

**PROJECT ENGINEERING  
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# **Higley ADMP**

## **Survey Data**

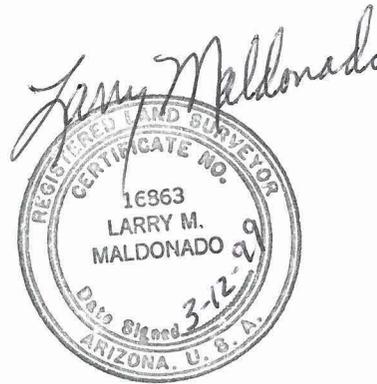
**U.S. 60  
To  
Hunt Highway**

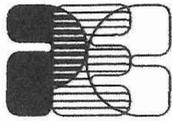
# Higley ADMP

## Survey Data

Property of  
Flood Control District of MC Library  
Please Return to  
2801 W. Durango  
Phoenix, AZ 85009

Project Engineering Consultants, Ltd.





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## **Survey Control**

**NAD 83 SPC System  
NAVD 29 Elevations - 3rd Order**

Note: Prime BM for this project is AHD BC cemented in bedrock base of westerly of 2 knolls, 2.0 miles east of Power Road, 34.4' north of CL of WB lanes of Apache Trail, NGS Datum EI = 1479.754

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
1	ERM	799676.432 528491.129	1220.518		GRIC 18 Brass Cap
2	ERM	801911.779 550448.305	1296.939		GRIC 19 Brass Cap
3	ERM	826406.595 539008.812	1250.466		ADOT Brass Cap "MANN"
4	ERM	831978.019 538986.913	1255.351		ADOT Brass Cap "PECOST"
5	ERM	850383.614 554755.461	1277.07		ADOT Brass Cap "SAN"
39	HV Panel	801749.000 524773.846	1215.11198		Set P.K. Nail in pavement on Hunt Highway, +/- $\frac{1}{4}$ mile east of Arizona Avenue
40	HV Panel	801792.688 527394.398	1220.04313		Set P.K. Nail in pavement on Hunt Highway, +/- $\frac{1}{4}$ mile west of McQueen Road
41	HV Panel ERM	801801.733 528651.210	1222.53162	NE Corner, Section 3, T3S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.75' below rim) @ intersection of Hunt Highway and McQueen Road

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
42	HV Panel	801867.737 531258.350	1229.29676		Set P.K. Nail in pavement on Hunt Highway, +/-½ mile west of Cooper Road
43	HV Panel ERM	801976.546 533945.397	1234.72274	NE Corner, Section 2, T3S R5E	Fd. City of Chandler Brass Cap in Handhole (0.35' below rim) @ intersection of Hunt Highway and Cooper Road
44	HV Panel	801964.168 536573.017	1241.09688	N¼ Corner, Section 1, T3S R5E	Fd. Handhole filled with concrete with chiseled "X" in center of concrete in center of Hunt Highway, +/-½ mile west of Gilbert Road
45	HV Panel ERM	801979.493 539207.637	1251.29803	NE Corner, Section 1, T3S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.77' below rim) @ intersection of Hunt Highway and Gilbert Road
46	HV Panel ERM	804356.061 523306.413	1214.711	E¼ Corner, Section 33, T2S R5E	Fd. Unmarked Brass Cap in Handhole (0.70' below rim) in center of Arizona Avenue, +/-½ mile south of Riggs Road
47	HV Panel	804407.242 525946.939	1222.474		Set ½" rebar flush w/ground, +/-½ mile south of Riggs Road, +/-½ mile west of McQueen Road in farm field @ irrigation crossing
48	HV Panel ERM	804435.326 528597.764	1225.951		Fd. City of Chandler Brass Cap flush w/pavement @ intersection of McQueen Road and St. Andrew Boulevard, +/-5' south of Brass Cap in Handhole (¼ Corner)
49	HV Panel TBM	804546.659 530018.433	1224.337		City of Chandler Brass Cap flush w/pavement on St. Andrews Boulevard, +/-1300' east of McQueen Road, @ recreation center driveway
50	HV Panel ERM	804580.129 532573.989	1229.741		Fd. Unmarked Brass Cap flush w/pavement in center of East Doral Drive, +/-100' west of South Coral Gable Drive, +/-300' east of South Championship Drive
51	HV Panel	804568.236 535275.722	1239.954		Set ½" rebar flush w/ground along dirt road @ irrigation ditch, +/-½ mile north of Hunt Highway, +/-¼ mile east of Cooper Road
52	HV Panel	804621.783 537867.385	1245.774		Set ½" rebar flush w/ground along northwest corner of Dairy Farm, +/-½ mile north of Hunt Highway, +/-¼ mile west of Gilbert Road
53	HV Panel	807034.417 524643.326	1218.458		Set P.K. Nail in pavement in center of Riggs Road, +/-¼ mile east of Arizona Avenue, +/-50' west of railroad tracks

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
54	HV Panel	807082.917 527295.088	1224.767		Set P.K. Nail in pavement on Riggs Road, +/-¼ mile west of McQueen Road
55	HV Panel ERM	807088.464 528584.499	1227.822	NE Corner, Section 34, T2S R5E	Fd. City of Chandler Brass Cap in Handhole (0.50' below rim) @ intersection of McQueen Road and Riggs Road
56	HV Panel ERM	807142.001 531235.606	1231.371	N¼ Corner, Section 35, T2S R5E	Fd. City of Chandler Brass Cap in Handhole (0.60' below rim) in center of Riggs Road, +/-½ mile east of McQueen Road
57	HV Panel ERM	807195.101 533886.605	1236.939	NE Corner, Section 35, T2S, R5E	Fd. Brass Cap in Handhole @ intersection of Riggs Road and Cooper Road
58	HV Panel ERM	807241.040 537071.978	1247.536	N¼ Corner, Section 36, T2S, R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.38' below rim) @ intersection of Riggs Road and Riggs Ranch Road
59	HV Panel	807258.599 538279.106	1250.00203		Fd. Cotton Spindle flush w/pavement in center of Riggs Road, +/-600' west of Gilbert Road
60	HV Panel ERM	807271.312 539165.691	1250.42	NE Corner, Section 36, T2S R5E	Fd. ½" rebar in pothole (1.67' below pavement) @ intersection of Riggs Road and Gilbert Road
61	HV Panel	809627.545 524503.090	1212.618		Set ½" rebar flush w/ground, +/-½ mile north of Riggs Road, +/-¼ mile east of Arizona Avenue, @ southeast corner of old manufacturing plant, +/-100' west of railroad spur line
62	HV Panel	809608.950 527357.232	1220.948		Set ½" rebar flush w/ground on eastside of Consolidated Canal, +/-½ mile south of Chandler Heights Road, +/-75, southwest of well pump
63	HV Panel	809866.246 536518.792	1247.848		Set P.K. Nail in pavement +/-½ mile south of Chandler Heights Road, in intersection of Riggs Ranch Road and East Cloud Drive
64	HV Panel ERM	809912.967 539148.633	1254.14	E¼ Corner, Section 25, T2S R5E	Fd. Maricopa County Highway Department Brass Cap flush w/pavement in center of Gilbert Road, +/-½ mile north of Riggs Road

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
65	HV Panel ERM	812289.999 523260.725	1212.228	NE Corner, Section 28, T2S R5E	Fd. Unmarked Brass Cap in Handhole (0.80' below rim) @ intersection of Arizona Avenue and Chandler Heights Road
66	HV Panel ERM	812327.015 525907.551	1223.675	N¼ Corner, Section 27, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.45' below rim) in center of Chandler Heights Road, +/-½ mile east of Arizona Avenue
67	HV Panel	812377.253 528556.802	1225.469		Fd. P.K. Nail in pavement @ intersection of Chandler Heights Road and McQueen Road
68	HV Panel ERM	812520.582 536496.494	1248.73	N¼ Corner, Section 25, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.32' below rim) @ intersection of Chandler Heights Road Road and 132nd Street
69	HV Panel ERM	812553.909 539124.514	1256.995	NE Corner, Section 25, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.36' below rim) @ intersection of Chandler Heights Road and Gilbert Road
70	HV Panel	814951.563 524584.928	1216.663		Set ½" rebar flush w/ground, +/-¼ mile east of Arizona Avenue, +/-½ mile north of Chandler Heights Road, +/-50' west of railroad tracks
71	HV Panel	814996.216 527234.855	1226.411		Set ½" rebar flush w/ground, +/-¼ mile west of McQueen Road, +/-½ mile north of Chandler Heights Road
72	HV Panel ERM	815203.436 539111.551	1257.09	E¼ Corner, Section 24, T2S R5E	Fd. Unmarked 2" Aluminum Cap in pothole (0.11' below surface) in center of Gilbert Road, +/-½ mile south of Ocotillo Road
73	HV Panel	817596.892 524519.684	1221.348		Set P.K. Nail in pavement in center of Ocotillo Road, +/-¼ mile east of Arizona Avenue, +/-150' west of railroad tracks
74	HV Panel	817634.579 527182.225	1226.306		Set P.K. Nail in pavement in center of Ocotillo Road, +/-300' east of Consolidated Canal
75	HV Panel ERM	817850.823 539097.394	1254.406	NE Corner, Section 24, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.83' below rim) @ intersection of Gilbert Road and Ocotillo Road
76	HV Panel TBM	817906.323 541585.801	1261.358	N¼ Corner, Section 19, T2S R6E	Fd. ½" rebar in pothole (0.16' below pavement) @ intersection of Ocotillo Road and 140th Street

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
77	HV Panel TBM	820226.133 523257.051	1216.903		Fd. City of Chandler Brass Cap flush w/pavement @ intersection of Arizona Avenue and Appleby Road
78	HV Panel	820281.329 525918.414	1221.552		Set ½" rebar flush w/ground, +/-½ mile east of Arizona Avenue
79	HV Panel ERM	820311.365 528515.481	1226.978	E¼ Corner, Section 15, T2S R5E	Fd. Unmarked Brass Cap flush w/pavement in center of McQueen Road, +/-½ mile north of Ocotillo Road
80	HV Panel	820331.156 531193.509	1234.304		Set ½" rebar flush w/ground along dirt farm field road, +/-½ mile south of Queen Creek Road, +/-½ mile east of McQueen Road
81	HV Panel	820519.820 541586.451	1261.736		Set ½" rebar flush w/ground +/-¼ mile east of Eastern Canal, +/-½ mile south of Queen Creek Road
82	HV Panel	822883.433 524490.627	1218.038		Set P.K. Nail in pavement in center of Queen Creek Road, +/-¼ mile east of Arizona Avenue
83	HV Panel	822933.153 527245.465	1221.437		Set P.K. Nail in pavement in center of Queen Creek Road, +/-¼ mile west of McQueen Road
84	HV Panel	822992.524 529829.261	1228.993		Set P.K. Nail in pavement in center of Queen Creek Road, +/-350' east of Consolidated Canal
85	HV Panel TBM	823189.033 541573.152	1259.03307	N¼ Corner, Section 18, T2S R6E	Fd. 1" Iron Pipe in Handhole (0.34' below rim) in center of Queen Creek Road, +/-25' east of Eastern Canal
86	HV Panel ERM	823231.380 544231.506	1267.021	NE Corner, Section 18, T2S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.31' below rim) @ intersection of Queen Creek Road and Lindsay Road
87	HV Panel TBM	825515.185 523209.949	1213.327		Fd. City of Chandler Brass Cap flush w/pavement @ intersection of Arizona Avenue and Ryan Road
88	HV Panel TBM	825564.779 525847.828	1217.379	Center of Section 10, T2S R5E	Fd. Aluminum Cap (0.20' below ground); stamped "RLS 15573 Standage & Truitt"

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
89	HV Panel TBM	825614.568 528487.526	1224.705	E¼ Corner, Section 10, T2S R5E	Fd. Brass Cap flush w/pavement @ intersection of McQueen Road and Ryan Road
90	HV Panel	825752.453 531009.935	1225.472		Set P.K. Nail in pavement in center of Chandler Airpark Boulevard, +/-½ mile north of Queen Creek Road
91	HV Panel	825240.455 533780.514	1236.486		Set P.K. Nail in pavement in center of Cooper Road, +/-½ mile north of Queen Creek Road
92	HV Panel	825876.622 544215.938	1263.881	E¼ Corner, Section 7, T2S R5E	Fd. 1" Iron Pipe in pothole (0.26' below rim) in center of Lindsay Road, +/-½ mile north of Queen Creek Road
93	HV Panel	828180.082 524867.109	1218.202		Set P.K. Nail in pavement in center of Germann Road, +/-1500' east of Arizona Avenue, +/-200' east of railroad tracks
94	HV Panel TBM	828208.421 527093.964	1218.881		Fd. City of Chandler Brass Cap in Handhole (0.46' below rim) in center of Germann Road, +/-1320' west of McQueen Road
95	HV Panel ERM	828264.738 529838.926	1225.056		Fd. City of Chandler Brass Cap in Handhole (0.72' below rim) in center of Germann Road, +/-¼ mile east of McQueen Road
96	HV Panel	828277.156 532352.910	1232.51		Set P.K. Nail in pavement in center of Germann Road, +/-1320' east of Consolidated Canal
97	HV Panel	828464.983 541518.775	1253.11		Set P.K. Nail in pavement in center of Germann Road, +/-½ mile north of Lindsay Road
98	HV Panel ERM	828521.494 544200.499	1262.69	NE Corner, Section 7, T2S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.89' below rim) @ intersection of Germann Road and Lindsay Road
99	HV Panel ERM	828539.815 546878.263	1271.926	N¼ Corner, Section 8, T2S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.40' below rim) in center of Germann Road, +/-½ mile east of Lindsay Road
100	HV Panel	830821.790 524471.726	1218.576		Set P.K. Nail in pavement in center of Willis Road, +/-¼ mile west of Arizona Avenue

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
101	HV Panel	830911.536 527108.447	1220.935		Set P.K. Nail in pavement on northside of intersection of Willis Road and Hamilton Street
102	HV Panel	830959.200 530133.752	1225.243		Set P.K. Nail in pavement in center of Willis Road, +/-400' west of Consolidated Canal, @ entrance to Sewer Treatment Plant
103	HV Panel	830937.326 532358.590	1233.599		Set ½" rebar flush w/ground along irrigation ditch +/-½mile north of Germann Road, +/-¼ mile west of Cooper Road
104	HV Panel	831144.544 545481.924	1266.01		Set ½" rebar flush w/ground in Willis Road, +/-¼ mile east of Lindsay Road
105	HV Panel ERM	833595.988 523130.615	1214.931		Fd. City of Chandler Brass Cap flush w/pavement @ intersection of Arizona Avenue and Pecos Road, +/-20' west of Brass Cap in Handhole
106	HV Panel ERM	833611.386 525792.062	1219.052	N¼ Corner, Section 3, T2S R5E	Fd. City of Chandler Brass Cap in Handhole (0.28' below rim) @ intersection of Pecos Road and Hamilton Street
107	HV Panel ERM	833623.726 528437.927	1219.869	NE Corner, Section 3, T2S R5E	Fd. City of Chandler Brass Cap in Handhole (0.49' below rim) @ intersection of Pecos Road and McQueen Road
108	HV Panel	833645.867 531081.000	1227.946	N¼ Corner, Section 2, T2S R5E	Fd. ½" Iron Pipe in pothole (0.11' below pavement) in center of Pecos Road, +/-½ mile east of McQueen Road
109	HV Panel ERM	833669.414 533725.351	1236.73399	NE Corner, Section 2, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.58' below rim) @ intersection of Pecos Road and Cooper Road
110	HV Panel ERM	833764.365 543705.056	1263.64234	NE Corner, Section 6, T2S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.61' below rim) @ intersection of Pecos Road and Lindsay Road
111	HV Panel	833800.367 546817.109	1267.953	N¼ Corner, Section 5, T2S R6E	Fd. ½" rebar in pothole (0.17' below pavement) in center of Pecos Road, +/-½ mile east of Lindsay Road
112	HV Panel	836438.245 545502.495	1265.571		Set ½" rebar flush w/ground on westside of Eastern Canal, +/-½ mile north of Pecos Road

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
113	HV Panel ERM	839078.973 544149.008	1259.301	NE Corner, Section 31, T1S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole ( 0.35' below rim) @ intersection of Chandler Boulevard and Lindsay Road
114	HV Panel ERM	839102.011 546787.930	1269.19	N¼ Corner, Section 32, T1S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.39' below rim) in center of Chandler Boulevard, +/-50' east of Eastern Canal
115	HV Panel ERM	839126.446 549425.810	1269.728	NE Corner, Section 32, T1S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.48' below rim) @ intersection of Chandler Boulevard and Val Vista Drive
116	HV Panel	841756.361 548881.945	1265.417		Fd. Cotton Spindle flush w/pavement in center of Val Vista Drive, +/-½ mile north of Chandler Boulevard
117	HV Panel ERM	844396.051 549409.424	1264.705	NE Corner, Section 29, T1S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.52' below rim) @ intersection of Ray Road and Val Vista Drive
118	HV Panel ERM	844411.552 552046.963	1270.397	N¼ Corner, Section 28, T1S R6E	Fd. Maricopa County Department of Transportation Brass Cap in Handhole (0.70' below rim) in center of Ray Road
119	HV Panel	846954.674 552066.839	1269.124		Set ½" rebar flush w/ground on westside of Eastern Canal, +/-½ mile south of Warner Road, +/-500' north of railroad tracks
120	HV Panel ERM	847028.029 554675.934	1273.911		Fd. Town of Gilbert Brass Cap in Handhole (0.32' below rim) @ intersection of Greenfield Road and Knox Road; +/-32' south of Brass Cap in Handhole @ north intersection
121	HV Panel ERM	849673.652 551696.892	1266.299	N¼ Corner, Section 21, T1S R6E	Fd. Town of Gilbert Brass Cap in Handhole (0.44' below rim) in center of Warner Road,
122	HV Panel ERM	849690.171 554669.463	1271.611		Fd. Town of Gilbert Brass Cap in Handhole (0.36' below rim) in center of Warner Road, +/-60' west of Greenfield Road
123	HV Panel ERM	852327.245 554658.298	1270.23	E¼ Corner, Section 16, T1S R6E	Fd. Maricopa County Department of Transportation Brass Cap in Handhole (0.61' below rim) @ monument line of Greenfield Road, +/-½ mile south of Elliot Road, +/-30' south of center of Mesquite Street

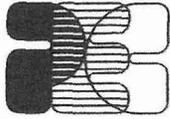
Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
124	HV Panel ERM	854962.051 554647.085	1269.505	NE Corner, Section 16, T1S R6E	Fd. Town of Gilbert Brass Cap in Handhole (0.36' below rim) @ intersection of Greenfield Road and Elliot Road
125	HV Panel	854986.006 557240.764	1276.923	N¼ Corner, Section 15, T1S R6E	Fd. ½" rebar in pothole (0.16' below pavement) in center of Elliot Road
126	HV Panel				Set ½" rebar flush w/ground on eastside of Eastern Canal, +/-½ mile south of Guadalupe Road
127	HV Panel ERM	860246.646 554506.894	1269.242		Town of Gilbert Brass Cap in Handhole (0.40' below rim) @ intersection of Greenfield Road and Guadalupe Road
128	HV Panel ERM	860277.159 558411.287	1282.316		Maricopa County Highway Department Brass Cap in pothole (0.20' below pavement) on monument line of Guadalupe Road
129	HV Panel	862748.750 556356.426	1280.66969		Set ½" rebar flush w/ground on westside of Eastern Canal, +/-½ mile south of Baseline Road
130	HV Panel	865543.612 556181.206	1283.054		Set P.K. Nail in pavement
131	HV Panel	868012.190 554589.711	1282.461		Set ½" rebar flush w/ground on westside of Eastern Canal, southside of U.S. 60 overpass
132	HV Panel	868165.054 557788.966	1303.268	Center of Section 34, T1N R6E	Fd. Brass Cap flush w/concrete of overpass over SR 60 (Superstition Freeway), +/-½ mile east of Greenfield Road
271	ERM		1325.805	SW Corner Section 36, T1N R6E	Maricopa County Highway Department Brass Cap in Handhole (0.22' below rim) @ intersection of Baseline Road and Recker Road north
332	ERM	822935.818 529063.352	1230.223		Maricopa County Highway Department Brass Cap flush w/concrete sidewalk @ southeast corner of Queen Creek Road bridge over Consolidated Canal; stamped "ELEV 1231.20 1975"

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
500	ERM	865604.265 764575.235	1320.61854	NE Corner Section 2, T1S R6E	Maricopa County Highway Department Brass Cap in Handhole (0.30' below rim) @ intersection of Baseline Road and Recker Road south
501	ERM	865594.639 762828.686	1312.99159	S¼ Corner Section 35, T1N R6E	Maricopa County Highway Department Brass Cap in Handhole (0.45' below rim) @ centerline of Baseline Road, +/-3000' east of Higley Road
502	ERm	865589.728 761939.707	1307.34313	N¼ Corner Section 2, T1S, R6E	Maricopa County Highway Department Brass Cap in Handhole (0.46' below rim) @ centerline of Baseline Road, +/-½ mile east of Higley Road
503	ERM	865579.897 760191.693	1298.90118	SE Corner, Section 34, T1N R6E	Maricopa County Highway Department Brass Cap in Handhole (0.29' below rim) @ centerline of Baseline Road, +/-1300' east of Higley Road
504	ERM	865575.145 759304.735	1294.88771	NE Corner, Section 3, T1S R6E	Maricopa County Highway Department Brass Cap in Handhole ( 0.37' below rim) @ intersection of Baseline Road and Higley Road
505	TBM		1289.2395		Brass Cap flush w/pavement @ intersection of Baseline Road and Claiborne Avenue
506	TBM		1286.73027		Brass Cap flush w/pavement @ intersection of Baseline Road and Rochester Drive
507	ERM	865607.336 755978.737	1286.75597		Brass Cap flush w/concrete on top of barrier wall @ northeast corner of Baseline Road Bridge over Eastern Canal, +/-100' west of Old Greenfield Road
509	ERM	862699.560 756169.555	1280.27175		Salt River Valley Water User's Association Brass Cap flush w/concrete on top of southwest corner of irrigation box, +/-½ mile south of Baseline Road, +/-40' west of center of Eastern Canal, +/-40' SSE of Salt River Project Wellsite #33.4 East 0.5 South
510	ERM	860348.751 756709.049	1280.73423		Maricopa County Engineering Department Brass Cap flush w/concrete in center of headwall on northside of Guadalupe Road bridge over Eastern Canal
512	ERM	857348.009 756445.390	1275.17715		Maricopa County Brass Cap flush w/pavement @ east end of Vaughn Street in center of cul-de-sac, +/-150' west of Eastern Canal, +/-½ mile north of Elliot Road

