(1990)-  35 09 21.84804(N)     089 26 47.90563(W) AD(       ) B
 FE2753  ELLIP H (09/07/90)    96.986  (m)                         GP(       ) 4 1
 FE2753  NAVD 88 (12/14/95)   124.6     (m)           409.      (f) GPS OBS
 FE2753  NAVD 88 (01/12/94)   124.6     (m)           409.      (f) GPS OBS
 FE2753  NGVD 29 (09/07/90)   124.6     (m)           409.      (f) GPS OBS
 FE2753
 FE2753.Superseded values are not recommended for survey control.
 FE2753.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 FE2753.See file dsdata.txt to determine how the superseded data were derived.
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FE2753
FE2753 U.S. NATIONAL GRID SPATIAL ADDRESS: 16SBD7714193091(NAD 83)
FE2753 MARKER: I = METAL ROD
FE2753 SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
FE2753 SP SET: STAINLESS STEEL ROD IN SLEEVE
FE2753 STAMPING: GPS 59 1987
FE2753 MARK LOGO: NGS
FE2753 PROJECTION: FLUSH
FE2753 MAGNETIC: S = STEEL SPIKE IMBEDDED IN MONUMENT
FE2753 STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
FE2753 SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
FE2753+SATELLITE: SATELLITE OBSERVATIONS - November 24, 2008
FE2753 ROD/PIPE-DEPTH: 7.90 meters
FE2753 SLEEVE-DEPTH   : 0.90 meters
FE2753
FE2753  HISTORY      - Date     Condition        Report By
FE2753  HISTORY      - 1987     MONUMENTED       NGS
FE2753  HISTORY      - 1987     GOOD             NGS
FE2753  HISTORY      - 19890627 GOOD
FE2753  HISTORY      - 19900823 GOOD             WHPCO
FE2753  HISTORY      - 19910102 GOOD             NGS
FE2753  HISTORY      - 19930519 GOOD
FE2753  HISTORY      - 19950620 GOOD             NGS
FE2753  HISTORY      - 20000819 GOOD             LOCENG
FE2753  HISTORY      - 20031010 GOOD             TNDT
FE2753  HISTORY      - 20081124 GOOD
FE2753
FE2753                          STATION DESCRIPTION
FE2753
FE2753'DESCRIBED BY NATIONAL GEODETIC SURVEY 1987 (DAC)
FE2753'THE STATION IS LOCATED ABOUT 14.5 KM (9 MI) SOUTHWEST OF
FE2753'SOMERVILLE, IN A GRASS ISLAND AT THE JUNCTION OF STATE ROUTES 195
FE2753'AND 193.
FE2753'OWNERSHIP--STATE RIGHT-OF-WAY.
FE2753'
FE2753'TO REACH THE STATION FROM THE COURTHOUSE IN SOMERVILLE GO
FE2753'SOUTH FOR 2.6 KM (1.6 MI) ON STATE ROUTE 76 TO THE JUNCTION OF
FE2753'STATE ROUTE 195.
FE2753'TURN RIGHT AND GO SOUTHWEST FOR 12.1 KM (7.5 MI) ON STATE ROUTE 195
FE2753'TO THE JUNCTION OF STATE ROUTE 193 AND THE STATION.
FE2753'
FE2753'THE STATION IS A 3-D MARK WITH STAINLESS STEEL ROD DRIVEN 7.9 METERS
FE2753'(26 FT).  THE LOGO CAP IS STAMPED---GPS 59 1987---, AND A STEEL
FE2753'SPIKE IS EMBEDDED IN THE CONCRETE.  LOCATED
FE2753'8.2 METERS (27 FT) SOUTH FROM THE CENTER OF STATE ROUTE 195,
FE2753'7.3 METERS (24 FT) NORTH FROM THE CENTER OF STATE ROUTE 193 AND
FE2753'LEVEL WITH SAME,
FE2753'6.1 METERS (20 FT) EAST FROM A FIBERGLASS WITNESS POST AND STOP
FE2753'SIGN,
FE2753'39.0 METERS (128 FT) EAST FROM A POWER POLE WITH FOUR GUY WIRES.
FE2753
FE2753                          STATION RECOVERY (1987)
FE2753
FE2753'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1987
FE2753'RECOVERED IN GOOD CONDITION.
FE2753
FE2753                          STATION RECOVERY (1989)
FE2753
FE2753'RECOVERED 1989
FE2753'RECOVERED IN GOOD CONDITION.
FE2753
FE2753                          STATION RECOVERY (1990)
FE2753
FE2753'RECOVERY NOTE BY W H PORTER AND COMPANY INCORPORATED 1990
FE2753'THE STATION IS LOCATED ABOUT 14.5 KM (9.0 MI) SOUTHWEST OF SOMERVILLE,
FE2753'IN A GRASS ISLAND AT THE JUNCTION OF STATE ROUTES 195 AND 193.
FE2753'OWNERSHIP-- STATE RIGHT-OF-WAY.
FE2753'TO REACH THE STATION FROM THE COURTHOUSE IN SOMERVILLE GO SOUTH FOR
FE2753'2.6 KM (1.6 MI) ON STATE ROUTE 76 TO THE JUNCTION OF STATE ROUTE 195.
FE2753'TURN RIGHT AND GO SOUTHWEST FOR 12.1 KM (7.5 MI) ON STATE ROUTE 195
FE2753'TO THE JUNCTION OF STATE ROUTE 193 AND THE STATION.
FE2753'THE STATION IS A 3-D MARK WITH STAINLESS STEEL ROD DRIVEN 7.9 METERS
FE2753'(26 FT.). THE LOGO CAP IS STAMPED ---GPS 59 1987---, AND A STEEL
FE2753'SPIKE IS EMBEDDED IN THE CONCRETE. LOCATED 8.2 METERS (27 FT.) SOUTH
FE2753'FROM THE CENTER OF STATE ROUTE 193 AND LEVEL WITH SAME, 6.1 METERS
FE2753'(20 FT.) EAST FROM A FIBERGLASS WTNESS POST AND STOP SIGN, 39.0
FE2753'METERS (128 FT.) EAST FROM A POWER POLE WITH FOUR GUY WIRES.
FE2753
FE2753                          STATION RECOVERY (1991)
FE2753
FE2753'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
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FE2753'THE STATION IS LOCATED ABOUT 3.7 KM (2.3 MI) EAST OF MACON, 14.64 KM
FE2753'(9.10 MI) SOUTHWEST OF SOMERVILLE AND AT THE JUNCTION OF STATE
FE2753'HIGHWAYS 193 AND 195.  OWNERSHIP--TENNESSEE DEPARTMENT OF
FE2753'TRANSPORTATION, P.O. BOX 23107, NASHVILLE, TN 37202, PHONE
FE2753'615-741-2158.
FE2753'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAYS 193 AND 194,
FE2753'ON THE SOUTH SIDE OF MACON, GO EAST ON STATE HIGHWAY 193 FOR 3.78 KM
FE2753'(2.35 MI) TO THE JUNCTION OF STATE HIGHWAY 195 AND THE STATION ON THE
FE2753'RIGHT IN THE CENTER OF THE GRASSY TRIANGLE FORMED BY THE JUNCTION OF
FE2753'THE HIGHWAYS.
FE2753'THE STATION IS LOCATED 8.2 M (26.9 FT) SOUTH OF THE CENTER OF HIGHWAY
FE2753'195, 7.3 M (24.0 FT) NORTH OF THE CENTER OF HIGHWAY 193, 6.4 M
FE2753'(21.0 FT) NORTH-NORTHEAST OF THE METAL POST OF A STOP SIGN, 5.7 M
FE2753'(18.7 FT) EAST-NORTHEAST OF THE METAL POST OF A ROAD SIGN (RHEA DR.
FE2753'MACON RD.)AND 0.2 M (0.7 FT) NORTHWEST OF A FIBERGLASS WITNESS POST.
FE2753
FE2753                          STATION RECOVERY (1993)
FE2753
FE2753'RECOVERED 1993
FE2753'RECOVERED IN GOOD CONDITION.
FE2753
FE2753                          STATION RECOVERY (1995)
FE2753
FE2753'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (CFS)
FE2753'RECOVERED AS DESCRIBED.
FE2753
FE2753                          STATION RECOVERY (2000)
FE2753
FE2753'RECOVERY NOTE BY LOCAL ENGINEER (INDIVIDUAL OR FIRM) 2000 (JBC)
FE2753'FOUND IN GOOD CONDITION W/ SURVEY MARKER
FE2753
FE2753                          STATION RECOVERY (2003)
FE2753
FE2753'RECOVERY NOTE BY TN DEPT OF TRANSP 2003
FE2753'RECOVERED AS DESCRIBED.
FE2753
FE2753                          STATION RECOVERY (2008)
FE2753
FE2753'RECOVERY NOTE BY   2008 (JTZ)
FE2753'RECOVERED AS DESCRIBED
FE2753'
FE2753'
FE2753'
FE2753'
FE2753'

