SURVEY CONTROL REPORT

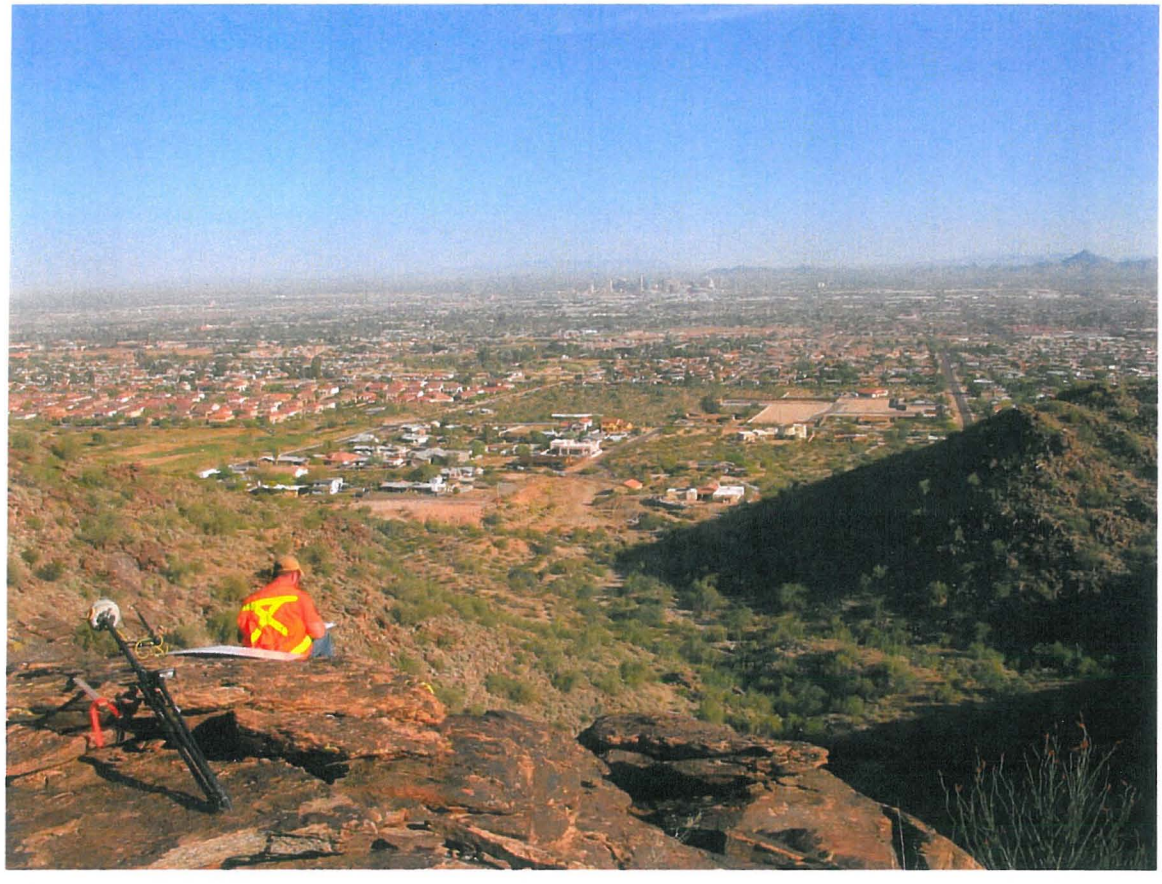
FCD 2008C020-1

RBF CONSULTING

RBF JOB#45-104209

MARCH 2009

MAPPING SERVICES FOR SE PHOENIX-TEMPE AREA



VIEW OF PROJECT AREA FROM CONTROL TARGET #123 ON SOUTH MOUNTAIN

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SURVEYORS SUMMARY AND CERTIFICATION

SURVEYORS SUMMARY AND CERTIFICATION

In March of 2009 RBF Consulting provided ground control for Vertical Mapping Resources (VMR) to map an area of approximately twelve square miles in south Phoenix. The project area extended from approximately Central Avenue to Twentieth Street and from the Salt River to South Mountain. RBF Consulting was contracted by VMR to set twenty six aerial photogrammetry control targets and provide coordinates in project datum that would meet or exceed FEMA minimum criteria for 1"=200' mapping with two foot contours. No blind panels were set by RBF for this phase of the project.

The project horizontal datum is NAD 83 (1992 epoch) State Plane Coordinates 1983, Arizona Central Zone in international feet. The vertical datum is NAVD88. The Maricopa County Flood Control District (MCFCD) scope required the survey to use the Maricopa County Department of Transportation (MCDOT) Geodetic Densification and Cadastral Survey (GDACS) control monuments and apply the vertical adjustment (Geoid Inclined Plane) used in the GDACS Control Survey as the realization of NAVD88. A previous phase of this project overlaps the east side of this phase and the control work completed by others for that phase did not include the use of the MCDOT GDACS vertical adjustment parameters. Removal of the GDACS vertical adjustment parameters from the solution of the control elevations raises the control elevation values an average of +0.10 feet and matches the solution form the adjoining phase of the project. In order to maintain consistency with the previous phase the MCDOT GDACS vertical adjustment parameters were not used for the control solution for this survey. The combined scale factor at each control point as calculated by Trimble Geomatics Office version 1.63 is listed in the primary coordinate list. No canal profiles or airborne GPS data were collected as a part of this phase.

Field Preparation:

RBF created a GPS project using the above referenced State Plane projection. The coordinate values for GDACS control points and the section corners in the area were added to the project for control and control verification. The planned coordinates for the layout of aerial targets were added to the project so that survey crews could efficiently navigate to the location needed by VMR for aerial control. The coordinates were then superimposed over maps with existing imagery to aid in field navigation.

Survey Control:

The GDACS control point 1BF1 (NGS PID AJ3668) was used as a GPS base station. Control point 1AG2 (NGS PID AJ3663) was observed with Real Time Kinematic observations each day to verify the base set up. Other checks were made to several section corners which are published in the GDACS survey for further verification. A further requirement from FCDMC was to show an equation to translate vertical data from NAVD88 to NGVD29. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) maps in the area no longer publish bench marks. They now show several National Geodetic Survey (NGS) permanent identifier (PID) numbers on the map and refer you to the (NGS) web site for information. Many of the monuments shown on the FIRM maps no longer show the superseded values which were published in NGVD29. Choosing monuments that did show this datum shift on the data sheets RBF preformed RTK observations to three of the published monuments in the area.

These included U272 (PID DV0419) near the southwest end of the project area, Hilton (PID DV0682) and Hilton RM2 (PID DV0683) both near the north central end of the project area. Based on analysis of the measured values compared to the "Vertcon" solutions derived from Corpscon 5.11.08 from the Army Corps of Engineers it is recommended that the Corpscon average conversion for the area of 2.14 feet be accepted for this project. The results of this effort are explained in the section of the report entitled NAVD88 to NGVD29 Conversion.

Field Measurements:

All Checks to control and all aerial targets placed were observed with GPS. Most were observed with RTK observations. Each control target was observed with two independent measurements which were performed with a minimum of a two hour separation in the satellite constellation. The RTK observations were 180 epochs in length. The radio link from the base to the roving receiver required for RTK observations was difficult to achieve on only two points #116 and #121. For these points two independent GPS static observations of 15 minutes each were performed. Static session information is noted in the quality control report.

Equipment:

All field work was completed using Trimble dual frequency receivers. A Trimble 4700 receiver (sn 0220149515) with a compact L1/L2 antenna was used as a base station. Trimble R8 receivers (sn#4529153617 and 4588158257) were used as roving stations. Data management and static baseline processing was completed using Trimble Geomatics Office v1.63. (sn#0032006125).

Surveyor's Certificate

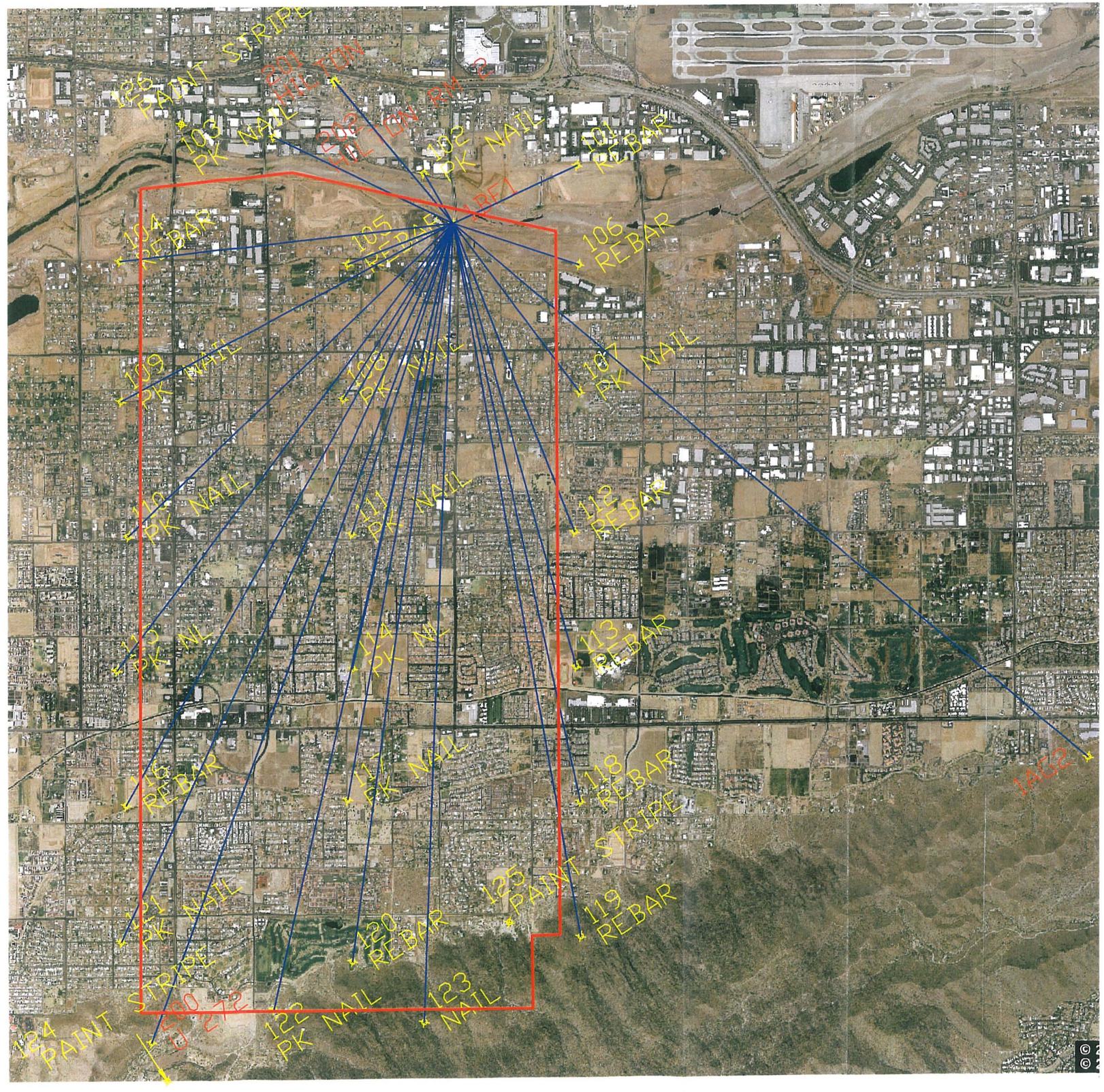
This report represents a GPS control survey to establish NAD83 values for control monuments used by Vertical Mapping Resources for Maricopa County Flood Control District project number FCD 2008C020-1. The network was surveyed under my direct supervision in March, 2009.

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
37174
DANIEL K.
MARDOCK
4-28-09
Date Signed
ARIZONA, U.S.A.
Expires: 03/31/10

April 28, 2009
Date

Daniel K Mardock, RLS 37174
RBF Consulting, 602-467-2200
16605 N 28th Ave, Suite 100
Phoenix, AZ 85053

CONTROL AND GPS VECTOR MAP


126
PAINT STRIPE
201
HILTON
203
HILL DR RM 2
102
PK NAIL
101
REBAR
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122
PK NAIL
123
NAIL
124
PAINT STRIPE
125
PAINT STRIPE
C 272
1AG2

PRIMARY COORDINATE LIST

PRIMARY CONTROL STATIONS

PT NAME	NORTHING	EASTING	ELEVATION	LATTITUDE	LONGITUDE	ELIPSOID HIEGHT	CSF	DESCRIPTION
1BF1	879158.13	660049.34	1092.36	33ø25'00.03497"N	112ø02'51.35510"W	994.60	0.99985435	CONTROL
1AG2	863987.41	677974.12	1275.39	33ø22'30.10482"N	111ø59'19.74692"W	1177.86	0.99984433	CONTROL
200	856233.31	651497.16	1358.92	33ø21'13.09293"N	112ø04'31.84447"W	1261.23	0.99984249	USGS U 272
201	883208.13	656686.51	1086.67	33ø25'40.06283"N	112ø03'31.09635"W	988.83	0.99985495	USGS HILTON
202	883140.09	656728.07	1086.06	33ø25'39.39018"N	112ø03'30.60477"W	988.24	0.99985497	USGS HILTON RM 2

AERIAL TARGET CONTROL COORDINATES

PT NAME	NORTHING	EASTING	ELEVATION	LATTITUDE	LONGITUDE	ELIPSOID HIEGHT	CSF	DESCRIPTION
101	880752.15	663545.62	1096.43	33ø25'15.84811"N	112ø02'10.12616"W	998.63	0.99985385	REBAR-PAPER
102	880570.62	659226.66	1084.33	33ø25'14.00007"N	112ø03'01.08276"W	986.46	0.99985482	PK NAIL-PAINTED
103	881626.03	654987.52	1077.08	33ø25'24.38584"N	112ø03'51.11772"W	979.13	0.99985558	PK NAIL-PAINTED
104	878171.25	650635.17	1069.44	33ø24'50.13950"N	112ø04'42.40902"W	971.44	0.99985642	REBAR-PAPER
105	878034.81	657069.62	1085.87	33ø24'48.88210"N	112ø03'26.49313"W	987.98	0.99985495	REBAR-PAPER
106	877965.15	663594.11	1034.44	33ø24'48.27354"N	112ø02'09.51626"W	936.65	0.99985681	REBAR-PAPER
107	874375.72	663613.24	1101.86	33ø24'12.75908"N	112ø02'09.24212"W	1004.09	0.99985359	PK NAIL PAINTED
108	874239.47	656937.30	1086.43	33ø24'11.32836"N	112ø03'27.99345"W	988.56	0.99985494	PK NAIL PAINTED
109	874222.69	650667.75	1072.03	33ø24'11.07204"N	112ø04'41.95234"W	974.06	0.99985629	PK NAIL PAINTED
110	870426.99	650866.91	1104.09	33ø23'33.51958"N	112ø04'39.53360"W	1006.15	0.99985474	PK NAIL PAINTED
111	870445.49	657170.73	1115.80	33ø23'33.79285"N	112ø03'25.17951"W	1017.96	0.99985351	PK NAIL PAINTED
112	870454.46	663466.29	1124.62	33ø23'33.95942"N	112ø02'10.92242"W	1026.87	0.99985251	REBAR-PAPER
113	866661.64	663502.05	1161.42	33ø22'56.43260"N	112ø02'10.44924"W	1063.69	0.99985075	REBAR-PAPER
114	866658.84	657189.11	1159.46	33ø22'56.32701"N	112ø03'24.90251"W	1061.65	0.99985142	PK NAIL PAINTED
115	866650.55	650547.23	1143.57	33ø22'56.14961"N	112ø04'43.23495"W	1045.67	0.99985289	PK NAIL PAINTED
116	862863.94	650797.99	1201.53	33ø22'18.68769"N	112ø04'40.20854"W	1103.67	0.99985009	REBAR-PAPER
117	862981.69	657045.65	1203.88	33ø22'19.94230"N	112ø03'26.53590"W	1106.10	0.99984932	PK NAIL PAINTED
118	862868.11	663611.94	1227.99	33ø22'18.89955"N	112ø02'09.10202"W	1130.29	0.99984756	REBAR-PAPER
119	859103.08	663610.65	1583.72	33ø21'41.64721"N	112ø02'09.06640"W	1486.05	0.99983058	REBAR-PAPER
120	858457.59	657165.87	1264.96	33ø21'35.18112"N	112ø03'25.04636"W	1167.22	0.99984639	REBAR-PAPER
121	859060.80	650652.02	1259.97	33ø21'41.05613"N	112ø04'41.86027"W	1162.15	0.99984732	PK NAIL PAINTED
122	857128.69	654942.42	1329.12	33ø21'22.00222"N	112ø03'51.24024"W	1231.37	0.99984355	PK NAIL PAINTED
123	856739.58	659191.77	1510.40	33ø21'18.20891"N	112ø03'01.13352"W	1412.70	0.99983448	60D NAIL PAINTED
124	855162.25	651935.02	1363.02	33ø21'02.50210"N	112ø04'26.66301"W	1265.25	0.99984225	PAINT STRIPE
125	859518.84	661601.82	1303.13	33ø21'45.73755"N	112ø02'32.75839"W	1205.432	0.99984415	PAINT STRIPE
126	882017.57	652380.72	1078.75	33ø25'28.22215"N	112ø04'21.88307"W	980.75	0.99985578	PAINT STRIPE

NGS QUALITY CONTROL DIFFERENCES REPORT

NGS QUALITY CONTROL DIFFERENCES REPORT

Resultant coordinates for point : 51835-1							
	Northing	Easting	Elevation	Height			
PUBLISHED (GDACS)	859732.325ift	651769.992ift	1265.407ift	1167.691ift			
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
RTK OBSERVATIONS							
B139 (1BF1-51835-1)		Enabled	0.090ift	-0.066ift	0.111ift	-0.170ift	-0.170ift
B140 (1BF1-51835-1)		Enabled	0.085ift	-0.044ift	0.096ift	-0.133ift	-0.133ift

Resultant coordinates for point : 51832-1							
	Northing	Easting	Elevation	Height			
PUBLISHED (GDACS)	859717.804ift	659663.632ift	1263.292ift	1165.664ift			
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
RTK OBSERVATIONS							
B137 (1BF1-51832-1)		Enabled	0.115ift	-0.002ift	0.115ift	-0.129ift	-0.129ift
B138 (1BF1-51832-1)		Enabled	0.107ift	0.009ift	0.108ift	-0.115ift	-0.115ift

Resultant coordinates for point : HILTON							
	Northing	Easting	Elevation	Height			
PUBLISHED NGS	883208.141ift	656686.343ift	1086.811ift	988.975ift			
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
RTK OBSERVATIONS							
B11 (1BF1-HILTON)		Enabled	0.047ift	-0.183ift	0.189ift	0.172ift	0.172ift
B129 (1BF1-HILTON)		Enabled	0.038ift	-0.166ift	0.170ift	0.056ift	0.056ift
B130 (1BF1-HILTON)		Enabled	-0.009ift	-0.153ift	0.153ift	0.125ift	0.125ift

NAVD88 TO NGVD29 CONVERSION

NAVD88 TO NGVD29 CONVERSION

PUBLISHED ON NGS DATA SHEET

PT NAME	ORDER	NAVD88	NGVD29	DIFFERENCE
HILTON	FIRST CLASS II	1086.81	1084.65	2.16
HILTON RM 2	FIRST CLASS II	1086.12	1083.95	2.17
U 272	SECOND CLASS 0	1359.1	1356.94	2.16

MEASURED NAVD88 FROM 1BF1

PT NAME	NAVD88 (M)	DIFFERENCE	VERTCON
HILTON	1086.667	2.017	2.16
HILTON RM 2	1086.063	2.113	2.16
U 272	1358.916	1.976	2.12
AVERAGE		2.03	2.14

HILTON and HILTON RM2 have been adjusted in NAVD88 and include superceded NGVD29 values on the datasheet.
U 272 includes a superceded NGVD29 value on the datasheet and has an NAVD88 value determined by vertcon.
The results of keying RBF measured values into vertcon agreed with the values from the NGS datasheets.
The measurements preformed in this survey were all consistently lower than the published values.
It was determined that the average difference as determined using Vertcon be held
for converting from NAVD88 to NGVD29.

To convert mapping derived from this survey from NAVD88 to NGVD29 use -2.14ift.