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
513	ERM	854987.301 756167.612	1281.09872		Maricopa County Highway Department Brass Cap flush w/concrete on top of barrier wall @ southwest corner of Elliot Road bridge over Eastern Canal; stamped "1283.01"
514	ERM	852363.134 754979.680	1273.59246		Salt River Project Brass Cap flush w/concrete on top of concrete headwall on westedge of Eastern Canal, +/-½ mile south of Elliot Road; stamped "33.1 E 4.5 S"
516	TBM		1274.56291		Town of Gilbert Brass Cap flush w/pavement @ east end of Pinto Drive in center of cul-de-sac, +/-100' northwest of Eastern Canal
517	ERM	849680.297 754020.812	1276.67931		Maricopa County Highway Department Brass Cap flush w/concrete on top of barrier wall @ southeast corner of Warner Road bridge over Eastern Canal
518	ERM	844400.962 750263.162	1271.40055		Arizona Highway Department Brass Cap flush w/concrete on top of barrier wall @ southwest corner of Ray Road bridge over Eastern Canal
519	TBM	840879.103 748916.122	1270.22682		Maricopa County Engineering Department Brass Cap flush w/northwest corner of concrete sidewalk @ northeast corner of Val Vista Drive bridge over Eastern Canal
522	TBM		1263.31065		Salt River Project R/W 2" Aluminum Cap flush w/concrete, by irrigation ditch +/-50' west of Eastern Canal, +/-1600' north of Pecos Road
523	ERM	833860.600 743937.349	1267.0484		Salt River Project Aluminum Cap flush w/concrete in northwest wingwall of Eastern Canal, +/-50' north of center of Pecos Road; stamped "31.0 E 6.0 S BM"
524	TBM		1265.11144		Salt River Project Aluminum Cap flush w/concrete in northwest wall of irrigation structure in Eastern Canal, +/-1500' south of Pecos Road, east of 144th Street, north of Lexington Street; stamped "SRP 31 E 6.3 S ELEV=1265.17"
525	ERM	830782.100 743723.846	1267.63674	E¼ Corner, Section 6, T2S R6E	Maricopa County Department of Transportation Brass Cap flush w/pavement @ intersection of Lindsay Road and 144th Street
526	ERM	828589.755 743351.731	1265.89155		Maricopa County Highway Department Brass Cap flush w/concrete on top of northeast corner of barrier wall of Eastern Canal, northside of Germann Road

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
528	ERM	823194.119 738857.074	1251.42891	NE Corner, Section 13, T2S R5E	Unmarked Aluminum Cap in Handhole @ intersection of Queen Creek Road and Gilbert Road
529	ERM	823146.435 736219.214	1244.56883	N¼ Corner, Section 13, T2S R5E	Maricopa County Highway Department Brass Cap in Handhole in center of Queen Creek Road, +/-½ mile west of Gilbert Road
530	ERM	823098.800 733581.513	1237.92576	NE Corner, Section 14, T2S R5E	Maricopa County Highway Department Brass Cap in Handhole @ intersection of Queen Creek Road and Cooper Road
531	ERM	823053.228 730942.033	1231.5337	N¼ Corner, Section 14, T2S R5E	1" O.D. Iron Pipe in Handhole @ intersection of Queen Creek Road and Adams Avenue
532	ERM	823101.845 728861.953	1230.39624		Salt River Project Brass Cap flush w/concrete @ northwest corner of headwall of Consolidated Canal, +/-60' north of Queen Creek Road, +/-350' east of McQueen Road; stamped "28.1 E 8.0 S 1993"
533	ERM	821854.978 728326.059	1228.67625		Maricopa County Department of Transportation Brass Cap flush w/concrete headwall
534	ERM	819395.736 727280.812	1226.96088		Salt River Project Brass Cap flush w/concrete in easterly wingwall of floodgate structure on Consolidated Canal, +/-½ mile south of Queen Creek Road; stamped "27.4 E 8.7 S 1993"
535	ERM	817643.319 726598.509	1227.72301		Salt River Project Brass Cap flush w/concrete in southwest corner of headwall of Consolidated Canal, southside of Ocotillo Road; stamped "27.7 E 9.0 S 1993"
536	ERM	815047.174 726111.558	1224.34177		Salt River Project Brass Cap flush w/concrete in west wingwall of floodgate structure of Consolidated Canal, +/-½ mile south of Ocotillo Road; stamped "27.6 E 9.5 S"
537	ERM	812363.03 726543.117	1226.62946		Maricopa County Highway Department Brass Cap flush w/concrete in west end of south barrier wall of Chandler Heights Road bridge over Consolidated Canal; stamped "1227.80"

Point No.	Remarks	NAD 27 Horizontal Coordinates	Elevation	Section Data	Description
540	ERM	807075.494 726007.872	1220.01992		Salt River Project Brass Cap flush w/concrete in center of south headwall of Consolidated Canal, southside of Riggs Road; stamped "27.7 E 11.0 S 1993"
541	ERM	804367.864 723770.419	1217.04283		Salt River Project Brass Cap flush w/concrete in flood control structure on east bank of Consolidated Canal, +/-0.6 miles south of Riggs Road; stamped "27.1 E 11.5 S 1993"
543	ERM	802068.764 723254.864	1215.31349		Arizona Department of Transportation Brass Cap flush w/concrete in north headwall of Consolidated Canal, east of Arizona Avenue, +/-500' north of Hunt Highway; stamped "1216.16 1962"
544	TBM	801962.117 732255.941	1230.96425		Fd. City of Chandler Brass Cap in Handhole @ intersection of Hunt Highway and Championship Drive
550	TBM		1248.65803		Maricopa County Department of Transportation Brass Cap flush w/pavement in center of East Vallejo Street (south P.C.), +/-300' west of Eastern Canal
562	ERM	788538.296 738789.102	1243.066		Brass Cap flush w/concrete @ northeast corner of State Route 87 Bridge over East Maricopa Flood Channel
583	ERM	867571.166 754759.036	1285.09647		Maricopa County Engineering Department Brass Cap flush w/concrete in center of west headwall of Greenfield Road bridge over Eastern Canal; stamped "ELEV 1262-M 1973"



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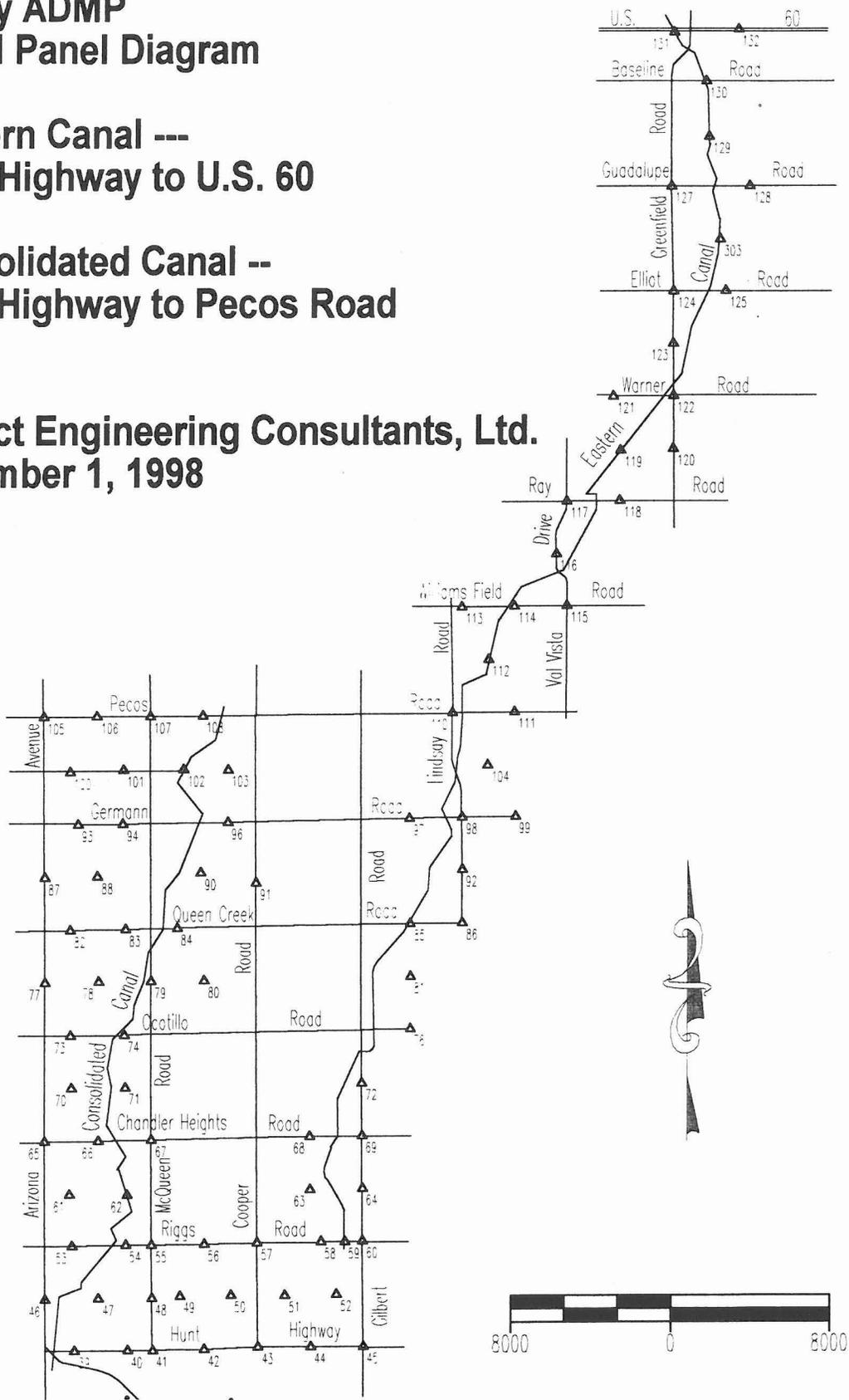
## **Horizontal and Vertical Aerial Panel Data**

# Higley ADMP Aerial Panel Diagram

**Eastern Canal ---  
Hunt Highway to U.S. 60**

**Consolidated Canal --  
Hunt Highway to Pecos Road**

**Project Engineering Consultants, Ltd.  
December 1, 1998**

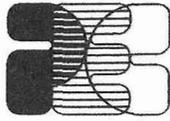


Final Panel Data  
 Subject Engineering Consultants, Ltd.  
 December 1, 1998

NAD 83 State Plane Coordinate System  
 NAVD 29 Elevations

Pt #	Northing	Easting	Panel Elevation	Remarks
39,	801793.984,	724560.376,	1215.112,	HV Panel
40,	801837.661,	727180.922,	1220.043,	HV Panel
41,	801846.711,	728437.738,	1223.282,	HV Panel
42,	801912.751,	731044.894,	1229.297,	HV Panel
43,	802021.572,	733731.943,	1235.073,	HV Panel
44,	802009.204,	736359.568,	1241.097,	HV Panel
45,	802024.543,	738994.222,	1252.068,	HV Panel
46,	804401.037,	723092.935,	1215.411,	HV Panel
47,	804452.244,	725733.528,	1222.474,	HV Panel
48,	804480.341,	728384.300,	1225.951,	HV Panel
49,	804591.659,	729804.964,	1224.337,	HV Panel
50,	804625.140,	732360.524,	1229.741,	HV Panel
51,	804613.265,	735062.263,	1239.954,	HV Panel
52,	804666.822,	737653.931,	1245.774,	HV Panel
53,	807079.435,	724429.857,	1218.458,	HV Panel
54,	807127.942,	727081.621,	1224.767,	HV Panel
55,	807133.493,	728371.033,	1228.322,	HV Panel
56,	807187.037,	731022.144,	1231.971,	HV Panel
57,	807240.143,	733673.145,	1236.939,	HV Panel
58,	807285.975,	736858.372,	1247.916,	HV Panel
59,	807303.537,	738065.502,	1250.002,	HV Panel
60,	807316.252,	738952.089,	1252.090,	HV Panel
61,	809672.562,	724289.614,	1212.618,	HV Panel
62,	809653.976,	727143.759,	1220.948,	HV Panel
63,	809911.183,	736305.183,	1247.848,	HV Panel
64,	809957.909,	738935.024,	1254.140,	HV Panel
65,	812335.013,	723047.242,	1213.028,	HV Panel
66,	812372.036,	725694.069,	1224.125,	HV Panel
67,	812422.282,	728343.324,	1225.469,	HV Panel
68,	812565.523,	736282.883,	1249.050,	HV Panel
69,	812598.856,	738910.908,	1257.355,	HV Panel
70,	814996.581,	724371.439,	1216.663,	HV Panel
71,	815041.240,	727021.367,	1226.411,	HV Panel
72,	815248.389,	738897.946,	1257.200,	HV Panel
73,	817641.909,	724306.187,	1221.348,	HV Panel
74,	817679.602,	726968.731,	1226.306,	HV Panel
75,	817895.780,	738883.791,	1255.236,	HV Panel
76,	817951.287,	741372.203,	1261.518,	HV Panel
77,	820271.146,	723043.547,	1216.903,	HV Panel
78,	820326.348,	725704.911,	1221.552,	HV Panel
79,	820356.302,	728301.949,	1226.978,	HV Panel
80,	820376.098,	730979.978,	1234.304,	HV Panel
81,	820564.790,	741372.856,	1261.736,	HV Panel
82,	822928.448,	724277.117,	1218.038,	HV Panel

822978.174,	727031.957,	1221.437,	HV Panel
823037.468,	729615.725,	1228.993,	HV Panel
85, 823234.009,	741359.560,	1259.373,	HV Panel
86, 823276.365,	744017.921,	1267.331,	HV Panel
87, 825560.196,	722996.431,	1213.327,	HV Panel
88, 825609.721,	725634.285,	1217.579,	HV Panel
89, 825659.516,	728273.985,	1224.705,	HV Panel
90, 825797.394,	730796.390,	1225.472,	HV Panel
91, 825285.400,	733566.973,	1236.486,	HV Panel
92, 825921.616,	744002.366,	1264.141,	HV Panel
93, 828225.095,	724653.584,	1218.202,	HV Panel
94, 828253.438,	726880.440,	1219.341,	HV Panel
95, 828309.759,	729625.405,	1225.776,	HV Panel
96, 828322.103,	732139.362,	1232.510,	HV Panel
97, 828509.971,	741305.190,	1253.110,	HV Panel
98, 828566.554,	743986.991,	1263.580,	HV Panel
99, 828584.820,	746664.692,	1272.326,	HV Panel
100, 830866.800,	724258.194,	1218.576,	HV Panel
101, 830956.551,	726894.915,	1220.935,	HV Panel
102, 831004.220,	729920.222,	1225.243,	HV Panel
103, 830982.273,	732145.037,	1233.599,	HV Panel
104, 831189.551,	745268.352,	1266.010,	HV Panel
105, 833640.995,	722917.074,	1214.931,	HV Panel
106, 833656.398,	725578.523,	1219.332,	HV Panel
107, 833668.742,	728224.389,	1220.359,	HV Panel
108, 833690.886,	730867.462,	1228.056,	HV Panel
, 833714.439,	733511.815,	1237.314,	HV Panel
110, 833809.416,	743491.530,	1264.252,	HV Panel
111, 833845.422,	746603.585,	1268.123,	HV Panel
112, 836483.266,	745288.936,	1265.571,	HV Panel
113, 839124.008,	743935.460,	1259.651,	HV Panel
114, 839147.034,	746574.363,	1269.580,	HV Panel
115, 839171.476,	749212.247,	1270.208,	HV Panel
116, 841801.402,	748668.390,	1265.417,	HV Panel
117, 844441.088,	749195.856,	1265.225,	HV Panel
118, 844456.594,	751833.397,	1271.097,	HV Panel
119, 846999.719,	751853.268,	1269.124,	HV Panel
120, 847073.079,	754462.368,	1274.231,	HV Panel
121, 849718.716,	751483.293,	1266.739,	HV Panel
122, 849735.243,	754455.868,	1271.971,	HV Panel
123, 852372.317,	754444.696,	1270.840,	HV Panel
124, 855007.124,	754433.478,	1269.865,	HV Panel
125, 855031.086,	757027.159,	1277.083,	HV Panel
127, 860291.722,	754293.273,	1269.642,	HV Panel
128, 860322.244,	758197.670,	1282.516,	HV Panel
129, 862793.831,	756142.801,	1280.670,	HV Panel
130, 865588.651,	755967.520,	1283.054,	HV Panel
131, 868057.260,	754376.059,	1282.461,	HV Panel
132, 868210.131,	757575.365,	1303.268,	HV Panel
303, 857618.418,	756727.294,	1277.809,	HV Panel



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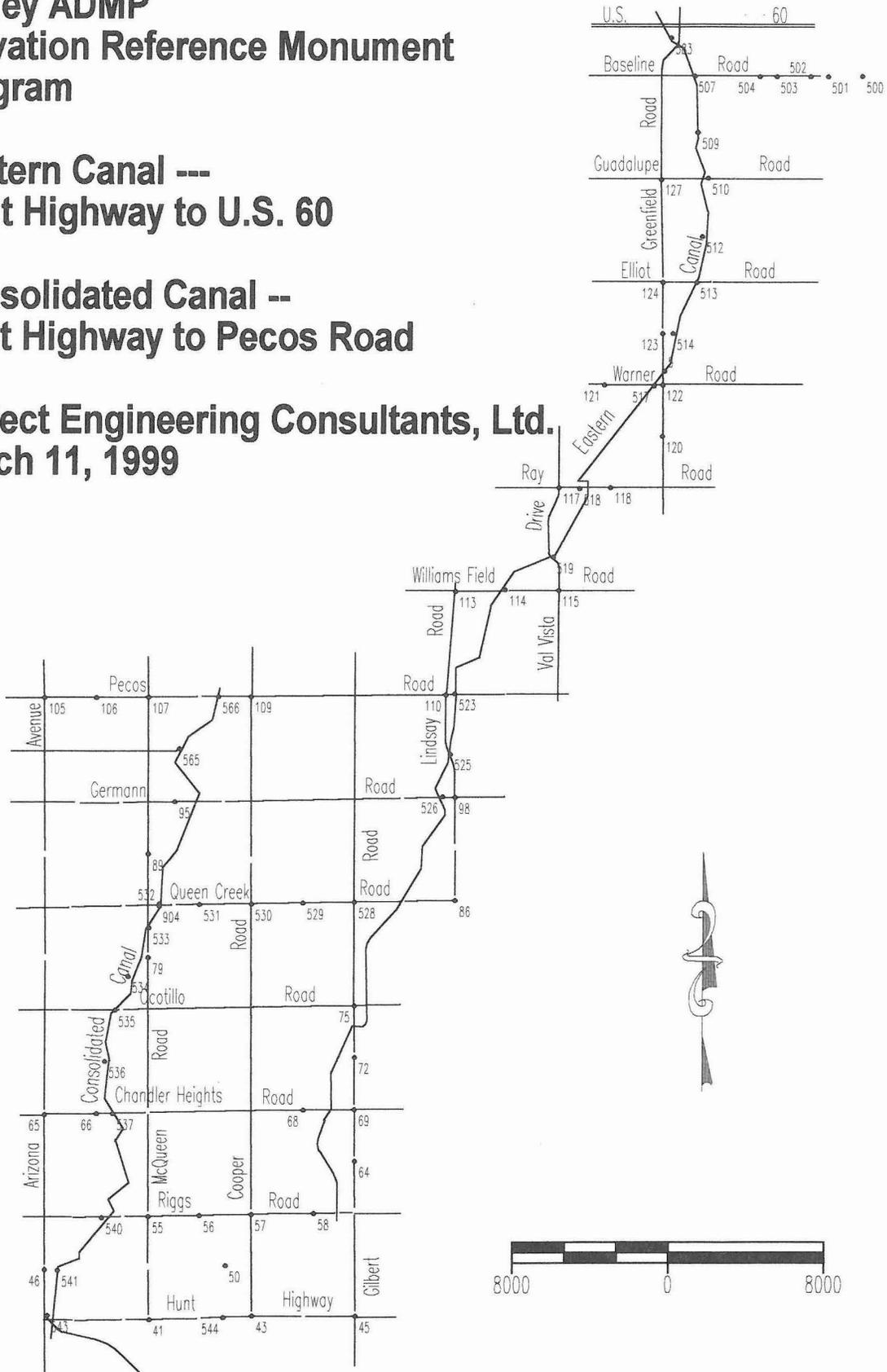
# **Elevation Reference Monument Data**

# Higley ADMP Elevation Reference Monument Diagram

Eastern Canal ---  
Hunt Highway to U.S. 60

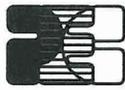
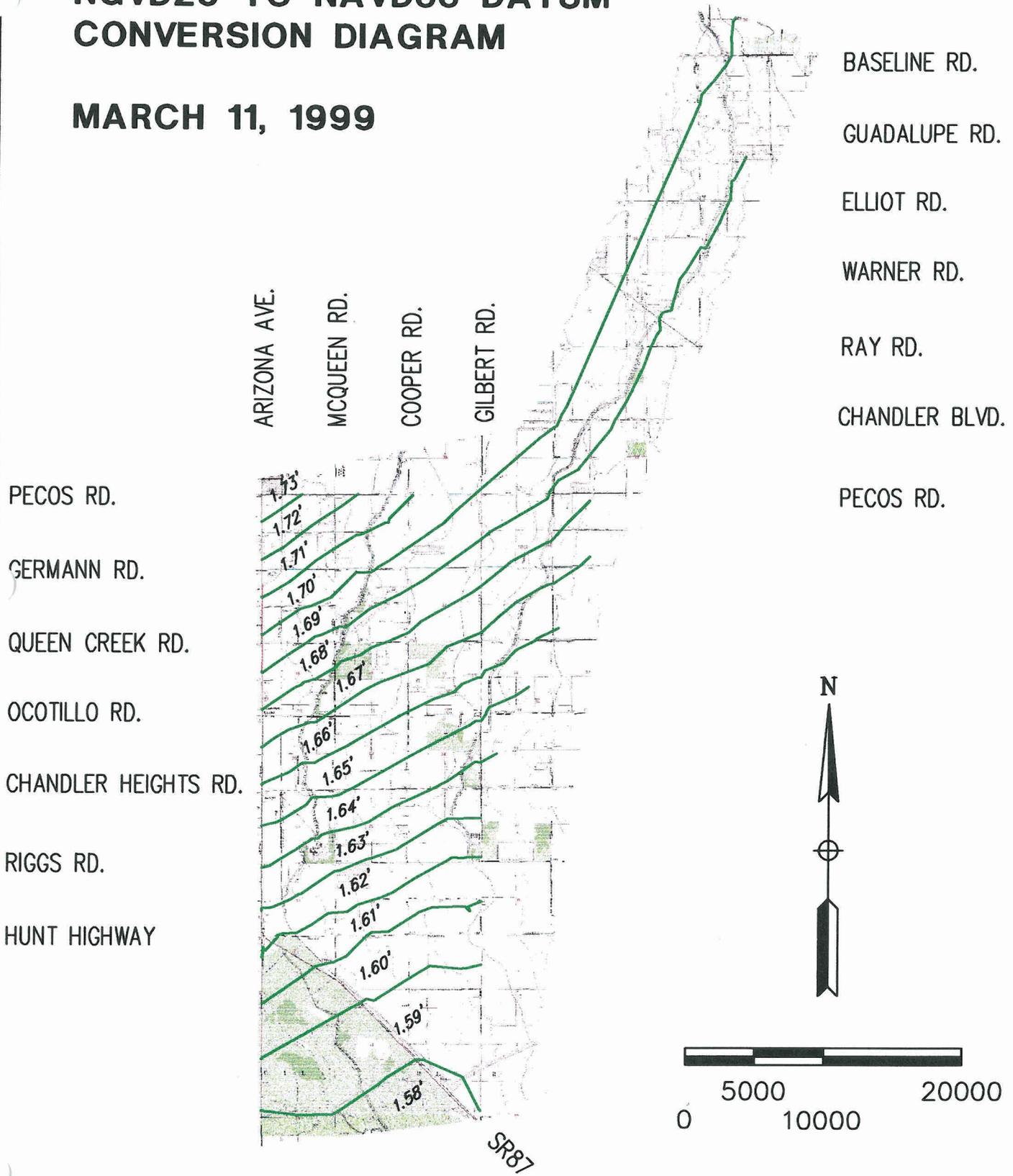
Consolidated Canal --  
Hunt Highway to Pecos Road