*** retrieval complete.
Elapsed Time = 00:00:00
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The NGS Data Sheet

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

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4.2
1        National Geodetic Survey,    Retrieval Date = JANUARY 17, 2012
 FE1371 ***********************************************************************
 FE1371  DESIGNATION -  KERR
 FE1371  PID         -  FE1371
 FE1371  STATE/COUNTY-  TN/TIPTON
 FE1371  USGS QUAD   -  MUNFORD (1983)
 FE1371
 FE1371                          *CURRENT SURVEY CONTROL
 FE1371
 FE1371* NAD 83(1995)-  35 24 00.30578(N)     089 50 47.33633(W)      ADJUSTED
 FE1371* NAVD 88     -       126.947   (meters)      416.49    (feet)  ADJUSTED
 FE1371
 FE1371  LAPLACE CORR-           0.74   (seconds)                      DEFLEC09
 FE1371  GEOID HEIGHT-         -27.29   (meters)                       GEOID09
 FE1371  DYNAMIC HT  -         126.836  (meters)      416.13   (feet)  COMP
 FE1371  MODELED GRAV-     979,754.2    (mgal)                         NAVD 88
 FE1371
 FE1371  HORZ ORDER  -  THIRD
 FE1371  VERT ORDER  -  FIRST     CLASS I
 FE1371
 FE1371.The horizontal coordinates were established by classical geodetic methods
 FE1371.and adjusted by the National Geodetic Survey in April 1999.
 FE1371
 FE1371.The orthometric height was determined by differential leveling and
 FE1371.adjusted in August 1995.
 FE1371
 FE1371.The Laplace correction was computed from DEFLEC09 derived deflections.
 FE1371
 FE1371.The geoid height was determined by GEOID09.
 FE1371
 FE1371.The dynamic height is computed by dividing the NAVD 88
 FE1371.geopotential number by the normal gravity value computed on the
 FE1371.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 FE1371.degrees latitude (g = 980.6199 gals.).
 FE1371
 FE1371.The modeled gravity was interpolated from observed gravity values.
 FE1371
 FE1371;                    North         East      Units Scale Factor Converg.
 FE1371;SPC TN       -   125,221.306   250,677.384   MT  0.99997691   -2 15 06.8
 FE1371;SPC TN       -   410,830.23    822,430.72    sFT 0.99997691   -2 15 06.8
 FE1371;UTM  16      - 3,921,134.075   241,489.143   MT  1.00042364   -1 38 59.4
 FE1371
 FE1371!             -  Elev Factor  x  Scale Factor =  Combined Factor
 FE1371!SPC TN       -   0.99998436  x   0.99997691  =  0.99996127
 FE1371!UTM  16      -   0.99998436  x   1.00042364  =  1.00040799
 FE1371
 FE1371:                Primary Azimuth Mark                    Grid Az
 FE1371:SPC TN       -  KERR AZ MK                              209 17 45.6
 FE1371:UTM  16      -  KERR AZ MK                              208 41 38.2
 FE1371
 FE1371|-----------------------------------------------------------------------|
 FE1371| PID    Reference Object                  Distance      Geod. Az   |
 FE1371|                                                        dddmmss.s |
 FE1371| FE2827 KERR RM 1                         27.345 METERS 03227      |
 FE1371| FE2585 MUNFORD MUNICIPAL TANK           APPROX. 6.3 KM 0322826.4 |
 FE1371| CG3628 KERR AZ MK                                      2070230.8 |
 FE1371| FE1372 KERR RM 2                         23.196 METERS 28702      |
 FE1371|-----------------------------------------------------------------------|
 FE1371
 FE1371                          SUPERSEDED SURVEY CONTROL
 FE1371
 FE1371  NAD 83(1990)-  35 24 00.31527(N)     089 50 47.33765(W) AD(       ) 3
 FE1371  NAD 83(1986)-  35 24 00.31760(N)     089 50 47.33789(W) AD(       ) 3
 FE1371  NAD 27      -  35 24 00.01570(N)     089 50 47.03290(W) AD(       ) 3
 FE1371  NAVD 88 (06/15/91)   126.955   (m)           416.52    (f) UNKNOWN     1 1
 FE1371  NGVD 29 (??/??/??)   126.924   (m)           416.42    (f) ADJUSTED    1 1
 FE1371
 FE1371.Superseded values are not recommended for survey control.
 FE1371.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
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FE1371.See file dsdata.txt to determine how the superseded data were derived.
FE1371
FE1371 U.S. NATIONAL GRID SPATIAL ADDRESS: 16SBE4148921134(NAD 83)
FE1371 MARKER: DS = TRIANGULATION STATION DISK
FE1371 SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FE1371 SP SET: CONCRETE POST
FE1371 STAMPING: KERR 1958
FE1371 MARK LOGO: CGS
FE1371 MAGNETIC: N = NO MAGNETIC MATERIAL
FE1371 STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FE1371+STABILITY: SURFACE MOTION
FE1371 SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
FE1371+SATELLITE: SATELLITE OBSERVATIONS - October 03, 2002
FE1371
FE1371  HISTORY     - Date     Condition        Report By
FE1371  HISTORY     - 1958     MONUMENTED       CGS
FE1371  HISTORY     - 1974     GOOD             LOCENG
FE1371  HISTORY     - 1974     GOOD             NGS
FE1371  HISTORY     - 19920115 GOOD             NGS
FE1371  HISTORY     - 20021003 GOOD             USACE
FE1371
FE1371                          STATION DESCRIPTION
FE1371
FE1371'DESCRIBED BY COAST AND GEODETIC SURVEY 1958 (WNM)
FE1371'THE STATION IS LOCATED ABOUT 4-1/2 MILES SOUTHWEST OF CROSSTOWN,
FE1371'ABOUT 3-1/2 MILES NORTHEAST OF MILLINGTON AND ON PROPERTY
FE1371'OWNED BY MR. BYRON B. HUGHES.  IT IS 51 FEET SOUTHWEST OF THE SOUTH
FE1371'EDGE OF A CONCRETE BLOCK BUILDING CALLED THE TURF CLUB, 32 FEET
FE1371'NORTHEAST OF THE CENTERLINE OF A GRAVELED DRIVEWAY AND 5 FEET
FE1371'NORTHWEST OF A WHITE WITNESS POST.  THE MONUMENT PROJECTS 2 INCHES
FE1371'AND THE DISK IS STAMPED KERR 1958.
FE1371'
FE1371'TO REACH THE STATION FROM THE CROSSROAD IN CROSSTOWN, GO SOUTHWEST ON
FE1371'U.S. HIGHWAY 51 FOR 4.45 MILES TO A GRAVELED DRIVEWAY ON THE
FE1371'RIGHT.  *TURN RIGHT ON THE DRIVEWAY AND GO NORTH FOR 0.05 MILE TO THE
FE1371'STATION ON THE RIGHT AS DESCRIBED.
FE1371'
FE1371'*TO REACH THE AZIMUTH MARK FROM THIS POINT, CONTINUE SOUTHWEST ON
FE1371'HIGHWAY 51 FOR 0.2 MILE TO THE AZIMUTH MARK ON THE LEFT AS
FE1371'DESCRIBED.
FE1371'
FE1371'REFERENCE MARK 1 IS 1 FOOT SOUTH OF THE WEST ENTRANCE TO THE CLUB.
FE1371'THE MONUMENT IS FLUSH AND THE DISK IS STAMPED KERR NO 1 1958.
FE1371'
FE1371'REFERENCE MARK 2 IS 114 FEET SOUTHWEST OF THE SOUTHWEST CORNER OF THE
FE1371'CLUB AND 31 FEET SOUTHWEST OF THE CENTERLINE OF THE DRIVEWAY.  THE
FE1371'MONUMENT PROJECTS 2 INCHES AND THE DISK IS STAMPED KERR NO 2 1958.
FE1371'
FE1371'THE AZIMUTH MARK IS 30 FEET EAST OF THE CENTERLINE OF HIGHWAY 51, 1
FE1371'FOOT NORTH OF A WHITE WITNESS POST AND AT THE WEST EDGE OF A
FE1371'CULTIVATED FIELD.  THE MONUMENT PROJECTS 1 INCH AND THE DISK IS
FE1371'STAMPED KERR 1958.
FE1371'
FE1371'HEIGHT OF LIGHT ABOVE STATION MARK 22 METERS.
FE1371
FE1371                          STATION RECOVERY (1974)
FE1371
FE1371'RECOVERY NOTE BY LOCAL ENGINEER (INDIVIDUAL OR FIRM) 1974
FE1371'THE STATION AND R.M. 2 WERE RECOVERED IN GOOD CONDITION AND LEVELED
FE1371'OVER IN 1974.  R.M. 1 WAS SEARCHED FOR BUT NOT RECOVERED, BELIEVED
FE1371'STILL THERE BUT COVERED WITH DEBRIS FROM BURNED TURF CLUB.
FE1371'
FE1371'TO REACH FROM THE JUNCTION OF U.S. HIGHWAY 51 AND NAVY ROAD AT
FE1371'MILLINGTON GO 5.65 MILES NORTHEAST ALONG U.S. HIGHWAY 51.
FE1371'
FE1371'THE STATION IS A C AND GS TRIANGULATION STATION DISK, STAMPED KERR
FE1371'1958.  0.25 MILE NORTHEAST OF THE JUNCTION OF A ROAD WEST TO
FE1371'WILKINSVILLE, 0.1 MILE NORTH AND ACROSS THE HIGHWAY FROM A GROCERY
FE1371'STORE AND SERVICE STATION, 152 FEET NORTHWEST OF THE CENTER LINE
FE1371'OF THE NORTHWEST LANES OF THE HIGHWAY, 97 FEET WEST OF A POWER
FE1371'POLE, IN A CONCRETE POST.
FE1371'
FE1371'R.M. 2 IS A C AND GS REFERENCE MARK DISK, STAMPED KERR NO 2 1958.
FE1371'76.1 FEET WEST OF THE STATION, 73 FEET NORTHEAST OF A PERSIMMON
FE1371'TREE, IN A CONCRETE POST.
FE1371'
FE1371'AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN--ABOUT 5-1/2 MILES
FE1371'NORTHEAST OF TIPTON.
FE1371
FE1371                          STATION RECOVERY (1974)
FE1371
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DATASHEETS