COORDINATE QUALITY CONTROL REPORT

QUALITY CONTROL REPORT QC1 AND QC2 RESULTS

NAME	START TIME	STOP TIME	MAX RDOP	MAX HDOP	MAX VDOP	# OF POSITIONS	RMS	HORZ PERCISION	VERT PERCISION	MIN SATELLITES
102	3/18/2009 10:45	3/18/2009 10:48	1.603	0.808	1.385	180	0.003	0.02	0.035	9
102	3/17/2009 13:14	3/17/2009 13:17	2.438	1.134	2.158	180	0.002	0.018	0.033	8
103	3/17/2009 12:10	3/17/2009 12:13	1.587	0.862	1.333	180	0.003	0.024	0.04	8
103	3/19/2009 9:04	3/19/2009 9:07	2.676	1.158	2.412	180	0.002	0.016	0.033	9
104	3/17/2009 11:47	3/17/2009 11:50	1.286	0.628	1.122	180	0.004	0.02	0.036	9
104	3/19/2009 8:45	3/19/2009 8:48	2.374	0.956	2.172	180	0.002	0.017	0.037	8
105	3/18/2009 9:16	3/18/2009 9:19	2.412	1.109	2.142	180	0.002	0.024	0.046	8
105	3/18/2009 12:09	3/18/2009 12:12	1.323	0.69	1.128	180	0.002	0.018	0.03	9
106	3/17/2009 12:33	3/17/2009 12:36	1.259	0.752	1.009	180	0.004	0.023	0.031	8
106	3/18/2009 10:18	3/18/2009 10:21	1.745	0.884	1.505	180	0.006	0.024	0.041	8
107	3/19/2009 6:27	3/19/2009 6:30	1.138	0.686	0.908	180	0.004	0.024	0.032	9
107	3/17/2009 11:41	3/17/2009 11:44	1.821	0.929	1.566	180	0.003	0.023	0.039	8
108	3/18/2009 11:56	3/18/2009 11:59	1.303	0.674	1.115	180	0.005	0.024	0.039	9
108	3/18/2009 8:49	3/18/2009 8:51	2.389	0.959	2.188	180	0.002	0.016	0.035	8
109	3/17/2009 11:17	3/17/2009 11:20	1.917	0.975	1.651	180	0.003	0.018	0.031	8
109	3/19/2009 8:33	3/19/2009 8:36	3.345	1.354	3.059	180	0.002	0.014	0.032	9
110	3/19/2009 8:22	3/19/2009 8:27	2.279	1.063	2.016	180	0.002	0.015	0.031	8
110	3/17/2009 10:57	3/17/2009 11:00	2.398	1.007	2.176	180	0.003	0.015	0.032	7
111	3/18/2009 11:44	3/18/2009 11:47	1.286	0.628	1.122	180	0.003	0.018	0.032	9
111	3/18/2009 8:24	3/18/2009 8:27	1.597	0.747	1.412	180	0.002	0.02	0.039	8
112	3/17/2009 11:18	3/17/2009 11:21	1.909	0.973	1.643	180	0.003	0.02	0.033	8
112	3/19/2009 6:14	3/19/2009 6:17	1.216	0.696	0.996	180	0.003	0.027	0.038	9
113	3/19/2009 5:57	3/19/2009 6:00	1.271	0.7	1.062	180	0.006	0.022	0.033	9
113	3/17/2009 10:33	3/17/2009 10:36	2.545	1.286	2.196	180	0.003	0.019	0.032	8
114	3/18/2009 8:05	3/18/2009 8:08	1.147	0.58	0.989	180	0.004	0.021	0.036	9
114	3/18/2009 11:30	3/18/2009 11:33	1.323	0.663	1.145	180	0.003	0.02	0.034	9
115	3/17/2009 10:33	3/17/2009 10:36	1.8	0.909	1.553	180	0.002	0.026	0.044	8
115	3/19/2009 8:13	3/19/2009 8:16	2.178	1.035	1.916	180	0.002	0.017	0.032	9
116	3/17/2009 10:05	3/17/2009 10:09	1.271	0.743	1.032	180	0.003	0.02	0.028	9
116	4/13/2009 12:17	4/13/2009 12:32	0.361	1.181		60	0.013	0.011	0.014	9
117	3/18/2009 13:07	3/18/2009 13:10	2.456	1.143	2.174	180	0.004	0.025	0.047	8
117	3/18/2009 10:29	3/18/2009 10:32	2.549	1.286	2.201	180	0.003	0.02	0.035	8
117	3/19/2009 5:26	3/19/2009 5:29	1.248	0.688	1.042	180	0.002	0.026	0.04	7
118	3/17/2009 10:01	3/17/2009 10:04	1.772	1.022	1.447	180	0.003	0.021	0.029	9
118	3/18/2009 12:47	3/18/2009 12:50	1.694	0.832	1.476	180	0.004	0.021	0.038	8
119	3/17/2009 9:08	3/17/2009 9:12	2.01	0.845	1.824	180	0.002	0.018	0.039	9
119	3/19/2009 6:51	3/19/2009 6:54	2.698	1.158	2.437	180	0.002	0.016	0.034	7
120	3/18/2009 9:56	3/18/2009 10:00	1.248	0.718	1.021	180	0.002	0.022	0.031	9
120	3/18/2009 12:19	3/18/2009 12:22	1.639	0.877	1.385	180	0.003	0.019	0.03	8

NAME	START TIME	STOP TIME	MAX RDOP	MAX HDOP	MAX VDOP	# OF POSITIONS	RMS	HORZ PERCISION	VERT PERCISION	MIN SATELLITES
121	3/18/2009 12:41	3/18/2009 12:56	0.472			60	0.01	0.004	0.012	8
121	3/17/2009 9:25	3/17/2009 9:40	0.383			60	0.011	0.005	0.012	9
122	3/17/2009 8:58	3/17/2009 9:01	2.218	0.909	2.023	180	0.002	0.015	0.034	9
122	3/18/2009 11:17	3/18/2009 11:20	1.615	0.806	1.399	180	0.002	0.024	0.042	9
123	3/18/2009 11:44	3/18/2009 11:48	1.36	0.724	1.152	180	0.003	0.018	0.032	8
123	3/18/2009 9:04	3/18/2009 9:07	2.1	0.849	1.921	180	0.001	0.02	0.044	8
124	4/13/2009 12:50	4/13/2009 12:55	2.075	1.001	1.817	180	0.004	0.023	0.042	8
124	4/15/2009 8:24	4/15/2009 8:27	2.509	1.242	2.18	180	0.008	0.031	0.054	8
125	4/15/2009 9:05	4/15/2009 9:08	1.522	0.765	1.316	180	0.002	0.018	0.031	9
125	4/13/2009 13:05	4/13/2009 13:08	2.243	1.124	1.941	180	0.002	0.021	0.037	7
126	4/13/2009 13:48	4/13/2009 13:52	4.542	1.81	4.165	180	0.005	0.019	0.029	5
126	4/15/2009 10:12	4/15/2009 10:15	1.284	0.642	1.111	180	0.003	0.019	0.033	10
200	3/17/2009 8:33	3/17/2009 8:36	2.136	0.913	1.931	180	0.002	0.02	0.044	9
200	3/18/2009 11:08	3/18/2009 11:11	1.408	0.707	1.217	180	0.002	0.023	0.04	9
201	3/17/2009 12:32	3/17/2009 12:35	1.645	0.985	1.318	180	0.008	0.037	0.051	8
201	3/19/2009 9:30	3/19/2009 9:33	1.564	0.789	1.35	180	0.005	0.021	0.036	9
202	3/19/2009 9:53	3/19/2009 9:56	1.25	0.72	1.022	180	0.008	0.031	0.043	9
202	3/17/2009 12:42	3/17/2009 12:45	2.245	1.163	1.92	180	0.002	0.027	0.046	8
1AG2	3/17/2009 7:45	3/17/2009 7:48	1.652	0.862	1.41	180	0.003	0.019	0.032	8
1AG2	3/17/2009 7:50	3/17/2009 7:53	1.64	0.838	1.41	180	0.003	0.02	0.033	8
1AG2	3/17/2009 7:50	3/17/2009 7:53	1.64	0.838	1.41	180	0.003	0.02	0.033	8
1AG2	3/17/2009 7:54	3/17/2009 7:57	1.627	0.817	1.407	180	0.002	0.02	0.034	8
1AG2	3/17/2009 13:34	3/17/2009 13:37	2.196	1.073	1.915	180	0.002	0.018	0.032	8
1AG2	3/17/2009 13:34	3/17/2009 13:37	2.196	1.073	1.915	180	0.002	0.018	0.032	8
1AG2	3/17/2009 13:38	3/17/2009 13:41	2.147	1.066	1.863	180	0.002	0.018	0.031	8
1AG2	3/18/2009 7:05	3/18/2009 7:08	5.426	2.03	5.032	180	0.001	0.014	0.034	7
1AG2	3/18/2009 7:11	3/18/2009 7:14	5.214	1.779	4.902	180	0.003	0.012	0.033	7
1AG2	3/18/2009 7:16	3/18/2009 7:19	8.851	2.836	8.384	180	0.006	0.014	0.043	7
1AG2	3/18/2009 7:21	3/18/2009 7:24	8.593	2.637	8.178	180	0.004	0.024	0.044	7
1AG2	3/19/2009 11:49	3/19/2009 11:52	1.349	0.699	1.154	180	0.002	0.018	0.031	9

NOTE: MAX HDOP and MAX VDOP were not produced for static baseline processing. The data was collected at 15 second intervals for 15 minutes making the number of observations 60.

NGS DATASHEETS

The NGS Data Sheet

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

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.65
1        National Geodetic Survey,   Retrieval Date = APRIL  3, 2009
 AJ3668 ***********************************************************************
 AJ3668  HT_MOD       -  This is a Height Modernization Survey Station.
 AJ3668  DESIGNATION -  1BF1
 AJ3668  PID          -  AJ3668
 AJ3668  STATE/COUNTY-  AZ/MARICOPA
 AJ3668  USGS QUAD    -  PHOENIX (1982)
 AJ3668
 AJ3668                         *CURRENT SURVEY CONTROL
 AJ3668  ___________________________________________________________________
 AJ3668* NAD 83(2007)-  33 25 00.03564(N)    112 02 51.35595(W)     ADJUSTED
 AJ3668* NAVD 88      -       332.95   (meters)    1092.4    (feet)  GPS OBS
 AJ3668  ___________________________________________________________________
 AJ3668  EPOCH DATE   -        2007.00
 AJ3668  X            -  -2,000,539.408 (meters)                     COMP
 AJ3668  Y            -  -4,939,689.854 (meters)                     COMP
 AJ3668  Z            -   3,492,791.057 (meters)                     COMP
 AJ3668  LAPLACE CORR-           2.01  (seconds)                    DEFLEC99
 AJ3668  ELLIP HEIGHT-         303.115 (meters)          (02/10/07) ADJUSTED
 AJ3668  GEOID HEIGHT-         -29.82  (meters)                     GEOID03
 AJ3668
 AJ3668  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AJ3668  Type    PID    Designation                      North   East  Ellip
 AJ3668  ---------------------------------------------------------------------
 AJ3668  NETWORK AJ3668 1BF1                              0.74   0.69   1.20
 AJ3668  ---------------------------------------------------------------------
 AJ3668
 AJ3668.The horizontal coordinates were established by GPS observations
 AJ3668.and adjusted by the National Geodetic Survey in February 2007.
 AJ3668
 AJ3668.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AJ3668.See National Readjustment for more information.
 AJ3668.The horizontal coordinates are valid at the epoch date displayed above.
 AJ3668.The epoch date for horizontal control is a decimal equivalence
 AJ3668.of Year/Month/Day.
 AJ3668
 AJ3668.The orthometric height was determined by GPS observations and a
 AJ3668.high-resolution geoid model.
 AJ3668.The orthometric height was determined by GPS observations and a
 AJ3668.high-resolution geoid model using precise GPS observation and
 AJ3668.processing techniques.
 AJ3668
 AJ3668.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ3668
 AJ3668.The Laplace correction was computed from DEFLEC99 derived deflections.
 AJ3668
 AJ3668.The ellipsoidal height was determined by GPS observations
 AJ3668.and is referenced to NAD 83.
 AJ3668
 AJ3668.The geoid height was determined by GEOID03.
 AJ3668
 AJ3668;                    North         East     Units Scale Factor Converg.
```

```
AJ3668;SPC AZ C      -   267,967.420   201,183.016   MT  0.99990183   -0 04 19.6
AJ3668;SPC AZ C      -   879,158.20    660,049.27   iFT  0.99990183   -0 04 19.6
AJ3668;UTM  12       - 3,697,971.720   402,598.110   MT  0.99971696   -0 34 37.1
AJ3668
AJ3668!              -  Elev Factor  x  Scale Factor =   Combined Factor
AJ3668!SPC AZ C      -   0.99995242  x   0.99990183  =   0.99985425
AJ3668!UTM  12       -   0.99995242  x   0.99971696  =   0.99966939
AJ3668
AJ3668                          SUPERSEDED SURVEY CONTROL
AJ3668
AJ3668  NAD 83(1992)-  33 25 00.03497(N)    112 02 51.35510(W) AD(       ) B
AJ3668  ELLIP H (04/12/01)  303.153  (m)                       GP(       ) 3 2
AJ3668
AJ3668.Superseded values are not recommended for survey control.
AJ3668.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AJ3668.See file dsdata.txt to determine how the superseded data were derived.
AJ3668
AJ3668_U.S. NATIONAL GRID SPATIAL ADDRESS: 12SVB0259897972(NAD 83)
AJ3668_MARKER: I = METAL ROD
AJ3668_SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL
AJ3668+WITH SETTING: INFORMATION.
AJ3668_STAMPING: 1BF1 1999
AJ3668_MARK LOGO: MCDOT
AJ3668_PROJECTION: FLUSH
AJ3668_MAGNETIC: B = BAR MAGNET IMBEDDED IN MONUMENT
AJ3668_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
AJ3668+STABILITY: POSITION/ELEVATION WELL
AJ3668_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ3668+SATELLITE: SATELLITE OBSERVATIONS - July 10, 2007
AJ3668_ROD/PIPE-DEPTH:  1.1 meters
AJ3668_SLEEVE-DEPTH  :  0.8 meters
AJ3668
AJ3668  HISTORY     - Date     Condition        Report By
AJ3668  HISTORY     - 1999     MONUMENTED       MCDOT
AJ3668  HISTORY     - 20051005 GOOD             EVANS
AJ3668  HISTORY     - 20070710 GOOD             GEOCAC
AJ3668
AJ3668                          STATION DESCRIPTION
AJ3668
AJ3668'DESCRIBED BY MARICOPA CO DOT 1999 (GH)
AJ3668'THE STATION IS LOCATED WITHIN THE CITY OF PHOENIX, TOWNSHIP 01 NORTH,
AJ3668'RANGE 03 EAST, SECTION 21
AJ3668'OWNERSHIP - CITY OF PHOENIX RIGHT OF WAY
AJ3668'TO REACH THE STATION FROM THE JUNCTION OF I-17 AND (EXIT 195A) , DRIVE
AJ3668'SOUTH ON 16TH STREET FOR 0.8 MI (1.3 KM) TO VICTORY STREET, THENCE
AJ3668'TURN RIGHT (WEST) ON VICTORY STREET FOR ONLY 50 FT TO A DRIVEWAY ON
AJ3668'THE RIGHT (NORTH) SIDE OF VICTORY STREET, THENCE TURN RIGHT (NORTH)
AJ3668'AND ENTER THE PARKING LOT AND PARK, HIKE NORTHEAST TO THE STATION SET
AJ3668'IN THE TOP EDGE OF THE EMBANKMENT OF THE SOUTH BANK OF THE SALT RIVER,
AJ3668'THE STATION IS AS DESCRIBED
AJ3668'MONUMENT DESCRIPTION - THE STATION IS MARKED BY AN ALUMINUM CAP
AJ3668'COMPRESSED ON A 3.5 FOOT (1.1 M) STAINLESS STEEL ROD DRIVEN TO REFUSAL
AJ3668'ENCASED IN A 1INCH GREASED PVC SLEEVE ENCLOSED IN A 5 INCH PVC PIPE
AJ3668'WITH A COUNTY LOGO ACCESS COVER STAMPED 1BF1 1999, SURROUNDED WITH A
AJ3668'CONCRETE COLLAR FLUSH WITH THE GROUND, WITNESSED BY A WHITE CARSONITE
AJ3668'MARKER
AJ3668'STATION TIES
AJ3668'64 FEET (19.5 M) PERPENDICULAR FROM THE NORTHEAST EDGE OF THE DIAGONAL
AJ3668'PORTION OF THE PARKING LOT
AJ3668'52 FEET (15.8 M) WEST OF AND PARALLEL WITH THE WEST EDGE OF THE
```

```
AJ3668'SIDEWALK ON THE WEST SIDE OF 16TH STREET
AJ3668'52 FEET (15.8 M) WEST OF THE WEST EDGE OF THE SIDEWALK ON THE WEST
AJ3668'SIDE OF 16TH STREET
AJ3668'FOR A TO REACH MAP, STATION IMAGES AND ADDITIONAL INFORMATION, YOU CAN
AJ3668'VISIT WWW.MCDOT.MARICOPA.GOV       SEARCH KEYWORD  GDACS
AJ3668
AJ3668                          STATION RECOVERY (2005)
AJ3668
AJ3668'RECOVERY NOTE BY DAVID EVANS + ASSOC 2005 (JST)
AJ3668'RECOVERED IN GOOD CONDITION.
AJ3668
AJ3668                          STATION RECOVERY (2007)
AJ3668
AJ3668'RECOVERY NOTE BY GEOCACHING 2007 (ACM)
AJ3668'RECOVERED IN GOOD CONDITION.