Project Engineering Consultants, Ltd.  
March 11, 1999



# HIGLEY ADMP NGVD29 TO NAVD88 DATUM CONVERSION DIAGRAM

MARCH 11, 1999



PROJECT ENGINEERING CONSULTANTS, LTD.  
2320 W. PEORIA PHOENIX, ARIZONA 85029  
PHONE (602) 906-1901

**NAD 83 SPC System  
NAVD 29 Elevations - 3rd Order**

Note: Prime BM for this project is AHD BC cemented in bedrock base of westerly of 2 knolls, 2.0 miles east of Power Road, 34.4' north of CL of WB lanes of Apache Trail, NGS Datum EI = 1479.754

Survey Point #	Remarks	NAD 83 Horizontal Coordinates	Elevation	Section Data	Description
5	ERM	850428.668 754541.890	1277.070		Arizona Department of Transportation Brass Cap flush w/concrete in top of curb on southerly side of Eastern Canal, +/-46' east from center of Greenfield Road, +/-25' northeast from southeast end of barrier wall; stamped "SAN"
41	HV Panel ERM	801846.711 728437.738	1222.532	NE Corner, Section 3, T3S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.75' below rim) @ intersection of Hunt Highway and McQueen Road
43	HV Panel ERM	802021.572 733731.943	1234.723	NE Corner, Section 2, T3S R5E	Fd. City of Chandler Brass Cap in Handhole (0.35' below rim) @ intersection of Hunt Highway and Cooper Road
45	HV Panel ERM	802024.543 738994.222	1251.298	NE Corner, Section 1, T3S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.77' below rim) @ intersection of Hunt Highway and Gilbert Road
46	HV Panel ERM	804401.037 723092.935	1214.711	E¼ Corner, Section 33, T2S R5E	Fd. Unmarked Brass Cap in Handhole (0.70' below rim) in center of Arizona Avenue, +/-½ mile south of Riggs Road
50	HV Panel ERM	804625.140 732360.524	1229.741		Fd. Unmarked Brass Cap flush w/pavement in center of East Doral Drive, +/-100' west of South Coral Gable Drive, +/-300' east of South Championship Drive
55	HV Panel ERM	807133.493 728371.033	1227.822	NE Corner, Section 34, T2S R5E	Fd. City of Chandler Brass Cap in Handhole (0.50' below rim) @ intersection of McQueen Road and Riggs Road
56	HV Panel ERM	807187.037 731022.144	1231.371	N¼ Corner, Section 35, T2S R5E	Fd. City of Chandler Brass Cap in Handhole (0.60' below rim) in center of Riggs Road, +/-½ mile east of McQueen Road
57	HV Panel ERM	807240.143 733673.145	1236.939	NE Corner, Section 35, T2S, R5E	Fd. Brass Cap in Handhole @ intersection of Riggs Road and Cooper Road

Survey Point #	Remarks	NAD 83 Horizontal Coordinates	Elevation	Section Data	Description
58	HV Panel ERM	807285.975 736858.372	1247.536	N¼ Corner, Section 36, T2S, R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.38' below rim) @ intersection of Riggs Road and Riggs Ranch Road
64	HV Panel ERM	809957.909 738935.024	1254.140	E¼ Corner, Section 25, T2S R5E	Fd. Maricopa County Highway Department Brass Cap flush w/pavement in center of Gilbert Road, +/-½ mile north of Riggs Road
65	HV Panel ERM	812335.013 723047.242	1212.228	NE Corner, Section 28, T2S R5E	Fd. Unmarked Brass Cap in Handhole (0.80' below rim) @ intersection of Arizona Avenue and Chandler Heights Road
66	HV Panel ERM	812372.036 725694.069	1223.675	N¼ Corner, Section 27, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.45' below rim) in center of Chandler Heights Road, +/-½ mile east of Arizona Avenue
68	HV Panel ERM	812565.523 736282.883	1248.730	N¼ Corner, Section 25, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.32' below rim) @ intersection of Chandler Heights Road Road and 132nd Street
69	HV Panel ERM	812598.856 738910.908	1256.995	NE Corner, Section 25, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.36' below rim) @ intersection of Chandler Heights Road and Gilbert Road
72	HV Panel ERM	815248.389 738897.946	1257.090	E¼ Corner, Section 24, T2S R5E	Fd. Unmarked 2" Aluminum Cap in pothole (0.11' below surface) in center of Gilbert Road, +/-½ mile south of Ocotillo Road
75	HV Panel ERM	817895.780 738883.791	1254.406	NE Corner, Section 24, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.83' below rim) @ intersection of Gilbert Road and Ocotillo Road
79	HV Panel ERM	820356.302 728301.949	1226.978	E¼ Corner, Section 15, T2S R5E	Fd. Unmarked Brass Cap flush w/pavement in center of McQueen Road, +/-½ mile north of Ocotillo Road
86	HV Panel ERM	823276.365 744017.921	1267.021	NE Corner, Section 18, T2S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.31' below rim) @ intersection of Queen Creek Road and Lindsay Road
89	HV Panel ERM	825659.516 728273.985	1224.705	E¼ Corner, Section 10, T2S R5E	Fd. Brass Cap flush w/pavement @ intersection of McQueen Road and Ryan Road
95	HV Panel ERM	828309.759 729625.405	1225.056		Fd. City of Chandler Brass Cap in Handhole (0.72' below rim) in center of Germann Road, +/-½ mile east of McQueen Road

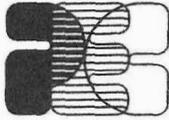
Survey Point #	Remarks	NAD 83 Horizontal Coordinates	Elevation	Section Data	Description
98	HV Panel ERM	828566.554 743986.991	1262.690	NE Corner, Section 7, T2S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.89' below rim) @ intersection of Germann Road and Lindsay Road
105	HV Panel ERM	833640.995 722917.074	1214.931		Fd. City of Chandler Brass Cap flush w/pavement @ intersection of Arizona Avenue and Pecos Road, +/- 20' west of Brass Cap in Handhole
106	HV Panel ERM	833656.398 725578.523	1219.052	N¼ Corner, Section 3, T2S R5E	Fd. City of Chandler Brass Cap in Handhole (0.28' below rim) @ intersection of Pecos Road and Hamilton Street
107	HV Panel ERM	833668.742 728224.389	1219.869	NE Corner, Section 3, T2S R5E	Fd. City of Chandler Brass Cap in Handhole (0.49' below rim) @ intersection of Pecos Road and McQueen Road
109	HV Panel ERM	833714.439 733511.815	1236.734	NE Corner, Section 2, T2S R5E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.58' below rim) @ intersection of Pecos Road and Cooper Road
110	HV Panel ERM	833809.416 743491.530	1263.642	NE Corner, Section 6, T2S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.61' below rim) @ intersection of Pecos Road and Lindsay Road
113	HV Panel ERM	839124.008 743935.460	1259.301	NE Corner, Section 31, T1S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole ( 0.35' below rim) @ intersection of Chandler Boulevard and Lindsay Road
114	HV Panel ERM	839147.034 746574.363	1269.190	N¼ Corner, Section 32, T1S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.39' below rim) in center of Chandler Boulevard, +/-50' east of Eastern Canal
115	HV Panel ERM	839171.476 749212.247	1269.728	NE Corner, Section 32, T1S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.48' below rim) @ intersection of Chandler Boulevard and Val Vista Drive
117	HV Panel ERM	844441.088 749195.856	1264.705	NE Corner, Section 29, T1S R6E	Fd. Maricopa County Highway Department Brass Cap in Handhole (0.52' below rim) @ intersection of Ray Road and Val Vista Drive
118	HV Panel ERM	844456.594 751833.397	1270.397	N¼ Corner, Section 28, T1S R6E	Fd. Maricopa County Department of Transportation Brass Cap in Handhole (0.70' below rim) in center of Ray Road, +/-½ mile east of Val Vista Drive
120	HV Panel ERM	847073.079 754462.368	1273.911		Fd. Town of Gilbert Brass Cap in Handhole (0.32' below rim) @ intersection of Greenfield Road and Knox Road; +/-32' south of Brass Cap in Handhole @ north intersection

Survey Point #	Remarks	NAD 83 Horizontal Coordinates	Elevation	Section Data	Description
121	HV Panel ERM	849718.716 751483.293	1266.299	N¼ Corner, Section 21, T1S R6E	Fd. Town of Gilbert Brass Cap in Handhole (0.44' below rim) in center of Warner Road, +/-½ mile west of Greenfield Road
122	HV Panel ERM	849735.243 754455.868	1271.611		Fd. Town of Gilbert Brass Cap in Handhole (0.36' below rim) in center of Warner Road, +/-60' west of Greenfield Road
123	HV Panel ERM	852372.317 754444.696	1270.230	E¼ Corner, Section 16, T1S R6E	Fd. Maricopa County Department of Transportation Brass Cap in Handhole (0.61' below rim) @ monument line of Greenfield Road, +/-½ mile south of Elliot Road, +/-30' south of center of Mesquite Street
124	HV Panel ERM	855007.124 754433.478	1269.505	NE Corner, Section 16, T1S R6E	Fd. Town of Gilbert Brass Cap in Handhole (0.36' below rim) @ intersection of Greenfield Road and Elliot Road
127	HV Panel ERM	860291.722 754293.273	1269.242		Town of Gilbert Brass Cap in Handhole (0.40' below rim) @ intersection of Greenfield Road and Guadalupe Road
132	HV Panel ERM	868210.131 757575.365	1303.268	Center of Section 34, T1N R6E	Fd. Brass Cap flush w/concrete of overpass over SR 60 (Superstition Freeway), +/-½ mile east of Greenfield Road
271	ERM		1325.805	SW Corner Section 36, T1N R6E	Maricopa County Highway Department Brass Cap in Handhole (0.22' below rim) @ intersection of Baseline Road and Recker Road north
328	ERM	833737.356 732153.897	1233.694		Fd. Maricopa County Highway Department Brass Cap flush w/concrete in sidewalk @ northwest corner of Pecos Road bridge over Consolidated Canal; stamped "EL 1234.69"
500	ERM	865604.265 764575.235	1320.619	NE Corner Section 2, T1S R6E	Maricopa County Highway Department Brass Cap in Handhole (0.30' below rim) @ intersection of Baseline Road and Recker Road south
501	ERM	865594.639 762828.686	1312.992	S¼ Corner Section 35, T1N R6E	Maricopa County Highway Department Brass Cap in Handhole (0.45' below rim) @ centerline of Baseline Road, +/-3000' east of Higley Road
502	ERM	865589.728 761939.707	1307.343	N¼ Corner Section 2, T1S, R6E	Maricopa County Highway Department Brass Cap in Handhole (0.46' below rim) @ centerline of Baseline Road, +/-½ mile east of Higley Road
503	ERM	865579.897 760191.693	1298.901	SE Corner, Section 34, T1N R6E	Maricopa County Highway Department Brass Cap in Handhole (0.29' below rim) @ centerline of Baseline Road, +/-1300' east of Higley Road

Survey Point #	Remarks	NAD 83 Horizontal Coordinates	Elevation	Section Data	Description
504	ERM	865575.145 759304.735	1294.888	NE Corner, Section 3, T1S R6E	Maricopa County Highway Department Brass Cap in Handhole ( 0.37' below rim) @ intersection of Baseline Road and Higley Road
507	ERM	865607.336 755978.737	1286.756		Brass Cap flush w/concrete on top of barrier wall @ northeast corner of Baseline Road Bridge over Eastern Canal, +/-100' west of Old Greenfield Road
509	ERM	862699.560 756169.555	1280.272		Salt River Valley Water User's Association Brass Cap flush w/concrete on top of southwest corner of irrigation box, +/-½ mile south of Baseline Road, +/-40' west of center of Eastern Canal, +/-40' SSE of Salt River Project Wellsite #33.4 East 0.5 South
510	ERM	860348.751 756709.049	1280.734		Maricopa County Engineering Department Brass Cap flush w/concrete in center of headwall on northside of Guadalupe Road bridge over Eastern Canal
512	ERM	857348.009 756445.390	1275.177		Maricopa County Brass Cap flush w/pavement @ east end of Vaughn Street in center of cul-de-sac, +/-150' west of Eastern Canal, +/-½ mile north of Elliot Road
513	ERM	854987.301 756167.612	1281.099		Maricopa County Highway Department Brass Cap flush w/concrete on top of barrier wall @ southwest corner of Elliot Road bridge over Eastern Canal; stamped "1283.01"
514	ERM	852363.134 754979.680	1273.592		Salt River Project Brass Cap flush w/concrete on top of concrete headwall on westedge of Eastern Canal, +/-½ mile south of Elliot Road; stamped "33.1 E 4.5 S"
517	ERM	849680.297 754020.812	1276.679		Maricopa County Highway Department Brass Cap flush w/concrete on top of barrier wall @ southeast corner of Warner Road bridge over Eastern Canal
518	ERM	844400.962 750263.162	1271.401		Arizona Highway Department Brass Cap flush w/concrete on top of barrier wall @ southwest corner of Ray Road bridge over Eastern Canal
519	ERM	840879.103 748916.122	1270.227		Maricopa County Engineering Department Brass Cap flush w/northwest corner of concrete sidewalk @ northeast corner of Val Vista Drive bridge over Eastern Canal
523	ERM	833860.600 743937.349	1267.048		Salt River Project Aluminum Cap flush w/concrete in northwest wingwall of Eastern Canal, +/-50' north of center of Pecos Road; stamped "31.0 E 6.0 S BM"

Survey Point #	Remarks	NAD 83 Horizontal Coordinates	Elevation	Section Data	Description
525	ERM	830782.100 743723.846	1267.637	E¼ Corner, Section 6, T2S R6E	Maricopa County Department of Transportation Brass Cap flush w/pavement @ intersection of Lindsay Road and 144th Street
526	ERM	828589.755 743351.731	1265.892		Maricopa County Highway Department Brass Cap flush w/concrete on top of northeast corner of barrier wall of Eastern Canal, northside of Germann Road
528	ERM	823194.119 738857.074	1251.429	NE Corner, Section 13, T2S R5E	Unmarked Aluminum Cap in Handhole @ intersection of Queen Creek Road and Gilbert Road
529	ERM	823146.435 736219.214	1244.569	N¼ Corner, Section 13, T2S R5E	Maricopa County Highway Department Brass Cap in Handhole in center of Queen Creek Road, +/-½ mile west of Gilbert Road
530	ERM	823098.800 733581.513	1237.926	NE Corner, Section 14, T2S R5E	Maricopa County Highway Department Brass Cap in Handhole @ intersection of Queen Creek Road and Cooper Road
531	ERM	823053.228 730942.033	1231.534	N¼ Corner, Section 14, T2S R5E	1" O.D. Iron Pipe in Handhole @ intersection of Queen Creek Road and Adams Avenue
532	ERM	823101.845 728861.953	1230.396		Salt River Project Brass Cap flush w/concrete @ northwest corner of headwall of Consolidated Canal, +/-60' north of Queen Creek Road, +/-350' east of McQueen Road; stamped "28.1 E 8.0 S 1993"
533	ERM	821854.978 728326.059	1228.676		Maricopa County Department of Transportation Brass Cap flush w/concrete headwall on McQueen Road bridge over Consolidated Canal
534	ERM	819395.736 727280.812	1226.961		Salt River Project Brass Cap flush w/concrete in easterly wingwall of floodgate structure on Consolidated Canal, +/-½ mile south of Queen Creek Road; stamped "27.4 E 8.7 S 1993"
535	ERM	817643.319 726598.509	1227.723		Salt River Project Brass Cap flush w/concrete in southwest corner of headwall of Consolidated Canal, southside of Ocotillo Road; stamped "27.7 E 9.0 S 1993"
536	ERM	815047.174 726111.558	1224.342		Salt River Project Brass Cap flush w/concrete in west wingwall of floodgate structure of Consolidated Canal, +/-½ mile south of Ocotillo Road; stamped "27.6 E 9.5 S"
537	ERM	812363.03 726543.117	1226.629		Maricopa County Highway Department Brass Cap flush w/concrete in west end of south barrier wall of Chandler Heights Road bridge over Consolidated Canal; stamped "1227.80"

Survey Point #	Remarks	NAD 83 Horizontal Coordinates	Elevation	Section Data	Description
540	ERM	807075.494 726007.872	1220.020		Salt River Project Brass Cap flush w/concrete in center of south headwall of Consolidated Canal, southside of Riggs Road; stamped "27.7 E 11.0 S 1993"
541	ERM	804367.864 723770.419	1217.043		Salt River Project Brass Cap flush w/concrete in flood control structure on east bank of Consolidated Canal, +/-0.6 miles south of Riggs Road; stamped "27.1 E 11.5 S 1993"
543	ERM	802068.764 723254.864	1215.313		Arizona Department of Transportation Brass Cap flush w/concrete in north headwall of Consolidated Canal, east of Arizona Avenue, +/-500' north of Hunt Highway; stamped "1216.16 1962"
544	TBM	801962.117 732255.941	1230.964		Fd. City of Chandler Brass Cap in Handhole @ intersection of Hunt Highway and Championship Drive
562	ERM	788538.296 738789.102	1243.066		Brass Cap flush w/concrete @ northeast corner of State Route 87 Bridge over East Maricopa Flood Channel
583	ERM	867571.166 754759.036	1285.096		Maricopa County Engineering Department Brass Cap flush w/concrete in center of west headwall of Greenfield Road bridge over Eastern Canal; stamped "ELEV 1262-M 1973"

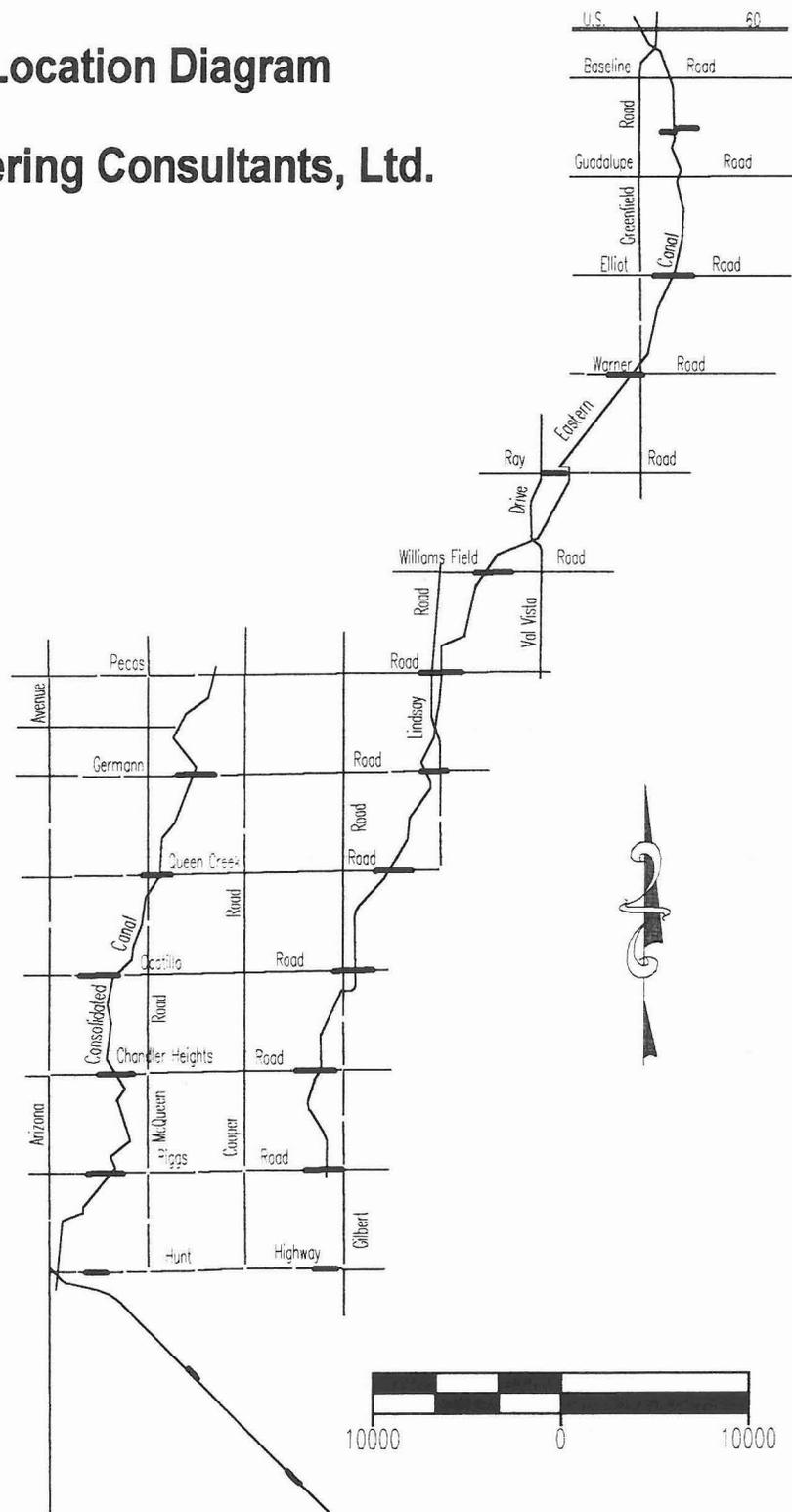


**PROJECT ENGINEERING  
CONSULTANTS, LTD.**  
ENGINEERS • PLANNERS • SURVEYORS

## **Survey Notes**

# Higley ADMP Cross Section Location Diagram

Project Engineering Consultants, Ltd.  
March 11, 1999



98045

E	L	A	N

Field Book  
E 64-8x4 W

HIGLEY ADMP

LEVELS

**BOOK 1 of**

50% cotton-content paper  
water-resistant surface  
50 sheets... 4 1/8" X 7 1/8"

## CURVE FORMULAS

$T = R \tan \frac{1}{2} I$ $T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$ $\text{Sin. } \frac{1}{2} D = \frac{50}{R}$ $\text{Sin. } \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$	$R = T \cot. \frac{1}{2} I$ $R = \frac{50}{\text{Sin. } \frac{1}{2} D}$ $E = R \text{ ex. sec } \frac{1}{2} I$ $E = T \tan \frac{1}{4} I$	$\text{Chord def.} = \frac{\text{chord}^2}{R}$ $\text{No. chords} = \frac{I}{D}$ $\text{Tan. def.} = \frac{1}{2} \text{ chord def.}$
---	--	--

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

## GENERAL DATA

**RIGHT ANGLE TRIANGLES.** Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt.  $10 \cdot 10^2 + 200 = 5$ .  $100 + 5 = 100.5$  hyp.

Given Hyp. 100, Alt.  $25 \cdot 25^2 + 200 = 3.125$ .  $100 - 3.125 = 96.875$  Base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

**LEVELING.** The correction for curvature and refraction, in feet and decimals of feet is equal to  $0.574 d^2$ , where  $d$  is the distance in miles. The correction for curvature alone is closely,  $\frac{1}{3}d^2$ . The combined correction is negative.