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FE1371'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1974
FE1371'5.6 MI NE FROM MILLINGTON.
FE1371'ABOUT 5.65 MILES NORTHEAST ALONG U.S. HIGHWAY 51 FROM THE
FE1371'JUNCTION WITH NAVY ROAD AT MILLINGTON, 0.25 MILE NORTHEAST OF THE
FE1371'JUNCTION WITH A PAVED ROAD LEADING WEST TO WILKINSVILLE, 0.1
FE1371'MILE NORTH AND ACROSS 4 LANES OF U.S. HIGHWAY 51 FROM A GROCERY
FE1371'STORE AND AN EXXON SERVICE STATION, 152 FEET NORTHWEST OF THE
FE1371'CENTER LINE OF THE NORTHWEST LANE OF THE HIGHWAY, 30 FEET
FE1371'SOUTHWEST OF THE SOUTHWEST EDGE OF AN ASPHALT PARKING AREA, NOW
FE1371'ABANDONED (FORMERLY SITE OF TURF CLUB) BURNED DOWN, IN SMALL
FE1371'GRASSY PLOT OF GROUND, 97 FEET WEST OF A POWER POLE, BEARING A
FE1371'LIGHT AND TRANSFORMER, 76.1 FEET EAST OF KERR NO1, 35 FEET EAST
FE1371'OF THE CENTER LINE OF AN ASPHALT DRIVEWAY, 18 FEET NORTHWEST OF
FE1371'A 11--INCH BLACK WALNUT TREE, 1.5 FEET NORTH OF A METAL WITNESS
FE1371'POST AND IN THE TOP OF A CONCRETE POST PROJECTING 1-INCH.
FE1371
FE1371                              STATION RECOVERY (1992)
FE1371
FE1371'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
FE1371'8.8 KM (5.45 MI) NORTHEASTERLY ALONG U.S. HIGHWAY 51 FROM THE JUNCTION
FE1371'OF COUNTY ROAD 205 (NAVY ROAD) IN MILLINGTON, 46.4 M (152.2 FT)
FE1371'NORTHWEST OF THE CENTERLINE OF THE SOUTHWEST-BOUND LANES OF THE
FE1371'HIGHWAY, 29.6 M (97.1 FT) WEST OF A UTILITY LIGHT POLE WITH
FE1371'TRANSFORMER NUMBER 13997, 17.9 M (58.7 FT) SOUTHWEST OF THE SOUTHWEST
FE1371'CORNER OF THE VICTORY BAPTIST MISSION SERVICES CHURCH, 11.1 M
FE1371'(36.4 FT) EAST OF THE CENTER OF A PAVED DRIVEWAY, 5.4 M (17.7 FT)
FE1371'NORTHWEST OF AN 18-INCH WALNUT TREE, 2.5 M (8.2 FT) ABOVE THE LEVEL OF
FE1371'THE HIGHWAY, AND THE MONUMENT PROJECTS 0.02 M (0.07 FT) ABOVE THE
FE1371'GROUND SURFACE.
FE1371
FE1371                              STATION RECOVERY (2002)
FE1371
FE1371'RECOVERY NOTE BY US ARMY CORPS OF ENGINEERS 2002 (JMH)
FE1371'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:01
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The NGS Data Sheet

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

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.6
1        National Geodetic Survey,    Retrieval Date = FEBRUARY 29, 2012
 FF0126 ***********************************************************************
 FF0126  DESIGNATION -  M 174
 FF0126  PID         -  FF0126
 FF0126  STATE/COUNTY-  AR/CRITTENDEN
 FF0126  USGS QUAD   -  TYRONZA (1974)
 FF0126
 FF0126                             *CURRENT SURVEY CONTROL
 FF0126
 FF0126* NAD 83(1986)-  35 23 42.      (N)     090 16 00.      (W)      SCALED
 FF0126* NAVD 88     -         68.368   (meters)      224.30   (feet)   ADJUSTED
 FF0126 ______________________________________________________________________
 FF0126  GEOID HEIGHT-          -27.51   (meters)                        GEOID09
 FF0126  DYNAMIC HT  -           68.307  (meters)      224.10   (feet)   COMP
 FF0126  MODELED GRAV-      979,749.9    (mgal)                          NAVD 88
 FF0126
 FF0126  VERT ORDER  -  FIRST     CLASS II
 FF0126
 FF0126.The horizontal coordinates were scaled from a topographic map and have
 FF0126.an estimated accuracy of +/- 6 seconds.
 FF0126.
 FF0126.The orthometric height was determined by differential leveling and
 FF0126.adjusted in June 1991.
 FF0126
 FF0126.The geoid height was determined by GEOID09.
 FF0126
 FF0126.The dynamic height is computed by dividing the NAVD 88
 FF0126.geopotential number by the normal gravity value computed on the
 FF0126.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 FF0126.degrees latitude (g = 980.6199 gals.).
 FF0126
 FF0126.The modeled gravity was interpolated from observed gravity values.
 FF0126
 FF0126;                      North         East     Units  Estimated Accuracy
 FF0126;SPC AR N      -   119,170.      557,450.      MT  (+/- 180 meters Scaled)
 FF0126
 FF0126                             SUPERSEDED SURVEY CONTROL
 FF0126
 FF0126  NGVD 29 (10/05/93)    68.335   (m)           224.20   (f) ADJUSTED    1 2
 FF0126
 FF0126.Superseded values are not recommended for survey control.
 FF0126.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 FF0126.See file dsdata.txt to determine how the superseded data were derived.
 FF0126
 FF0126_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SYV482202(NAD 83)
 FF0126
 FF0126_MARKER: DB = BENCH MARK DISK
 FF0126_SETTING: 38 = SET IN THE ABUTMENT OR PIER OF A LARGE BRIDGE
 FF0126_SP SET: PIER
 FF0126_STAMPING: M 174 1956
 FF0126_MARK LOGO: CGS
 FF0126_MAGNETIC: N = NO MAGNETIC MATERIAL
 FF0126_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 FF0126_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
 FF0126+SATELLITE: SATELLITE OBSERVATIONS - October 16, 2002
 FF0126
 FF0126  HISTORY     - Date     Condition        Report By
 FF0126  HISTORY     - 1956     MONUMENTED       CGS
 FF0126  HISTORY     - 19920319 GOOD             NGS
 FF0126  HISTORY     - 20021016 GOOD             USACE
 FF0126
 FF0126                             STATION DESCRIPTION
 FF0126
 FF0126'DESCRIBED BY COAST AND GEODETIC SURVEY 1956
 FF0126'1.8 MI NW FROM TURRELL.
 FF0126'1.8 MILES NORTHWEST ALONG THE ST. LOUIS-SAN FRANCISCO RAILWAY
 FF0126'FROM THE STATION AT TURRELL, NEAR MILEAGE POLE NO. 460/17, AT THE
 FF0126'OVERPASS OF RAILROAD OVER U.S. HIGHWAY 61, SET VERTICALLY IN
 FF0126'THE NORTHEAST FACE OF THE SOUTHEAST CONCRETE PIER OF OVERPASS,
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DATASHEETS

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FF0126'21 FEET SOUTHEAST OF CENTER LINE OF HIGHWAY, 13 FEET NORTHEAST
FF0126'OF CENTER LINE OF TRACK (MEASURED UNDER OVERPASS), 0.4 FOOT
FF0126'NORTHWEST OF EAST CORNER OF PIER, 2 FEET SOUTHEAST OF CENTER
FF0126'OF NORTHEAST FACE OF PIER AND 2 FEET ABOVE GROUND AND HIGHWAY
FF0126'61.
FF0126
FF0126                          STATION RECOVERY (1992)
FF0126
FF0126'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
FF0126'2.5 KM (1.55 MI) NORTHERLY ALONG THE BURLINGTON NORTHERN RAILROAD FROM
FF0126'THE JUNCTION OF BARTON STREET IN TURRELL, SET VERTICALLY IN THE
FF0126'NORTHEAST FACE OF THE 1ST CONCRETE PIER NORTHWEST OF THE SOUTHEAST
FF0126'ABUTMENT OF THE RAILROAD OVERPASS OF U.S. HIGHWAY 61 AND INTERSTATE
FF0126'HIGHWAY 55, 6.4 M (21.0 FT) SOUTHEAST OF THE CENTERLINE OF THE U.S.
FF0126'HIGHWAY, 4.0 M (13.1 FT) NORTHEAST OF THE NEAR RAIL, 0.3 M (1.0 FT)
FF0126'ABOVE THE LEVEL OF THE HIGHWAY, 0.1 M (0.3 FT) NORTHWEST OF THE EAST
FF0126'CORNER OF THE PIER, AND 0.1 M (0.3 FT) BELOW THE GROUND SURFACE.
FF0126
FF0126                          STATION RECOVERY (2002)
FF0126
FF0126'RECOVERY NOTE BY US ARMY CORPS OF ENGINEERS 2002 (DLB)
FF0126'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:00
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The NGS Data Sheet