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

Maricopa County Department of Transportation

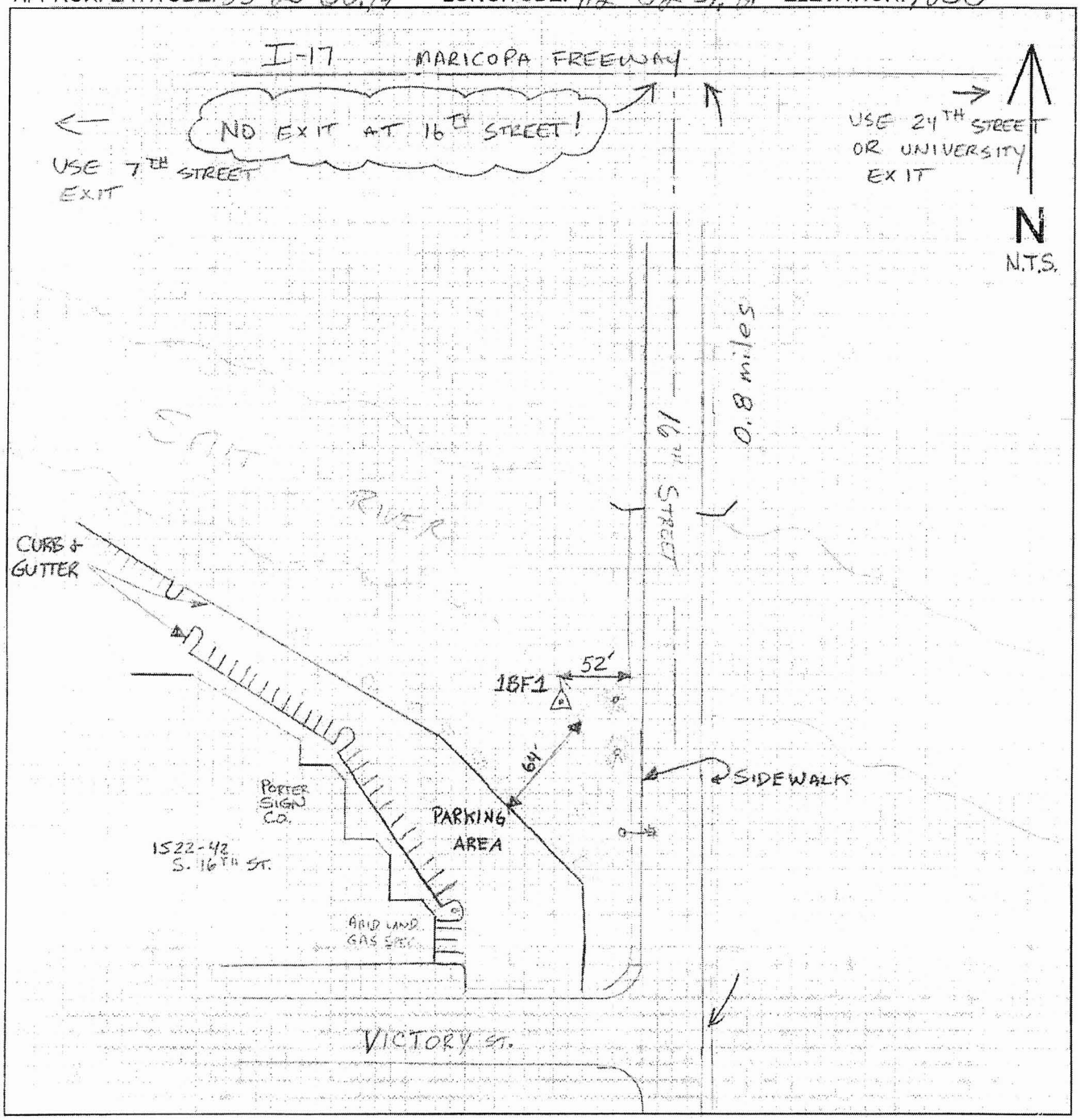
MONUMENT RECORD

STATION NAME: 1BF1 4 LETTER ID: 1BF1

APPROX. LOCATION: T 1N R 3E S 21 GILA AND SALT RIVER MERIDIAN AND BASELINE

AGENCY/FIRM: ENTRANCO SKETCH BY: G. HUNTER DATE: 9/21/99

APPROX. LATITUDE: 33°25'00.14" LONGITUDE: 112°02'51.81" ELEVATION: 1050'



DESCRIPTION OF MONUMENT: NGS 3-D MONUMENT

ROD LENGTH = 3.5'

Station Sketch

Sheet 1 of 1

The NGS Data Sheet

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

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.65
1        National Geodetic Survey,   Retrieval Date = APRIL  3, 2009
 AJ3663 ***********************************************************************
 AJ3663  HT_MOD       -  This is a Height Modernization Survey Station.
 AJ3663  DESIGNATION  -  1AG2
 AJ3663  PID          -  AJ3663
 AJ3663  STATE/COUNTY-   AZ/MARICOPA
 AJ3663  USGS QUAD    -  TEMPE (1982)
 AJ3663
 AJ3663                         *CURRENT SURVEY CONTROL
 AJ3663  ___________________________________________________________________
 AJ3663* NAD 83(2007)-  33 22 30.10553(N)    111 59 19.74779(W)     ADJUSTED
 AJ3663* NAVD 88     -       388.74   (meters)    1275.4    (feet)  GPS OBS
 AJ3663  ___________________________________________________________________
 AJ3663  EPOCH DATE  -        2007.00
 AJ3663  X           -  -1,996,440.182 (meters)                     COMP
 AJ3663  Y           -  -4,944,140.514 (meters)                     COMP
 AJ3663  Z           -   3,488,965.121 (meters)                     COMP
 AJ3663  LAPLACE CORR-           0.13  (seconds)                   DEFLEC99
 AJ3663  ELLIP HEIGHT-         358.972 (meters)          (02/10/07) ADJUSTED
 AJ3663  GEOID HEIGHT-         -29.75  (meters)                     GEOID03
 AJ3663
 AJ3663  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 AJ3663  Type    PID    Designation                      North   East  Ellip
 AJ3663  ---------------------------------------------------------------------
 AJ3663  NETWORK AJ3663 1AG2                              0.74   0.71   1.22
 AJ3663  ---------------------------------------------------------------------
 AJ3663
 AJ3663.The horizontal coordinates were established by GPS observations
 AJ3663.and adjusted by the National Geodetic Survey in February 2007.
 AJ3663
 AJ3663.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 AJ3663.See National Readjustment for more information.
 AJ3663.The horizontal coordinates are valid at the epoch date displayed above.
 AJ3663.The epoch date for horizontal control is a decimal equivalence
 AJ3663.of Year/Month/Day.
 AJ3663
 AJ3663.The orthometric height was determined by GPS observations and a
 AJ3663.high-resolution geoid model.
 AJ3663.The orthometric height was determined by GPS observations and a
 AJ3663.high-resolution geoid model using precise GPS observation and
 AJ3663.processing techniques.
 AJ3663
 AJ3663.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ3663
 AJ3663.The Laplace correction was computed from DEFLEC99 derived deflections.
 AJ3663
 AJ3663.The ellipsoidal height was determined by GPS observations
 AJ3663.and is referenced to NAD 83.
 AJ3663
 AJ3663.The geoid height was determined by GEOID03.
 AJ3663
 AJ3663;                    North         East     Units Scale Factor Converg.
```