**PROBABLE ERROR.** If  $d_1, d_2, d_3$ , etc. are the discrepancies of various results from the mean, and if  $\sum d^2$  = the sum of the squares of these differences and  $n$  = the number of observations, then the probable error of the mean =

$$\pm 0.6745 \sqrt{\frac{\sum d^2}{n(n-1)}}$$

### MINUTES IN DECIMALS OF A DEGREE

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

### INCHES IN DECIMALS OF A FOOT

$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

Elan Publishing Co., Inc. Meredith, N.H. 03253

#98045

HIGLEY ADMP

PROJECT ENGINEERING  
 2320 W. Peoria, Ste. C-122  
 Phoenix, AZ



## LINE 1

STA	A#	BS+	FS-	ELEV	ADJ EL
POB	271			1325.805	
TP1			5.527		
		3.399			
TP2			5.528	1321.158	
		4.025			
TP3	500		4.565	1320.618	
		2.771			
TP4			4.704	1318.686	
		3.615			
TP5			5.176	1317.124	
		3.745			
TP6			4.991	1315.878	
		3.812			
TP7			5.239	1314.451	
		3.528			✓
TP8	501		4.989	1312.990	
		2.707			
TP9			6.076	1310.621	
		3.551			
TPX10			6.037	1308.135	
		4.474			
TP1/211	502		5.268	1307.340	
		3.357			
TP1/212			5.727	1304.970	

## REMARKS

Brass Cap in Handhole @ intersection of Baseline Rd & Recker Rd North

B.C. IN H.H. DIX OF BASELINE RD. & RECKER RD. SOUTH

B.C. IN H.H. HOUSE NR. 5635 ON SOUTH SIDE BASELINE RD

55 2 51

B.C. IN H.H. @ N.W. COR. OF BLDG # 5525 @ BASELINE RD

STA	A#	BSt	FS-	ELEV	ADJ'EL
		2.802			
TP#13			5.405	1303.361	
		3.695			
TP#14			5.523	1301.539	
		3.741			
TP#15			5.409	1299.870	
		3.789			
TP#16	503		4.763	1298.896	
		3.507			
TP#17			5.481	1296.923	
		2.702			
TP 18			5.424	1295.200	
		4.389			
TP 19	504		4.707	1294.882	
		3.519			
TP 20			5.519	1292.883	
		4.020			
TP 21			5.477	1291.425	
		4.011			
TP 22			5.718	1289.717	
		3.973			
TP 23	505		4.458	1289.232	
		3.558			
P.B.O					
TP 24	272		5.283	1287.507	
		4.393			

REMARKS

B.C. IN H.H.

B.C. IN H.H.  $\frac{1}{2}$  OF BASELINE & HIGLEY RD.

B.C. FLUSH  $\frac{1}{2}$  OF BASELINE & CLAIBORNE AV.

STA	PT#	B.S.	I.S.	EL.
TP 1	506		5.096	1286.804
		3.345		
TP 2			5.587	1284.562
		3.919		
TP 3			5.473	1283.008
		4.758		
* TP 4	507		0.937	1286.828
		1.270		
TP 5			6.051	1282.047
		5.864		
TP 6			5.730	1282.180
		4.972		
TP 7			5.243	1281.909
		4.890		
TP 8			4.952	1281.847
		4.799		
TP 9			4.831	1281.815
		5.470		
TP 10			5.362	1281.924
		5.205		
TP 11			4.915	1282.213
		3.977		
TP 12			5.237	1280.954

5

BC FLUSH ~~W~~ OF BASELINE RD. ROCHESTER

N. E. COR. of Barrier Wall  
 BC FLUSH NORTH ~~W~~ OF BASELINE & OLD CASE  
 OF Baseline Rd Bridge over Eastern Canal, ± 100' west of Old  
 Greenfield Rd.

STA	PT. #	B.S.	F.S.	ELEV.
		4.589		
TP 13	508		4.803	1280.739
		5.297		
* TP 14	509		5.695	1280.341
		4.669		
TP 15			4.717	1280.294
		4.557		
TP 16			4.994	1279.857
		4.432		
TP 17			4.688	1279.601
		4.305		
TP 18			4.470	1279.436
		4.356		
TP 19			4.915	1278.877
		4.939		
TP 20			4.885	1278.931
		5.070		
TP 21	510		3.198	1280.803
		3.818		
TP 22			5.194	1278.428
		4.695		
TP 23			4.824	1279.298
		4.765		
TP 24			5.078	1278.985

6

1/2 REBAR

P.E. G.P.S. # 129 EAST NEWELL SITE # 33.4 E - 0.5 SOUTH

SRVWUA Top of SW Cor Jct Structure, 1/2 mile South of Basilio  
 SRPT B.C. TOP OF HEAD WALL OF SOUTH WEST COR WATER CONTROL  
 RD. 40' West of center of Eastern Canal, 40' SSE of SRP Well site  
 ADJACENT OF WELL SITE 174 EAST 20 E SOUTH

M.C.E.D. B.C. <sup>center of</sup> TOP OF ~~SRP~~ HEAD WALL ? NORTH  
 SIDE GUADALUPE RD. Bridge over Eastern Canal

STA	PT.#	B.S.	F.S.	ELEV.
		4.368		
TP 25		4.724	4.767	1278.586
		4.291	4.919	1278.401
TP 26		4.862	4.377	1278.315
		5.097	5.301	1277.875
TP 27	126 SM	5.097	4.538	1278.435
		7.941	7.866	1275.243
T.P. 29		4.603	5.053	1278.131
		4.488	4.642	1278.092
T.P. 30	512	4.488	4.548	1278.032
		4.849	4.580	1278.301
T.P. 31		4.798	5.231	1277.867
		5.140	4.866	1278.141
T.P. 32				
T.P. 33				
T.P. 34				
T.P. 35				
T.P. 36				

1/2 REGAR G.P.S. POINT # 126  
367

M.C. B.C. Flush w/ pavement @ East End of Vaughn Street in center  
1/2 MI. WEST SIDE REGANAL  
M.C. B.C. @ GILDER SAC N-E HOUSE #  
R Cut-de-Sac, # 150 West of Eastern Canal, ± 1/2 mile north of ELLIOT  
S-E HOUSE # 12314

STA.	PT.#	B.S.	F.S.	ELEV.
		5.013		
T.P. 37			5.291	1277.863
		5.841		
T.P. 38	513		2.542	1281.161
		1.852		
T.P. 39			6.511	1276.503
		3.614		
T.P. 40			4.848	1275.269
		4.899		
T.P. 41			4.747	1275.421
		4.409		
T.P. 42			5.162	1274.667
		5.333		
T.P. 43			4.664	1275.338
		4.678		
T.P. 44			4.967	1275.047
		5.027		
T.P. 45			4.607	1275.467
		4.366		
T.P. 46			5.218	1274.615
		4.880		
T.P. 47	514		5.842	1273.653
		5.801		
T.P. 48			4.771	1274.683

M.C.H.D. B.C. TOP CONC. S.W. COR. OF <sup>Barrier Wall</sup> HEADWALL ~~D~~  
 of ELLIOT RD. <sup>Bridge over</sup> ~~E.S.R.P. CANAL~~ <sup>and Eastern</sup> Canal; stamped  
 "1203.01"

S.R.P. B.C. 33.1 E & 2.5 S. TOP OF CONC HEADWALL  
 0.85 MILE SOUTH OF ELLIOT RD. WEST SIDE CANAL  
 stamped "33.1 S 4.5 S"



STA.	PT. #	B.S.	F.S.	ELEV.
		4.980		
TP 61			4.920	1270.847
		4.867		
TP 62			4.990	1270.724
		4.973		
TP 63			5.164	1270.533
		5.539		
T.P. 64	273		6.320	1269.752
		<del>6.803</del>		
<del>TP 65</del>			<del>4.904</del>	<del>1271.151</del>
		<del>4.700</del>		
<del>TP 66</del>			<del>5.323</del>	<del>1270.528</del>
		<del>4.981</del>		
<del>TP 67</del>			<del>4.752</del>	<del>1270.758</del>
		<del>5.261</del>		
<del>TP 68</del>			<del>5.278</del>	<del>1270.741</del>
		<del>4.621</del>		
<del>TP 69</del>			<del>4.989</del>	<del>1270.373</del>
		<del>4.900</del>		
<del>TP 70</del>			<del>4.945</del>	<del>1270.329</del>
		<del>5.532</del>		
<del>TP 71</del>			<del>6.582</del>	<del>1269.279</del>
TP 72				

10

AT 1/2 MILE EAST SIDE OF CANAL  
 TOWN OF GILBERT B.C. FLUSH <sup>IN</sup> center of South Cross  
 Drive, ± 300' north of Devon Ct. <sup>at</sup> HOUSE ~~lost on~~  
~~SOUTH CROSS RD. RR.~~ ± 20' south of ~~house~~  
 of median curb



STA.	PT. #	B.S.	F.S.	ELEV
TP 12			4.801	1268.839
		4.786		
TP 13			4.801	1268.824
		5.140		
TP 14	518		2.507	1271.451
		2.182		
TP 15			4.982	1268.657
		5.066		
TP 16			4.599	1269.124
		4.784		
TP 17			4.826	1269.082
		4.935		
TP 18			5.355	1268.662
		5.455		
TP 19			4.685	1269.433
		4.708		
TP 20			5.240	1268.900
		5.182		
TP 21			5.011	1269.071
		4.672		
TP 22			4.949	1268.794
		5.217		
TP 23			5.010	1269.001
		4.431		

R

A.H.D. B.C. D. <sup>Top of Barrier Wall @ SW Corner of Bay Rd</sup>  
~~SOUTH WEST COR. OF BARRIER WALL S. SIDE~~  
 Bridge over Eastern Canal  
~~TOP OF RAY RD E CANAL~~

STA.	PT.#	B.S.	F.S.	ELEV.
TP 24	519		3.151	1270.280
		2.560		
TP 25			4.635	1268.206
		4.900		
TP 26			5.137	1267.968
		4.523		
TP 27			4.822	1267.669
		5.072		
TP 28			4.593	1268.148
		4.639		
TP 29			4.870	1267.917
		4.664		
TP 30			4.602	1267.979
		4.912		
TP 31			4.731	1268.159
		4.749		
TP 32	520		1.157	1276.751
		1.408		
TP 33			6.700	1266.459
		5.420		
TP 34			5.149	1266.730
		4.780		
TP 35			4.968	1266.541
		4.798		

M.C.E. B.C. Flush w/ NW Cor of Conc SW @ NE Cor of Wall V. 11  
~~BRIDGE OVER EAST COR OF HEAD WALL~~  
~~WILLIAMS~~ ~~CANAL~~

SAP BC Flush w/ conc SW Cor of STG E 75' North of W. FIELDS,  
 West side of Eastern Canal, stamped "315 E 50 S"

MCHD BC Flush w/ top of barrier wall @ NW Cor of Williams Field RD  
 B.C. NORTH EAST COR OF HEADWALL \*  
 (CHAMPAGNE BLVD)  
 CANAL @ WILLIAMS FIELD ROAD  
 Bridge over Eastern Canal

STA.	PT.#	B.S.	F.S.	ELEV.
TP 36			4.759	1266.581
		4.912		
TP 37			4.889	1266.603
		4.621		
TP 38			4.586	1266.638
		4.557		
TP 39			4.898	1266.297
		4.644		
TP 40	521		5.821	1265.121

CUT-CROSS<sup>"+"</sup> TOP OF LONG HEAD WALL WEST SIDE OF THE CANAL  
 1/2 MILE ± S. OF CHANDLER BLVD

ON 1/2 MILE ± S. OF CHANDLER BLVD

10/23/98 JR

STA	PT #	BS +	FS -	ELEV	ADJ. ELEV
P.O.B (9)	521			1265.121	
		6.163			
1			5.389	1265.895	
		5.346			
2			5.061	1266.179	
		4.524			
3			5.085	1265.618	
		5.225			
4			5.370	1265.473	
		4.485			
5	522		6.601	1263.357	
		7.473			
6			5.298	1265.532	
		5.194			
7			4.963	1265.763	
		5.166			
8	523		3.835	1267.093	
		4.174			
9			6.306	1264.961	
		4.637			
10			4.476	1265.121	
		4.702			
11	<del>524</del>		3.864	1265.960	
		4.340			
12	524		5.145	1265.154	

NAIL
SRP R/W 2" AL CAP ~ 50' W OF CANAL BY IRRIG. DITCH 1400' E.N. OF PECOS ROAD
NAIL
NAIL
SRP CAP IN N.W. WALL CANAL @ PECOS ROAD MARKED 31.0 E 6.05 BM (50' E N OF PECOS RD.) 60' W OF 44 <sup>TH</sup> ST
PK
PK
CONC.
SRP CAP IN N.W. WALL CANAL STRUT. E. OF 44 <sup>TH</sup> ST @ N OF 31.5 LEXINGTON ST MARKED ("SRP 31 E 6.35 BLW = 1265.17) 6.35 1275 11

STA	P1 <sup>#</sup>	BS +	FS -	ELEV
		3.724		
13		5.622	5.239	1263.640
		5.622		
14		4.126	5.375	1263.887
		5.671		
15		1.546	0.910	1267.103
		5.671		
16	525	5.675	5.095	1267.678
		5.675		
17		5.088	6.904	1262.321
		5.088		
18		5.675	5.352	1262.643
		5.675		
19		5.088	5.791	1261.940
		5.088		
20		4.946	5.297	1261.589
		5.815		
21		5.815	5.370	1262.034
		6.574		
22	526	6.574	2.677	1265.931
		1.845		
23		1.845	6.506	1261.271
		5.186		
24		5.186	5.605	1260.952
		5.224		

NAIL
NAIL
PK IN E.P.
MCCOY ST TRANS BC FLUSH @ 144 <sup>th</sup> ST & LINDSAY
NAIL
MCHD BRASS CAP IN NE BARRIER WALL OF CANAL @ GERMANN RD (ELEV 1269.08) 1997
NAIL
NAIL



	PT #	BS	FS	ELEV	ADJ ELEV
		5.163			
38			5.864	1251.884	
		5.071			
39	528		5.493	1251.462	
		4.326			
40			6.088	1249.700	
	<del>528</del>	3.909			
41			5.471	1248.137	
		4.170			
42			5.723	1246.585	
		4.498			
43			5.340	1245.743	
		4.424			
44	529		5.567	1244.599	
		4.470			
45			5.546	1243.223	
		4.075			
46			5.471	1241.882	
		4.060			
47			5.305	1240.637	
		4.345			
48			5.338	1239.645	
		4.151			
49	530		5.840	1237.956	

NAIL IN FARM Rd S. OF QUEEN CREEK ROAD			
ALUM CAP B.C. IN H.H. NOT MARKED @ QUEEN CREEK & GILBERT ROAD			
PK	PAINT SPOT		
NATL	S. EP		
PAINT SPOT S. EP QUEEN CREEK			
PAINT SPOT			
PAINT SPOT			
MCHD B.C. IN H.H. 1/2 MILE W. OF GILBERT ON QUEEN CREEK			
PAINT SPOT N. EP			
"	"	"	"
"	"	"	"
PAINT SPOT S. TOP IRREG DITCH N. OF QUEEN CREEK			
MCHD B.C. IN H.H. @ QUEEN CREEK & COOPER			



Sta	Pt#	BS+	FS-	(L.S.V)	ADJ. ELEV
		5.716			
13			4.909	1226.404	
		5.818			
14	533		3.521	1228.701	
		3.814			
15			5.552	1226.963	
		6.305			
16			5.448	1227.820	
		4.780			
17			5.603	1226.997	
		6.363			
18			6.131	1227.229	
		5.447			
19	531		5.692	1226.985	
		4.161			
20			5.719	1225.427	
		5.800			
21			5.582	1225.645	
		4.823			
22			5.239	1225.229	
		6.691			
23	535		4.174	1227.746	
		2.501			
24			5.895	1224.353	
		5.252			
25			4.785	1224.89	

PAINT SPOT

E NORTH HOWALL OF CANAL BOX UNDERNEATH McQUEEN ROAD  
MC DOT BRASS CAP

NAIL

NAIL

NAIL

NAIL

SRP BRASS CAP IN EASTERN LIMITS WITH ELSON LATE STRUCTURE ON CANAL  
MARKED (27.4E 8.75 1993) 0.5M SOUTH OF QUEEN CREEK RD

NAIL

NAIL

NAIL

SRP BRASS CAP IN SW HOWALL & Ocotillo RD CONSOLIDATED CANAL  
MARKED (27.7E 9.05 1993)

NAIL

NAIL

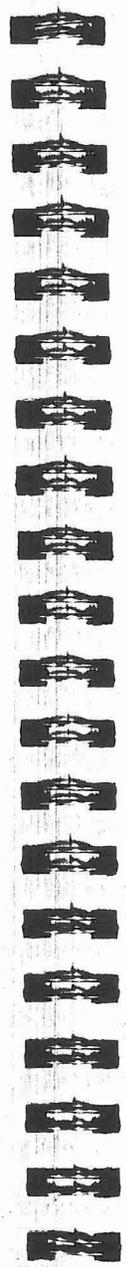
S	PT#	BSI	FS-	FLN	ADJ ELEV.
		5.323			
26			5.642	1224.500	
		5.390			
27			6.247	1223.643	
		5.545			
28			5.472	1223.716	
		5.750			
29	536		5.103	1224.363	
		4.605			
30			6.255	1227.712	
		5.407			
31			5.941	1222.179	
		5.977			
32			5.820	1222.336	
		5.669			
33			3.787	1224.217	
		4.793			
34	537		2.362	1226.649	
		0.392			
35			6.209	1220.831	
		5.886			
36			5.863	1220.855	
		5.690			
37			5.866	1220.678	
		5.106			
38			5.195	1220.589	

NAIL
NAIL
NAIL
NAIL
SEP BE IN W. USING WALL FLOOD GATE STRUCTURE ± 1/2 MILE S. OF OCOTILLO RD MARKED (27.6E 9.5S)
NAIL
MCHD BC. WENT SOUTH BARRIER WALL OF CANAL BRIDGE OVER CHANDLER HEIGHTS RD MKD. (1227.80)
NAIL
NAIL
NAIL
NAIL





Sta	PT#	Bst	FS	ELEV	ADJ ELEV
		4.912			
13			4.904	1217.862	
		4.770			
14			5.544	1217.088	
		5.389			
15	541		5.421	1217.056	
		5.072			
16			5.920	1216.208	
		5.655			
17			5.797	1216.066	
		5.460			
18			4.818	1216.708	
		5.341			
19	542		4.708	1217.341	
		4.115			
20			5.460	1215.996	
		4.438			
21			4.840	1215.594	
		5.582			
22	543		5.851	1215.325	
		3.965			
23			5.065	1214.225	
		5.480			
24			5.348	1214.357	
		5.683			
25	39		4.922	1215.118	



NAIL
NAIL
SEP BECAP IN CONC. FLOOD CONTROL STRUCT. E. BANK OF CONSOL CANAL 0.6 MILES OF RIGGS (27.1E 11.55 1993)
NAIL
NAIL
PAINT SPOT W. EP ARIZ AVE
FIND COTTON PICKER E ARIZ AVE 3/4 MILE E S. OF RIGGS ROAD (WICKERLY LS 5068)
PAINT SPOT W. EP ARIZ AVE
PAINT SPOT W. EP ARIZ AVE
ADOT CAP IN N. HEADWALL CONSOLID. CANAL - E. OF ARIZ AVE SOUTH OF HUNT HIGHWAY (1216.6 1962)
PAINT SPOT N. EP HUNT HWY
PAINT SPOT
PANEL # 39



	PT#	BS+	FS-	ELN	ADJ. ELN
		5.387			
39			4.960	1229.706	
		6.112			
40			4.966	1230.852	
		5.784			
41	544		5.695	1230.941	
		6.770			
42			4.760	1232.951	
		5.288			
43			4.494	1233.745	
		6.184			
44	43		5.235	1234.694	
		5.300			
45			4.340	1235.654	
		5.530			
46			4.435	1236.749	
		6.076			
47			4.432	1238.393	
		5.682			
48			4.510	1239.565	
		5.770			
49	44		4.276	1241.059	
		5.702			
50			4.508	1242.253	
		6.015			
51			4.338	1243.930	

TO N. SIDE HUNT HWY
" " " "
END CITY OF CHANDLER BC. IN H.H. @ HUNT HIGHWAY & CHAMPIONSHIP DRIVE
TO N. SIDE HUNT HWY
" " " " "
END CITY OF CHANDLER BC. IN H.H. @ HUNT HIGHWAY & COOPER PANEL # 43 PANEL IS 0.38 ABOVE CAP
PAINT SPOT S. EP HUNT
" " " " "
" " " "
" " " "
CHISLED "1" ON W. ERM OF H.H. @ HUNT HIGHWAY 1/2 MILE EAST OF COOPER PANEL # 44 - GOOD PANEL ELN
PAINT SPOT S. EP HUNT
" " " "

STA PT# BST FS- ELEV. ADJ. ELEV.

6.038

52

4.370 1245.598

6.385

53

1.242 1247.741

7.085

54

45

3.575 1251.251

PANT SPOT S, EP HUNT

MCHD B.C IN H.H. HUNT HWY & GILBERT ROAD  
B.C IS 0.69 BELOW PANEL PANEL #45

STA	PT #	BS+	FS-	ELEV	ADJ ELEV
P.O.B.	527			1259.069	
		4.197			
TP 1			4.925	1258.841	
		4.849			
TP 2			5.221	1258.47	
		4.523			
TP 3			4.644	1258.348	
		4.630			
TP 4			4.818	1258.161	
		4.755			
TP 5			4.779	1258.137	
		4.295			
TP 6			4.760	1257.671	
		4.697			
TP 7			4.591	1257.777	
		4.910			
TP 8	<sup>28</sup> 578		3.278	1259.410	
		2.965			
TP 9			4.394	1257.981	
		4.486			
TP 10			4.159	1258.308	
		4.964			
TP 11			4.634	1258.638	
		4.055			
TP 12			4.889	1257.804	

SEPP 17

CHECK TOP OF CONC. LINE. ELEV. 1258.410 # 128 P.W. SURE CONAD.

STA. PT. No B.S. F.S. ELEV.

4.881  
TP 13 4.572 1258.113

4.431  
TP 14 4.462 1258.082

4.227  
TP 15 4.713 1257.597

4.824  
TP 16 3.509 1258.911

3.718  
TP 17 4.785 1257.844

5.219  
TP 18 <sup>546</sup>  
5/29 3.821 1259.242

3.760  
TP 19 5.297 1257.706

4.378  
TP 20 4.397 1257.687

4.345  
TP 21 4.614 1257.418

5.306  
TP 22 4.499 1258.226

3.938  
TP 23 <sup>547</sup>  
5/30 4.305 1257.859

3.617  
TP 24 4.026 1257.451

CUT-X TOP OF CONC. HEAD WALL W. S. OF OGOTIHO'S CANAL S. SIDE

CUT-X TOP OF CONC. HEAD WALL P. X. GILBERT'S CANAL W. SIDE

STA. P.T. NE B.S. F.S. ELEV.

TP 25 4.953 4.640 1257.764

TP 26 4.096 5.077 1256.782

TP 27 4.546 5.350 1255.977

TP 28 548 531 4.731 3.675 1252.034

TP 29 3.319 4.460 1251.892

TP 20 3.998 5.274 1254.616

TP 31 4.429 4.572 1254.480

TP 32 5.648 5.793 1254.339

TP 23 4.456 4.746 1254.049

TP 24 4.631 4.341 1254.308

TP 35 4.821 4.834 1254.326

TP 36 549 532 5.463 5.895 1253.893

CUT-X TOP OF CONC. HEAD WALL @ N.W. COR. 150' SOUTHWEST HIGH VOLTAGE STA.