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

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4.2
1        National Geodetic Survey,    Retrieval Date = JANUARY   9, 2012
 FF0153 ***********************************************************************
 FF0153  DESIGNATION -  MARION
 FF0153  PID         -  FF0153
 FF0153  STATE/COUNTY-  AR/CRITTENDEN
 FF0153  USGS QUAD   -  WEST MEMPHIS (1983)
 FF0153
 FF0153                          *CURRENT SURVEY CONTROL
 FF0153
 FF0153* NAD 83(1997)-  35 13 15.78081(N)     090 12 10.62306(W)      ADJUSTED
 FF0153* NAVD 88     -         67.073   (meters)      220.06   (feet)  ADJUSTED
 FF0153
 FF0153  LAPLACE CORR-           -0.21   (seconds)                      DEFLEC09
 FF0153  GEOID HEIGHT-          -27.30   (meters)                       GEOID09
 FF0153  DYNAMIC HT  -           67.013  (meters)       219.86  (feet)  COMP
 FF0153  MODELED GRAV-      979,739.2    (mgal)                         NAVD 88
 FF0153
 FF0153  HORZ ORDER  -  FIRST
 FF0153  VERT ORDER  -  FIRST     CLASS II
 FF0153
 FF0153.The horizontal coordinates were established by classical geodetic methods
 FF0153.and adjusted by the National Geodetic Survey in September 1999.
 FF0153
 FF0153.The orthometric height was determined by differential leveling and
 FF0153.adjusted in June 1991.
 FF0153
 FF0153.The Laplace correction was computed from DEFLEC09 derived deflections.
 FF0153
 FF0153.The geoid height was determined by GEOID09.
 FF0153
 FF0153.The dynamic height is computed by dividing the NAVD 88
 FF0153.geopotential number by the normal gravity value computed on the
 FF0153.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 FF0153.degrees latitude (g = 980.6199 gals.).
 FF0153
 FF0153.The modeled gravity was interpolated from observed gravity values.
 FF0153
 FF0153;                      North         East      Units Scale Factor Converg.
 FF0153;SPC AR N      -    99,977.450   563,590.634   MT  0.99995590   +1 02 44.5
 FF0153;SPC AR N      -   328,009.35  1,849,046.94    sFT  0.99995590   +1 02 44.5
 FF0153;SPC TN        -   106,707.855   217,470.594   MT  1.00000524   -2 27 38.1
 FF0153;SPC TN        -   350,090.69    713,484.77    sFT  1.00000524   -2 27 38.1
 FF0153;UTM  15       - 3,901,142.656   754,581.191   MT  1.00039881   +1 36 50.5
 FF0153
 FF0153!              -  Elev Factor  x  Scale Factor =  Combined Factor
 FF0153!SPC AR N      -   0.99999376  x   0.99995590  =   0.99994966
 FF0153!SPC TN        -   0.99999376  x   1.00000524  =   0.99999900
 FF0153!UTM  15       -   0.99999376  x   1.00039881  =   1.00039257
 FF0153
 FF0153:                  Primary Azimuth Mark                    Grid Az
 FF0153:SPC AR N      -  BOLLINGER                                173 09 44.7
 FF0153:SPC TN        -  BOLLINGER                                176 40 07.3
 FF0153:UTM  15       -  BOLLINGER                                172 35 38.7
 FF0153
 FF0153|-----------------------------------------------------------------------|
 FF0153| PID    Reference Object                  Distance      Geod. Az   |
 FF0153|                                                        dddmmss.s  |
 FF0153| CI4577 MARION RM 1                       90.300 METERS 00317      |
 FF0153| FF2241 MARION RM 4                        7.468 METERS 01417      |
 FF0153| FF1640 MARION RM 3                       52.420 METERS 02557      |
 FF0153| FF2242 MARION RM 5                       32.135 METERS 08854      |
 FF0153| FF0152 MARION RM 2                      130.202 METERS 09318      |
 FF0153| FF1983 MEMPHIS FIRESTONE TIRE CO STK    APPROX.16.7 KM 1065902.3  |
 FF0153| FF1978 NATIONAL MEMPHIS GARAGE OCC LT   APPROX.18.7 KM 1221658.1  |
 FF0153| FF2000 MEMPHIS TVA STEAM PLANT N STK    APPROX.17.4 KM 1270134.6  |
 FF0153| FF1968 RADIO STATION KWEM MAST          APPROX.13.9 KM 1341803.9  |
 FF0153| FF2013 MEMPHIS INTL HARVESTER TANK      APPROX.17.2 KM 1353549.9  |
 FF0153| FF1970 US ENGINEERS RADIO MAST          APPROX.13.8 KM 1353735.9  |
 FF0153| FF2036 WEST MEMPHIS FEL TANK            APPROX. 8.6 KM 1644953.3  |
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FF0153| FF2035 W MEMPHIS COTTON OIL MILL TK        APPROX. 7.4 KM 1665425.1 |
FF0153| FF2038 WEST MEMPHIS S MUNICIPAL TANK       APPROX. 8.6 KM 1675325.3 |
FF0153| FF2037 WEST MEMPHIS N MUNICIPAL TANK       APPROX. 7.3 KM 1683233.1 |
FF0153| FF2034 W MEMPHIS PLANTERS COMPRESS TK      APPROX.10.0 KM 1702900.7 |
FF0153| FF0243 BOLLINGER                           APPROX. 9.0 KM 1741229.2 |
FF0153| CI4576 MARION AZ MK                                       1962944.6 |
FF0153|-----------------------------------------------------------------------|
FF0153
FF0153                          SUPERSEDED SURVEY CONTROL
FF0153
FF0153  NAD 83(1995)-  35 13 15.78110(N)    090 12 10.62302(W) AD(       ) 1
FF0153  NAD 83(1993)-  35 13 15.78676(N)    090 12 10.62377(W) AD(       ) 1
FF0153  NAD 83(1990)-  35 13 15.79105(N)    090 12 10.62380(W) AD(       ) 1
FF0153  NAD 83(1985)-  35 13 15.79145(N)    090 12 10.62381(W) AD(       ) 1
FF0153  NAD 27      -  35 13 15.46920(N)    090 12 10.28210(W) AD(       ) 1
FF0153  NGVD 29 (??/??/??)   67.035  (m)          219.93   (f) ADJUSTED    1 2
FF0153
FF0153.Superseded values are not recommended for survey control.
FF0153.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FF0153.See file dsdata.txt to determine how the superseded data were derived.
FF0153
FF0153_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SYV5458101142(NAD 83)
FF0153_MARKER: DS = TRIANGULATION STATION DISK
FF0153_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FF0153_SP SET: SET IN TOP OF CONCRETE MONUMENT
FF0153_STAMPING: MARION 1929
FF0153_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FF0153+STABILITY: SURFACE MOTION
FF0153_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
FF0153+SATELLITE: SATELLITE OBSERVATIONS - August 05, 2005
FF0153
FF0153  HISTORY      - Date     Condition        Report By
FF0153  HISTORY      - 1929     MONUMENTED       CGS
FF0153  HISTORY      - 1935     GOOD             CGS
FF0153  HISTORY      - 1938     GOOD             CGS
FF0153  HISTORY      - 1943     GOOD             USE
FF0153  HISTORY      - 1944     GOOD             CGS
FF0153  HISTORY      - 1954     GOOD             CGS
FF0153  HISTORY      - 1956     GOOD             CGS
FF0153  HISTORY      - 1979     GOOD             NGS
FF0153  HISTORY      - 20021016 GOOD             USACE
FF0153  HISTORY      - 20050805 GOOD             GEOCAC
FF0153
FF0153                          STATION DESCRIPTION
FF0153
FF0153'DESCRIBED BY COAST AND GEODETIC SURVEY 1929 (HWH)
FF0153'ABOUT 1/4 MILE NORTH OF MARION, ON WEST SIDE OF
FF0153'SCHOOLHOUSE (BRICK STRUCTURE ON U.S. ROUTE 61), 92 METERS (302 FEET)
FF0153'SOUTH OF ROAD RUNNING EAST AND WEST ALONG NORTH SIDE OF SCHOOL
FF0153'PROPERTY, 145 METERS (476 FEET) WEST OF CENTER LINE OF ROUTE 61,
FF0153'AND 16.6 METERS (54 FEET) SOUTH OF A LITTLE-USED ROAD
FF0153'RUNNING AROUND SOUTH SIDE OF SCHOOL.  SURFACE AND UNDERGROUND
FF0153'MARKS ARE STANDARD STATION DISKS IN CONCRETE.
FF0153'REFERENCE MARKS ARE STANDARD REFERENCE DISKS IN CONCRETE.
FF0153'NO. 1 IS 3.75 METERS (12.3 FEET) NORTH OF EAST-AND-WEST
FF0153'ROAD, 8.10 METERS (26.6 FEET) SOUTHEAST OF SOUTHEAST CORNER
FF0153'OF PORCH OF HOUSE, AND 90.30 METERS (296.3 FEET) FROM STATION,
FF0153'N 02 DEG 54 MIN E.  NO. 2 IS 14.9 METERS (49 FEET)
FF0153'WEST OF CENTER LINE OF ROUTE 61, 32.85 METERS (107.8 FEET)
FF0153'SOUTHEAST OF CORNER OF SCHOOL, AND 130.35 METERS (427.7 FEET)
FF0153'FROM STATION, S 86 DEG 42 MIN 02 SEC E.
FF0153
FF0153                          STATION RECOVERY (1935)
FF0153
FF0153'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1935 (GOW)
FF0153'STATION AND REFERENCE MARKS FOUND IN GOOD CONDITION AND THE
FF0153'ORIGINAL DESCRIPTION IS ADEQUATE.
FF0153
FF0153                          STATION RECOVERY (1938)
FF0153
FF0153'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1938 (SAD)