```
AJ3663;SPC AZ C      -   263,343.384   206,646.490   MT  0.99990056   -0 02 22.9
AJ3663;SPC AZ C      -   863,987.48    677,974.05   iFT  0.99990056   -0 02 22.9
AJ3663;UTM  12       - 3,693,300.639   408,019.616   MT  0.99970431   -0 32 38.4
AJ3663
AJ3663!              -  Elev Factor  x  Scale Factor =   Combined Factor
AJ3663!SPC AZ C      -   0.99994365  x   0.99990056  =   0.99984421
AJ3663!UTM  12       -   0.99994365  x   0.99970431  =   0.99964797
AJ3663
AJ3663                          SUPERSEDED SURVEY CONTROL
AJ3663
AJ3663  NAD 83(1992)-  33 22 30.10482(N)    111 59 19.74692(W) AD(       ) B
AJ3663  ELLIP H (04/12/01)  359.011  (m)                       GP(       ) 3 2
AJ3663
AJ3663.Superseded values are not recommended for survey control.
AJ3663.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AJ3663.See file dsdata.txt to determine how the superseded data were derived.
AJ3663
AJ3663_U.S. NATIONAL GRID SPATIAL ADDRESS: 12SVB0802093301(NAD 83)
AJ3663_MARKER: I = METAL ROD
AJ3663_SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL
AJ3663+WITH SETTING: INFORMATION.
AJ3663_STAMPING: 1AG2 1999
AJ3663_MARK LOGO: MCDOT
AJ3663_PROJECTION: FLUSH
AJ3663_MAGNETIC: B = BAR MAGNET IMBEDDED IN MONUMENT
AJ3663_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
AJ3663+STABILITY: POSITION/ELEVATION WELL
AJ3663_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ3663+SATELLITE: SATELLITE OBSERVATIONS - 1999
AJ3663_ROD/PIPE-DEPTH:  1.1 meters
AJ3663_SLEEVE-DEPTH  :  0.8 meters
AJ3663
AJ3663  HISTORY     - Date     Condition        Report By
AJ3663  HISTORY     - 1999     MONUMENTED       MCDOT
AJ3663
AJ3663                          STATION DESCRIPTION
AJ3663
AJ3663'DESCRIBED BY MARICOPA CO DOT 1999 (RB)
AJ3663'THE STATION IS LOCATED WITHIN THE CITY OF PHOENIX, TOWNSHIP 01 SOUTH,
AJ3663'RANGE 04 EAST, SECTION 06
AJ3663'OWNERSHIP - CITY OF PHOENIX PARKS
AJ3663'TO REACH THE STATION FROM THE JUNCTION OF I-10 AND 40TH STREET (EXIT
AJ3663'152), DRIVE SOUTH 2.0 MI (3.2 KM) ON 40TH STREET TO BASELINE ROAD,
AJ3663'THENCE TURN LEFT (EAST) ONTO BASELINE ROAD AND DRIVE 0.3 MI (0.5 KM)
AJ3663'TO A DIRT ACCESS ROAD ON THE LEFT (SOUTH) SIDE OF BASELINE ROAD ( SAID
AJ3663'DIRT ROAD IS ALSO WEST OF HIGHLINE CANAL, THENCE TURN LEFT (SOUTH)
AJ3663'ONTO THE DIRT ACCESS ROAD AND DRIVE SOUTHEASTERLY FOR 0.2 MI (0.3 KM)
AJ3663'TO A DIRT TRAIL ON RIGHT (SOUTH) SIDE OF ROAD, THENCE TURN RIGHT
AJ3663'(SOUTH) ONTO THE DIRT TRAIL AND DRIVE 300 FT (91.4 M) UPHILL TO THE
AJ3663'TOP, PARK AND FIND THE STATION AS DESCRIBED
AJ3663'MONUMENT DESCRIPTION - THE STATION IS MARKED BY AN ALUMINUM CAP
AJ3663'COMPRESSED ON A 3.5 FOOT (1.1 M) STAINLESS STEEL ROD DRIVEN TO REFUSAL
AJ3663'ENCASED IN A 1 INCH GREASED PVC SLEEVE ENCLOSED IN A 5 INCH PVC PIPE
AJ3663'WITH A COUNTY LOGO ACCESS COVER STAMPED 1AG2 1999, SURROUNDED WITH A
AJ3663'CONCRETE COLLAR FLUSH WITH THE GROUND, WITNESSED BY A WHITE CARSONITE
AJ3663'MARKER
AJ3663'STATION TIES
AJ3663'6 FEET (1.8 M) NORTHEAST OF WHITE CARSONITE MARKER
AJ3663'ON TOP OF SMALL HILL JUST NORTH OF FOUR BOULDERS
AJ3663'FOR A TO REACH MAP, STATION IMAGES AND ADDITIONAL INFORMATION, YOU CAN
```

Maricopa County Department of Transportation

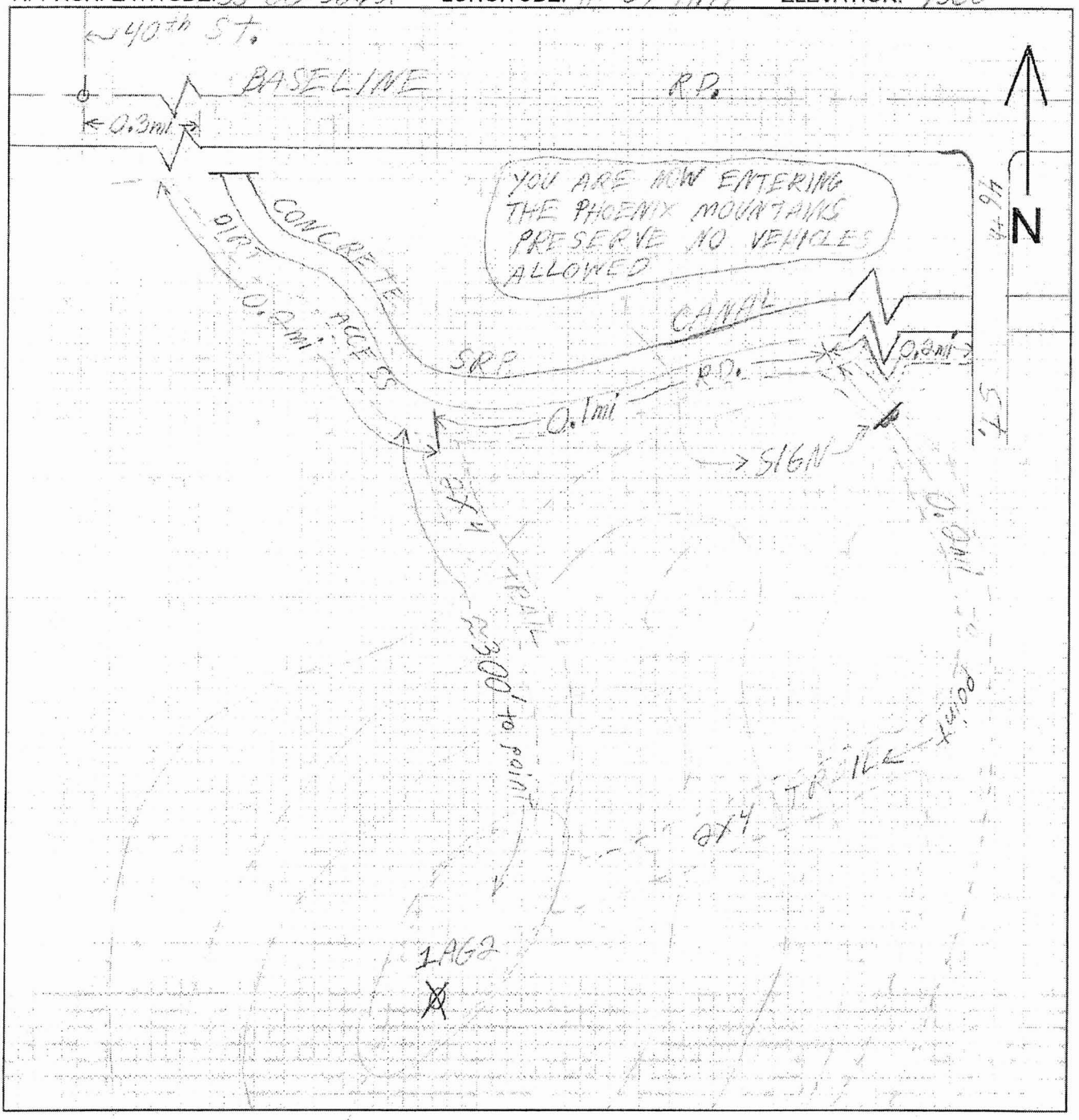
MONUMENT RECORD

STATION NAME: 1AG2 4 LETTER ID: 1AG2

APPROX. LOCATION: T 2S R 4E S 6 GILA AND SALT RIVER MERIDIAN AND BASELINE

AGENCY/FIRM: ENTRANCO SKETCH BY: RON BARBALA DATE: 8/13/99

APPROX. LATITUDE: 33°22'32.37" LONGITUDE: 111°57'19.77" ELEVATION: 1300



DESCRIPTION OF MONUMENT: TOP OF SMALL HILL, JUST NORTH OF 4 BOLDERS. NGS 3D MONUMENT WITH CARSONITE MARKER.

ROD LENGTH = 3.5'

Station Sketch

Sheet 1 of 2

The NGS Data Sheet

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

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.65
1        National Geodetic Survey,   Retrieval Date = APRIL  2, 2009
 DV0419 ***********************************************************************
 DV0419  DESIGNATION -  U 272
 DV0419  PID         -  DV0419
 DV0419  STATE/COUNTY-  AZ/MARICOPA
 DV0419  USGS QUAD   -  LONE BUTTE (1973)
 DV0419
 DV0419                        *CURRENT SURVEY CONTROL
 DV0419  ______________________________________________________________________
 DV0419* NAD 83(1986)-  33 21 13.     (N)    112 04 31.     (W)     SCALED
 DV0419* NAVD 88     -       414.25   (+/-2cm)    1359.1    (feet)  VERTCON
 DV0419  ______________________________________________________________________
 DV0419  GEOID HEIGHT-         -29.80  (meters)                     GEOID03
 DV0419  VERT ORDER  -  SECOND    CLASS 0 (See Below)
 DV0419
 DV0419.The horizontal coordinates were scaled from a topographic map and have
 DV0419.an estimated accuracy of +/- 6 seconds.
 DV0419
 DV0419.The NAVD 88 height was computed by applying the VERTCON shift value to
 DV0419.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 DV0419.The vertical order pertains to the NGVD 29 superseded value.
 DV0419
 DV0419.The geoid height was determined by GEOID03.
 DV0419
 DV0419;                    North         East    Units  Estimated Accuracy
 DV0419;SPC AZ C     -   260,980.      198,600.      MT  (+/- 180 meters Scaled)
 DV0419
 DV0419                          SUPERSEDED SURVEY CONTROL
 DV0419
 DV0419  NGVD 29 (??/??/92)  413.597  (m)         1356.94   (f) ADJ UNCH    2 0
 DV0419
 DV0419.Superseded values are not recommended for survey control.
 DV0419.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DV0419.See file dsdata.txt to determine how the superseded data were derived.
 DV0419
 DV0419_U.S. NATIONAL GRID SPATIAL ADDRESS: 12SUB999910(NAD 83)
 DV0419_MARKER: DB = BENCH MARK DISK
 DV0419_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DV0419_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 DV0419_STAMPING: U 272 1948
 DV0419_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 DV0419+STABILITY: SURFACE MOTION
 DV0419_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DV0419+SATELLITE: SATELLITE OBSERVATIONS - December 10, 2008
 DV0419
 DV0419  HISTORY     - Date     Condition        Report By
 DV0419  HISTORY     - 1948     MONUMENTED       CGS
 DV0419  HISTORY     - 1959     GOOD             NGS
 DV0419  HISTORY     - 20070515 GOOD             GEOCAC
 DV0419  HISTORY     - 20081210 GOOD             GEOCAC
 DV0419
 DV0419                          STATION DESCRIPTION
```

```
DV0419
DV0419'DESCRIBED BY COAST AND GEODETIC SURVEY 1948
DV0419'6.7 MI S FROM PHOENIX.
DV0419'5.8 MILES SOUTH ALONG SOUTH CENTRAL AVE. FROM THE UNION STATION AT
DV0419'PHOENIX THENCE 0.9 MILE SOUTHWEST ALONG THE MAIN ROAD THROUGH SOUTH
DV0419'MT. PARK, 400 FEET NORTHWEST OF THE SOUTH MT.  TRADING POST, 93.6 FEET
DV0419'NORTH OF THE CENTER LINE OF THE ROAD, ABOUT LEVEL WITH THE ROAD AND
DV0419'2.5 FEET EAST OF THE WHITE WOODEN WITNESS POST, SET IN THE TOP OF A
DV0419'CONCRETE POST PROJECTING 0.4 FOOT ABOVE THE GROUND.
DV0419
DV0419                          STATION RECOVERY (1959)
DV0419
DV0419'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1959
DV0419'RECOVERED IN GOOD CONDITION.
DV0419
DV0419                          STATION RECOVERY (2007)
DV0419
DV0419'RECOVERY NOTE BY GEOCACHING 2007 (ACM)
DV0419'RECOVERED IN GOOD CONDITION.
DV0419
DV0419                          STATION RECOVERY (2008)
DV0419
DV0419'RECOVERY NOTE BY GEOCACHING 2008 (BA)
DV0419'RECOVERED IN GOOD CONDITION. HANDHELD GPSR INDICATED COORDINATES
DV0419'OF N 33 21.217' W 112 04.531'.