F.M. C.P. S. <sup>FINISH</sup> ~~TOP~~ ~~PAV.~~ ~~2~~ OF CHANDLER HEIGHTS RD, ~~AT~~ ~~CORNER~~ of center of Elyers Road #30' offset



STA.	PT. NO.	B.S.	F.S.	ELEV.
		4.593		
TP 49		4.444	4.122	1253.088
		4.444		
TP 50		4.839	4.839	1252.694
		4.665		
TP 51	<sup>551</sup> 534	4.591	4.591	1252.768
		4.477		
TP 52		4.852	4.852	1252.393
		4.567		
TP 53		5.054	5.054	1251.906
		4.575		
TP 54		4.670	4.670	1251.811
		4.829		
TP 55	<sup>552</sup> 575 59	6.672	6.672	1249.769
		5.089		
TP 56		5.260	5.260	1249.798
		5.570		
TP 57		4.575	4.575	1250.793
		5.462		
TP 58	<sup>553</sup> 536	1.422	1.422	1254.833
		1.585		
TP 59		5.533	5.533	1250.885
		4.552		
TP 60		4.946	4.946	1250.491

CUT-X TOP OF CONC. HEAD WALL @ N.W. COR. @ WELL STA. NO. #

C.P.S. PANEL POINT #59 ON RIGGS RD @ CANAL CROSSING

CUT-X TOP OF CONC. @ N.E. COR. OF IRRIG. FLOOR @ S.W. \* OF GILBERT & RIGGS RD

STA.	PT. NO	B.S.	F.S.	ELEV
		4.795		
TP 61			4.835	1250.452
		4.516		
TP 62			4.649	1250.319
		4.911		
TP 63			4.875	1250.356
		4.889		
TP 64			4.905	1250.339
		4.781		
TP 65	<sup>554</sup> 587		4.970	1250.149
		4.827		
TP 66			4.688	1250.288
		4.597		
TP 67			5.586	1249.299
		6.007		
TP 68			5.391	1249.915
		5.698		
TP 69			5.075	1250.539
		5.181		
TP 70			4.998	1250.722
		5.287		
TP 71			4.855	1251.155
		5.087		
TP 72			4.920	1251.322

CUT-X TOP OF CON SURV. MONUMENT 1/2 MILE SOUTH OF RIGGS RD  
ON GILBERT RD 15' WEST OF E/P

STA.	PT. No.	P.S.	F.S.	ELEV.
		4.966		
TP 73		5.091	4.475	1251.813
		5.309		
TP 74	555	5.309	5.637	1251.267
		5.150		
TP 75		5.150	4.909	1251.667
		4.996		
TP 76		4.996	5.229	1251.588
		3.177		
TP 77		3.177	5.748	1251.235
		2.842		
TP 78		2.842	3.767	1250.645
		4.667		
TP 79		4.667	3.652	1249.835
		4.356		
TP 80		4.356	4.487	1250.015
		1.584		
TP 81	556	1.584	4.356	1250.016
		3.513		
TP 82		3.513	3.222	1248.378
		3.378		
TP 83		3.378	4.251	1247.641
		3.378		
TP 84		3.378	4.091	1246.928

B.C. IN H.H. DIX OF GILBERT RD & HUNT HWY

CLIX TOP CONC. IRRIG. BOX NORTH EAST COR. 2.35 MI. SOUTH OF HUNT HWY, WEST SIDE OF GILBERT RD

STA.	PT. NO	B.S.	F.S.	ELEV
		3.436		
TP 85			4.233	1246.130
		4.189		
TP 86			5.078	1245.242
		4.788		
TP 87	557		6.658	1243.372
		4.242		
TP 88			3.430	1244.184
		4.390		
TP 89			4.915	1243.659
		4.535		
TP 90			4.968	1243.225
		4.624		
TP 91	558		4.878	1242.971
		4.556		
TP 92			5.372	1242.155
		4.784		
TP 93			5.337	1241.602
		4.715		
TP 94			5.116	1241.202
		3.934		
TP 95			4.525	1240.611
		4.488		
TP 96			4.906	1240.194

CUT-X TOP CONC IRRIG. BOX. NORTH-EAST COR. 20.7 MILES  
SOUTH OF HUNT HWY. ON WEST SIDE GILBERT RD.

P.K. PANEL POINT #32 1.0 MILE SOUTH OF HUNT HWY  
ON GILBERT RD.

STA.	PT. No	B.S.	I.S.	ELLIP.
		4.652		
TP 97			5.147	1239.699
		4.645		
TP 98			5.116	1239.228
		5.127		
TP 99	559		2.873	1241.481
		2.126		
TP 100			4.757	1238.850
		4.688		
TP 101			4.953	1238.885
		4.667		
TP 102			4.954	1238.297
		4.966		
TP 103			4.816	1238.447
		4.667		
TP 104			5.076	1238.038
		4.923		
TP 105			5.107	1237.854
		3.086		
TP 106			3.249	1237.690
		5.239		
TP 107	560		4.937	1237.991
		4.781		
TP 108			5.321	1237.451

CUTEX TOP CON. IRRIG. BOX NORTH EAST COR. 0.06 MI.  
SOUTH OF PANEL POINT #32 ON GILBERT RD WEST SIDE

Ed. P.K. & GILBERT RD SOUTH OF T.B.M. #559 0.576 MI

STN. PT. No. B.S. E.S. ELEV.

5.187

TR. 109 5.404 1237.234

5.006

TR. 110 4.428 1237.813

4.905

TR. 111 4.384 1238.334

5.140

TR. 112 5.147 1238.326

4.978

TR. 113 4.348 1238.957

6.374

TR. 114 4.174 1241.157

5.014

TR. 115 4.338 1241.833

5.282

TR. 116 4.790 1242.325

5.271

TR. 117 4.790 1242.805

5.325

TR. 118 5.163 1242.968

Fd. B.C. FLUSH W/GENE. NORTH EAST COR. OF SR 87  
BRIDGE EAST MPR LODGE ELMWAY.

CUT X FOR CONC. HEND WALL OF CATTLE CROSSING. NORTH  
\* OF 87 HWY & CILBERT

STA.	PT. NO.	B.S.	F.S.	ELEV.
K.C.	532			1230.422
		4.218		
TP 1			5.003	1229.638
		4.830		
TP 2			4.477	1229.991
		5.314		
TP 3			5.030	1230.275
		4.289		
TP 4			4.772	1229.793
		5.082		
TP 5			4.325	1230.550
		4.679		
TP 6			4.902	1230.327
		5.215		
TP 7			4.221	1231.321
		4.693		
TP 8			5.198	1230.815
		3.624		
TP 9	<sup>563</sup> <del>535</del>		6.725	1227.715
		7.157		
TP 10			4.729	1230.143
		4.900		
TP 11			4.709	1230.334
		4.927		
TP 12			4.885	1230.375

S.R.P. B.C. CONC. HEAD WALL N-W. COR. 2 CANAL  
 1/2 MILE NORTH OF E

CUT X TOP CAN. EAST SIDE CANAL 2 CANAL BRANCHING  
 WEST 1/2<sup>+</sup> MILE NORTH OF QUEEN RD

STA	PT. No	B.S.	I.S.	ELEV.
		4.811		
TP 13		5.244	1229.943	
		5.321		
TP 14		4.132	1231.132	
		5.017		
TP 15		4.674	1231.475	
		4.647		
TP 16		5.115	1231.007	
		4.647		
TP 17	5.64	3.166	1232.489	
		3.863		
TP 18		5.599	1230.753	
		5.550		
TP 19		5.448	1230.854	
		4.555		
TP 20		4.783	1230.627	
		4.843		
TP 21		6.632	1228.838	
		6.984		
TP 22		6.952	1228.870	
		6.555		
TP 23		6.407	1229.019	
		6.541		
TP 24		6.637	1228.922	

B.C. IN H.H. SIDE OF GERMANN RD. & S. AIRPORT BLDG







STM PIN# P.S. FS. CIV. S.519  
 TP 61 4.486 1254.999 S.233  
 TP 62 4.233 1255.998 S.022  
 TP 63 4.591 1256.430 S.160  
 TP 64 S 70 4.498 1257.093 S.017  
 TP 65 4.520 1257.610 S.577  
 TP 66 S.027 1258.160 S.687  
 TP 67 4.923 1258.925 S.357  
 TP 68 4.286 1259.986 S.227  
 TP 69 4.711 1260.512 S.054  
 TP 70 3.409 1262.157 S.161  
 TP 71 3.648 1263.670 7.331  
 END S.23 3.925 1267.076

1" PIPE FLUSH & PAV 1/2" MILL EAST SILBERT RD  
 @ RR # 30 E. 65. 1061 SOUTH SIDE  
 B.C. IN H.H. PANEL PT. # 110 @ \* LINDSAY RD. #  
 PLACE RD.  
 S.R.R. CAR IN N.W. WALL CANAL CANAL & PECOS RD







STA.	PT. NO.	B.S.	I.S.	ELLV.
TP 36		5.018	5.322	1225.681
TP 37	577	5.512	5.911	1224.793
TP 38		4.904	5.184	1225.121
TP 39		4.862	5.251	1224.774
TP 40		4.872	5.228	1224.408
TP 41		4.990	5.345	1223.936
TP 42		5.119	5.395	1223.530
TP 43	578	6.578	6.517	1222.133
TP 44		4.886	5.282	1223.459
TP 45		4.992	5.366	1222.978
TP 46		4.570	5.390	1222.580
TP 47		4.842	5.352	1221.798



B.C. & TOP CONC. HEAD WALL EAST SIDE OF SR-87 0.55 MILE  
NORTH OF PT. # 576 & 200± SOUTH OF HWY MILE  
158

B.C. & TOP CONC. HEAD WALL EAST SIDE OF SR-87  
0.33 MILE NORTH OF PT. # 577

STA.	PT. No	B.S.	F.S.	ELEV.
TP 48			5.215	1221.425
		4.798		
TP 49			5.218	1221.005
		5.004		
TP 50	579		4.891	1221.118
		4.560		
TP 51			5.363	1220.315
		4.605		
TP 52			5.408	1219.512
		4.837		
TP 53			5.319	1219.030
		4.604		
TP 54			5.394	1218.240
		4.787		
TP 55			5.605	1217.423
		4.913		
TP 56			5.463	1216.873
		5.019		
TP 57			4.976	1216.916
		5.039		
TP 58	580		4.515	1217.479
		4.609		
TP 59			4.922	1217.127
		4.998		

P.K. PANEL PT# 34 @ 0.45 NORTH OF PT# 579

P.K. NAIL IN PAV. & HWY @ REDUCED SPEED AREA @ 0.45 MI NORTH OF PANEL# 34 & PT# 579



ST.	PT. No.	B.S.	F.S.	ELEV.
TP 7		5.269	5.219	1215.238
TP 8		5.012	4.668	1215.839
TP 9		4.881	5.141	1215.711
TP 10		4.675	5.044	1215.548
TP 11		4.892	4.984	1215.239
TP 12		4.702	4.988	1215.143
TP 13	581	4.873	4.699	1215.146
TP 14		4.901	4.871	1215.148
TP 15		5.219	5.003	1215.046
TP 16		5.163	4.937	1215.328
TP 17	582		5.252	1215.239

B.C. E TOP OF CONC. HEAD WALL EAST SIDE  
OF SR-587 HWY. 75' ± SOUTH OF J. SR-587 & GOOD YEAR RD

B.C. IN H.H. E SR-587 HWY. 0.16 SOUTH OF GOOD YEAR

98045

E	L	A	N

Field Book  
E 64-8x4 W

HIGLEY ADMP  
LEVELS

**Book 2 of**

50% cotton-content paper  
water resistant surface  
50 sheets. . . . 4<sup>7</sup>/<sub>8</sub>" X 7<sup>1</sup>/<sub>4</sub>"

STA.	PT. No	B.S.	F.S.	ELEV.
P.O.B.	507			1286.828
		0.523		
TP 1			5.059	1282.291
		4.879		
TP 2			4.473	1282.696
		4.784		
TP 3			5.292	1282.189
		4.991		
TP 4	0		4.680	1282.500
		4.849		
TP 1			4.935	1282.413
		4.711		
TP 2			4.642	1282.483
		5.368		
TP 3			4.873	1282.977
		5.681		
TP 4	583		3.501	1285.158
		3.225		
TP 5			5.406	1282.977
		4.785		
TP 6			5.279	1282.483
		4.840		
TP 7			4.911	1282.412
		5.004		

(1)

B.C. FLUSH NORTH HEAD WALL N-E COR.  
\* OF BASE LINE RD & OLD GREENFIELD RD.

INCEP BC FLUSH w/ cone top on center of top of hdwl, westside  
of Greenfield Rd Bridge over Eastern Canal; stamped "ELEV 1262.11  
1973"



STA.	PT. No	B.S.	F.S.	ELEV.
P.O.B.	582			1215.239
		5.409		
TP 1			5.273	1215.375
		4.827		
TP 2			5.153	1215.050
		5.079		
TP 3			5.347	1214.782
		5.090		
TP 4	584		4.452	1215.419
		4.818		
TP 5			5.032	1215.205
		5.396		
TP 6			5.125	1215.476
		5.324		
TP 7			4.971	1215.829
		5.339		
TP 8			5.146	1216.022
		5.132		
TP 9			5.170	1215.984
		4.957		
TP 10			5.139	1215.803
		5.002		
TP 11			5.332	1215.473
		5.144		

B.C. IN H.A. @ SR. 587 HWY. 0.16 SOUTH OF GOODYEAR RD.

B.C. @ TOP OF CONK HEAD WALL EAST SIDE OF SR. 587  
0.3 SOUTH OF GOODYEAR RD.



AUXILIARY LEVERS

11/10/98

J.R.

B.S.

STA	PT#	BS+	FS-	ELEV	ADJ ELEV
P.O.B	546			1259.242	1259.279
		2.320			
1	75		7.196	1254.372	1254.409
		6.89			
2	546		2.02	1259.242	1259.279

SEE PG 29 LEVEL BOOK 1

B.C. IN H.H. ODOMUS & GILBERT

SEE PG 29 LEVEL BOOK 1



S	PT#	BS+	FS-	ELEV	ADJ ELEV
P.O.B	523			1267.093	1267.048
		4.09			
1	110		7.49	1263.693	1263.648
		7.60			
2	523		4.20	1267.093	

SEE LEVEL BK 1 PAGE 15

BC IN H.H @ PECOS F LINDSAY

SEE ABOVE

98045

E	L	A	N

Field Book  
E 64-8x4 W

HIGLEY ADMP

HORIZONTAL CONTROL

**Book 3 of**

50% cotton-content paper  
water resistant surface  
50 sheets. . . . 4<sup>7</sup>/<sub>8</sub>" X 7<sup>1</sup>/<sub>4</sub>"

CURVE FORMULAS

$T = R \tan \frac{1}{2} I$	$R = T \cot. \frac{1}{2} I$	Chord def. = $\frac{\text{chord}^2}{R}$
$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$	$R = \frac{50}{\text{Sin. } \frac{1}{2} D}$	No. chords = $\frac{I}{D}$
$\text{Sin. } \frac{1}{2} D = \frac{50}{R}$	$E = R \text{ ex. sec } \frac{1}{2} I$	Tan. def. = $\frac{1}{2}$ chord def.
$\text{Sin. } \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$	$E = T \tan \frac{1}{4} I$	

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

RIGHT ANGLE TRIANGLES. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt.  $10 \cdot 10^2 + 200 = .5$ .  $100 + .5 = 100.5$  hyp.

Given Hyp. 100, Alt.  $25 \cdot 25^2 + 200 = 3.125$ .  $100 - 3.125 = 96.875 = \text{Base}$

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

LEVELING. The correction for curvature and refraction, in feet and decimals of feet is equal to  $0.574 d^2$ , where d is the distance in miles. The correction for curvature alone is closely,  $\frac{1}{3} d^2$ . The combined correction is negative.

PROBABLE ERROR. If  $d_1, d_2, d_3$ , etc. are the discrepancies of various results from the mean, and if  $\sum d^2$  = the sum of the squares of these differences and n = the number of observations, then the probable error of the mean =

$$\pm 0.6745 \sqrt{\frac{\sum d^2}{n(n-1)}}$$

MINUTES IN DECIMALS OF A DEGREE

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729	.0833
1	2	3	4	5	6	7	8	9	10	11	12
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.0000

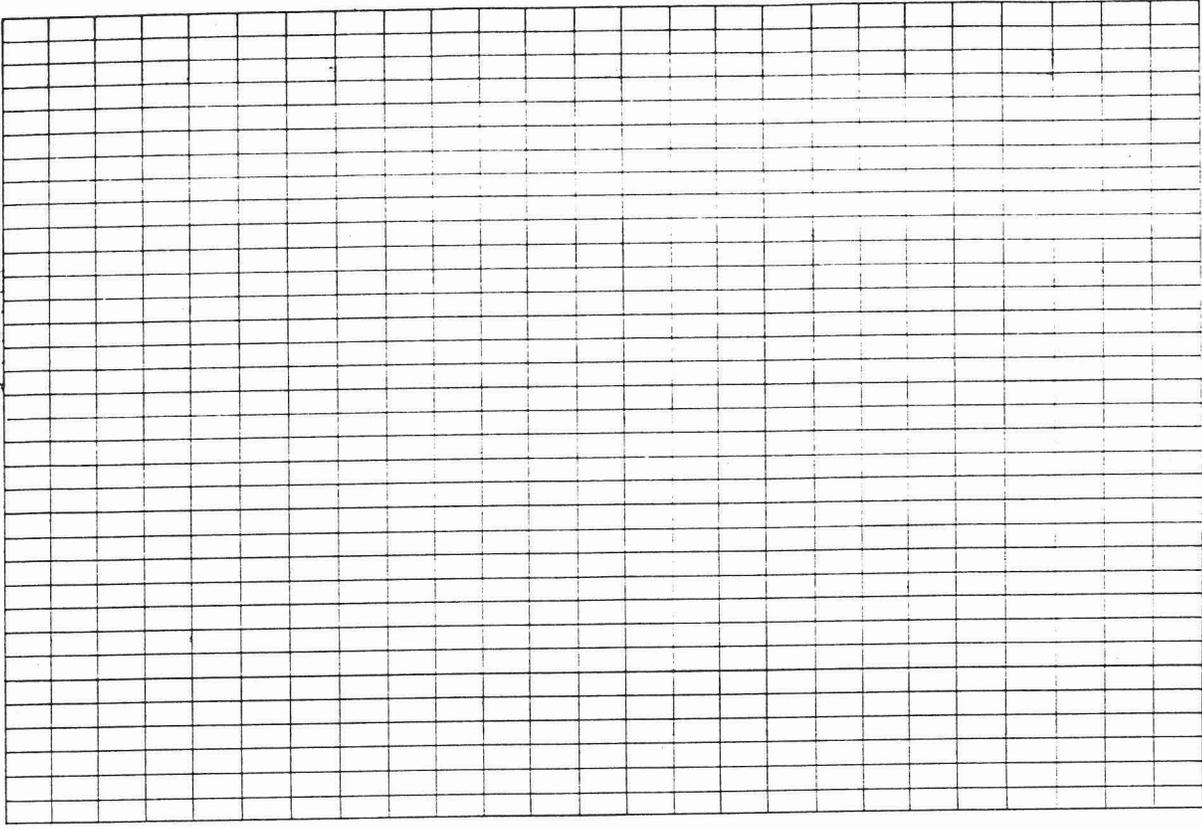
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Project Engineering  
2370 W Peoria, #C-122  
Phoenix, AZ



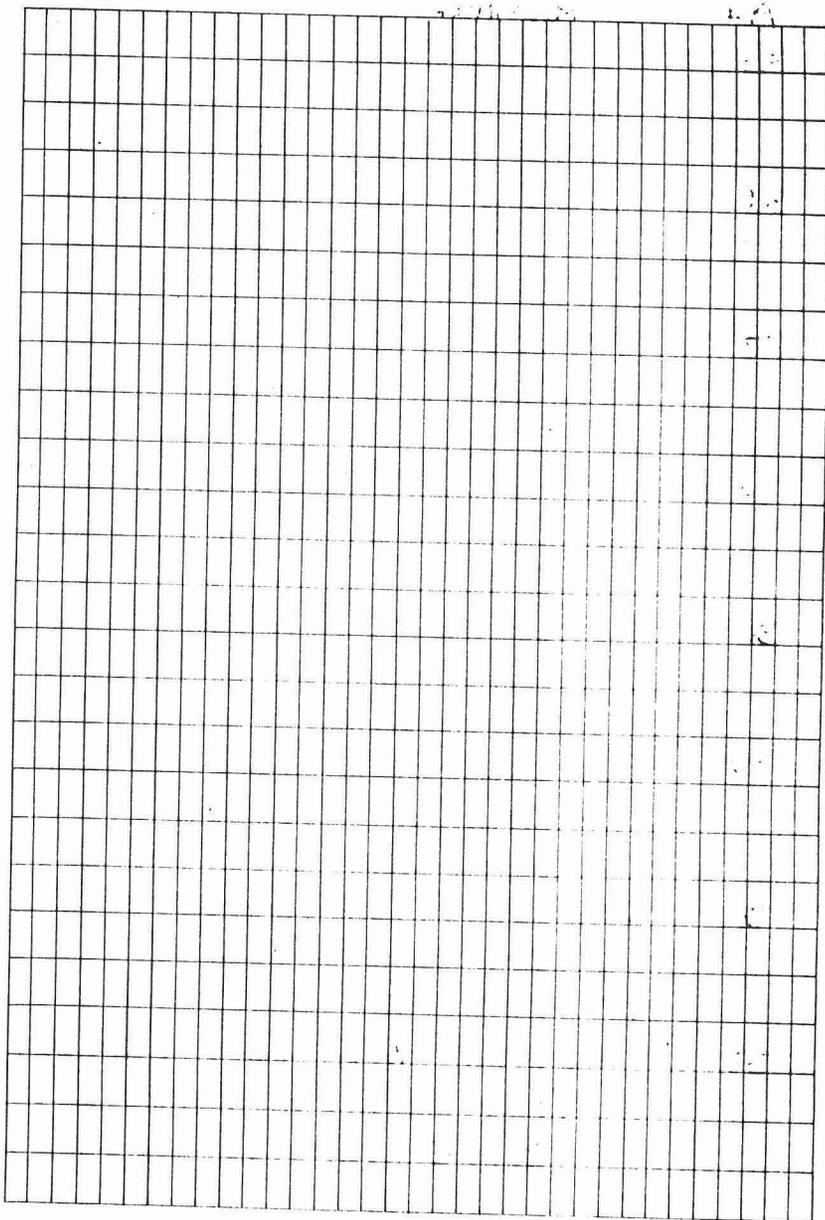
P#	REMARKS
6	FND P.K. IN BUKTOP ARIZONA AVE NORTH SIDE EAST AMERICIA FLOWDRWAY
7	SET RIB 1/2 MI EAST ARIZONA AVE SOUTH SIDE EASTERN FLOWDRWAY
8	SET COTTON PICKER IN BUKTOP SS. EASTERN FLOWDRWAY C McQUEEN RD 2.5 MI SOUTH HUNT HWY
9	SET RIB 1 1/2 MI EAST OF ARIZONA AVE & 2.5 MI SOUTH HUNT HWY SOUTH SIDE EASTERN FLOWDRWAY 40'± SOUTH PK
10	SET RIB 2 MI EAST OF ARIZONA AVE & 2.5 MI SOUTH HUNT HWY SS. CASTELLON CANAL
11	FND PK & BUKTOP RD @ NORTH SIDE AMERICIA EASTERN FLOWDRWAY 1/2 MI WEST OF GILBERT RD
12	FND 3/4" RIB IN PIT HOLE .50 BELOW DIET SURFACE 30'± NORTH OF NORTH SIDE MARICIPA COUNTY EASTERN FLOWDRWAY @ GILBERT RD EXTENDED
13	