FF0153'THE STATION IS 18 FEET S OF THE LINE OF THE S END OF THE SCHOOL
FF0153'BUILDING, AND 55 FEET N OF A LITTLE USED ROAD RUNNING AROUND S
FF0153'SIDE OF SCHOOL.
FF0153'
FF0153'NOTE- ABOVE DATA FROM CAHIER OF MAGNETIC OBSERVATIONS CHECKED BY
FF0153'CEDRIC W. KROLL.
FF0153
FF0153                          STATION RECOVERY (1943)
FF0153
FF0153'RECOVERY NOTE BY US ENGINEERS 1943
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FF0153'DISTANCE FROM STATION TO R.M. 1 SHOULD BE 302.93 FT., RATHER
FF0153'THAN 296.3 AS PUBLISHED
FF0153'
FF0153'A HOUSE HAS BEEN BUILT SO THAT R.M. 1 CANNOT BE OBSERVED FROM
FF0153'THE STATION.  THE SE CORNER OF THE HOUSE PROJECTS ABOUT 2 FT.
FF0153'OVER THE LINE OF SIGHT.
FF0153
FF0153                          STATION RECOVERY (1944)
FF0153
FF0153'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1944 (JCB)
FF0153'THE LANE IS NOW A GRADED STREET AND THE STATION IS 48 FEET N
FF0153'OF ITS CENTER LINE.
FF0153
FF0153                          STATION RECOVERY (1954)
FF0153
FF0153'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1954 (RLE)
FF0153'THE STATION AND REFERENCE MARK NO. 2 WERE RECOVERED AND FOUND
FF0153'TO BE IN GOOD CONDITION.  REFERENCE MARK NO. 1 WAS FOUND TO
FF0153'BE OBSTRUCTED AND WAS THEREFORE DESTROYED.  A NEW REFERENCE MARK
FF0153'NO. 3 AND AN AZIMUTH MARK WERE ESTABLISHED.
FF0153'
FF0153'FOLLOWING IS A NEW AND COMPLETE DESCRIPTION-
FF0153'
FF0153'THE STATION IS LOCATED IN THE NORTH PART OF MARION, ABOUT 0.5 MILE
FF0153'NORTHWEST OF THE COURTHOUSE IN THE SOUTHWEST CORNER OF THE J.S.
FF0153'FELIX SCHOOL YARD, 173 FEET SOUTHWEST OF THE SOUTHWEST CORNER OF
FF0153'THE GYMNASIUM, 55 FEET NORTH OF THE CENTER OF AN EAST-WEST STREET
FF0153'AND 50 FEET EAST OF THE CENTER OF A NORTH-SOUTH STREET.  IT IS
FF0153'STAMPED MARION 1929 AND PROJECTS 10 INCHES.
FF0153'
FF0153'REFERENCE MARK NO. 2 IS IN THE SOUTHEAST CORNER OF THE SCHOOL
FF0153'YARD, 96 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF THE SCHOOLHOUSE,
FF0153'50 FEET WEST OF THE CENTER OF A NORTHWEST-SOUTHEAST HARD SURFACED
FF0153'ROAD AND 20 FEET NORTH OF THE CENTER OF AN EAST-WEST STREET.
FF0153'IT IS STAMPED MARION NO 2 1929 AND PROJECTS 8 INCHES.
FF0153'
FF0153'REFERENCE MARK NO. 3 IS 1 FOOT SOUTHWEST OF THE SOUTHWEST CORNER
FF0153'OF THE GYMNASIUM.  IT IS STAMPED MARION NO 3 1929 AND IS FLUSH
FF0153'WITH THE GROUND SURFACE.
FF0153'
FF0153'THE AZIMUTH MARK IS IN THE NORTH EDGE OF A CHURCH YARD, 200 FEET
FF0153'EAST OF THE INTERSECTION OF U.S. HIGHWAYS 64, 63 AND 61, 150 FEET
FF0153'NORTH OF A CHURCH, 75 FEET SOUTH OF THE CENTER OF AN EAST-WEST
FF0153'ROAD, 1 FOOT EAST OF A POWER LINE POLE AND 1 FOOT NORTH OF A
FF0153'WITNESS POST.  IT IS STAMPED MARION 1929 1954 AND PROJECTS 2
FF0153'INCHES.
FF0153'
FF0153'TO REACH THE STATION FROM THE POST OFFICE IN MARION, GO WEST
FF0153'FOR 0.05 MILE TO AN INTERSECTION JUST AFTER CROSSING RAILROAD
FF0153'TRACKS, (CONTINUE STRAIGHT AHEAD FOR 0.5 MILE TO THE AZIMUTH MARK
FF0153'ON LEFT AS DESCRIBED).  TURN RIGHT AND GO NORTH AND NORTHWEST
FF0153'ON HARD SURFACED ROAD FOR 0.5 MILE TO A T ROAD LEFT AT THE J.S.
FF0153'FELIX SCHOOL, TURN LEFT AND GO WEST FOR 0.1 MILE TO THE STATION
FF0153'ON RIGHT IN THE SOUTHWEST CORNER OF SCHOOL YARD AS DESCRIBED.
FF0153
FF0153                          STATION RECOVERY (1956)
FF0153
FF0153'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1956
FF0153'AT MARION.
FF0153'AT MARION, 0.5 MILE NORTHWEST ALONG THE ST. LOUIS-SAN FRANCISCO
FF0153'RAILWAY, THENCE ABOUT 0.1 MILE WEST ACROSS A FIELD, THENCE
FF0153'ABOUT 0.1 MILE WEST ALONG A STREET WHICH FOLLOWS THE SOUTH SIDE
FF0153'OF SCHOOL YARD OF J.S. FELIX SCHOOL FOR COLORED, 58 FEET NORTH
FF0153'OF CENTER LINE OF EAST-WEST STREET, 58 FEET EAST OF CENTER
FF0153'LINE OF NORTH-SOUTH STREET, IN SOUTHWEST CORNER OF SCHOOL YARD,
FF0153'427.1 FEET WEST OF RM NO. 2, 172 FEET SOUTHWEST OF RM NO. 3,
FF0153'172 1/2 FEET SOUTHWEST OF SOUTHWEST CORNER OF GYMNASIUM BUILDING
FF0153'(CORRUGATED TIN BUILDING), 52 FEET NORTHEAST OF A POWER POLE,
FF0153'ABOUT LEVEL WITH STREETS AND SET IN THE TOP OF A CONCRETE
FF0153'POST PROJECTING 4 INCHES.
FF0153
FF0153                          STATION RECOVERY (1979)
FF0153
FF0153'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1979 (LHW)
FF0153'THE STATION MARK AND REFERENCE MARKS 2 AND 3 WERE RECOVERED
FF0153'IN GOOD CONDITION.  THE AZIMUTH MARK WAS SEARCHED FOR BUT
FF0153'NOT RECOVERED.  NO SUITABLE LOCATION WAS FOUND TO
FF0153'ESTABLISH A NEW AZIMUTH MARK.  THE DISTANCE TO REFERENCE
FF0153'MARK 2 WAS NOTED AND VERIFIED TO BE 0.06 FOOT LONGER THAN
FF0153'THE 1954 OBSERVATIONS.  REFERENCE MARK 3 WAS FOUND TO BE
FF0153'OBSTRUCTED BY A BUILDING.  REFERENCE MARKS 4 AND 5 WERE
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FF0153'ESTABLISHED AT THIS TIME.
FF0153'
FF0153'THE STATION IS LOCATED ON THE GROUNDS NEAR THE SOUTHWEST
FF0153'CORNER OF THE J.S. FELIX SCHOOL IN THE NORTH PART OF MARION.
FF0153'
FF0153'TO REACH THE STATION FROM THE INTERSECTION OF STATE HIGHWAY 77
FF0153'AND MILITARY ROAD IN MARION, GO NORTHWEST ON STATE HIGHWAY 77
FF0153'FOR 0.5 MILE TO A SIDE ROAD LEFT.  TURN LEFT AND GO
FF0153'SOUTHWEST ON A PAVED ROAD FOR ABOUT 200 FEET TO A GATE ON
FF0153'THE RIGHT INTO A SCHOOL YARD.  THE STATION IS ABOUT
FF0153'200 FEET SOUTHWEST.
FF0153'
FF0153'THE STATION IS A STANDARD CGS DISK
FF0153'STAMPED---MARION 1929---,
FF0153'SET INTO THE TOP OF A SQUARE CONCRETE MONUMENT 30 CM ON A SIDE
FF0153'FLUSH WITH GROUND.  IT IS LOCATED
FF0153'14.0 METERS NORTHEAST FROM A FENCE CORNER AND
FF0153'4.3 METERS SOUTHWEST FROM THE SOUTHWEST CORNER OF THE GYMNASIUM.
FF0153'
FF0153'REFERENCE MARK NUMBER 02 IS A STANDARD CGS DISK
FF0153'STAMPED---MARION NO 2 1929---,
FF0153'SET INTO THE TOP OF A SQUARE CONCRETE MONUMENT 30 CM ON A SIDE
FF0153'FLUSH WITH GROUND.  IT IS LOCATED
FF0153'15.0 METERS WEST FROM THE CENTER OF STATE HIGHWAY 77,
FF0153'6.2 METERS NORTH FROM THE CENTER OF THE PAVED STREET AND
FF0153'4.7 METERS WEST FROM A FENCE CORNER.
FF0153'MARK IS LEVEL WITH STATION.
FF0153'
FF0153'REFERENCE MARK NUMBER 03 IS A STANDARD CGS DISK
FF0153'STAMPED---MARION NO 3 1929---,
FF0153'SET INTO THE TOP OF A SQUARE CONCRETE MONUMENT 30 CM ON A SIDE
FF0153'RECESSED 3 CM BELOW THE GROUND.  IT IS LOCATED
FF0153'4.10 METERS WEST FROM THE SOUTHWEST ENTRANCE TO A BUILDING,
FF0153'4.10 METERS EAST FROM A POWER POLE WITH A METER AND
FF0153'0.30 METER SOUTH FROM A METAL SIDED BUILDING.
FF0153'MARK IS LEVEL WITH STATION.
FF0153'
FF0153'REFERENCE MARK NUMBER 04 IS A STANDARD NGS DISK
FF0153'STAMPED---MARION 1929 NC 4 1979---,
FF0153'CEMENTED INTO A DRILL HOLE IN THE WEST CONCRETE ENTRANCE
FF0153'STEP TO THE GYMNASIUM.
FF0153'IT IS LOCATED
FF0153'11.59 METERS WEST FROM A FENCE,
FF0153'4.42 METERS NORTH-NORTHWEST FROM THE SOUTHWEST CORNER OF THE
FF0153'GYMNASIUM AND
FF0153'1.30 METERS SOUTHWEST FROM THE CENTER OF THE WEST ENTRANCE TO THE
FF0153'GYMNASIUM.
FF0153'MARK IS LEVEL WITH STATION.
FF0153'
FF0153'REFERENCE MARK NUMBER 05 IS A STANDARD NGS DISK
FF0153'STAMPED---MARION 1929 NC 5 1979---,
FF0153'CEMENTED INTO A DRILL HOLE IN THE SOUTH ENTRANCE TO THE GYMNASIUM.
FF0153'IT IS LOCATED
FF0153'10.07 METERS NORTH FROM A FENCE,
FF0153'6.30 METERS WEST FROM THE SOUTHEAST CORNER OF A BUILDING AND
FF0153'1.38 METERS SOUTHWEST FROM THE CENTER OF THE SOUTH CONCRETE TO
FF0153'ENTRANCE THE GYMNASIUM.
FF0153'MARK IS LEVEL WITH STATION.
FF0153'
FF0153'NO MEASUREMENT BETWEEN REFERENCE MARKS BECAUSE OF BUILDINGS
FF0153'ON LINE.
FF0153'HEIGHT OF LIGHT SHOWN ABOVE THE MARK WAS 16.1 METERS.
FF0153'A GEODIMETER TIE WAS MADE TO TRIANGULATION BEEF UTILIZING A
FF0153'G-MAST.
FF0153
FF0153                          STATION RECOVERY (2002)
FF0153
FF0153'RECOVERY NOTE BY US ARMY CORPS OF ENGINEERS 2002 (DLB)
FF0153'RECOVERED IN GOOD CONDITION.
FF0153
FF0153                          STATION RECOVERY (2005)
FF0153
FF0153'RECOVERY NOTE BY GEOCACHING 2005 (WD)
FF0153'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:02
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The NGS Data Sheet