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

The NGS Data Sheet

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

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.65
1        National Geodetic Survey,   Retrieval Date = APRIL  2, 2009
 DV0682 ***********************************************************************
 DV0682  DESIGNATION -  HILTON
 DV0682  PID         -  DV0682
 DV0682  STATE/COUNTY-  AZ/MARICOPA
 DV0682  USGS QUAD   -  PHOENIX (1982)
 DV0682
 DV0682                        *CURRENT SURVEY CONTROL
 DV0682  ___________________________________________________________________
 DV0682* NAD 83(1992)-  33 25 40.06295(N)    112 03 31.09828(W)     ADJUSTED
 DV0682* NAVD 88     -       331.260  (meters)    1086.81   (feet)  ADJUSTED
 DV0682  ___________________________________________________________________
 DV0682  LAPLACE CORR-           2.24  (seconds)                    DEFLEC99
 DV0682  GEOID HEIGHT-         -29.85  (meters)                     GEOID03
 DV0682  DYNAMIC HT  -         330.879 (meters)    1085.56   (feet)  COMP
 DV0682  MODELED GRAV-     979,477.4   (mgal)                       NAVD 88
 DV0682
 DV0682  HORZ ORDER  -  SECOND
 DV0682  VERT ORDER  -  FIRST     CLASS II
 DV0682
 DV0682.The horizontal coordinates were established by classical geodetic methods
 DV0682.and adjusted by the National Geodetic Survey in August 1993.
 DV0682
 DV0682.The orthometric height was determined by differential leveling
 DV0682.and adjusted in November 1993.
 DV0682
 DV0682.The Laplace correction was computed from DEFLEC99 derived deflections.
 DV0682
 DV0682.The geoid height was determined by GEOID03.
 DV0682
 DV0682.The dynamic height is computed by dividing the NAVD 88
 DV0682.geopotential number by the normal gravity value computed on the
 DV0682.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 DV0682.degrees latitude (g = 980.6199 gals.).
 DV0682
 DV0682.The modeled gravity was interpolated from observed gravity values.
 DV0682
 DV0682;                    North         East     Units Scale Factor Converg.
 DV0682;SPC AZ C     -   269,201.841   200,157.997   MT  0.99990215   -0 04 41.6
 DV0682;SPC AZ C     -   883,208.14    656,686.34   iFT  0.99990215   -0 04 41.6
 DV0682;UTM  12      - 3,699,214.899   401,584.196   MT  0.99971941   -0 34 59.6
 DV0682
 DV0682!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DV0682!SPC AZ C     -   0.99995268  x   0.99990215  =   0.99985484
 DV0682!UTM  12      -   0.99995268  x   0.99971941  =   0.99967211
 DV0682
 DV0682|---------------------------------------------------------------------|
 DV0682| PID    Reference Object                      Distance      Geod. Az  |
 DV0682|                                                            dddmmss.s |
 DV0682| DV0684 HILTON RM 1                           17.553 METERS 04338     |
 DV0682| DV2069 PHOENIX SKY HARBOR MUN APT TWR       APPROX. 4.1 KM 0775844.2 |
 DV0682| DU2187 RNG PHOENIX TX                       APPROX. 7.7 KM 0820758.5 |
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DV0682| DV0683 HILTON RM 2                          24.320 METERS 14829     |
DV0682| DV2085 PHOENIX TV STATION KPHO TOWER       APPROX.10.4 KM 1813310.0 |
DV0682| DV2084 PHOENIX TV STATION KOOL TOWER       APPROX.10.4 KM 1815558.8 |
DV0682| DV2082 PHOENIX TV STATION KTAR TOWER       APPROX.10.5 KM 1824536.1 |
DV0682| DV2070 PHOENIX RADIO STA KIFN TOWER        APPROX. 1.3 KM 2590146.2 |
DV0682| DV2072 PHOENIX SAFEWAY FOODS TANK          APPROX. 3.1 KM 2681340.0 |
DV0682| DV2075 PHOENIX RADIO STA KRIZ MAST         APPROX. 4.9 KM 2805517.5 |
DV0682| DV2062 PHOENIX WESTERN COMPRESS TANK       APPROX. 5.8 KM 2882200.9 |
DV0682| DV2076 PHOENIX GREAT AZ SAV BLDG TWR       APPROX. 2.8 KM 3293240.3 |
DV0682| DV2077 PHOENIX TV STA KPHO RELAY TWR       APPROX. 3.4 KM 3342746.8 |
DV0682|-----------------------------------------------------------------------|
DV0682
DV0682                          SUPERSEDED SURVEY CONTROL
DV0682
DV0682  NAD 83(1986)-  33 25 40.05722(N)    112 03 31.10358(W) AD(       ) 2
DV0682  NAD 27      -  33 25 39.89770(N)    112 03 28.56920(W) AD(       ) 2
DV0682  NGVD 29 (??/??/92)  330.602  (m)         1084.65   (f) ADJ UNCH    1 2
DV0682
DV0682.Superseded values are not recommended for survey control.
DV0682.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DV0682.See file dsdata.txt to determine how the superseded data were derived.
DV0682
DV0682_U.S. NATIONAL GRID SPATIAL ADDRESS: 12SVB0158499215(NAD 83)
DV0682_MARKER: DE = TRAVERSE STATION DISK
DV0682_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DV0682_SP_SET: CONCRETE POST
DV0682_STAMPING: HILTON 1962
DV0682_MARK LOGO: CGS
DV0682_MAGNETIC: N = NO MAGNETIC MATERIAL
DV0682_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DV0682+STABILITY: SURFACE MOTION
DV0682_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DV0682+SATELLITE: SATELLITE OBSERVATIONS - December 03, 2006
DV0682
DV0682  HISTORY     - Date     Condition        Report By
DV0682  HISTORY     - 1962     MONUMENTED       CGS
DV0682  HISTORY     - 1962     GOOD             CGS
DV0682  HISTORY     - 1979     GOOD             AZDT
DV0682  HISTORY     - 19920311 GOOD             NGS
DV0682  HISTORY     - 20061203 GOOD             GEOCAC
DV0682
DV0682                          STATION DESCRIPTION
DV0682
DV0682'DESCRIBED BY COAST AND GEODETIC SURVEY 1962 (CAA)
DV0682'STATION IS LOCATED ABOUT 1-1/2 MILES SOUTHWEST OF THE
DV0682'CENTER OF BUSINESS SECTION OF PHOENIX, AT THE JUNCTION OF E. HILTON
DV0682'ST. AND S 11 TH ST. AND ON THE GROUNDS OF ST. MARY MAGDALENE
DV0682'CATHOLIC CHURCH.
DV0682'
DV0682'TO REACH FROM THE INTERSECTION OF E. BUCKEYE ROAD AND S. 7 TH
DV0682'STREET IN PHOENIX, GO SOUTH ON S. 7 TH STREET FOR 0.5 MILE
DV0682'TO OVERPASS, TURN LEFT JUST AFTER PASSING UNDER OVERPASS
DV0682'AND GO EAST ON ONE-WAY STREET FOR 0.35 MILE TO ST. MARY
DV0682'MAGDALENE CATHOLIC CHURCH ON RIGHT AND STATION IN SOUTHWEST
DV0682'CORNER OF PROPERTY.
DV0682'
DV0682'STATION MARK, A STANDARD TRAVERSE DISK STAMPED HILTON 1962,
DV0682'IS SET IN TOP OF A CONCRETE CYLINDER WHICH PROJECTS ABOUT
DV0682'2 INCHES ABOVE THE GROUND.  THE MARK IS 46.6 FEET SOUTHWEST
DV0682'OF THE SOUTHWEST CORNER OF CHURCH, 52.6 FEET NORTHWEST
```

```
DV0682'OF STREET SIGN POST, 30 FEET NORTHWEST OF JUNCTION OF S. 11 TH
DV0682'STREET AND E. HILTON STREET AND 6.5 FEET EAST OF THE WITNESS
DV0682'POST AND FENCE.
DV0682'
DV0682'REFERENCE MARK 1, A STANDARD REFERENCE DISK STAMPED HILTON
DV0682'NO 1 1962, IS SET IN A DRILL HOLE IN THE NORTHEAST CORNER OF A
DV0682'CONCRETE SLAB, 38 FEET NORTH OF A UTILITY POLE NO. 14N-7
DV0682'AND 20 FEET EAST OF THE SOUTHWEST CORNER OF CHURCH.
DV0682'
DV0682'REFERENCE MARK 2, A STANDARD REFERENCE DISK STAMPED HILTON
DV0682'NO 2 1962, IS SET IN THE TOP OF A CONCRETE CYLINDER WHICH
DV0682'PROJECTS ABOUT 4 INCHES ABOVE THE GROUND.  THE MARK IS 84
DV0682'FEET SOUTHEAST OF THE WITNESS POST, 29.5 FEET SOUTH-SOUTHEAST
DV0682'OF STREET SIGN POST AND 4.5 FEET NORTH OF A UTILITY POLE.
DV0682'
DV0682'NO AZIMUTH MARK WAS SET AT THIS STATION.
DV0682'
DV0682'HEIGHT OF LIGHT ABOVE STATION MARK 22 METERS.
DV0682
DV0682                          STATION RECOVERY (1962)
DV0682
DV0682'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1962
DV0682'2.3 MI SE FROM PHOENIX.
DV0682'0.3 MILE EAST ALONG THE SOUTHERN PACIFIC COMPANY RAILROAD FROM THE