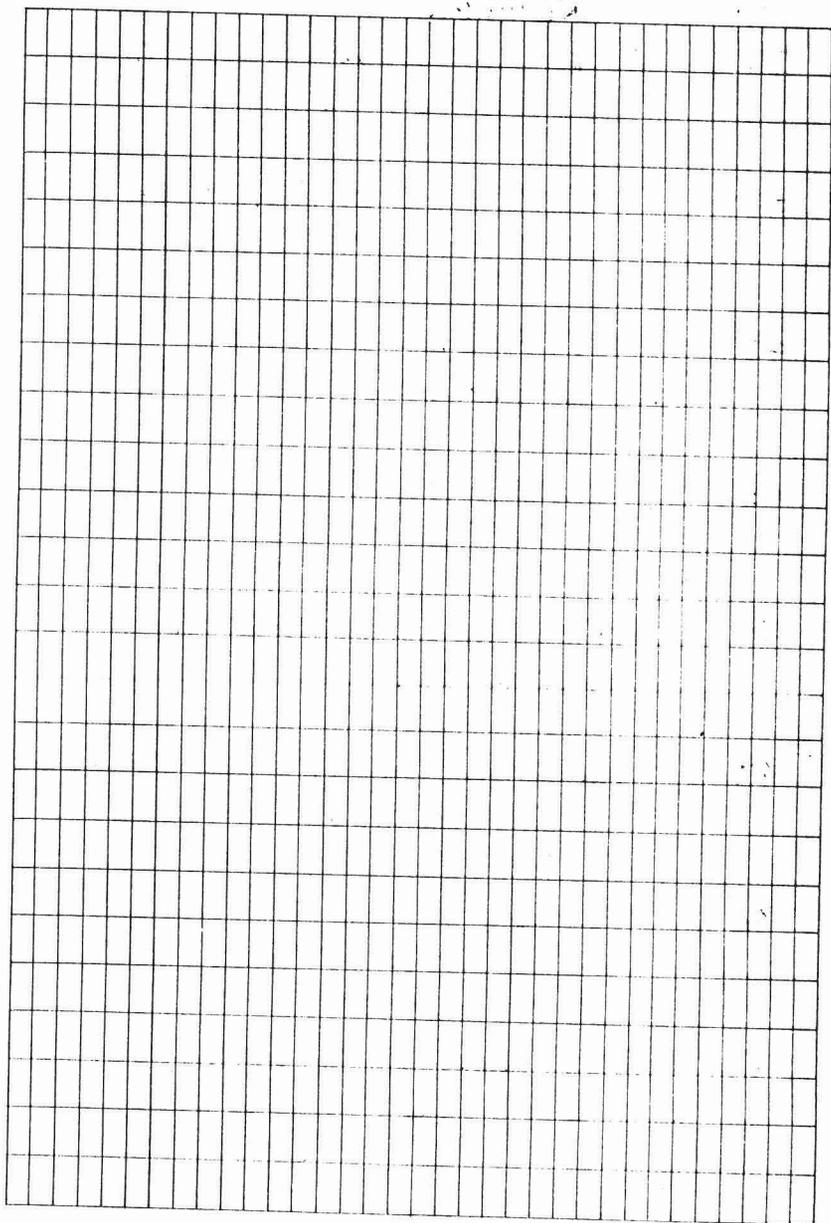
Pt#	REMARKS
14	
15	
16	
17	
18	
19	SET RIBFIELD 2 mi SOUTH HWY Hwy
	1/4 WEST OF GILBERT RD
20	
21	

Date	

Pt#	REMARKS										
22											
23											
24	SET RB in Field 3/4 mi WEST GILBERT RD 1 1/2 mi SOUTH HUNT Hwy										
25	SET RB in Field 1/4 mi WEST GILBERT RD 1 1/2 mi SOUTH HUNT Hwy										
26	SET P.K 1 MILE S. OF HUNT Hwy ON W. SHOULDER OF ARIZ AVE										
27											
28	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td data-bbox="367 974 514 1015">6 LO. BC.</td> <td data-bbox="525 974 577 1015">53</td> <td data-bbox="598 974 651 1015">92</td> <td data-bbox="661 974 714 1015">T35</td> <td data-bbox="735 974 955 1015" rowspan="2">.15 ABOVE GRD</td> </tr> <tr> <td data-bbox="388 1023 441 1055">1911</td> <td data-bbox="514 1023 577 1055">510</td> <td data-bbox="598 1023 651 1055">RSE</td> <td data-bbox="661 1023 714 1055">311</td> <td data-bbox="756 1023 987 1063" rowspan="2">CONDITION GOOD</td> </tr> </table>	6 LO. BC.	53	92	T35	.15 ABOVE GRD	1911	510	RSE	311	CONDITION GOOD
6 LO. BC.	53	92	T35	.15 ABOVE GRD							
1911	510	RSE	311		CONDITION GOOD						
29	SET RB 1.5 mi WEST OF GILBERT RD @ END FRR RD 250' ± EAST OF RR TRACKS. POINT IS 1 mi SOUTH HUNT Hwy										



Pt#	REMARKS
30	SET PIB 1.0 mi WEST GILBERT RD 1.0 mi SOUTH HUNT HWY ALONG IRRIGATION DITCH RD
31	SET PIB 1/2 mi WEST GILBERT RD 1 mi SOUTH HUNT HWY
32	FND P.K. w/ STRAWLS GILBERT RD 1 mi SOUTH of HUNT HWY
33	
34	SET PIC SR 37 3/4 mi EAST of ARIZONA AVE 200'± EAST of G.I.D PC in FIELD 1/16
35	SET PIB 1/2 mi SOUTH HUNT HWY 1 1/2 mi WEST GILBERT RD e IRR. CROSSING
36	SET PIB 1/2 mi SOUTH HUNT HWY 1 1/4 mi WEST GILBERT RD ALONG IRR. DITCH RD
37	SET PIB 1/2 mi SOUTH HUNT HWY 3/4 mi WEST of GILBERT RD 200'± NORTH of PUMP STATION IN FIELD



Pt#	REMARKS
38	SET RIB in field 1/4 mi west GILBERT RD 1/2 mi south HUNT HWY
39	SET PK HUNT HWY 1/4 mi EAST OF ARIZONA AVE
40	SET PK. HUNT HWY 1/4 mi WEST OF MCQUEEN RD
41	BC HH MARICOPA COUNTY 175 BELOW RIM INT HUNT HWY + MCQUEEN RD
42	SET PK HUNT HWY 1/2 mi WEST COOPER RD
43	BC HH CITY OF CHANDLER 135 BELOW RIM INT HUNT HWY + COOPER RD
44	HH FILLED w/ CONCRETE CHISED "X" IN CENTER HUNT HWY 1/2 mi WEST OF GILBERT RD
45	BC HH MARICOPA COUNTY 70 BELOW RIM INT HUNT HWY + GILBERT RD

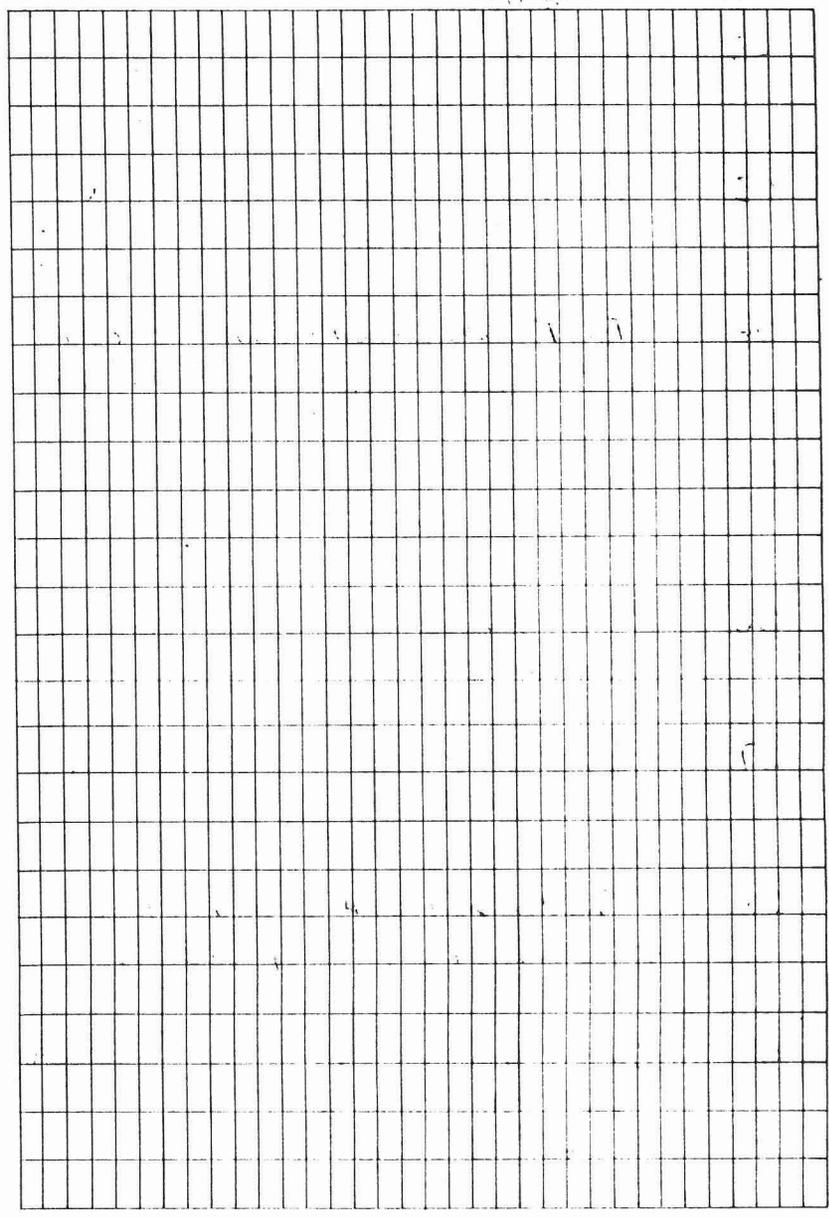
R#	REMARKS
46	BCFH NO MARKINGS TO RECREATION ARIZONA AVE 1/2 mi SOUTH RIGGS RD
47	SET RIB/FK6 1/2 mi SOUTH RIGGS RD 1/2 mi WEST OF MCQUEEN RD IN FARM FIELD @ IRR. CROSSING
48	BCF city of CHANDLER MCQUEEN RD @ ST ANDREW'S BLVD
49	BCF CITY CHANDLER 1997 LS 16913 ST ANDREW'S BLVD @ RECREATION CENTER DRIVE ENTRANCE
50	BCF NO ID E DORAL DR 100' WEST OF S CORAL GABLE DR 300' EAST OF CHAMPIONSHIP DR
51	SET RIB/FK6 1/2 mi NORTH HUNT HWY 3/4 mi WEST GILBERT RD ALONG DIRT ROAD @ IRR. DITCH
52	SET RIB/FK6 1/2 mi NORTH HUNT HWY 1/4 mi WEST GILBERT RD ALONG N/W COR DAIRY FARM
53	SET PK RIGGS RD 1/4 mi EAST OF ARIZONA AVE 50' WEST OF R.R. TRACKS

± 5' South of BC in HH 1/4 Cor

→ SPRINGFIELD SUB  
ROAD NORTH UNNAMED ± 1300' East of McQueen Rd

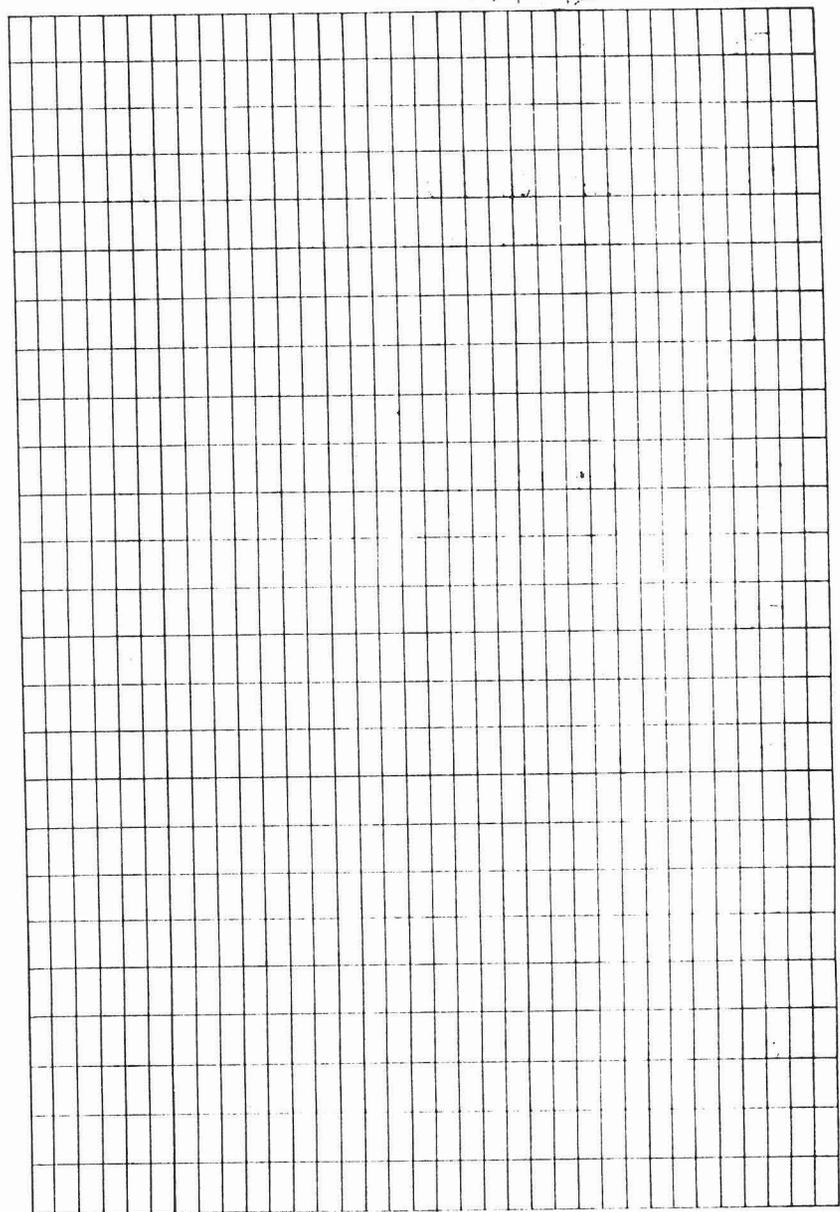
→ SUBSID SUB

Pt#	REMARKS
54	SET P.K. RIGGS RD $\frac{1}{4}$ MI WEST of McQUEEN RD
55	BCHH CITY OF CHANDLER .50 BELOW RIM INT McQUEEN RD + RIGGS RD
56	BCHH CITY OF CHANDLER .60 BELOW RIM RIGGS RD $\frac{1}{2}$ MI EAST OF McQUEEN RD
57	BCHH INT RIGGS RD @ COOPER RD
58	BCHH MARICOPA COUNTY .50 BELOW RIM E RIGGS RD @ S RIGGS RANCH RD
59	FND COTTON PICKER RIGGS RD 600' WEST OF GILBERT RD
60	FND $\frac{1}{2}$ " RIB 1.80' BELOW ROAD SURFACE INT RIGGS RD @ GILBERT RD
61	SET RIB W FLAG $\frac{1}{2}$ MI NORTH RIGGS RD $\frac{1}{4}$ MI EAST ARIZONA AVE 1 S/E COR OLD MANUFACTURING PLANT 100' WEST + OF RR SPUR @ PLANT @ END FLE LINE





P*	REMARKS
70	SET RB 1/4 mi EAST of ARIZONA AVE 1/2 mi NORTH CHANDLER HEIGHTS BLVD 50' WEST ± of RR. TRACKS
71	SET RB WITH 1/2 mi NORTH of CHANDLER HEIGHT RD AND 1/2 mi WEST of MCQUEEN RD
72	2" ALUMINUM CAP. .16 BELOW ROAD SURFACE GILBERT RD 1/2 MP SOUTH @ COTILLO RD
73	SET PK. OCOTILLO RD 1/4 mi EAST of ARIZONA AVE 150' ± WEST of TRACKS
74	SET PK. OCOTILLO RD 300' EAST of CONSOLIDATED CANAL
75	BC HH .190 BELOW RIM MARICOPA COUNTY INT OCOTILLO + GILBERT RD
76	IND RB OCOTILLO RD .20 BELOW BLKTOP SURFACE @ 140 ST
77	BCF CITY of CHANDLER ARIZONA AVE @ ADLBY RD



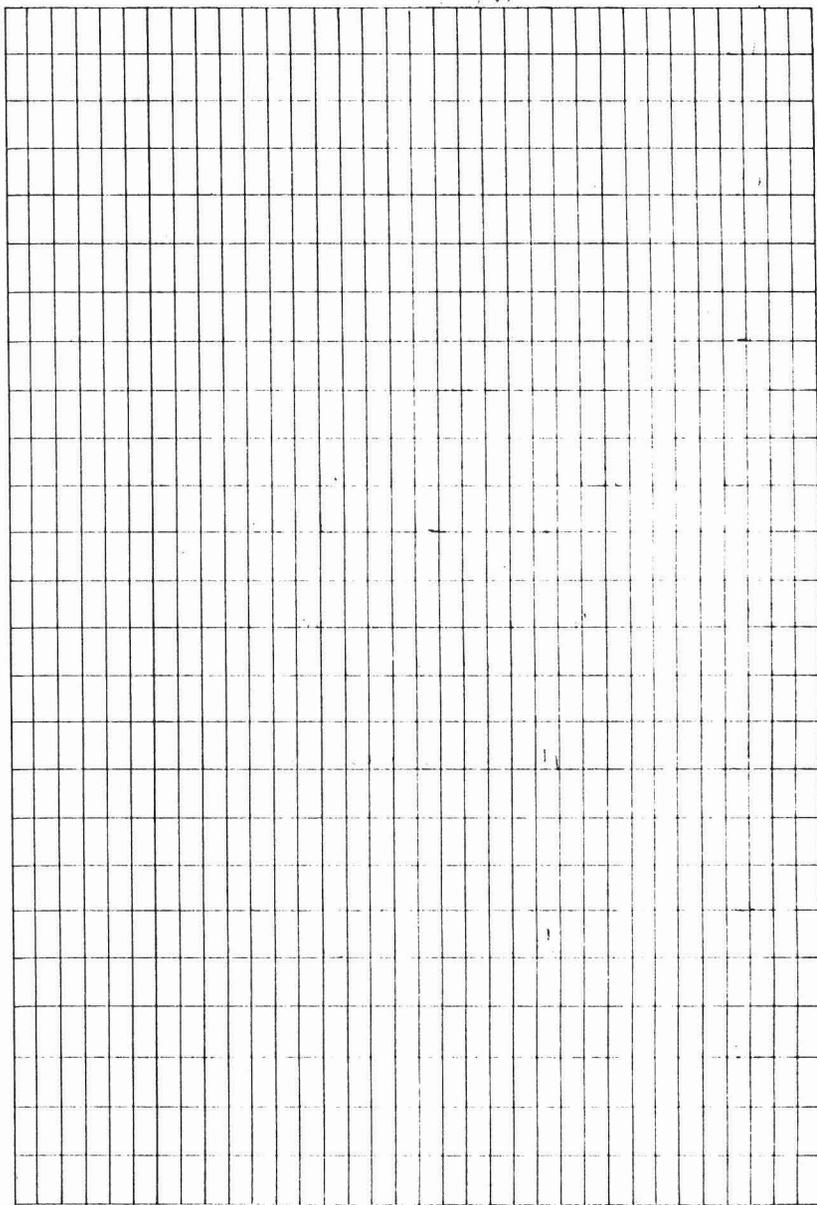
P#	REMARKS
78	SET R/B 1/2 mi EAST of ARIZONA AVE
79	BCF NO 17 MCQUEEN RD 1/2 mi NORTH OCCOTILLO RD
80	SET R/B 1/2 mi SOUTH QUEEN CREEK RD 1/2 mi EAST of MCQUEEN RD (ALONG FIELD ROAD)
81	SET R/B 1/4 mi EAST of EASTERN CANAL 1/2 mi SOUTH of QUEEN CREEK RD
82	SET PK QUEEN CREEK RD 1/4 mi EAST of ARIZONA AVE
83	SET PK QUEEN CREEK RD 1/4 mi WEST of MCQUEEN RD
84	SET PK QUEEN CREEK RD 350' E EAST of CONSOLIDATED CANAL
85	1" FROM PINE IN HH .40 BELOW RIM 25' EAST of CANAL @ QUEEN CREEK RD



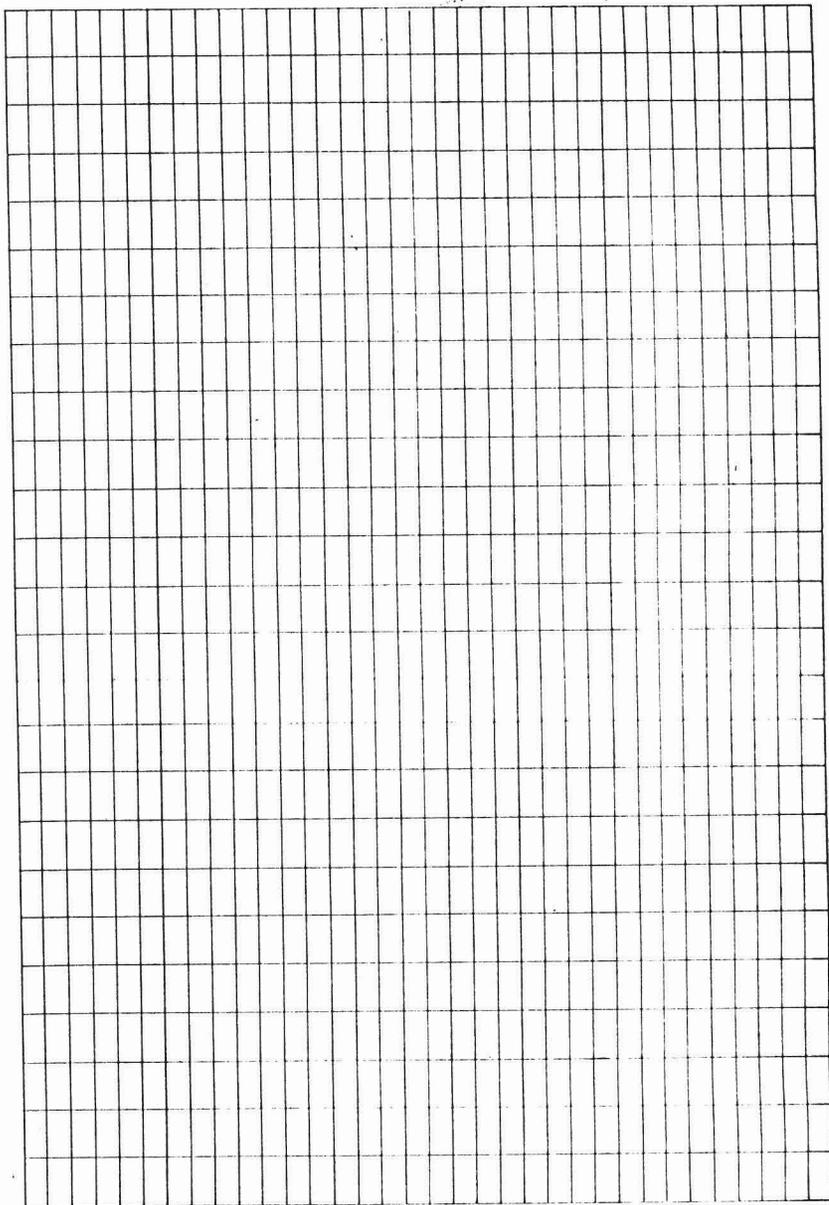
PT#	REMARKS
94	BCHH CITY OF CHANDLER GERMANN RD 150 BELOW RIM $\frac{1}{4}$ MI WEST OF MCQUEEN RD
95	BCHH CITY OF CHANDLER 70 BELOW RIM GERMANN AVE $\frac{1}{4}$ MI WEST OF CANAL <small>CONSOLIDATED</small>
96	SET P.K. PAVEMENT GERMANN RD $\frac{1}{4}$ MILE EAST OF CONSOLIDATED CANAL
97	SET P.K. GERMANN RD $\frac{1}{2}$ MI WEST OF LINDSAY RD
98	BCHH MARICOPA COUNTY .85 BELOW RIM INT LINDSAY & GERMANN RD
99	BCHH MARICOPA COUNTY .45 BELOW RIM $\frac{1}{2}$ MILE EAST OF LINDSAY ON GERMANN RD
100	<del>SET RIB/FLAG 50' WEST OF P.R. TRACK ALONG WILLIS RD 17' NORTH OF E.P.</del>
101	SET P.K. NORTH INT WILLIS RD @ HAMILTON ST