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

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.6
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 29, 2012
 FE1126 ***********************************************************************
 FE1126  DESIGNATION -  X 16
 FE1126  PID         -  FE1126
 FE1126  STATE/COUNTY-  TN/SHELBY
 FE1126  USGS QUAD   -  GERMANTOWN (1997)
 FE1126
 FE1126                          *CURRENT SURVEY CONTROL
 FE1126
 FE1126* NAD 83(1986)-  35 04 52.      (N)     089 48 08.      (W)      SCALED
 FE1126* NAVD 88     -       117.664   (meters)      386.04    (feet)   ADJUSTED
 FE1126
 FE1126  GEOID HEIGHT-          -27.54   (meters)                        GEOID09
 FE1126  DYNAMIC HT  -          117.555  (meters)      385.68    (feet)   COMP
 FE1126  MODELED GRAV-      979,707.6    (mgal)                          NAVD 88
 FE1126
 FE1126  VERT ORDER  -  FIRST     CLASS II
 FE1126
 FE1126.The horizontal coordinates were scaled from a topographic map and have
 FE1126.an estimated accuracy of +/- 6 seconds.
 FE1126.
 FE1126.The orthometric height was determined by differential leveling and
 FE1126.adjusted in June 1991.
 FE1126
 FE1126.The geoid height was determined by GEOID09.
 FE1126
 FE1126.The dynamic height is computed by dividing the NAVD 88
 FE1126.geopotential number by the normal gravity value computed on the
 FE1126.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 FE1126.degrees latitude (g = 980.6199 gals.).
 FE1126
 FE1126.The modeled gravity was interpolated from observed gravity values.
 FE1126
 FE1126;                      North         East     Units  Estimated Accuracy
 FE1126;SPC TN       -     89,700.      253,320.      MT  (+/- 180 meters Scaled)
 FE1126
 FE1126                          SUPERSEDED SURVEY CONTROL
 FE1126
 FE1126  NGVD 29 (??/??/??)  117.633  (m)           385.93    (f) ADJUSTED    1 2
 FE1126
 FE1126.Superseded values are not recommended for survey control.
 FE1126.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 FE1126.See file dsdata.txt to determine how the superseded data were derived.
 FE1126
 FE1126_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SBD445856(NAD 83)
 FE1126
 FE1126_MARKER: DB = BENCH MARK DISK
 FE1126_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 FE1126_SP SET: SET IN TOP OF CONCRETE MONUMENT
 FE1126_STAMPING: X 16 1934
 FE1126_MARK LOGO: CGS
 FE1126_PROJECTION: FLUSH
 FE1126_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 FE1126+STABILITY: SURFACE MOTION
 FE1126_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 FE1126+SATELLITE: SATELLITE OBSERVATIONS - October 09, 2002
 FE1126
 FE1126  HISTORY     - Date     Condition        Report By
 FE1126  HISTORY     - 1934     MONUMENTED       CGS
 FE1126  HISTORY     - 1983     GOOD             NGS
 FE1126  HISTORY     - 20021009 GOOD             USACE
 FE1126  HISTORY     - 20050301 POOR             GEOCAC
 FE1126
 FE1126                           STATION DESCRIPTION
 FE1126
 FE1126'DESCRIBED BY COAST AND GEODETIC SURVEY 1934
 FE1126'8.8 MI NW FROM COLLIERVILLE.
 FE1126'8.8 MILES NORTHWEST ALONG THE SOUTHERN RAILWAY FROM THE
 FE1126'COLLIERVILLE HERALD PRINTING OFFICE AT COLLIERVILLE, SHELBY
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DATASHEETS

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FE1126'COUNTY, 300 FEET SOUTHEAST OF THE CITY-LIMIT AT GERMANTOWN, 54
FE1126'FEET EAST OF BLOCK SIGNAL 5365 A, AND 30 FEET NORTHEAST OF THE
FE1126'CENTERLINE OF THE TRACK.  A STANDARD DISK, STAMPED X 16 1934
FE1126'AND SET IN THE TOP OF A CONCRETE POST.
FE1126
FE1126                          STATION RECOVERY (1983)
FE1126
FE1126'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1983
FE1126'RECOVERED IN GOOD CONDITION.  NOTE, 4.6 METERS (15.0 FT) NORTHWEST OF
FE1126'THE NORTHWEST FACE OF A RAILROAD SWITCH BOX, AND 0.30 METER (1.0 FT)
FE1126'SOUTHEAST OF A WITNESS POST.  NOTE, THE X IN THE STAMPING IS NOT
FE1126'LEGIBLE.
FE1126'THE MARK IS 0.61 M BELOW RAILROAD.
FE1126
FE1126                          STATION RECOVERY (2002)
FE1126
FE1126'RECOVERY NOTE BY US ARMY CORPS OF ENGINEERS 2002 (JMH)
FE1126'RECOVERED IN GOOD CONDITION.
FE1126
FE1126                          STATION RECOVERY (2005)
FE1126
FE1126'RECOVERY NOTE BY GEOCACHING 2005 (MFL)
FE1126'STAMPING ON MARK IS NOT LEGIBLE.