DV0682'UNION STATION AT PHOENIX, THENCE 1.1 MILES SOUTH ALONG SOUTH CENTRAL
DV0682'AVENUE, THENCE 0.9 MILE WEST ALONG THE SERVICE ROAD ALONG THE SOUTH
DV0682'SIDE OF INTERSTATE HIGHWAY 10, AT THE MARY MAGDALENE CATHOLIC CHURCH,
DV0682'AT THE CORNER OF EAST HILTON AVENUE AND SOUTH 11TH STREET, 46 FEET
DV0682'SOUTHWEST OF THE SOUTHWEST CORNER OF THE CHURCH, 37 FEET NORTHWEST OF
DV0682'THE CENTER OF THE STREET, 42.5 FEET WEST OF POWER POLE NO. 14 N 7, 6.4
DV0682'FEET EAST OF A FENCE, 6.4 FEET EAST OF A METAL WITNESS POST, ABOUT 1
DV0682'FOOT ABOVE THE LEVEL OF THE STREET, AND SET IN TOP OF A CONCRETE POST
DV0682'PROJECTING 1 INCH.
DV0682
DV0682                          STATION RECOVERY (1979)
DV0682
DV0682'RECOVERY NOTE BY ARIZONA DEPARTMENT OF TRANSPORTATION 1979
DV0682'RECOVERED IN GOOD CONDITION.
DV0682
DV0682                          STATION RECOVERY (1992)
DV0682
DV0682'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
DV0682'IN PHOENIX, AT THE INTERSECTION OF SOUTH 11TH STREET AND EAST HILTON
DV0682'AVENUE, 24.4 M (80.1 FT) NORTHWEST OF REFERENCE MARK 2, 6.3 M (20.7
DV0682'FT) NORTH OF THE EXTENDED CENTER OF EAST HILTON AVENUE, 5.3 M (17.4
DV0682'FT) WEST OF THE EXTENDED CENTER OF THE STREET, 1.9 M (6.2 FT) EAST OF
DV0682'A CHAIN-LINK FENCE, 0.6 M (2.0 FT) ABOVE THE LEVEL OF THE AVENUE, 0.3
DV0682'M (1.0 FT) SOUTHWEST OF A CHAIN-LINK FENCE CORNER, 0.2 M (0.7 FT)
DV0682'SOUTH OF A WITNESS POST, AND THE MONUMENT PROJECTS 0.05 M (0.16 FT)
DV0682'ABOVE THE GROUND SURFACE.
DV0682
DV0682                          STATION RECOVERY (2006)
DV0682
DV0682'RECOVERY NOTE BY GEOCACHING 2006 (ACM)
DV0682'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 =  ,PROGRAM = datasheet, VERSION = 7.65
1        National Geodetic Survey,   Retrieval Date = APRIL  2, 2009
 DV0683 ***********************************************************************
 DV0683  DESIGNATION -  HILTON RM 2
 DV0683  PID         -  DV0683
 DV0683  STATE/COUNTY-  AZ/MARICOPA
 DV0683  USGS QUAD   -  PHOENIX (1982)
 DV0683
 DV0683                        *CURRENT SURVEY CONTROL
 DV0683  ___________________________________________________________________
 DV0683* NAD 83(1986)-  33 25 39.     (N)    112 03 31.     (W)     SCALED
 DV0683* NAVD 88     -       331.050  (meters)    1086.12   (feet)  ADJUSTED
 DV0683  ___________________________________________________________________
 DV0683  GEOID HEIGHT-         -29.85  (meters)                     GEOID03
 DV0683  DYNAMIC HT  -         330.669 (meters)    1084.87   (feet)  COMP
 DV0683  MODELED GRAV-     979,477.4   (mgal)                       NAVD 88
 DV0683
 DV0683  VERT ORDER  -  FIRST     CLASS II
 DV0683
 DV0683.The horizontal coordinates were scaled from a topographic map and have
 DV0683.an estimated accuracy of +/- 6 seconds.
 DV0683
 DV0683.The orthometric height was determined by differential leveling
 DV0683.and adjusted in November 1993.
 DV0683
 DV0683.The geoid height was determined by GEOID03.
 DV0683
 DV0683.The dynamic height is computed by dividing the NAVD 88
 DV0683.geopotential number by the normal gravity value computed on the
 DV0683.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 DV0683.degrees latitude (g = 980.6199 gals.).
 DV0683
 DV0683.The modeled gravity was interpolated from observed gravity values.
 DV0683
 DV0683;                    North         East    Units  Estimated Accuracy
 DV0683;SPC AZ C     -   269,170.      200,160.      MT  (+/- 180 meters Scaled)
 DV0683
 DV0683                          SUPERSEDED SURVEY CONTROL
 DV0683
 DV0683  NGVD 29 (??/??/92)  330.390  (m)         1083.95   (f) ADJ UNCH    1 2
 DV0683
 DV0683.Superseded values are not recommended for survey control.
 DV0683.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DV0683.See file dsdata.txt to determine how the superseded data were derived.
 DV0683
 DV0683_U.S. NATIONAL GRID SPATIAL ADDRESS: 12SVB015991(NAD 83)
 DV0683_MARKER: DR = REFERENCE MARK DISK
 DV0683_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DV0683_SP_SET: CONCRETE POST
 DV0683_STAMPING: HILTON NO 2 1962
 DV0683_MARK LOGO: CGS
 DV0683_MAGNETIC: N = NO MAGNETIC MATERIAL
 DV0683_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
```

```
DV0683+STABILITY: SURFACE MOTION
DV0683_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DV0683+SATELLITE: SATELLITE OBSERVATIONS - December 03, 2006
DV0683
DV0683  HISTORY     - Date     Condition        Report By
DV0683  HISTORY     - 1962     MONUMENTED       CGS
DV0683  HISTORY     - 1979     GOOD             AZDT
DV0683  HISTORY     - 19920311 GOOD             NGS
DV0683  HISTORY     - 20061203 GOOD             GEOCAC
DV0683
DV0683                          STATION DESCRIPTION
DV0683
DV0683'DESCRIBED BY COAST AND GEODETIC SURVEY 1962
DV0683'2.3 MI SE FROM PHOENIX.
DV0683'0.3 MILE EAST ALONG THE SOUTHERN PACIFIC COMPANY RAILROAD FROM THE
DV0683'UNION STATION AT PHOENIX, THENCE 1.1 MILES SOUTH ALONG SOUTH CENTRAL
DV0683'AVENUE, THENCE 0.9 MILE EAST ALONG THE SERVICE ROAD ALONG THE SOUTH
DV0683'SIDE OF INTERSTATE HIGHWAY 10, AT THE MARY MAGDALENE CATHOLIC CHURCH,
DV0683'AT THE CORNER OF EAST HILTON AVENUE AND SOUTH 11TH STREET, 46 FEET
DV0683'EAST OF THE CENTER OF SOUTH 11TH STREET, 28 FEET SOUTH OF THE CENTER
DV0683'OF HILTON AVENUE, 4 FEET NORTH OF A POWER POLE, 1 FOOT WEST OF A
DV0683'FENCE, 79.8 FEET SOUTHEAST OF TRAVERSE STATION HILTON, 84.2 FEET
DV0683'SOUTHEAST OF A METAL WITNESS POST, ABOUT 1 FOOT ABOVE THE LEVEL OF THE
DV0683'STREET, AND SET IN TOP OF A CONCRETE POST PROJECTING 4 INCHES.
DV0683
DV0683                          STATION RECOVERY (1979)
DV0683
DV0683'RECOVERY NOTE BY ARIZONA DEPARTMENT OF TRANSPORTATION 1979
DV0683'RECOVERED IN GOOD CONDITION.
DV0683
DV0683                          STATION RECOVERY (1992)
DV0683
DV0683'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
DV0683'IN PHOENIX, AT THE INTERSECTION OF SOUTH 11TH STREET AND EAST HILTON
DV0683'AVENUE, 24.4 M (80.1 FT) SOUTHEAST OF TRAVERSE STATION HILTON, 14.4 M
DV0683'(47.2 FT) SOUTH OF THE CENTERLINE OF THE AVENUE, 7.2 M (23.6 FT)
DV0683'SOUTH OF A CHAIN-LINK FENCE CORNER, 7.0 M (23.0 FT) EAST OF AND LEVEL
DV0683'WITH THE CENTER OF THE STREET, 1.1 M (3.6 FT) NORTH OF A UTILITY POLE
DV0683'WITH A GUY CABLE, 0.7 M (2.3 FT) WEST OF A FENCE, AND THE MONUMENT IS
DV0683'FLUSH WITH THE GROUND SURFACE.
DV0683
DV0683                          STATION RECOVERY (2006)
DV0683
DV0683'RECOVERY NOTE BY GEOCACHING 2006 (ACM)
DV0683'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:00
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FIELD NOTES AND CONTROL LOCATIONS

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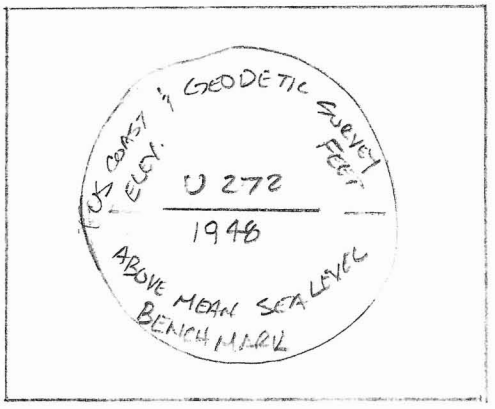
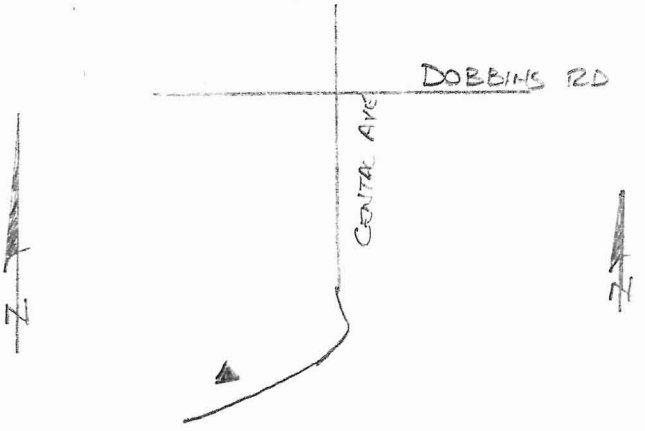
JOB 45-104209
SHEET NO. 1 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC #	STORE #	PHOTOS	OBSERVATION TIME / DATE
#U 272	#200	1-3	8:30 AM 3/17/09 - RTK OBS.
			11:10 AM 3/18/09 - RTK OBS





DESCRIPTION 6"x6" CONC. POST
SET 3" ABOVE GRADE WITH
3" BRASS CAP SET IN CONC. POST
0.7' OF A MILE TO THE STATION ON
THE RIGHT FROM INTX OF CENTRAL AVE AND DOBBINS RD.
± 95' NORTH OF ℄ CENTRAL AVE

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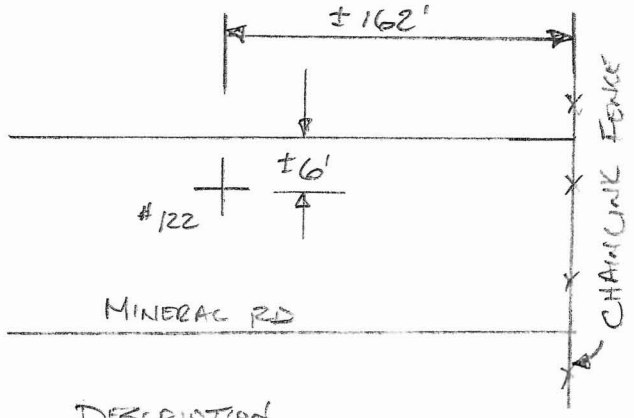
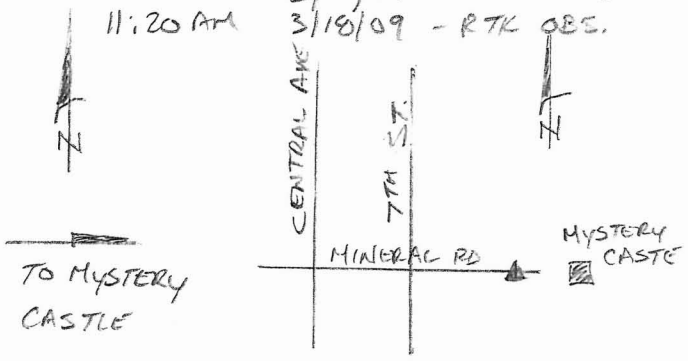
JOB 45-104209
SHEET NO. 2 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC #	STORE #	PHOTOS
#22	#122	4, 5

OBSERVATION TIME / DATE
9:00 AM 3/17/09 - RTK OBS.