\* SET P.K. IN PUNT ALONG WILLIS RD  $\frac{1}{4}$  MILE W. OF <sup>OF</sup> R.R. AVE

#	REMARKS
102	SET BK. BLKTOP WILLIS ROAD 400'± WEST of COSO LINED CANAL @ INT TO SEWER T/P
103	SET RIB 1/2 mi NORTH GERMAN RD 1/4 mi WEST of COOPER RD ALONG IRRIGATION DITCH
104	SET RIB WILLIS RD 1/4 mi EAST of LISAY RD
105	BCF city of CHANDLER 20' WEST of BCHH INT ARIZONA AVE @ PECOS RD
106	BCHH city of CHANDLER .30 Below Rim INT PECOS + HAMILTON ST
107	BCHH city of CHANDLER .50 Below Rim INT PECOS + McQUEEN
108	1/2" I.P. 110 Below R/SURFACE PECOS ROAD 1/2 mile EAST of McQUEEN
109	BCHH .52 Below Rim MARICOPA COUNTY INT PECOS + COOPER RD



P#	REMARKS
110	BCHH MARICOPA COUNTY .68 Below RIM INT PECOS + LINDSAY
111	$\frac{1}{2}$ ' RB .20 Below PAVEMENT SURFACE PECOS ROAD $\frac{1}{2}$ MILE EAST of LINDSAY
112	SET PMS WEST SIDE EASTERN CANAL $\frac{1}{2}$ MI NORTH of PECOS RD
113	BCHH .135 Below RIM MARICOPA COUNTY INT LINDSAY RD + CHANDLER BLVD (WILLIAMS Field RD) in Field
114	BCHH .45 Below RIM MARICOPA COUNTY CHANDLER BLVD 50' EAST of EASTERN CANAL
115	BCHH .50 Below RIM MARICOPA COUNTY INT CHANDLER BLVD + VALVISTA DR
116	FND COTTON PICKER VALVISTA DR $\frac{1}{2}$ MI NORTH CHANDLER BLVD
117	BCHH .50 Below RIM MARICOPA COUNTY Hwy DEPT INT VALVISTA & RAY RD

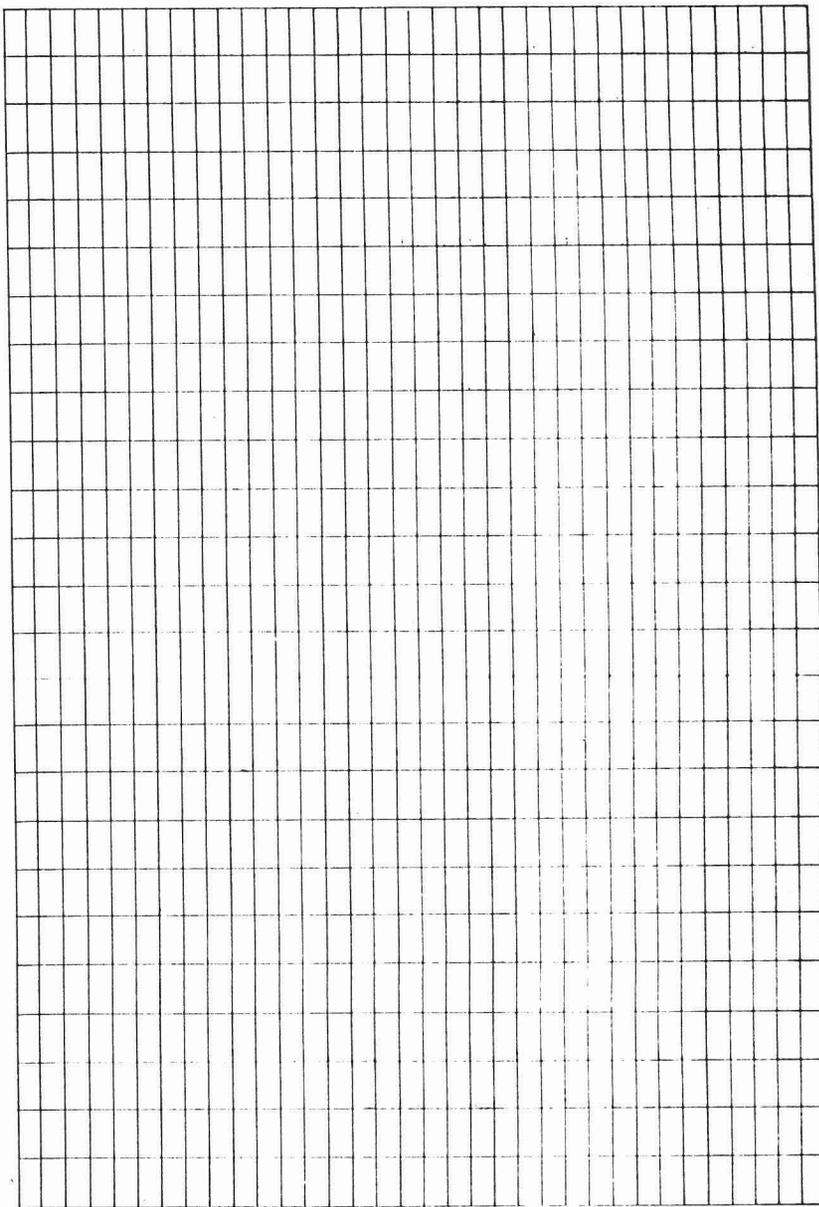




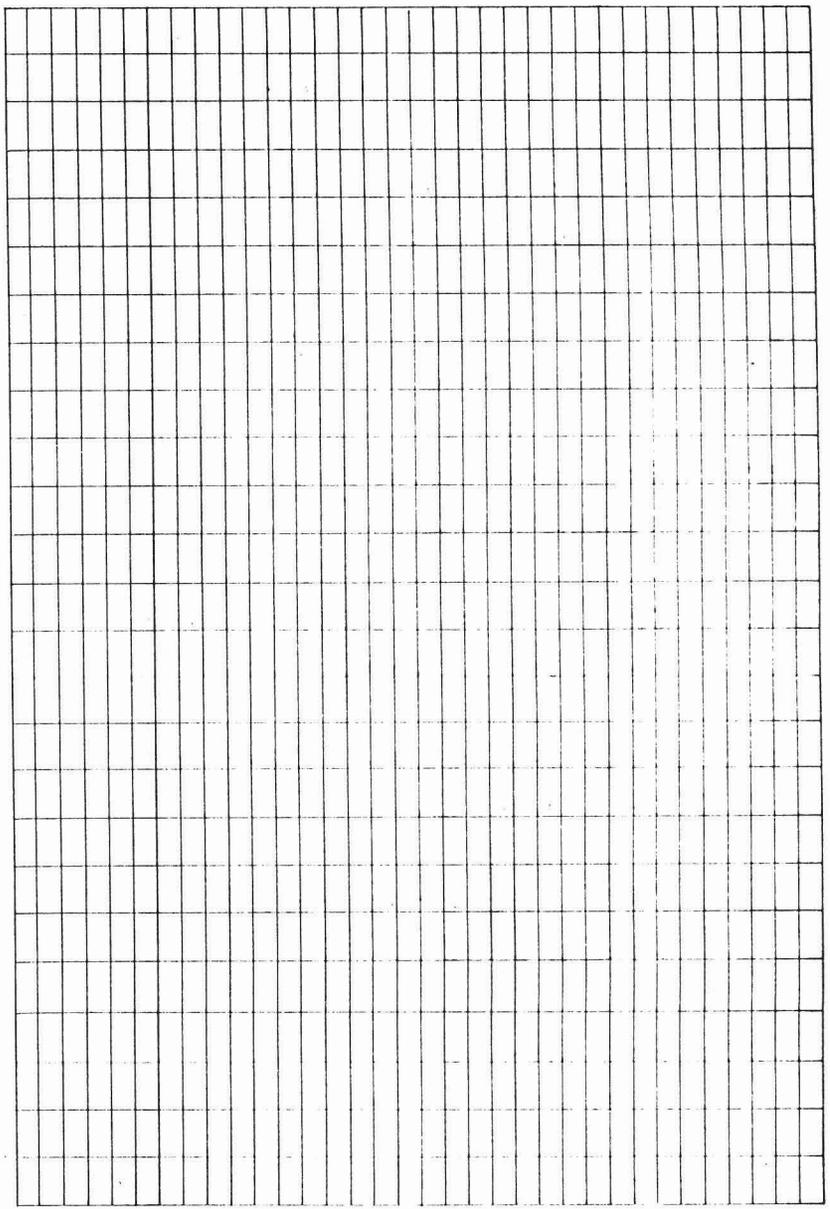
A#	REMARKS
126 303 JUNE	R/B w/flag. EAST SIDE EASTERN CANAL 1/2 mi SOUTH GUADALUPE RD
127	BCHH .40 BELOW RIM TOWARD GILBERT INT GREENFIELD + GUADALUPE
128	BRASS CAP POT HOLE MARKED CONT/ GUADALUPE RD .20 BELOW <sup>MARKED</sup> RD SURFACE WEST OF HIGHWAY
129	SET R/B w/flag WEST SIDE <sup>EASTERN</sup> CANAL .50 MI SOUTH OF BASELINE
130	SET P.I.C. TO BLK TOP NORTH SIDE CANAL @ BASELINE ROAD
131	SET R/B WEST SIDE EASTERN CANAL @ SOUTH SIDE U.S. 60 OVERPASS
132	C 1/4 4 STAMPED 34 .10' ALUM./CAP IN CON. OVERPASS OVER SR60

ADDITIONAL CONTROL  
POINTS FOR TOPO  
CONTROL & ERM DESC.

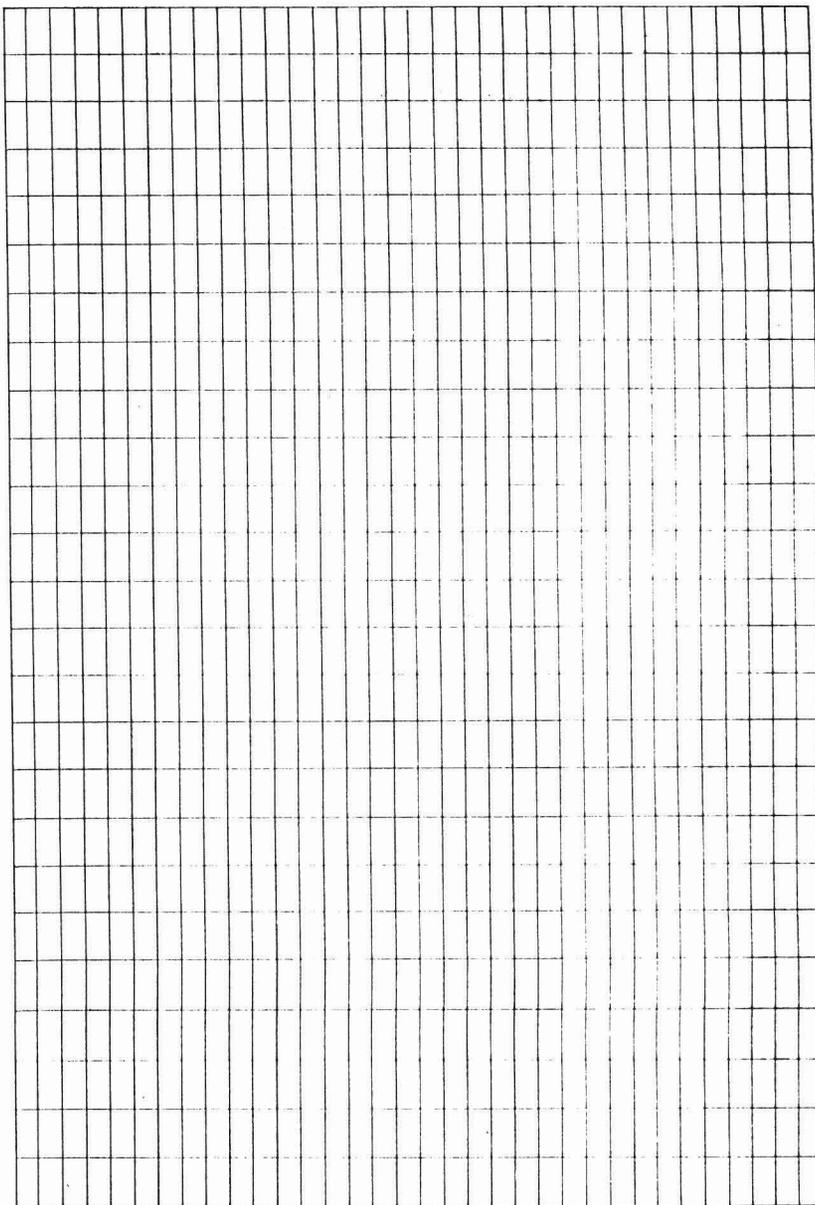
PT.	DESCRIPTION
300	SET 1/2" REBAR 1/2 MILE <sup>±</sup> S. OF ELLIOT RD 1/2 40'± E. OF EASTERN CANAL
301	SET 1/2" REBAR 40'± SOUTH OF ELLIOT 1/2 30'± EAST OF EASTERN CANAL
302	SET 1/2" REBAR 40'± NORTH OF ELLIOT 1/2 40'± E. OF EASTERN CANAL
303	- SEE PANEL #126
304	SET 1/2" REBAR 40'± SOUTH OF GUADALUPE RD 1/2 40'± E. OF EASTERN CANAL
305	SET 1/2" REBAR 40'± NORTH OF GUADALUPE RD 1/2 40'± E. OF EASTERN CANAL
306	SET 1/2" REBAR 40'± SOUTH OF BASELINE ROAD 1/2 40'± E. OF EASTERN CANAL
307	SET CHISELED "1" IN CONC. @ S.E. CORNER OF WARNER RD 1/2 EASTERN CANAL



PT	DESCRIPTION
308	SET REBAR 40'± S. OF QUEEN CREEK Rd ± 40'± E. OF EASTERN CANAL
309	SET 1/2" REBAR 40'± N. OF QUEEN CREEK Rd ± 40'± E OF EASTERN CANAL
310	SET CHISELED "+" IN CONC. S.E. CORNER OF RAY Rd ± EASTERN CANAL
311	SET 1/2" REBAR ± 40' N OF RAY Rd ± 40'± EAST OF EASTERN CANAL
312	SET 1/2" REBAR ± 1/2 N OF RAY Rd (N. OF RAILROAD) ± 40'± EAST OF EASTERN CANAL
313	SET 1/2" REBAR 1300'± S. OF WARNER Rd ± 40'± E OF EASTERN CANAL
314	SET 1/2" REBAR 40'± W. OF VAL VISTA ± 40'± S.E. OF EASTERN CANAL
315	SET 1/2" REBAR 40'± E. OF VAL VISTA ± 40'± SE OF EASTERN CANAL



PT	DESCRIPTION
316	SET "+" IN CONC. SIDEWALK N.E. COR OF EASTERN CANAL & CHANDLER BLVD
317	SET "+" ON CONC APPROACH SLAB S.E. COR OF EASTERN CANAL & CHANDLER
318	SET "+" ON CONC SLAB N.E. COR PECOS ROAD & EASTERN CANAL
319	SET "+" ON CONC SLAB S.E. COR PECOS ROAD & EASTERN CANAL
320	SET "+" ON CONC SLAB N.E. COR GERMANN ROAD & EASTERN CANAL
321	SET "+" ON CONC SLAB S.E. COR GERMANN ROAD & EASTERN CANAL
322	FND 1/2" REBAR 40'± N OF OCOTILLO ROAD & 50'± WEST OF EASTERN CANAL
323	FND 1/2" REBAR 40'± S. OF OCOTILLO RD & 50'± W. OF EASTERN CANAL



PT DESCRIPTION

324 SET 1/2" REBAR 40'± S. OF CHANDLER HEIGHTS  
9 50'± E. OF EASTERN CANAL

325

326

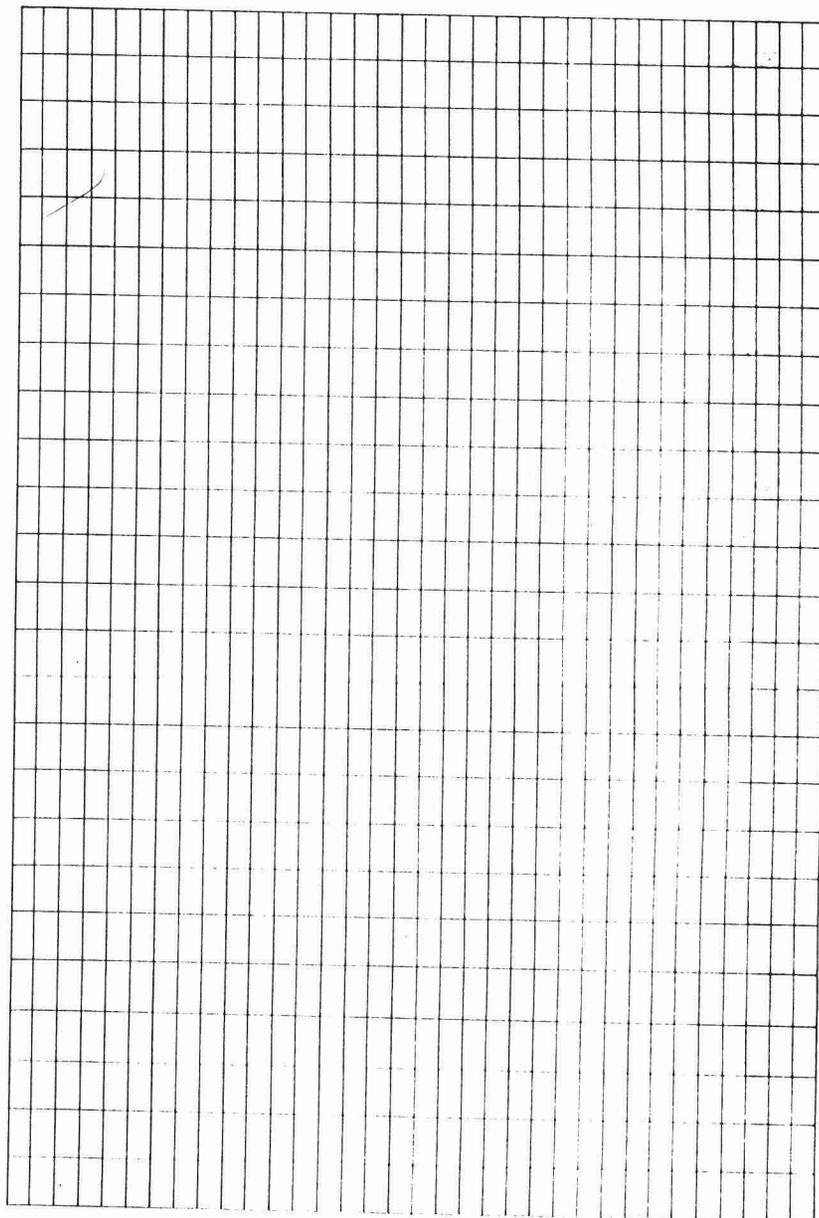
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98045

E	L	A	N

Field Book  
E-64-8x4 W

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BOOK 5 of

50% cotton-content paper  
water resistant surface  
50 sheets. . . . 4<sup>7</sup>/<sub>8</sub>" X 7<sup>1</sup>/<sub>4</sub>"

CURVE FORMULAS

$T = R \tan \frac{1}{2} I$	$R = T \cot. \frac{1}{2} I$	Chord def. = $\frac{\text{chord}}{R}$
$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$	$R = \frac{50}{\text{Sin. } \frac{1}{2} D}$	No. chords = $\frac{1}{D}$
$\text{Sin. } \frac{1}{2} D = \frac{50}{R}$	$E = R \text{ ex. sec } \frac{1}{2} I$	Tan. def. = $\frac{1}{2} \text{ chord def.}$
$\text{Sin. } \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$	$E = T \tan \frac{1}{4} I$	

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.  
 Rule 1. Multiply the given distance by .01745 (def. for 100) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

RIGHT ANGLE TRIANGLES. Square the altitude, divide by the base. Add quotient to base for hypotenuse.

Given Base 100, Alt.  $10.10^2 + 200 = 5.100 + 5 = 100.5$  hyp.

Given Hyp. 100, Alt.  $25.25^2 + 200 = 3.125. 100 - 3.125 = 96.875$  base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight of rail by  $\pi$ , and divide by 7.

LEVELING. The correction for curvature and refraction, in feet or decimals of feet is equal to  $0.574 d^2$ , where  $d$  is the distance in miles. The correction for curvature alone is closely,  $\frac{1}{2} d^2$ . The combined correction is negative.