*** retrieval complete.
Elapsed Time = 00:00:01
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The NGS Data Sheet

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

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.5
1        National Geodetic Survey,   Retrieval Date = FEBRUARY 15, 2012
 FE1410 ***********************************************************************
 FE1410  DESIGNATION -  X 90
 FE1410  PID         -  FE1410
 FE1410  STATE/COUNTY-  TN/SHELBY
 FE1410  USGS QUAD   -  MILLINGTON (1997)
 FE1410
 FE1410                         *CURRENT SURVEY CONTROL
 FE1410
 FE1410* NAD 83(2007)-  35 16 15.98396(N)     089 57 58.36767(W)     ADJUSTED
 FE1410* NAVD 88     -        73.173  (meters)     240.07   (feet)  ADJUSTED
 FE1410
 FE1410  EPOCH DATE  -        2002.00
 FE1410  X           -      3,074.146  (meters)                      COMP
 FE1410  Y           -  -5,213,153.451  (meters)                     COMP
 FE1410  Z           -   3,662,490.442  (meters)                     COMP
 FE1410  LAPLACE CORR-          -0.14  (seconds)                     DEFLEC09
 FE1410  ELLIP HEIGHT-          45.848  (meters)         (02/10/07) ADJUSTED
 FE1410  GEOID HEIGHT-         -27.34  (meters)                     GEOID09
 FE1410  DYNAMIC HT  -          73.108  (meters)     239.86  (feet)  COMP
 FE1410
 FE1410  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 FE1410  Type    PID    Designation                       North   East  Ellip
 FE1410  -------------------------------------------------------------------
 FE1410  NETWORK FE1410 X 90                               0.76    0.63   1.98
 FE1410  -------------------------------------------------------------------
 FE1410  MODELED GRAV-      979,747.7     (mgal)                     NAVD 88
 FE1410
 FE1410  VERT ORDER  -  FIRST     CLASS II
 FE1410
 FE1410.The horizontal coordinates were established by GPS observations
 FE1410.and adjusted by the National Geodetic Survey in February 2007.
 FE1410
 FE1410.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 FE1410.See National Readjustment for more information.
 FE1410
 FE1410.The horizontal coordinates are valid at the epoch date displayed above
 FE1410.which is a decimal equivalence of Year/Month/Day.
 FE1410
 FE1410.The orthometric height was determined by differential leveling and
 FE1410.adjusted in August 1995.
 FE1410
 FE1410.Photographs are available for this station.
 FE1410
 FE1410.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 FE1410
 FE1410.The Laplace correction was computed from DEFLEC09 derived deflections.
 FE1410
 FE1410.The ellipsoidal height was determined by GPS observations
 FE1410.and is referenced to NAD 83.
 FE1410
 FE1410.The geoid height was determined by GEOID09.
 FE1410
 FE1410.The dynamic height is computed by dividing the NAVD 88
 FE1410.geopotential number by the normal gravity value computed on the
 FE1410.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 FE1410.degrees latitude (g = 980.6199 gals.).
 FE1410
 FE1410.The modeled gravity was interpolated from observed gravity values.
 FE1410
 FE1410;                    North         East     Units Scale Factor Converg.
 FE1410;SPC TN       -    111,357.540   239,229.997   MT  0.99999634   -2 19 19.1
 FE1410;SPC TN       -    365,345.53    784,873.75   sFT  0.99999634   -2 19 19.1
 FE1410;UTM  16      -  3,907,143.571   230,183.438   MT  1.00049729   -1 42 49.9
 FE1410;UTM  15      -  3,907,329.646   775,965.179   MT  1.00053866   +1 45 10.6
 FE1410
 FE1410!             -  Elev Factor  x  Scale Factor =  Combined Factor
 FE1410!SPC TN       -   0.99999280  x   0.99999634  =   0.99998914
 FE1410!UTM  16      -   0.99999280  x   1.00049729  =   1.00049009
```

file:///G|/GS/Projects/72124_USGS_ShelbyCo_TN_LIDAR_2012/SV/Control/NGS%20Datasheets/X%2090.htm[2/29/2012 11:05:31 AM]

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FE1410!UTM  15      -   0.99999280  x   1.00053866  =   1.00053146
FE1410
FE1410                          SUPERSEDED SURVEY CONTROL
FE1410
FE1410  NAD 83(1995)-  35 16 15.98378(N)     089 57 58.36742(W) AD(       ) 1
FE1410  ELLIP H (02/20/01)    45.884   (m)                        GP(       ) 2 1
FE1410  NAVD 88 (02/20/01)    73.17    (m)           240.1     (f) LEVELING    3
FE1410  NAVD 88 (06/15/91)    73.202   (m)           240.16    (f) UNKNOWN     1 2
FE1410  NGVD 29 (??/??/??)    73.155   (m)           240.01    (f) ADJUSTED    1 2
FE1410
FE1410.Superseded values are not recommended for survey control.
FE1410.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
FE1410.See file dsdata.txt to determine how the superseded data were derived.
FE1410
FE1410_U.S. NATIONAL GRID SPATIAL ADDRESS: 16SBE3018307143(NAD 83)
FE1410
FE1410_MARKER: DB = BENCH MARK DISK
FE1410_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
FE1410_SP_SET: CONCRETE POST
FE1410_STAMPING: X 90 1957
FE1410_MARK LOGO: NGS
FE1410_PROJECTION: FLUSH
FE1410_MAGNETIC: N = NO MAGNETIC MATERIAL
FE1410_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
FE1410+STABILITY: SURFACE MOTION
FE1410_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
FE1410+SATELLITE: SATELLITE OBSERVATIONS - April 19, 2003
FE1410
FE1410  HISTORY     - Date     Condition        Report By
FE1410  HISTORY     - 1957     MONUMENTED       CGS
FE1410  HISTORY     - 1974     GOOD             NGS
FE1410  HISTORY     - 19920116 GOOD             NGS
FE1410  HISTORY     - 1999     GOOD             LOWE
FE1410  HISTORY     - 20021007 GOOD             USACE
FE1410  HISTORY     - 20030702 GOOD             EMCINC
FE1410  HISTORY     - 20080419 GOOD             MAEC
FE1410
FE1410                          STATION DESCRIPTION
FE1410
FE1410'DESCRIBED BY NATIONAL GEODETIC SURVEY 1974
FE1410'4.8 MI NE FROM FRAYSER.
FE1410'ABOUT 3.8 MILES NORTHEAST ALONG U.S. HIGHWAY 51 FROM OUR LADY OF
FE1410'SORROWS CHURCH AND SCHOOL AT FRAYSER, THENCE 1.05 MILES EAST
FE1410'ALONG FITE ROAD (PAVED) TO THE ILLINOIS CENTRAL RAILROAD, 0.1
FE1410'MILE SOUTHWEST OF THE CROSSING OF FITE ROAD, 13 RAILS NORTHEAST
FE1410'OF A TOOL AND CAR SHED BETWEEN TRACKS AT WOODSTOCK, WHICH IS A
FE1410'SIDING, 140 FEET SOUTH OF THE CENTER LINE OF FITE ROAD (BEFORE
FE1410'MARKING CURVE), 82 FEET NORTHWEST OF THE NORTHWEST RAIL OF MAIN
FE1410'TRACK, 42 FEET NORTHWEST OF THE NORTHWEST RAIL OF A SIDE TRACK,
FE1410'27 FEET NORTHWEST OF THE CENTER LINE OF A GRAVEL ROAD, 10 FEET
FE1410'SOUTHWEST OF POWER POLE NO. 17410, 1.5 FEET SOUTHEAST OF A
FE1410'FENCE, 2 FEET SOUTH OF A 4 FT BY 4 FT WOODEN WITNESS POST, 2 1/2
FE1410'FEET BELOW LEVEL OF THE RAILS AND IN THE TOP OF A CONCRETE
FE1410'POST PROJECTING 1-INCH.
FE1410
FE1410                          STATION RECOVERY (1992)
FE1410
FE1410'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
FE1410'10.1 KM (6.25 MI) SOUTHWESTERLY ALONG U.S. HIGHWAY 51 FROM THE
FE1410'JUNCTION OF COUNTY ROAD 205 (NAVY ROAD) IN MILLINGTON, THENCE 1.5 KM
FE1410'(0.95 MI) EASTERLY ALONG FITE ROAD, 42.7 M (140.1 FT) SOUTH OF THE
FE1410'CENTER OF THE ROAD, 9.9 M (32.5 FT) SOUTHEAST OF THE NEAR RAIL OF A
FE1410'SPUR TRACK OF THE ILLINOIS CENTRAL RAILROAD, 8.3 M (27.2 FT)
FE1410'NORTHWEST OF THE CENTER OF A GRAVELED ROAD, 2.9 M (9.5 FT) SOUTHWEST
FE1410'OF UTILITY POLE NUMBER 17410, 0.3 M (1.0 FT) BELOW THE LEVEL OF THE
FE1410'TRACK, 0.3 M (1.0 FT) NORTHEAST OF A WITNESS POST, AND THE MONUMENT
FE1410'IS FLUSH WITH THE GROUND SURFACE.
FE1410
FE1410                          STATION RECOVERY (1999)
FE1410
FE1410'RECOVERY NOTE BY LOWE ENGINEERS 1999
FE1410'RECOVERED 1999
FE1410'RECOVERED IN GOOD CONDITION.
FE1410'
FE1410'
FE1410
FE1410                          STATION RECOVERY (2002)
FE1410
FE1410'RECOVERY NOTE BY US ARMY CORPS OF ENGINEERS 2002 (JMH)
FE1410'RECOVERED IN GOOD CONDITION.
FE1410
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DATASHEETS

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FE1410                          STATION RECOVERY (2003)
FE1410
FE1410'RECOVERY NOTE BY EMC INCORPORATED 2003 (MG)
FE1410'RECOVERED AS DESCRIBED
FE1410