11:20 AM 3/18/09 - RTK OBS.





DESCRIPTION
PK NAIL SET IN PAVEMENT IN & PAINTED AERIAL TARGET ±6' FROM NORTH EDGE OF PAVEMENT ±162' WEST OF FENCE.
FROM THE INTX OF 7TH ST AND MINERAL RD GO EAST ±500 TO STATION ON THE LEFT.

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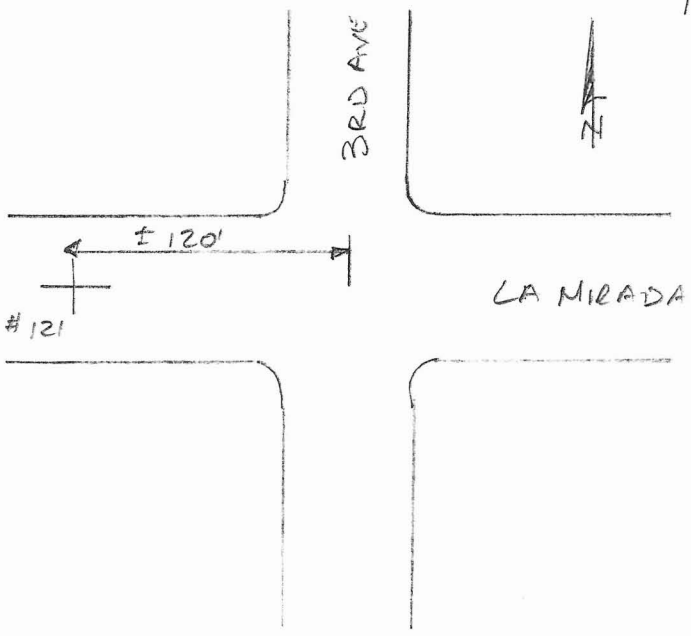
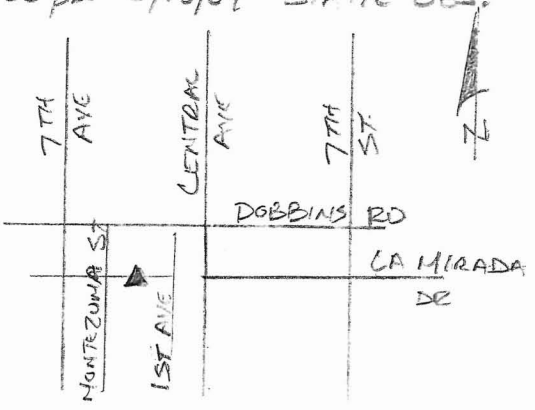
JOB 45-104209
SHEET NO. 3 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY DATE
SCALE N.T.S.

CALC# #21 STORE# #121 PHOTOS 6-7

OBSERVATION TIME / DATE
9:25-9:40 AM 3/17/09 - STATIC OBS.
12:40-12:55 PM 3/18/09 - STATIC OBS.





PK NAIL SET IN ℄ OF LA MIRADA DR.
IN CENTER OF PAINTED AERIAL TARGET
FROM INTX OF LA MIRADA DR AND 3RD AVE
GO WEST ± 120' TO STATION IN ℄ OF
LA MIRADA DR

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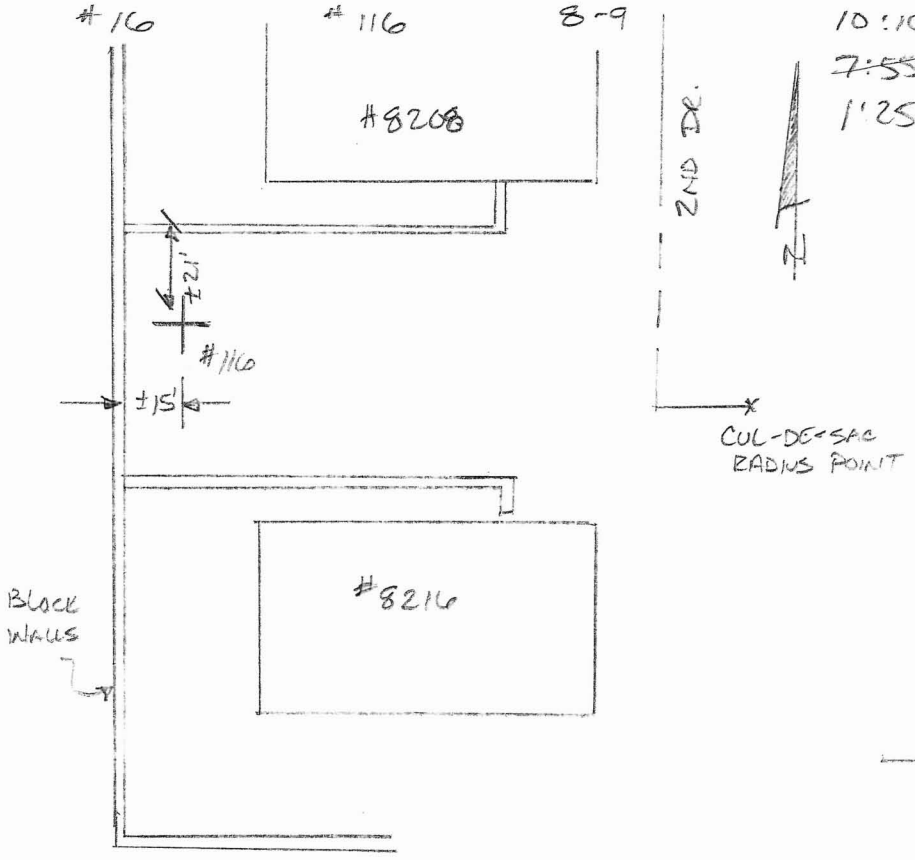
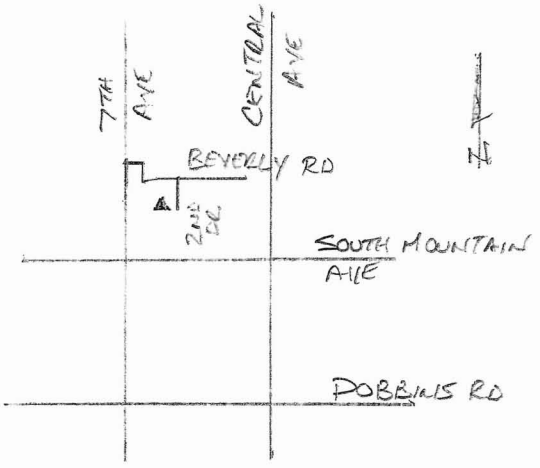
JOB 45-104209
SHEET NO. 4 OF 15
CALCULATED BY DWG, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC # #16 | STORE # #116 | PHOTOS 8-9

OBSERVATION TIME / DATE
10:10 AM 3/17/09 - RTK OBS.
~~7:55 AM~~ FILE CORRUPT ~~3/19/09~~ STATIC OBS
1:25 PM 3/23/09 - STATIC OBS





DESCRIPTION

CAP AND 1/2" REBAR SET FLUSH WITH GRADE IN ℄ OF PAPER AERIAL TARGET.
FROM THE INTX OF BEVERLY RD AND 2ND DR. GO SOUTH ON 2ND DR. ± 800' TO THE STATION ON THE RIGHT. LOCATED IN REAR OF EMPTY LOT BETWEEN HOUSE #'S 8208 AND 8216

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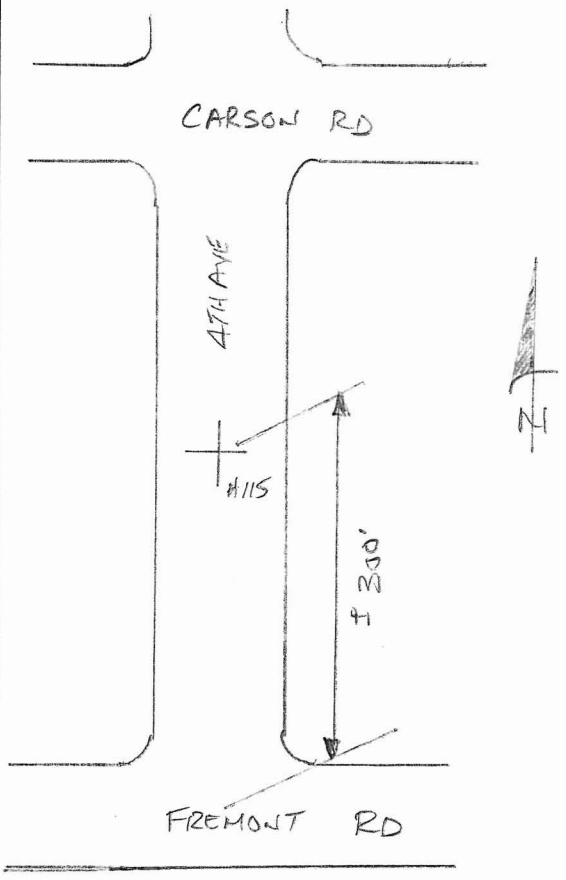
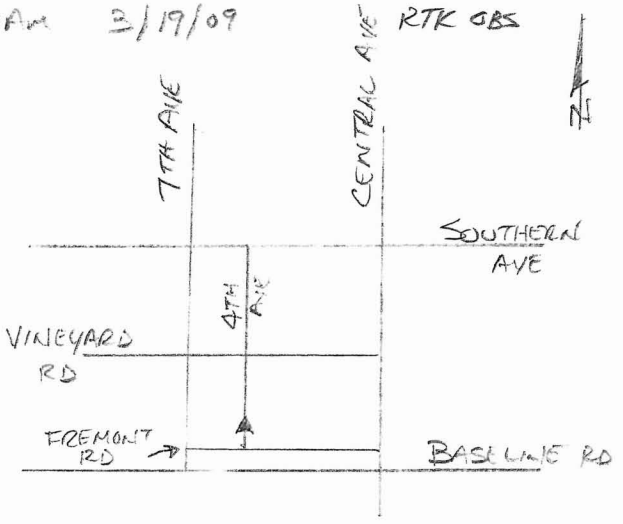
JOB 45-104209
SHEET NO. 5 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC #	STORE #	PHOTOS
#15	#115	10-11

OBSERVATION TIME / DATE
10:30 AM 3/17/09 RTK OBS.
8:10 AM 3/19/09 RTK OBS





DESCRIPTION

PK NAIL SET IN PAVEMENT IN ℄ OF PAINTED AERIAL TARGET, LOCATED IN ℄ OF 4TH AVE. FROM INTX OF FREMONT RD AND 4TH AVE GO NORTH ± 300' TO THE STATION IN ℄ OF 4TH AVE.

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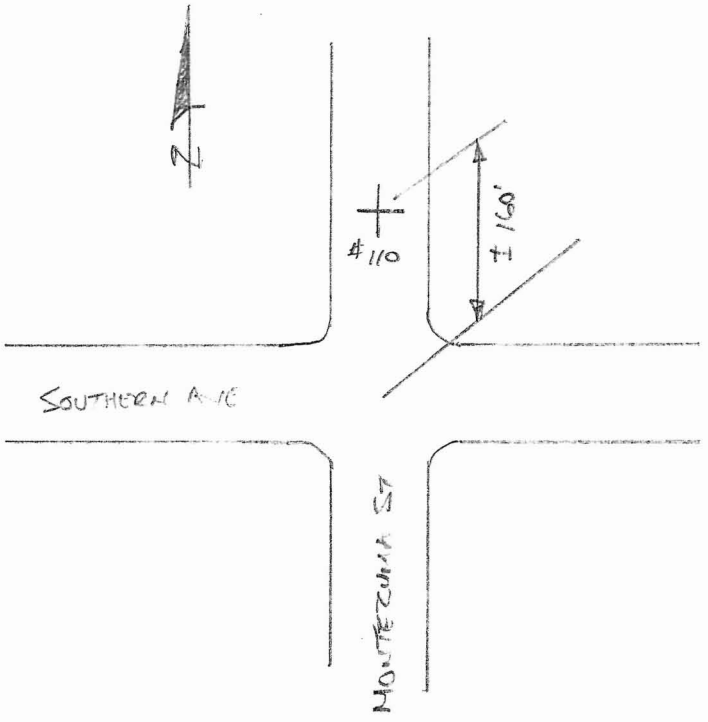
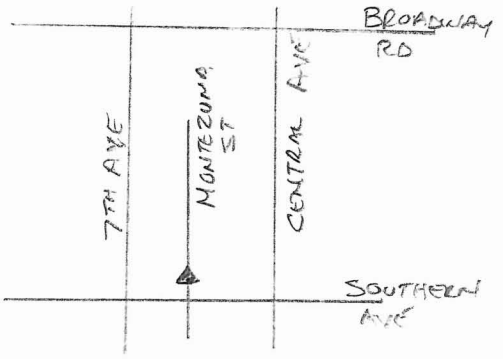
JOB 45-104209
SHEET NO. 6 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC #	STORE #	PHOTOS
#10	#110	12-13

OBSERVATION TIME / DATE

11:00 AM	3/17/09	RTK OBS
8:25 AM	3/19/09	RTK OBS





DESCRIPTION

PK NAIL SET IN PAVEMENT IN ℄ OF PAINTED AERIAL TARGET LOCATED IN ℄ OF MONTEZUMA ST. FROM THE INTX OF SOUTHERN AVE AND MONTEZUMA ST GO NORTH ±160' TO THE STATION IN ℄ OF MONTEZUMA ST

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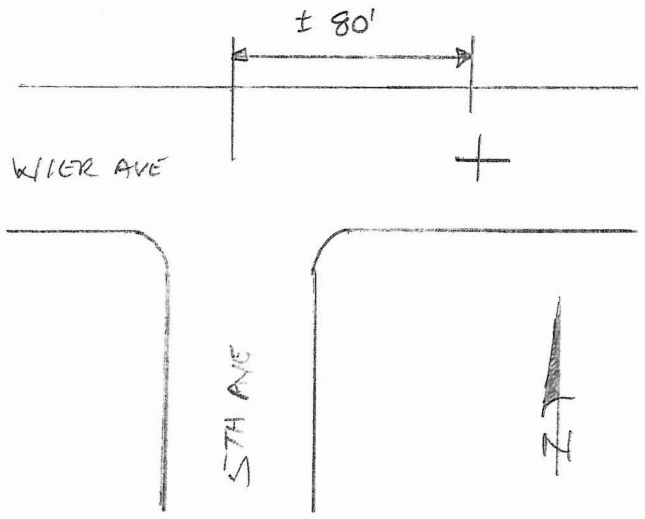
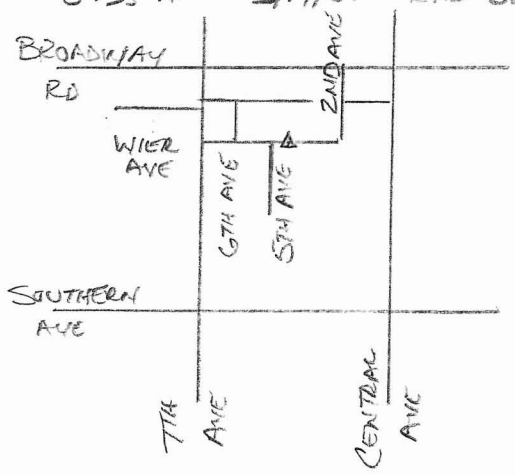
JOB 45-104209
SHEET NO. 7 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC #	STORE #	PHOTOS	OBSERVATION TIME / DATE
#9	#109	14-15	11:20 AM 3/17/09 - RTK OBS.
			8:35 AM 3/19/09 - RTK OBS.





DESCRIPTION

PK NAIL SET IN PAVEMENT IN ℄ OF PAINTED AERIAL TARGET. LOCATED IN ℄ OF WIER AVE FROM INTX OF WIER AVE AND 5TH AVE GO EAST ± 80' TO THE STATION IN ℄ OF WIER AVE

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JOB 45-104209
SHEET NO. 8 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC #	STORE #	PHOTOS	OBSERVATION TIME / DATE	
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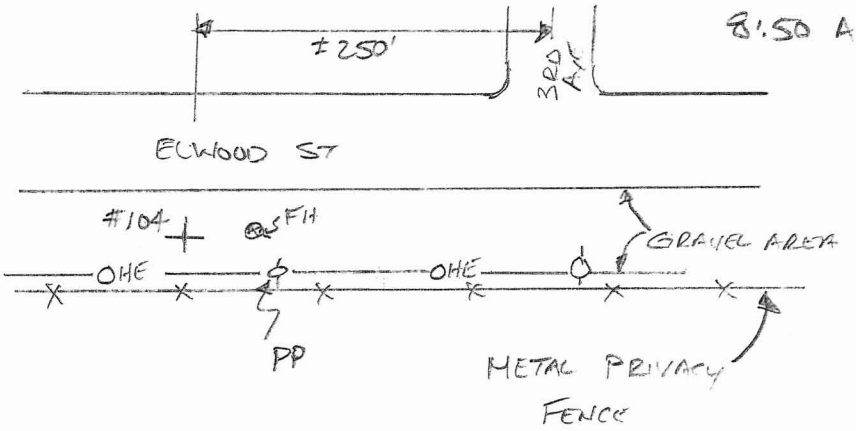
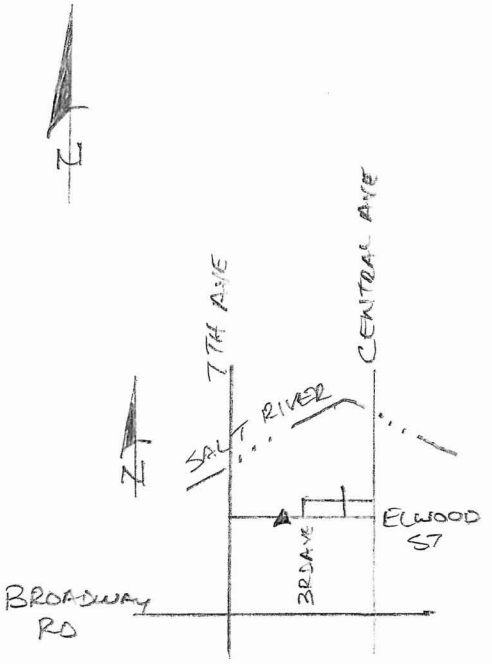
			8:50 AM	3/19/09 - RTK OBS





DESCRIPTION

CAP AND 1/2" REBAR SET FLUSH IN ℄ OF PAPER AERIAL TARGET LOCATED ±20' SOUTH OF EDGE OF PAVEMENT OF ELWOOD ST AND ±13' WEST OF FIRE HYDRANT FROM INTX OF 3RD AVE AND ELWOOD ST GO WEST ±250 TO THE STATION ON THE LEFT.

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION
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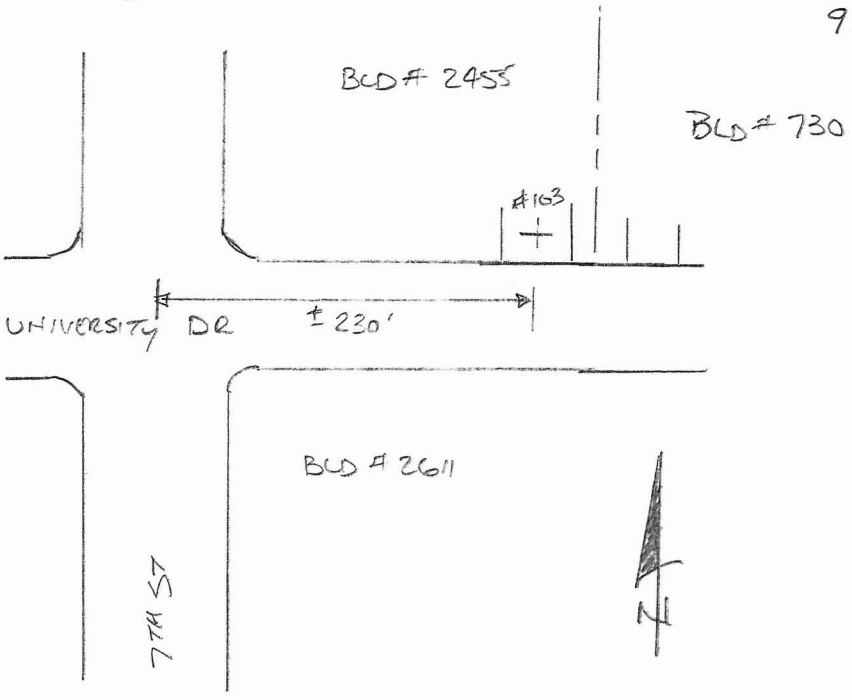
JOB 45-104209
SHEET NO. 9 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

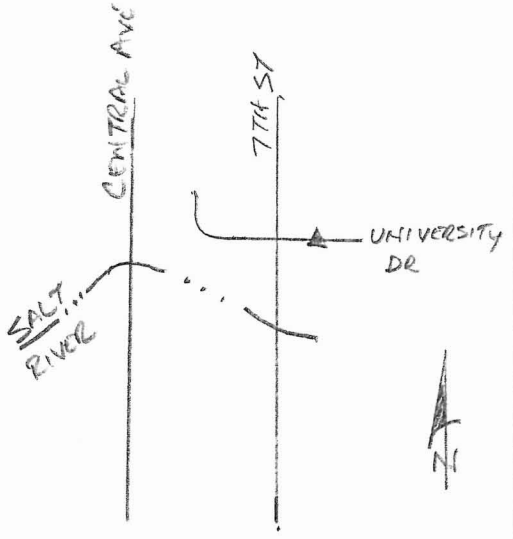
CALC # #3

STORE # #103

PHOTOS 18-19

OBSERVATION TIME / DATE
12:10 PM 3/17/09 - RTK OBS
9:05 AM 3/19/09 - RTK OBS





DESCRIPTION

PK NAIL SET IN PAVEMENT IN ℄ OF PAINTED AERIAL TARGET LOCATED IN DRIVEWAY FOR BLD # 2455, ±5' NORTH OF THE BACK OF DRIVEWAY APRON AND ± 20' EAST OF THE WEST BACK OF CURB ALONG DRIVEWAY ENTRANCE
FROM THE INTX OF 7TH ST AND UNIVERSITY DR GO EAST ± 230' TO THE STATION ON THE LEFT.

RBF CONSULTING

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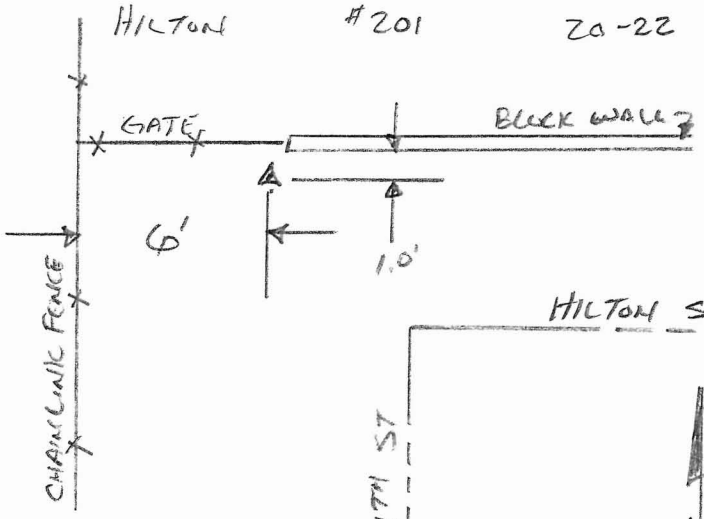
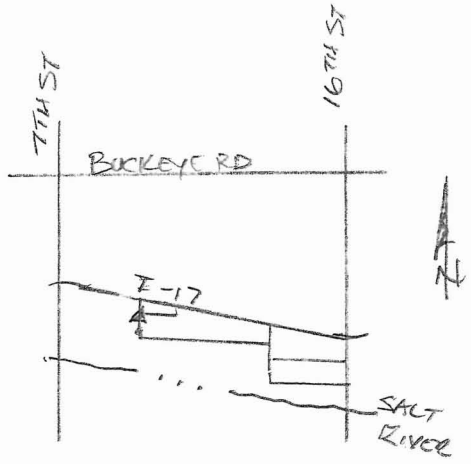
JOB 45-104209
SHEET NO. 10 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC # HILTON | STORE # #201 | PHOTOS 20-22

OBSERVATION TIME / DATE
12:30 PM 3/17/09 - RTK OBS
9:35 AM 3/19/09 - RTK OBS





DESCRIPTION

3" BRASS CAP SET IN 1.0' ROUND CONC. POST SET 0.2' ABOVE GRADE FROM THE INTX OF HILTON ST AND 11TH ST GO ± 30' NORTHWEST TO THE STATION.

RBF CONSULTING

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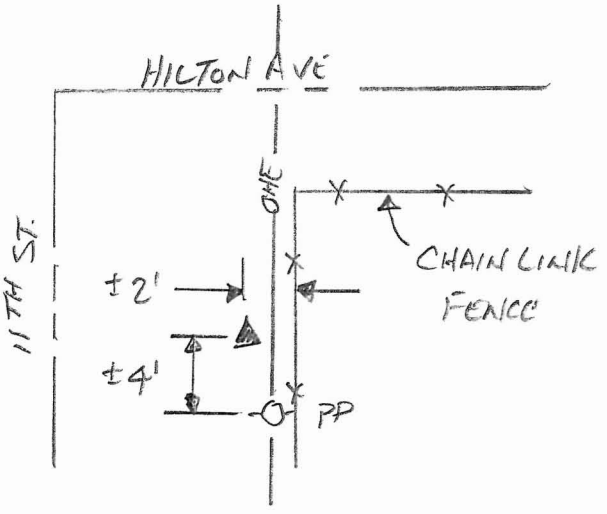
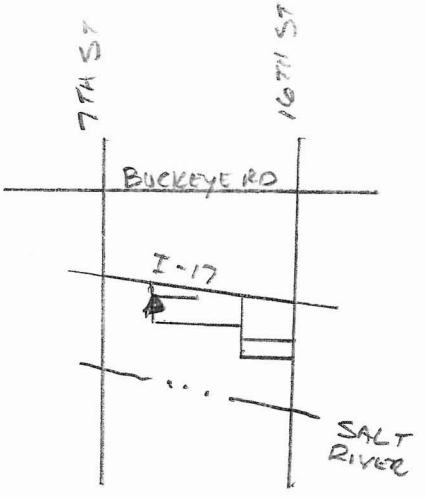
JOB 45-104209
SHEET NO. 11 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S

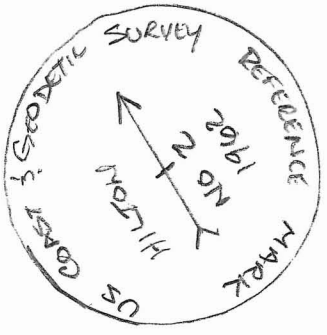
CALC #	STORE #	PHOTOS	OBSERVATION TIME/DATE
HILTON RM2	#202	23-25	12:45 pm 3/17/09 - RTK OBS.
			9:55 AM 3/19/09 - RTK OBS.





DESCRIPTION

3" BRASS CAP SET IN 1.0'
ROUND CONC. POST SET
0.20' ABOVE GRADE
FROM THE INTX OF HILTON AVE AND 11TH ST
GO SOUTH EAST ± 50' TO THE STATION



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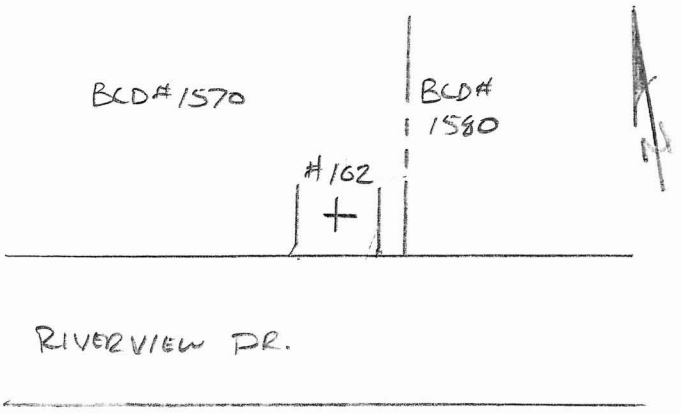
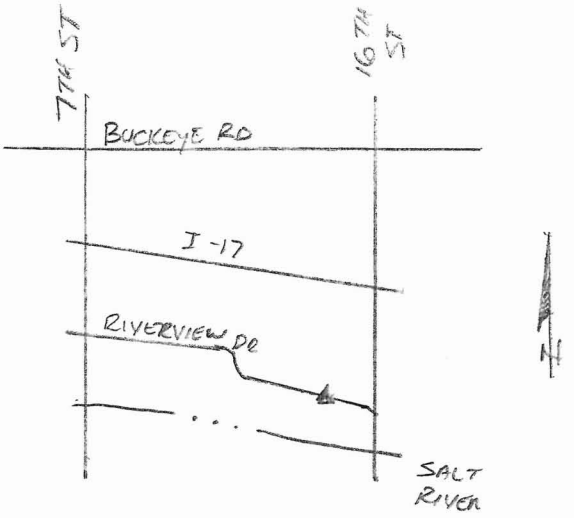
JOB 45-104209
SHEET NO. 12 OF 15
CALCULATED BY DWW, MGB DATE 3/17/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC #	STORE #	PHOTOS
#2	#102	26-27

OBSERVATION TIME / DATE
1:15 PM 3/17/09 - RTK OBS
10:45 PM 3/18/09 - RTK OBS





DESCRIPTION

PK NAIL SET IN PAVEMENT IN ℄ OF PAINTED AERIAL TARGET. LOCATED IN DRIVEWAY FOR BCD #1570, ± 5' NORTH OF BACK OF CONC. APRON. AND ± 14' EAST OF THE WEST BACK OF CURB ALONG DRIVEWAY ENTRANCE.
FROM THE INTY OF 16TH ST AND RIVERVIEW RD GO WEST ON RIVERVIEW RD ± 700' TO THE STATION ON THE RIGHT.

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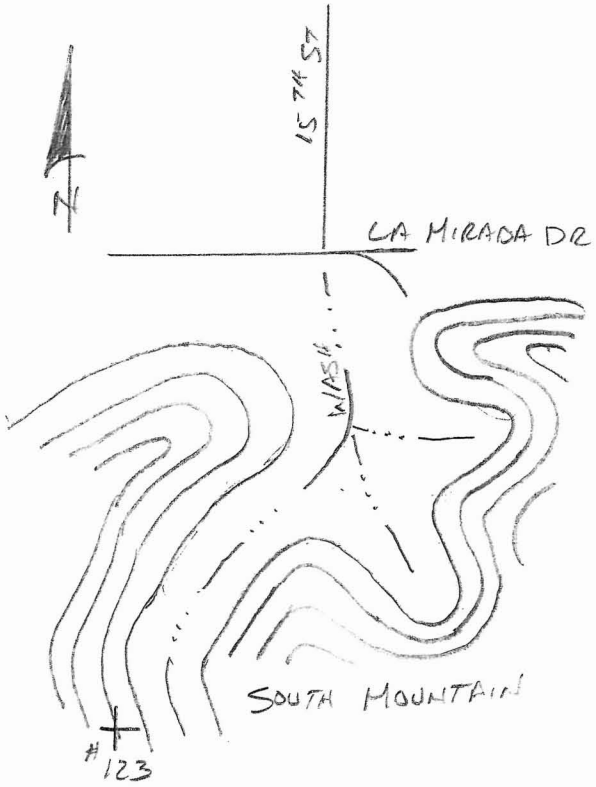
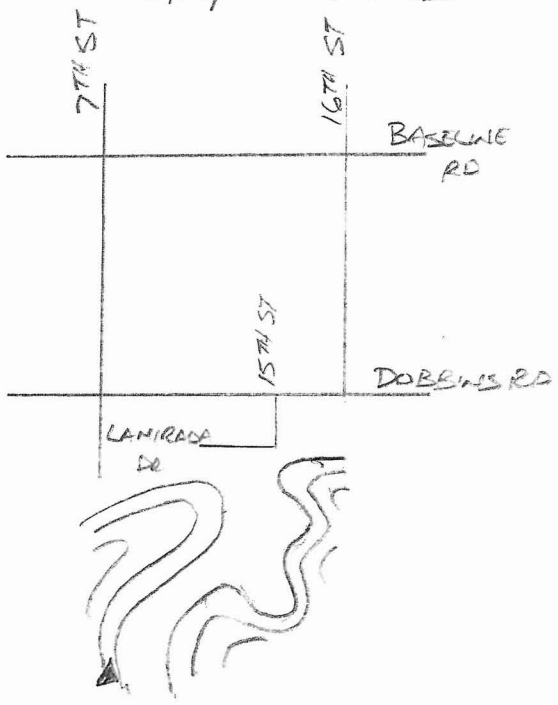
JOB 45-104209
SHEET NO. 13 OF 15
CALCULATED BY DWW, MGB DATE 3/18/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC #	STORE #	PHOTOS	OBSERVATION TIME	/ DATE
#23	#123	3-4	9:05 AM	3/18/09 - RTK OBS
			11:45 AM	3/18/09 - RTK OBS





DESCRIPTION

GOD SPIKE WITH ORANGE FLAGGING SET IN ℄ OF PAPER AERIAL TARGET FROM ℄ INTX OF 15TH ST AND LA MIRADA DR FOLLOW WASH TO SOUTH WEST ± 1900' TO THE STATION ON THE RIGHT.

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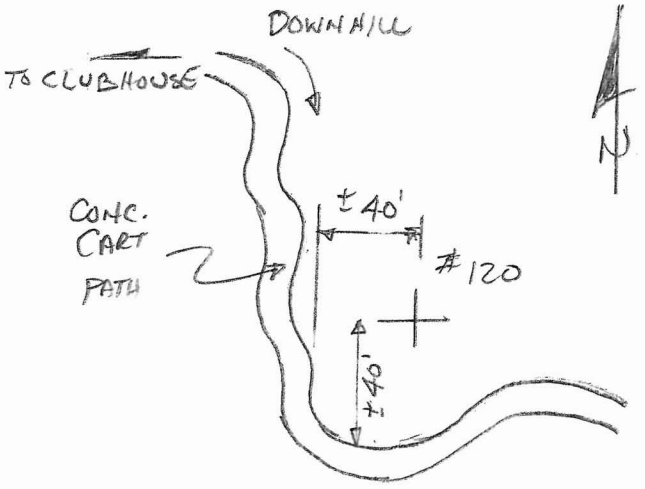
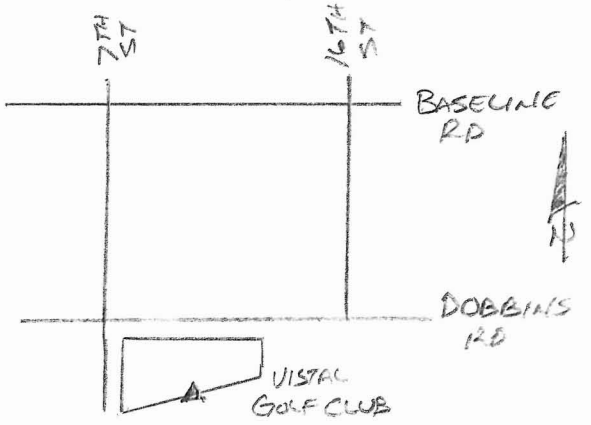
JOB 45-104209
SHEET NO. 14 OF 15
CALCULATED BY DWW, MGB DATE 3/18/09
CHECKED BY DATE
SCALE N.T.S

CALC #	STORE #	PHOTOS
#20	#120	5-6

OBSERVATION TIME / DATE
10:00 AM 3/18/09 - RTK OBS
12:20 PM 3/18/09 - RTK OBS





DESCRIPTION

SET CAP AND ½" REBAR FLUSH WITH GRADE IN ℄ OF PAPER AERIAL TARGET.
FROM CLUBHOUSE GO EAST ALONG CART PATH ± 2300' TO THE STATION ON THE LEFT.

RBF CONSULTING

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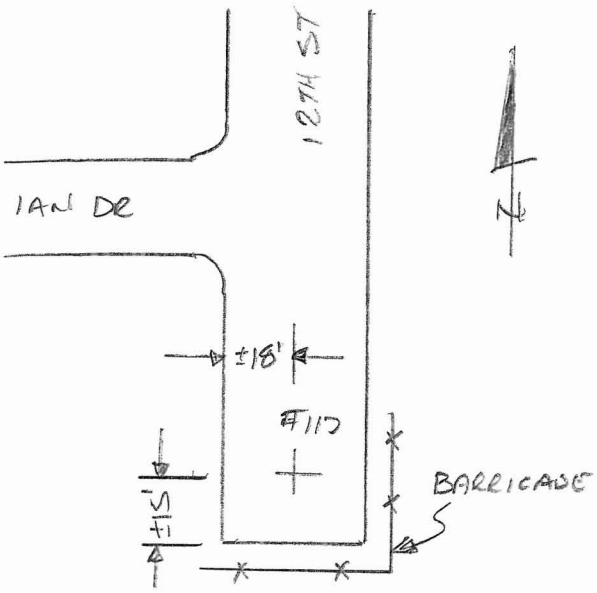
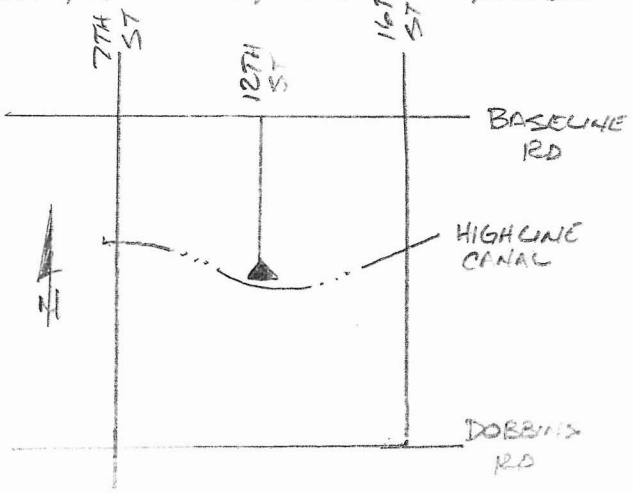
JOB 45-104209
SHEET NO. 15 OF 15
CALCULATED BY DWW, MGB DATE 3/18/09
CHECKED BY _____ DATE _____
SCALE N.T.S.

CALC # #17 | STORE # #117 | PHOTOS 7-8

OBSERVATION TIME / DATE
10:30 AM 3/18/09 - RTK OBS
1:10 PM 3/18/09 - RTK OBS





DESCRIPTION