FE1410                          STATION RECOVERY (2008)
FE1410
FE1410'RECOVERY NOTE BY MA ENGINEERING CONSULT INC 2008 (SH)
FE1410'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:04
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The NGS Data Sheet

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

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DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4.2
1        National Geodetic Survey,   Retrieval Date = JANUARY 16, 2012
 EH0143 ***********************************************************************
 EH0143  DESIGNATION -  Y 243
 EH0143  PID         -  EH0143
 EH0143  STATE/COUNTY-  MS/DE SCTO
 EH0143  USGS QUAD   -  LAKE CORMORANT (1982)
 EH0143
 EH0143                          *CURRENT SURVEY CONTROL
 EH0143
 EH0143* NAD 83(2007)-  34 56 42.46278(N)     090 09 27.72098(W)      NO CHECK
 EH0143* NAVD 88     -         64.411   (meters)      211.32   (feet)  ADJUSTED
 EH0143
 EH0143  EPOCH DATE  -         2002.00
 EH0143  X           -     -14,405.838  (meters)                      COMP
 EH0143  Y           -  -5,233,926.658  (meters)                      COMP
 EH0143  Z           -   3,632,699.952  (meters)                      COMP
 EH0143  LAPLACE CORR-          -1.33   (seconds)                     DEFLEC09
 EH0143  ELLIP HEIGHT-          37.108  (meters)           (02/10/07) NO CHECK
 EH0143  GEOID HEIGHT-         -27.31   (meters)                      GEOID09
 EH0143  DYNAMIC HT  -          64.351  (meters)      211.12   (feet)  COMP
 EH0143
 EH0143  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 EH0143  Type     PID     Designation                  North    East  Ellip
 EH0143  ----------------------------------------------------------------
 EH0143  NETWORK EH0143 Y 243                           0.49    0.31   1.06
 EH0143  ----------------------------------------------------------------
 EH0143  MODELED GRAV-      979,703.5    (mgal)                      NAVD 88
 EH0143
 EH0143  VERT ORDER  -  FIRST     CLASS I
 EH0143
 EH0143.The horizontal coordinates were established by GPS observations
 EH0143.and adjusted by the National Geodetic Survey in February 2007.
 EH0143
 EH0143.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 EH0143.See National Readjustment for more information.
 EH0143.No horizontal observational check was made to the station.
 EH0143.The horizontal coordinates are valid at the epoch date displayed above.
 EH0143.The epoch date for horizontal control is a decimal equivalence
 EH0143.of Year/Month/Day.
 EH0143
 EH0143.The orthometric height was determined by differential leveling and
 EH0143.adjusted in July 1994.
 EH0143
 EH0143.Photographs are available for this station.
 EH0143
 EH0143.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 EH0143
 EH0143.The Laplace correction was computed from DEFLEC09 derived deflections.
 EH0143
 EH0143.The ellipsoidal height was determined by GPS observations
 EH0143.and is referenced to NAD 83.
 EH0143
 EH0143.The geoid height was determined by GEOID09.
 EH0143
 EH0143.The dynamic height is computed by dividing the NAVD 88
 EH0143.geopotential number by the normal gravity value computed on the
 EH0143.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 EH0143.degrees latitude (g = 980.6199 gals.).
 EH0143
 EH0143.The modeled gravity was interpolated from observed gravity values.
 EH0143
 EH0143;                    North          East      Units Scale Factor Converg.
 EH0143;SPC MS W     -    603,800.077    716,043.123   MT  0.99995317   +0 06 02.2
 EH0143;SPC MS W     - 1,980,967.42   2,349,218.15    sFT  0.99995317   +0 06 02.2
 EH0143;UTM  15      - 3,870,647.719    759,574.477   MT  1.00043051   +1 37 44.2
 EH0143
 EH0143!             -  Elev Factor  x  Scale Factor =   Combined Factor
 EH0143!SPC MS W     -   0.99999418  x   0.99995317  =   0.99994735
 EH0143!UTM  15      -   0.99999418  x   1.00043051  =   1.00042468
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DATASHEETS

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EH0143
EH0143                            SUPERSEDED SURVEY CONTROL
EH0143
EH0143  NAD 83(1993)-  34 56 42.46241(N)     090 09 27.72054(W) AD(       ) 1
EH0143  ELLIP H (12/02/99)    37.132   (m)                        GP(       ) 1 1
EH0143  NAVD 88 (12/02/99)    64.41    (m)           211.3     (f) LEVELING     3
EH0143  NAVD 88 (06/15/91)    64.406   (m)           211.31    (f) UNKNOWN      1 1
EH0143  NGVD 29 (??/??/??)    64.404   (m)           211.30    (f) ADJUSTED     1 1
EH0143
EH0143.Superseded values are not recommended for survey control.
EH0143.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
EH0143.See file dsdata.txt to determine how the superseded data were derived.
EH0143
EH0143_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SYU5957470647(NAD 83)
EH0143_MARKER: DV = VERTICAL CONTROL DISK
EH0143_SETTING: 32 = SET IN A RETAINING WALL OR CONCRETE LEDGE
EH0143_SP SET: 4X11-FT. DOUBLE CULVERT HEADWALL
EH0143_STAMPING: Y 243 1974
EH0143_MARK LOGO: NGS
EH0143_MAGNETIC: N = NO MAGNETIC MATERIAL
EH0143_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
EH0143+STABILITY: SURFACE MOTION
EH0143_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
EH0143+SATELLITE: SATELLITE OBSERVATIONS - October 24, 2009
EH0143
EH0143  HISTORY      - Date     Condition        Report By
EH0143  HISTORY      - 1974     MONUMENTED       NGS
EH0143  HISTORY      - 19911112 GOOD             NGS
EH0143  HISTORY      - 19990302 GOOD             NGS
EH0143  HISTORY      - 20030409 GOOD             USACE
EH0143  HISTORY      - 20070814 GOOD             JCLS
EH0143  HISTORY      - 20070814 GOOD             JCLS
EH0143  HISTORY      - 20091024 GOOD             JCLS
EH0143
EH0143                            STATION DESCRIPTION
EH0143
EH0143'DESCRIBED BY NATIONAL GEODETIC SURVEY 1974
EH0143'0.85 MI SW FROM WALLS.
EH0143'ABOUT 0.85 MILE SOUTHWEST ALONG U.S. HIGHWAY 61 FROM THE POST OFFICE
EH0143'AT WALLS, 75 FEET NORTHWEST OF AND ACROSS THE HIGHWAY FROM POWER POLE
EH0143'134 WHICH IS BRACED BY A GUY WIRE, 20.5 FEET NORTHWEST OF THE CENTER
EH0143'LINE OF THE HIGHWAY, 1 FOOT BELOW LEVEL OF THE HIGHWAY AND SET IN TOP
EH0143'AND CENTER OF THE NORTHWEST HEADWALL OF A 11 FT. BY 4 FT. DOUBLE
EH0143'CHANNEL BOX CULVERT. SECTION 4, T 1S, R 9W.
EH0143
EH0143                            STATION RECOVERY (1991)
EH0143
EH0143'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
EH0143'1.0 KM (0.60 MI) SOUTHERLY ALONG U.S. HIGHWAY 61 FROM THE POST OFFICE
EH0143'IN WALLS, IN TOP OF AND 1.9 M (6.2 FT) SOUTHWEST OF THE NORTHEAST END
EH0143'OF THE NORTHWEST CONCRETE HEADWALL OF A CULVERT, 6.1 M (20.0 FT)
EH0143'NORTHWEST OF THE HIGHWAY CENTERLINE, AND 0.1 M (0.3 FT) BELOW THE
EH0143'LEVEL OF THE HIGHWAY.
EH0143
EH0143                            STATION RECOVERY (1999)
EH0143
EH0143'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1999 (AJL)
EH0143'RECOVERED AS DESCRIBED 03/02/99.  R.G.  HAYES
EH0143
EH0143                            STATION RECOVERY (2003)
EH0143
EH0143'RECOVERY NOTE BY US ARMY CORPS OF ENGINEERS 2003 (JMH)
EH0143'RECOVERED IN GOOD CONDITION.
EH0143
EH0143                            STATION RECOVERY (2007)
EH0143
EH0143'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2007 (MRY)
EH0143'RECOVERED IN GOOD CONDITION.
EH0143
EH0143                            STATION RECOVERY (2007)
EH0143
EH0143'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2007
EH0143'RECOVERED IN GOOD CONDITION.
EH0143
EH0143                            STATION RECOVERY (2009)
EH0143
EH0143'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2009
EH0143'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:01
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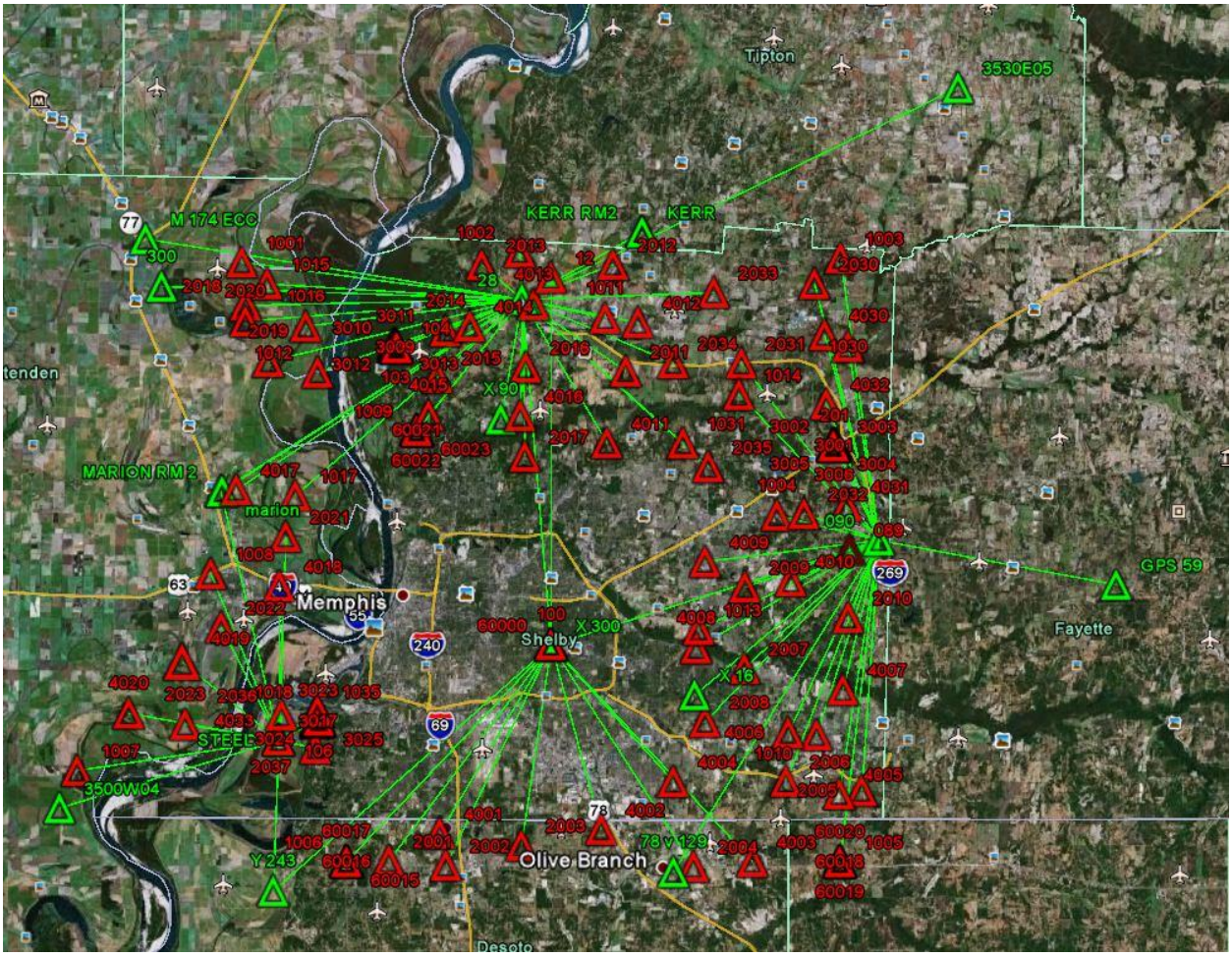
SECTION 5: GPS CONTROL DIAGRAM

This section contains a graphical representation of the control stations used for the project.



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Shelby County, TN 1m NPS LiDAR & 2-D Building Feature Extration

Not to Scale