PK NAIL SET IN PAVEMENT IN ℄ OF PAINTED AERIAL TARGET, LOCATED ± 15' NORTH OF THE END OF PAVEMENT ON 12TH ST AND ± 18' EAST OF THE WEST SIDE BACK OF CURB.
FROM THE INTX OF IAN DR GO SOUTH ± 200' TO THE STATION IN ℄ OF 12TH ST

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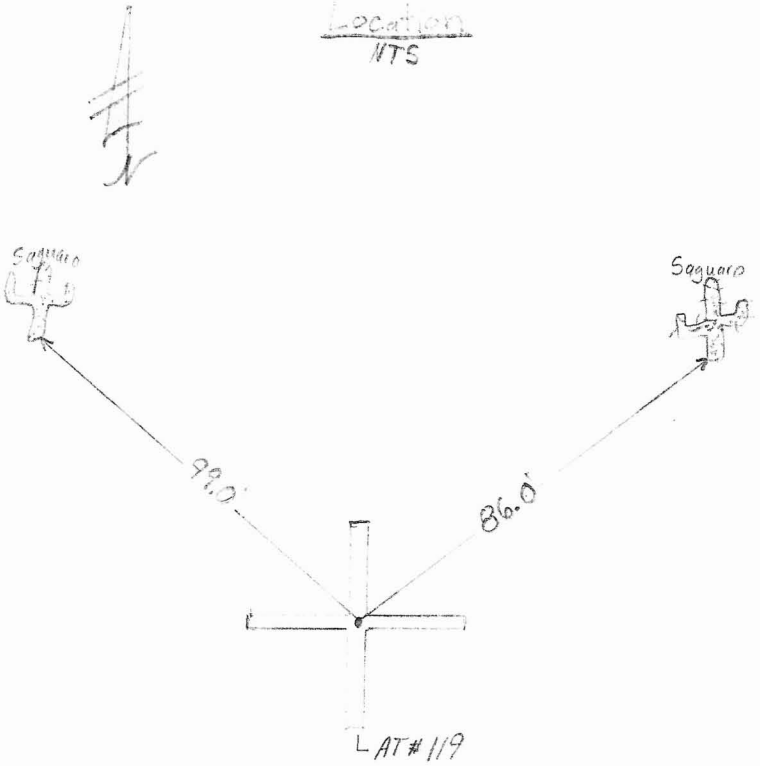
Base: 4700 Ser# ___
HI = [illegible]
Rover: R3 Ser# [illegible]
HR = [illegible]

JOB Hohokam 45104209
SHEET NO. ___ OF ___
CALCULATED BY Will Wing DATE 3-17-09
CHECKED BY James Slovik DATE 3-17-09
SCALE ___

Pt #	Calc #	Photo #
119	19	1,2

Description
Set ½" rebar with 1" red plastic cap "RBF Control" flush with natural ground. Laid out panel paper on all 4 quadrants of rebar and nailed it down with metal shingers. Target lies in the South Mountain Preserve almost at the top and 300' above the valley floor. The two Saguaro Cactus were the only natural tree in the area.

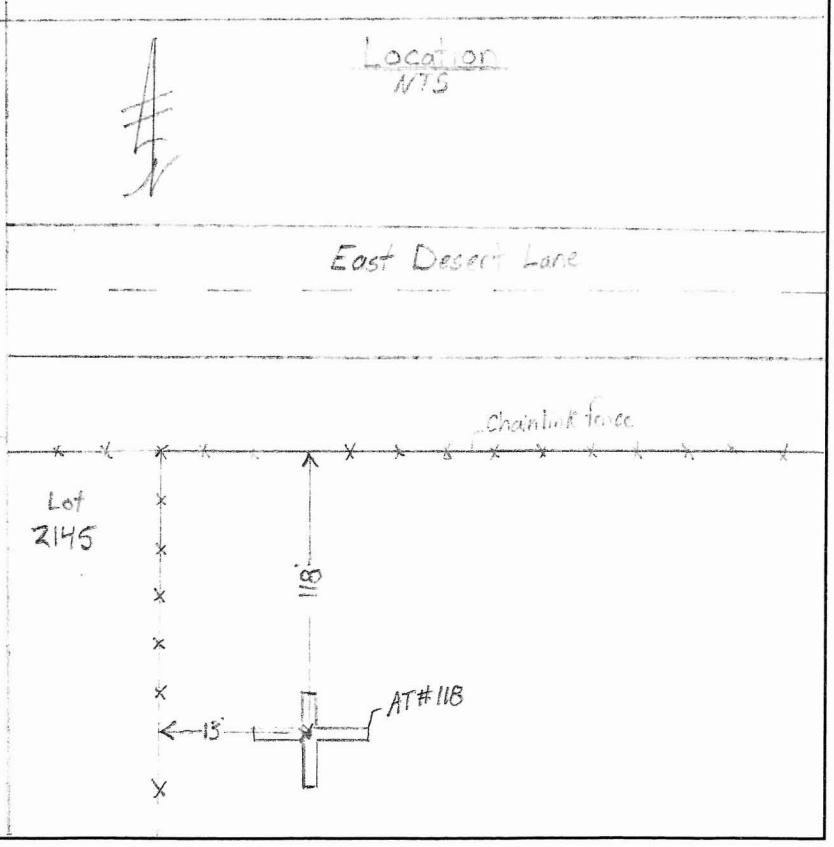
Location
NTS



Pt #	Calc #	Photo #
118	18	3,4

Description
Set ½" rebar with 1" red plastic cap "RBF Control" flush with natural ground. Laid out panel paper on all 4 quadrants of rebar and nailed it down with metal shingers. Target lies on an empty lot East of 2145 East Desert Lane, Phoenix Az

Location
NTS



RBF CONSULTING

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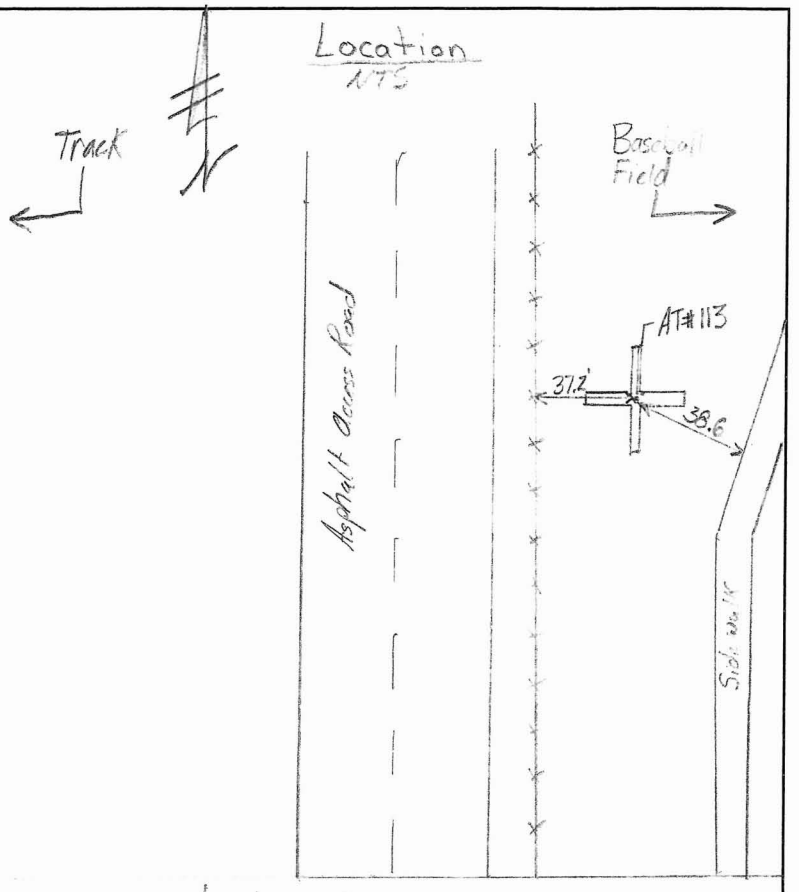
Base: 4700 Sec. #
HZ = 4.921 ft
Power: RB Sec. #
HZ = 6.562 ft

JOB Hohokam 45104209
SHEET NO. _____ OF _____
CALCULATED BY Will Wing DATE 3-17-09
CHECKED BY James Slavik DATE 3-17-09
SCALE _____

Pt#	Calc#	Photo#
113	13	5, 6

Description
Set ½" rebar with 1" red plastic cap "RBF Control" flush with natural ground. Laid out panel paper on all 4 quadrants of rebar and nailed it down with metal shiners. Target lies on the South Mountain Community College Campus in between the track and baseball field.

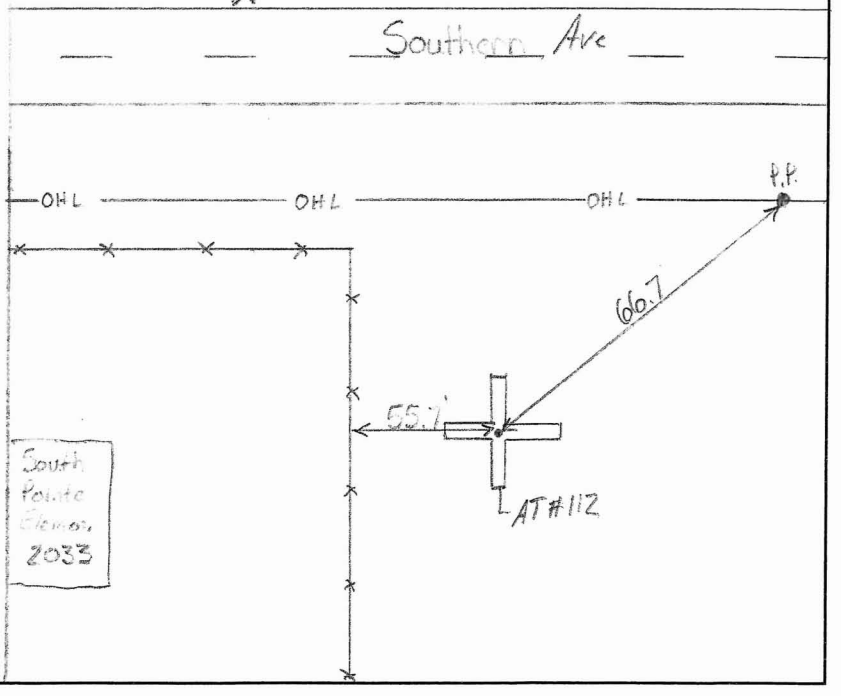
Location
NTS



Pt#	Calc#	Photo#
112	12	7, 8

Description
Set ½" rebar with 1" red plastic cap "RBF Control" flush with ground. Laid out panel paper on all 4 quadrants of rebar and nailed it down with metal shiners. Target lies in an open/empty lot just East of South Pointe Elementary School 2033 Southern Ave, Phoenix AZ.

Location
NTS



RBF CONSULTING

Base: 4700 Ser#
HI = 4.921
Rover: R8 Ser#
HR = 6.562

PLANNING ■ DESIGN ■ CONSTRUCTION
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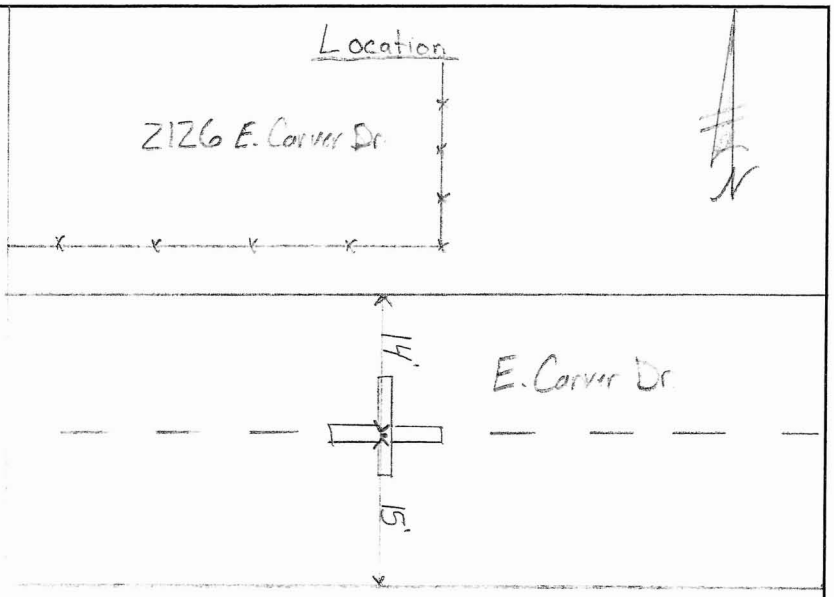
JOB Hohokam 45104209
SHEET NO. _____ OF _____
CALCULATED BY Will Wing DATE 3-17-09
CHECKED BY James Slovik DATE 3-17-09
SCALE _____

Point #	Calc #	Photo #
107	7	9,10

Description
Set PK nail flush in asphalt at centerline of Carver Dr. Painted the target white with spray paint on all 4 quadrants of PK nail. Target lies just South of 2126 E. Carver Drive, Phoenix, AZ

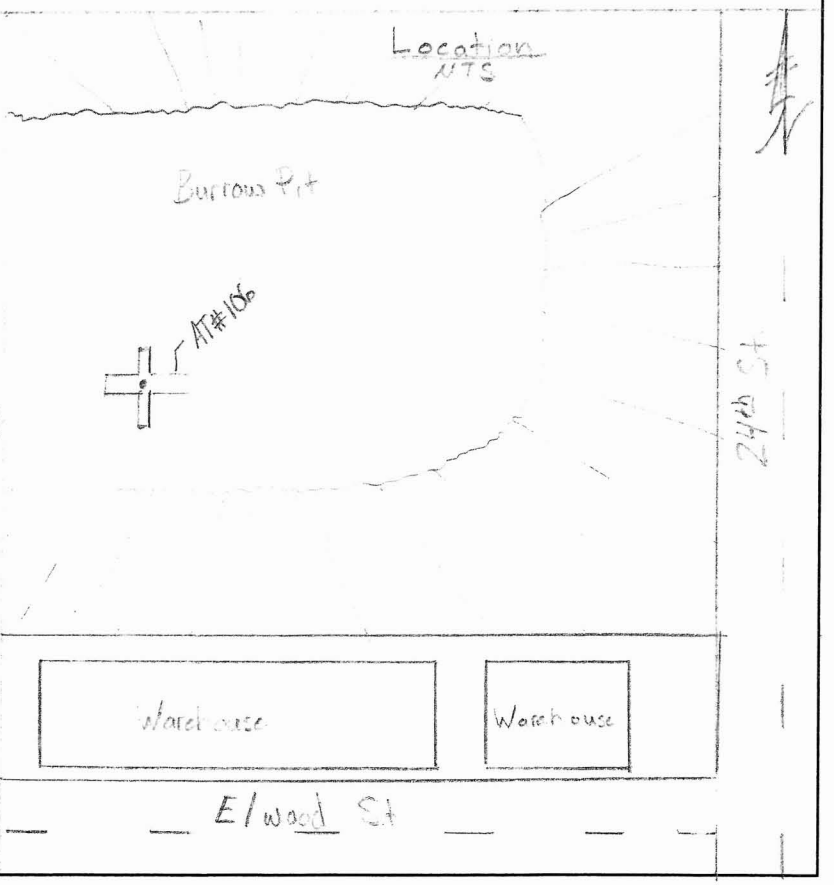
Location



Point #	Calc #	Photo #
106	6	11, 12

Description
Set ½" rebar with 1" red plastic cap "RBF Control" flush with natural ground. Laid out panel paper on 4 quadrants of rebar and nailed it down with metal staples. Target falls in a very large burrow pit about 100' deep. There is nothing within a 100' to tie.

Location
NTS



RBF CONSULTING

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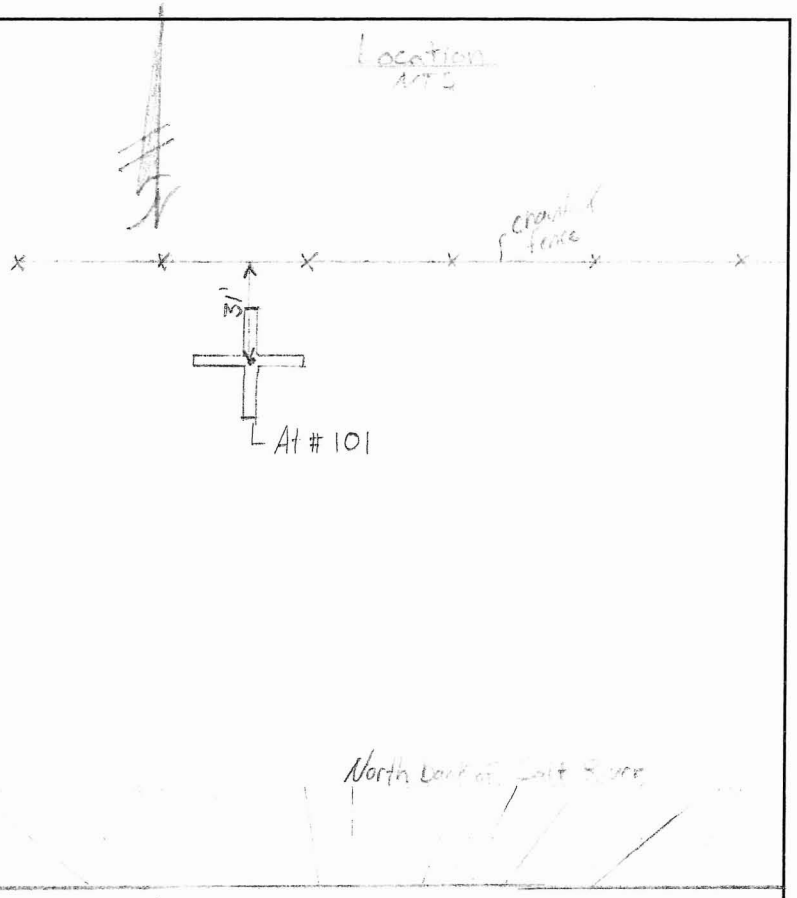
Base: 4700 Sn #
HI = 1.921
Rover: RB Sn #
HI = 6.562

JOB Hohokam 45104209
SHEET NO. _____ OF _____
CALCULATED BY Will Wing DATE 5-17-09
CHECKED BY James Slovik DATE 5-17-09
SCALE _____

Point #	Calc #	Photo #
101	1	13, 14

Description
Set 1/2" rebar with 1" red plastic cap "RBF Control" flush with natural ground. Laid out panel paper on all 4 quadrants of rebar and nailed it down with metal stakes. Target Lies on the North Side of the Salt River and South of a Chainlink fence in an open field getting ready for development.

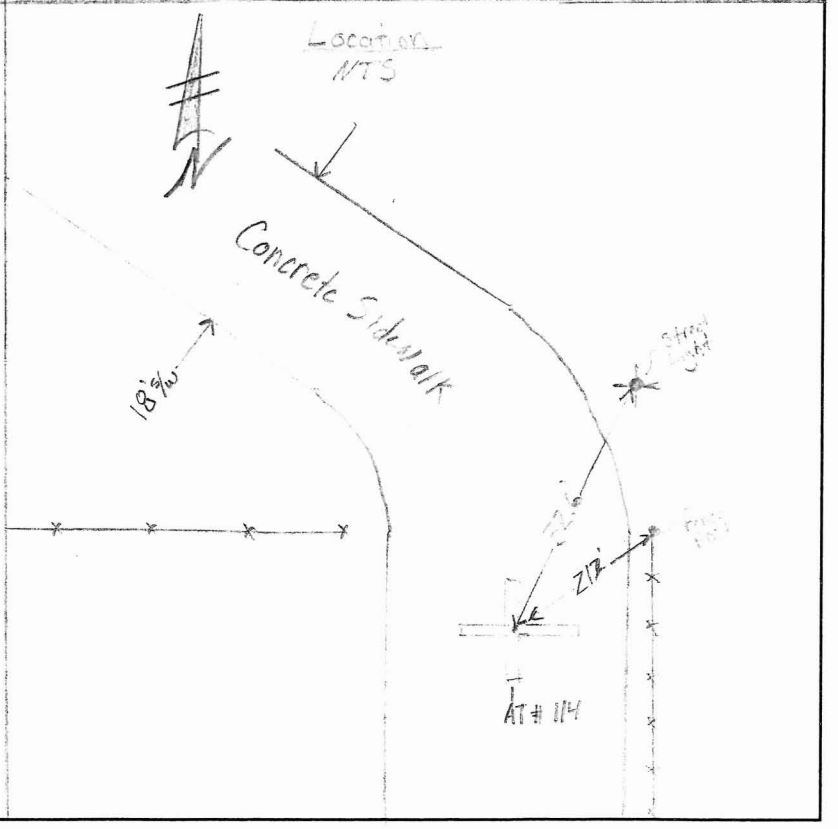
Location
NTS



Point #	Calc #	Photo #
114	14	1, 2

Description
Set PK nail flush in crack of concrete sidewalk. Painted the target white with spray paint on all 4 quadrants of the PK nail. Target Lies in the middle of a 18 ft sidewalk on the playground of C.O. Greenfield Elementary School

Location
NTS



RBF CONSULTING

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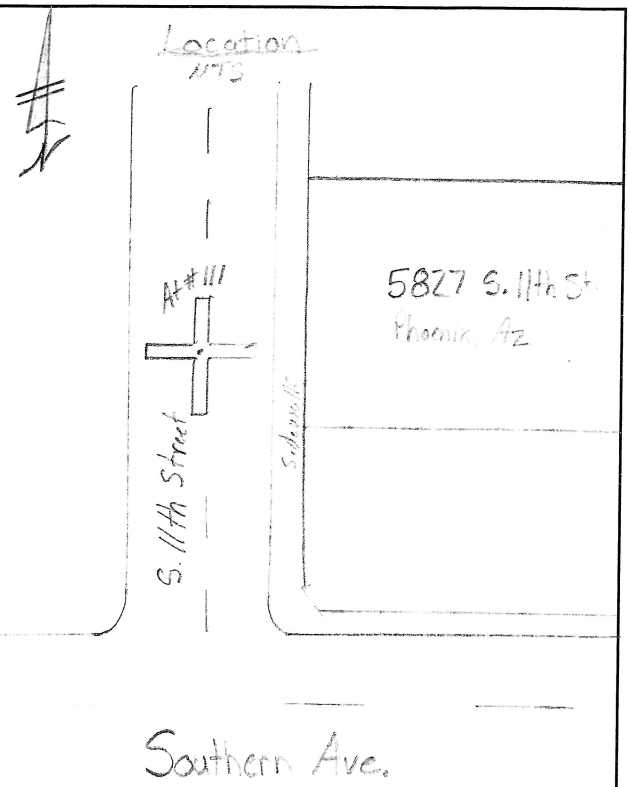
Base: 4700 Ser #
HI = 4.921 ft
Rover: R8 Ser #
HR = 6.502 ft

JOB Hohokam 45104709
SHEET NO. _____ OF _____
CALCULATED BY Will Wing DATE 3-18-09
CHECKED BY James Slovik DATE 3-18-09
SCALE _____

Point #	Calc #	Photo #
111	11	3,4

Description
Set PK nail flush in asphalt. Painted the target white with spray paint on all 4 quadrants of the PK nail. Target lies in the centerline of S. 11th Street, just North of E. Southern Ave in front of the home 5827 S. 11th St Phoenix, Az

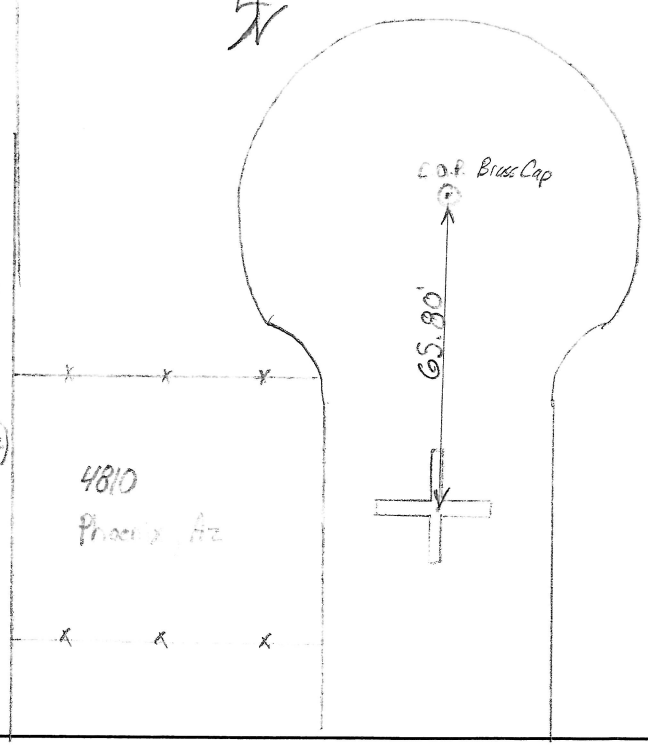
Location
NTS



Point #	Calc #	Photo #
108	8	5,6

Description
Set PK nail flush in asphalt. Painted the target white with spray paint on all 4 quadrants of the PK nail. Target lies in the centerline of a half street (no name) in front of 4810

Location
NTS



RBF CONSULTING

Base: 4700 Ser #
HI: 4921 ft
Rover: B8 Ser #
HI: 6.562 ft

PLANNING ■ DESIGN ■ CONSTRUCTION
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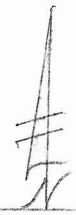
JOB Hobolan 7510-209
SHEET NO. _____ OF _____
CALCULATED BY [illegible] DATE [illegible]
CHECKED BY James Clovt DATE 3-18-09
SCALE _____

Point #	Calc #	Photo #
105	5	7,8

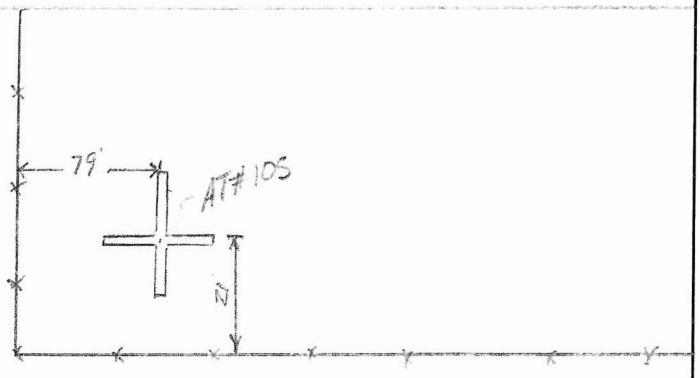
Location
NTS



Elwood St

Description

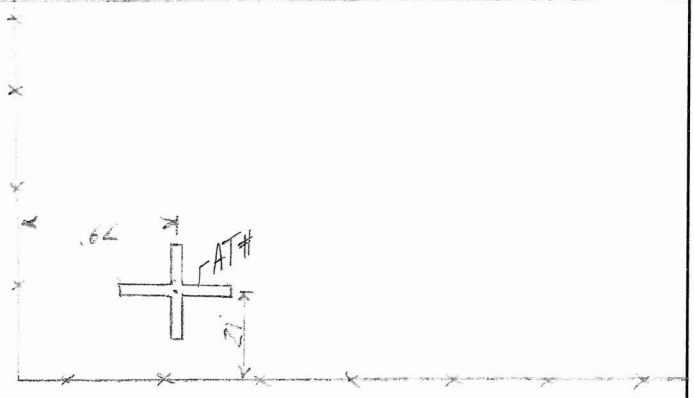
Set 1/2" rebar with red plastic cap "RBF Control" flush in natural ground. Laid out panel point paper on all 4 quadrants of the rebar and nailed it down with metal shiners. The target lies in an open field just South of Elwood Street.



Point #	Calc #	Photo #

Location
NTS

Description



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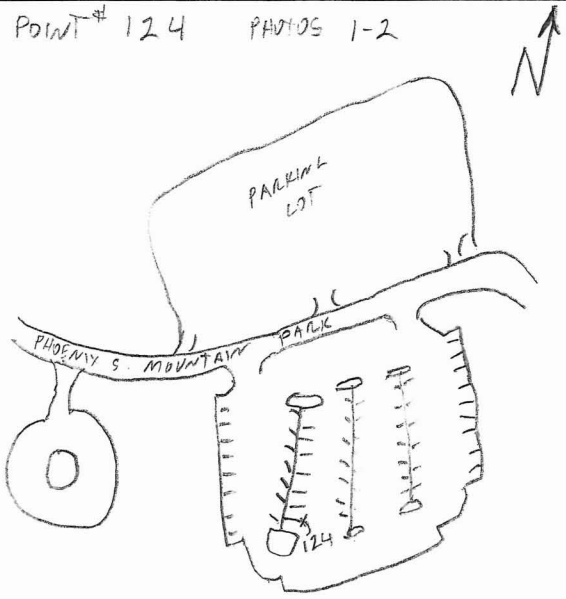
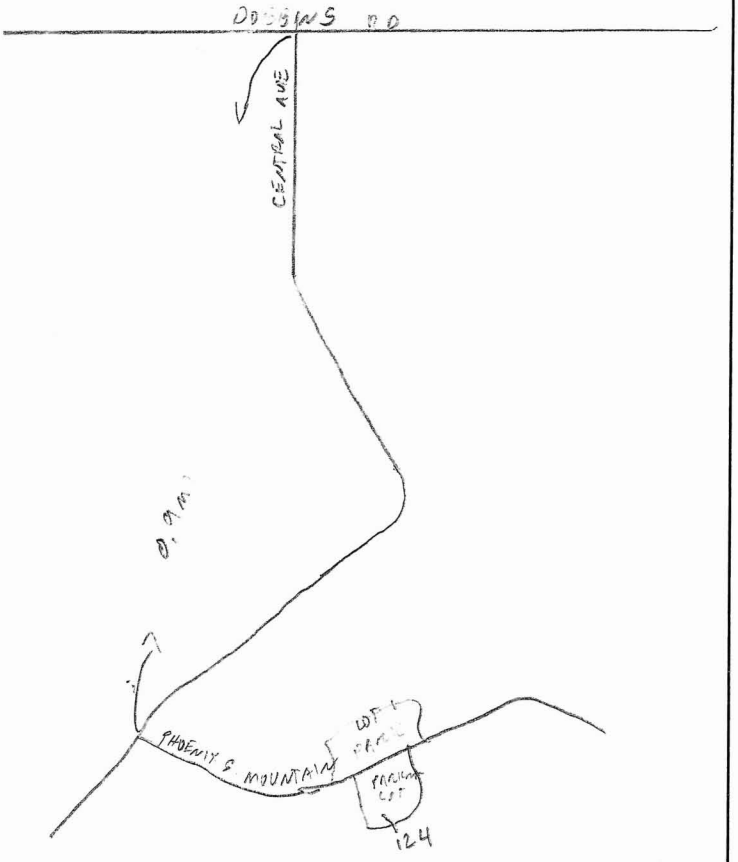
JOB 45-104209
SHEET NO. _____ OF _____
CALCULATED BY DW DATE 4-13-09
CHECKED BY _____ DATE _____
SCALE N.T.S.

POINT # 124 PHOTOS 1-2



THE NORTH EAST CORNER OF THE PARKING STRIPE ON THE SOUTH EASTERN MOST PARKING SPACE IN THE WESTERLY TIER OF PARKING ROWS.

OBSERVATION	TIME / DATE	
12:45 pm	4/13/09	RTK
8:25 AM	4/15/09	RTK



RBF CONSULTING

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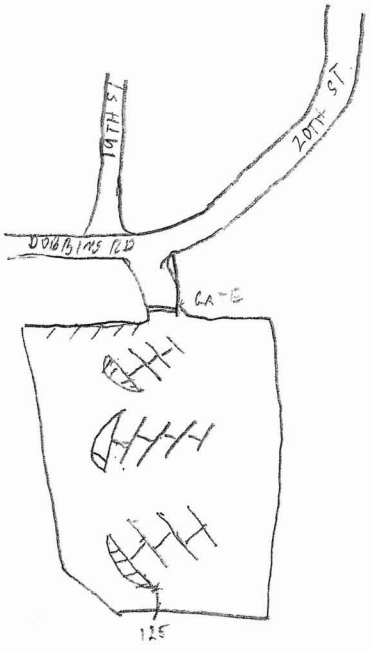
JOB 45-104209
SHEET NO. _____ OF _____
CALCULATED BY DW DATE 4-13-09
CHECKED BY _____ DATE _____
SCALE N.T.S.

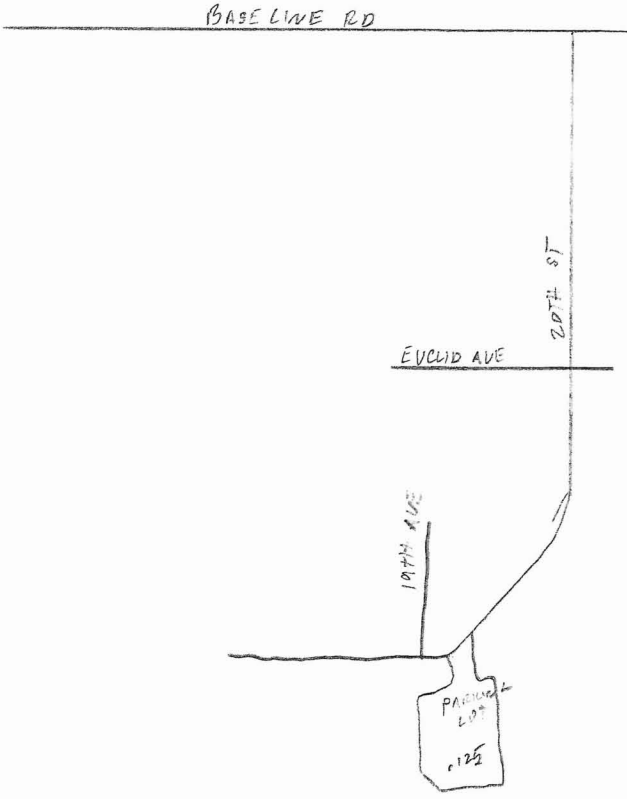
POINT # 125 PHOTOS 3-4

N



BOY SCOUT CAMP

OBSERVATION	TIME / DATE
13:05 pm	4/13/09
9:05 am	4/15/09



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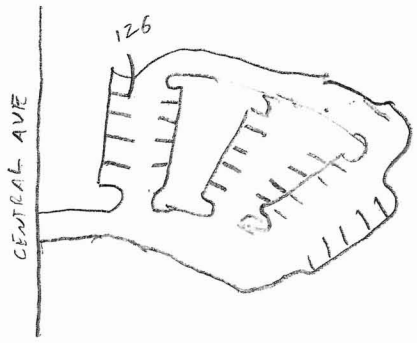
JOB 45-104209
SHEET NO. _____ OF _____
CALCULATED BY DW DATE 4-13-09
CHECKED BY _____ DATE _____
SCALE N.T.S.

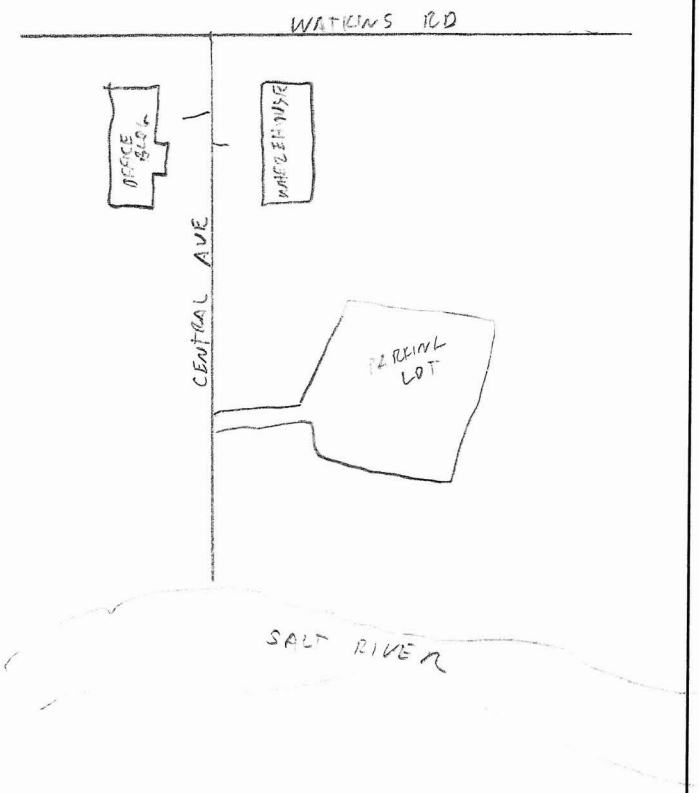
POINT # 126 PHOTOS 5-6

N

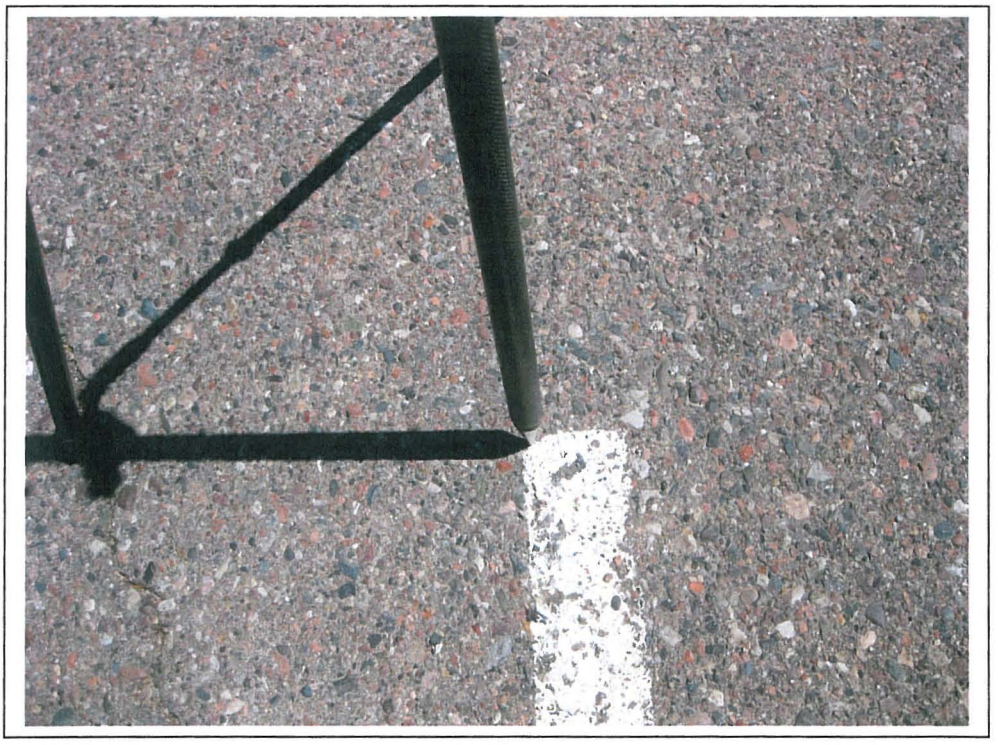


THE SOUTH EAST CORNER OF THE PAINT STRIPE IN THE NORTH WESTERLY MOST PARKING SPACE IN THE RIO SALADO PARK PARKING LOT

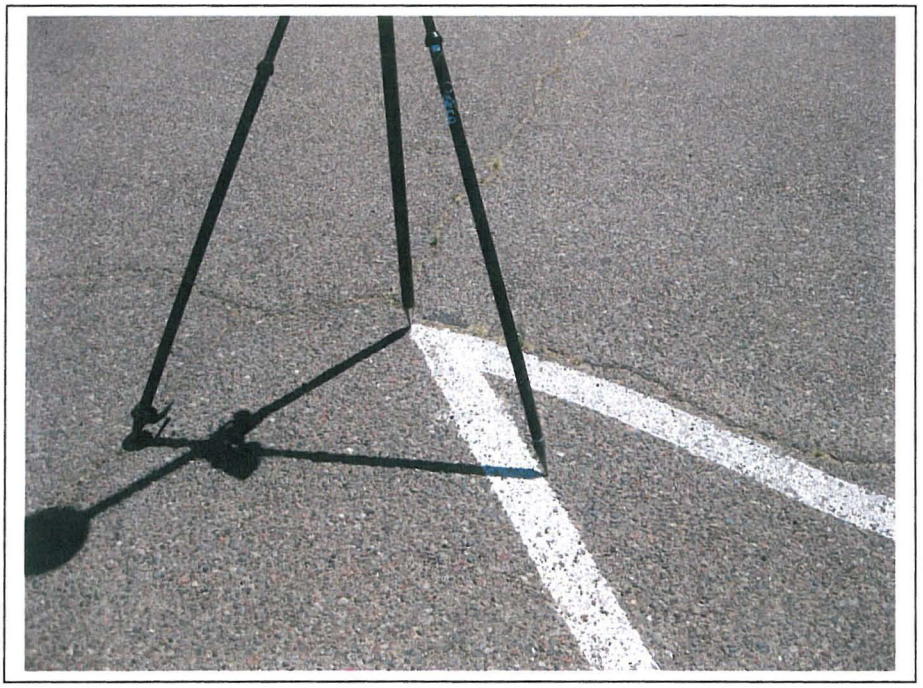
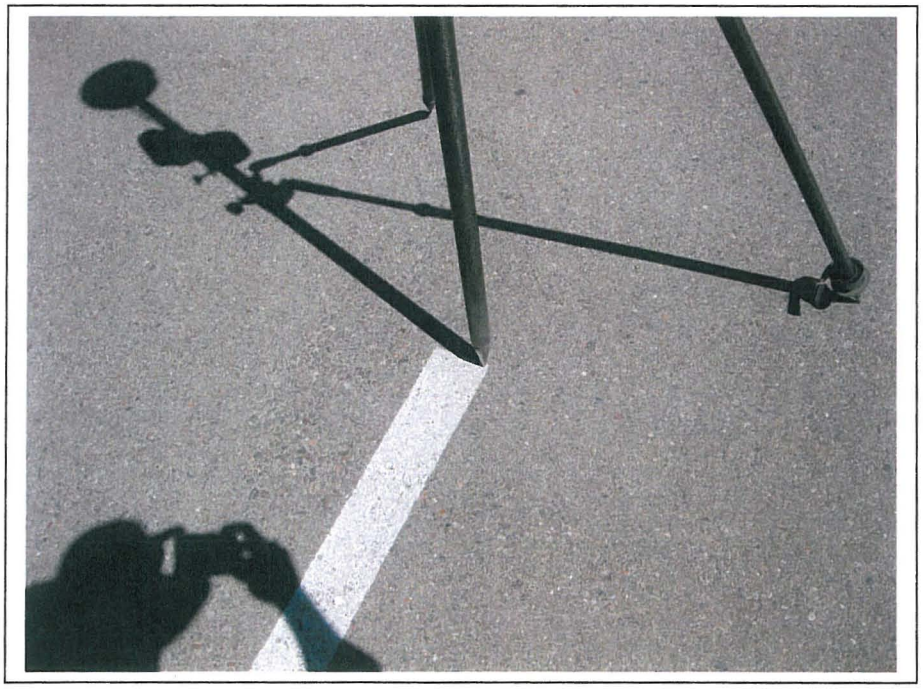
OBSERVATION TIME/DATE
13:50 PM 4/13/09 RTK
10:10 AM 4/15/09 RTK



PID#2 point #124
Looking east NE corner of stripe.



PID#3 Point#125
Looking south SE point of stripe



PID #1 point #126
Looking north SE corner of stripe