PROBABLE ERROR. If  $d_1, d_2, d_3$ , etc. are the discrepancies of individual results from the mean, and if  $\sum d^2$  = the sum of the squares of these differences and  $n$  = the number of observations, then the probable error of the mean =  $\pm 0.6745 \sqrt{\frac{\sum d^2}{n(n-1)}}$

MINUTES IN DECIMALS OF A DEGREE

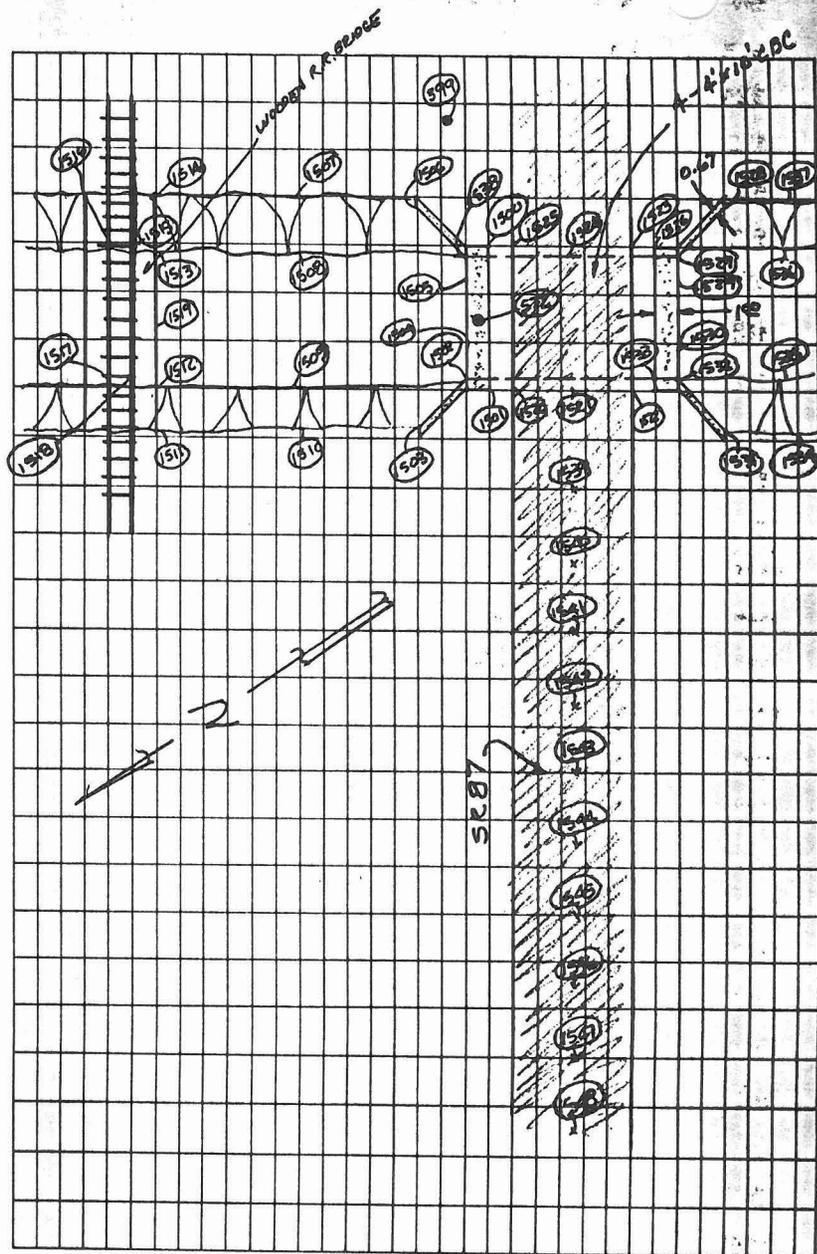
1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333

INCHES IN DECIMALS OF A FOOT

$\frac{1}{16}$	.0052	$\frac{3}{32}$	.0078	$\frac{1}{8}$	.0104	$\frac{5}{16}$	.0156	$\frac{3}{8}$	.0208	$\frac{7}{16}$	.0260	$\frac{9}{16}$	.0313	$\frac{1}{2}$	.0417	$\frac{5}{8}$	.0521	$\frac{3}{4}$	.0625
1	.0833	2	.1667	3	.2500	4	.3333	5	.4167	6	.5000	7	.5833	8	.6667	9	.7500	10	.8333

		JOB # 98045	
		HIZLEY ADMP	
		DEC 1998	
		JR G.A.	
		ADDITIONAL TOPO ON STRUCTURES AND CHECK X SECTIONS - PROFILES	
NOTE: CO-ORD. ELEV. ARE ASSUMED			
ROTATE & TRANSLATE DATA	AROUND #399 (1500-1548)	ROTATE & TRANSLATE DATA	AROUND #384 (1945-1963)
"	#398 (1549-1588)	"	#333 (1964-1979)
"	#397 (1589-1627)	"	#309 (1980-1999)
"	#396 (1628-1666)	"	#382 (2000-2020)
"	#395 (1667-1713)		
"	#394 (1714-1752)		
"	#392 (1753-1818)		
"	#388 (1819-1838)		
"	#387 (1839-1858)		
"	#386 (1859-1878)		
"	#383 (1879-1891)		
"	#346 (1892-1903)		
"	#385 (1904-1923)		
"	#325 (1924-1944)		

*	ROD	DESCRIPTION
TE 399	5.33	
BSE 398	4.99	H.D. = 3243.162 VERT. = -5.440
1500	4.95	HWALL
1501		HWALL
1502		WINGWALL
1503		" "
1504	4.95	# CONC
1505		# CONC
1506		WINGWALL
1507		TOP
1508	4.95	TOE
1509		TOE
1510		TOP
1511		TOP
1512	4.95	TOE
1513		TOE
1514		TOP
1515		R.R. TRACK
1516		" "
1517	4.95	" "
1518		" "
1519		TOP OF DRAINAGE OPENING
1520		EP
1521		P
1522	4.95	EP









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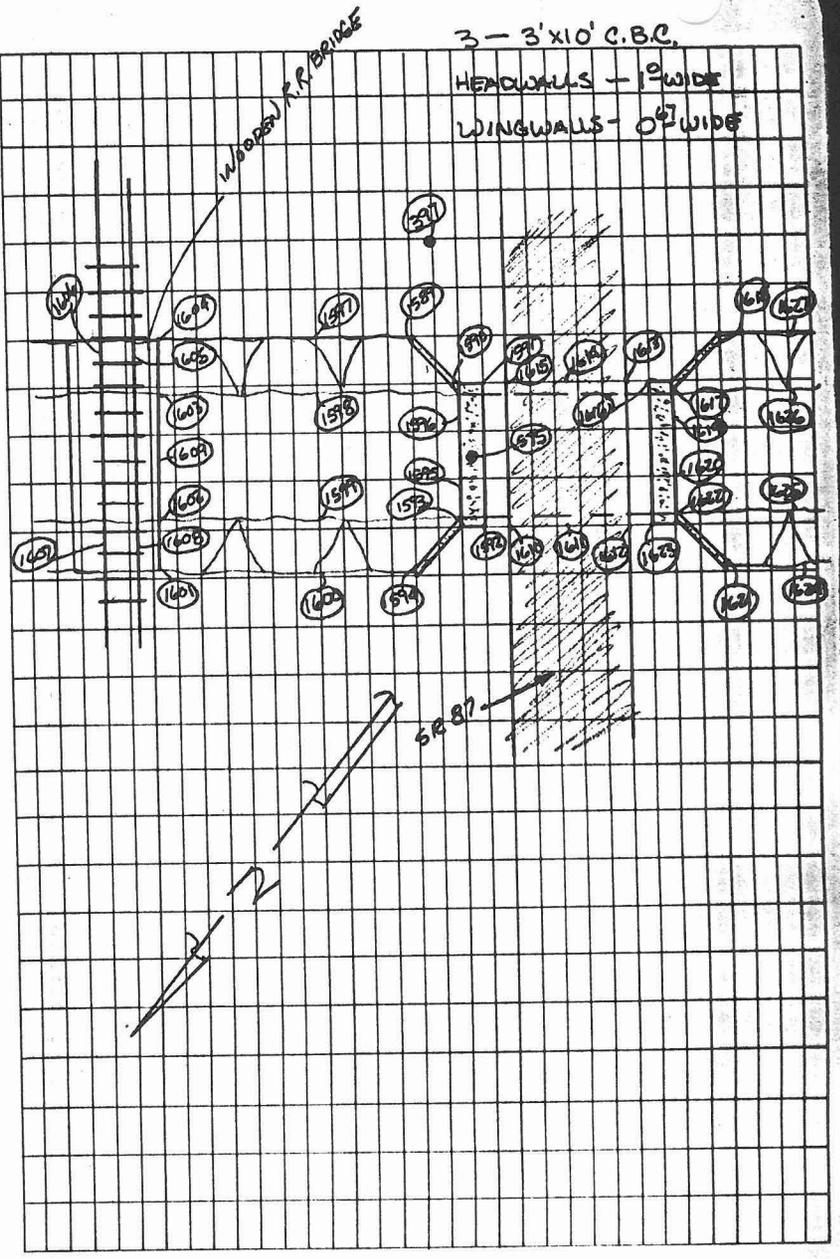
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STA	ROD	DESCRIP.
1612	4.95	EP
1613	}	EP
1614		P
1615	4.95	EP
1616	}	H.W.
1617		W.W.
1618	4.95	W.W.
1619	8.50	± DIRT
1620	}	± DIRT
1621		W.W.
1622	}	W.W.
1623		8.50
1624	}	TOP
1625		TDE
1626	}	TDE
1627		8.50

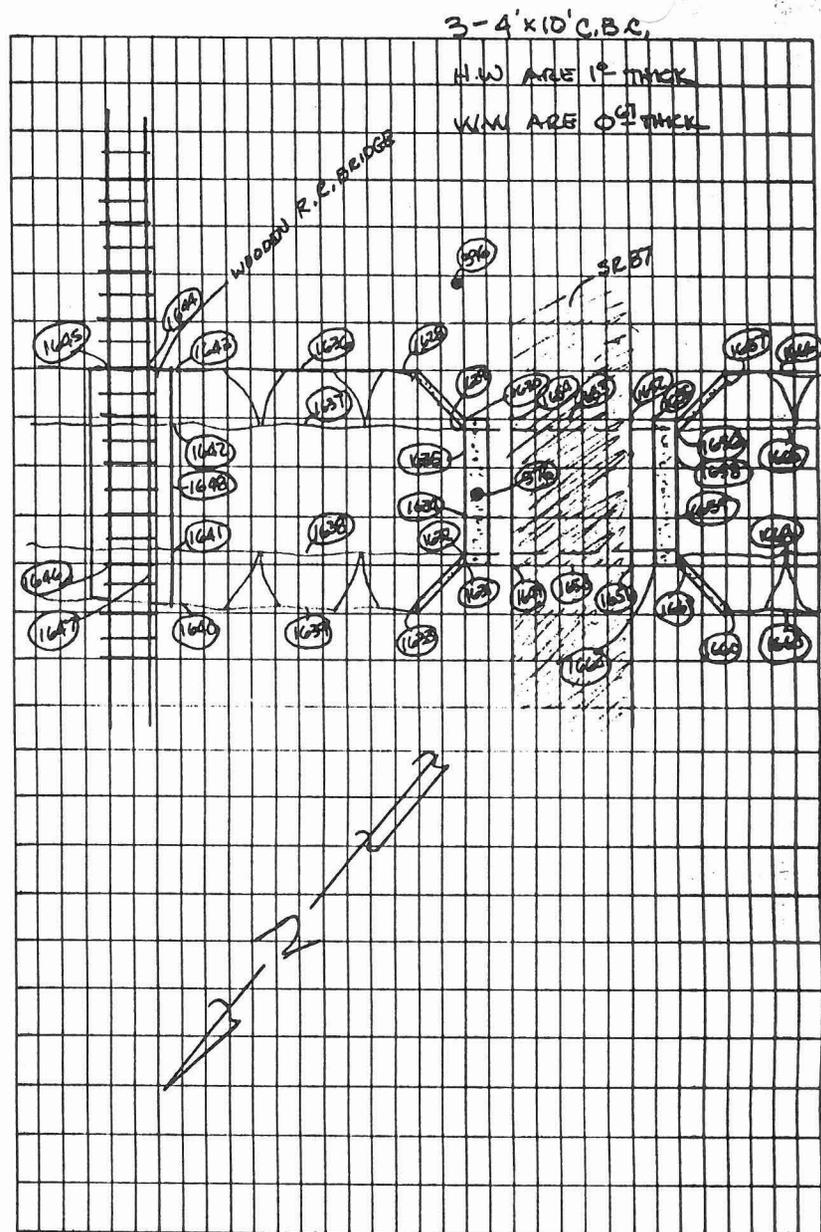


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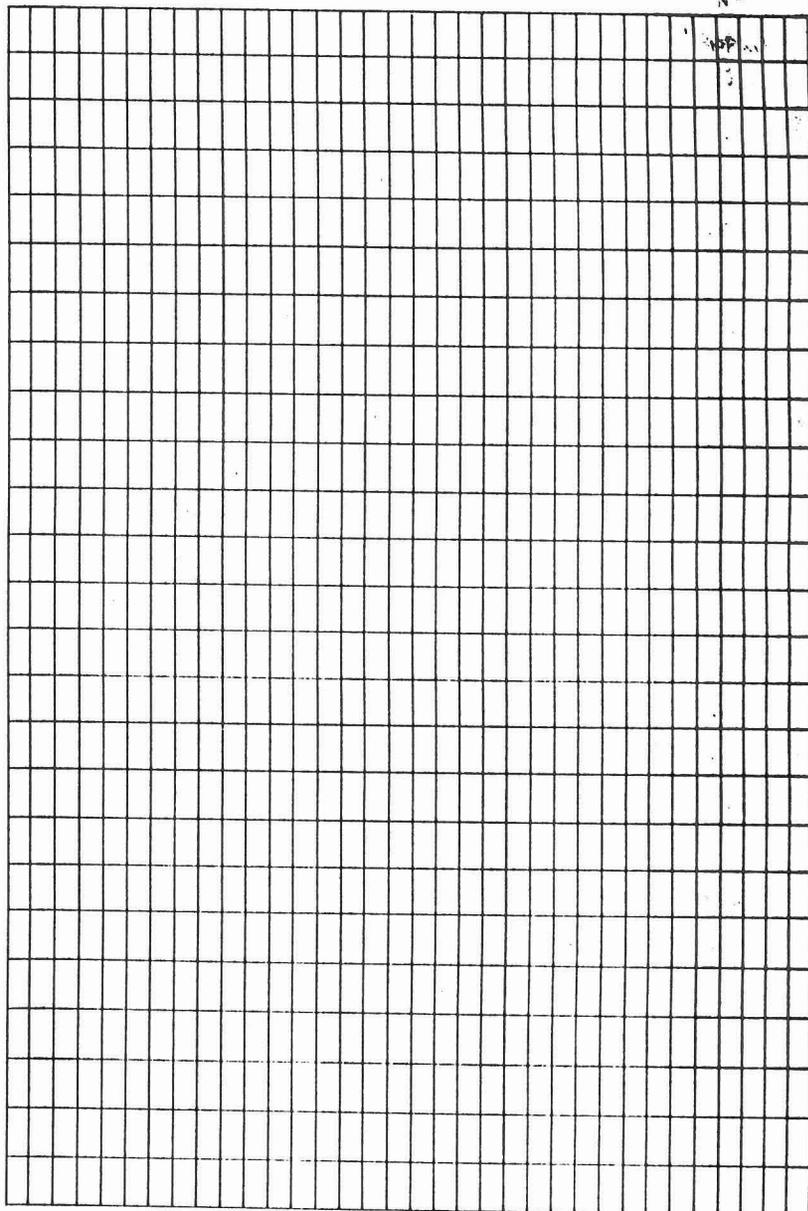


STA	ROD	DESCRIPTION
1651	4.95	EP
1652		EP
1653		P
1654		EP
1655		H.W.
1656		W.W.
1657	4.95	W.W.
1658	8.50	# Conc
1659		" "
1660		W.W.
1661		W.W.
1662	8.50	H.W.
1663		TDP
1664		TDE
1665		TDE
1666	8.50	TDP

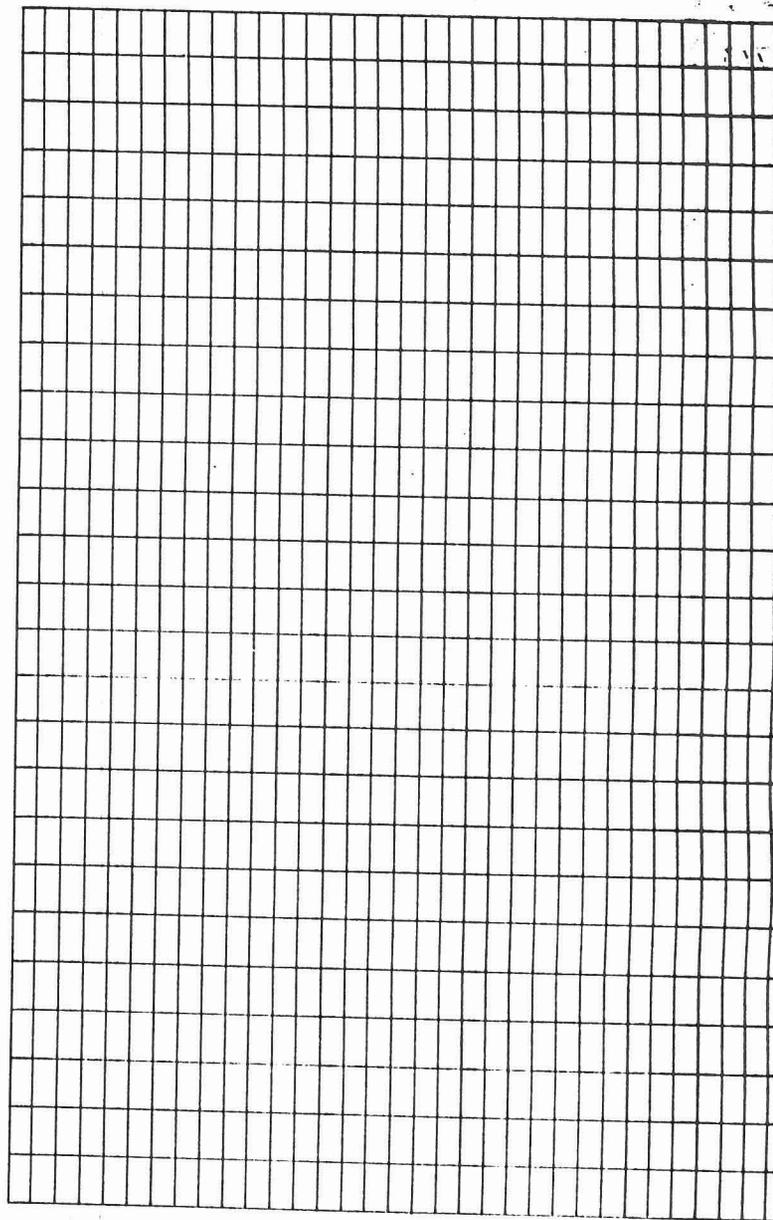




STA	ROD	DESCRIPTION		
X @ 395	5.38			
BSC 394	5.12	H.D =	1943.873	VERT = -2.196
1667	4.95	W.W		
1668	}	W.W		
1669		H.W		
1670		H.W		
1671		W.W		
1672	4.95	W.W		
1673	}	to Cone		
1674		TOP		
1675		TDE		
1676		TDE		
1677		4.95	TOP	
1678	}	TOP		
1679		TDE		
1680		TDE		
1681		TOP		
1682	4.95	R.R TRACK		
1683	}	" "		
1684		" "		
1685		" "		
1686	}	TOP OF DRAINAGE STRUC. OPEN.		
1687		EP		
1688	4.95	P		

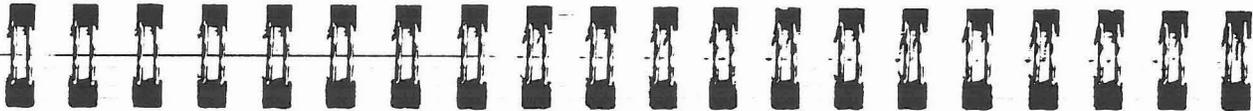


STA	ROD	DESC.			
1689	4.95	EP			
1690	}	EP			
1691		P			
1692		EP			
1693		H.W			
1694		W.W			
1695	4.95	W.W.			
1696	8.50	H. CONC.			
1697	}	W.W.			
1698		W.W.			
1699		H.W.			
1700	8.50	TDP			
1701	}	TDE			
1702		TDE			
1703		TOP			
1704	8.50	P			
1705	}	P			
1706		P			
1707		P			
1708	8.50	P			
1709	}	P			
1710		P			
1711		P			
1712	8.50	P			



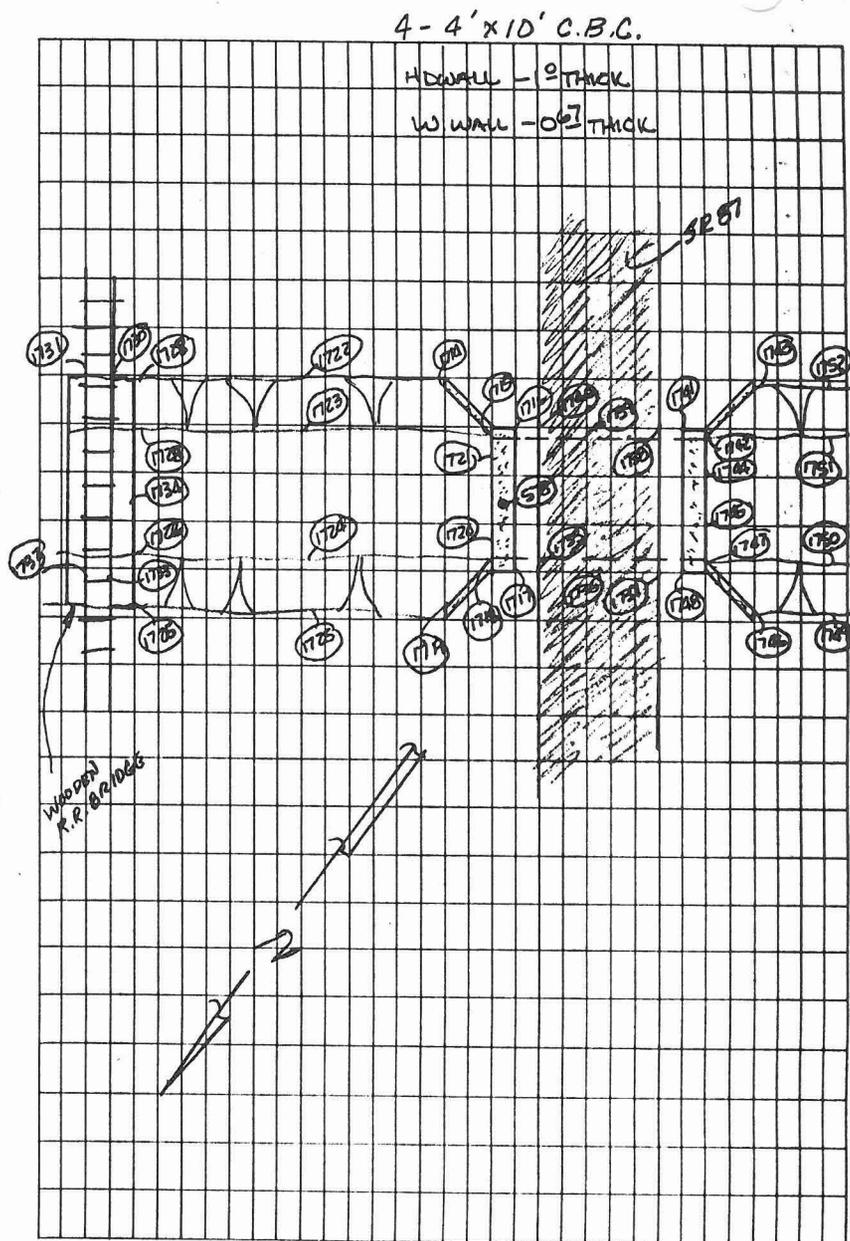


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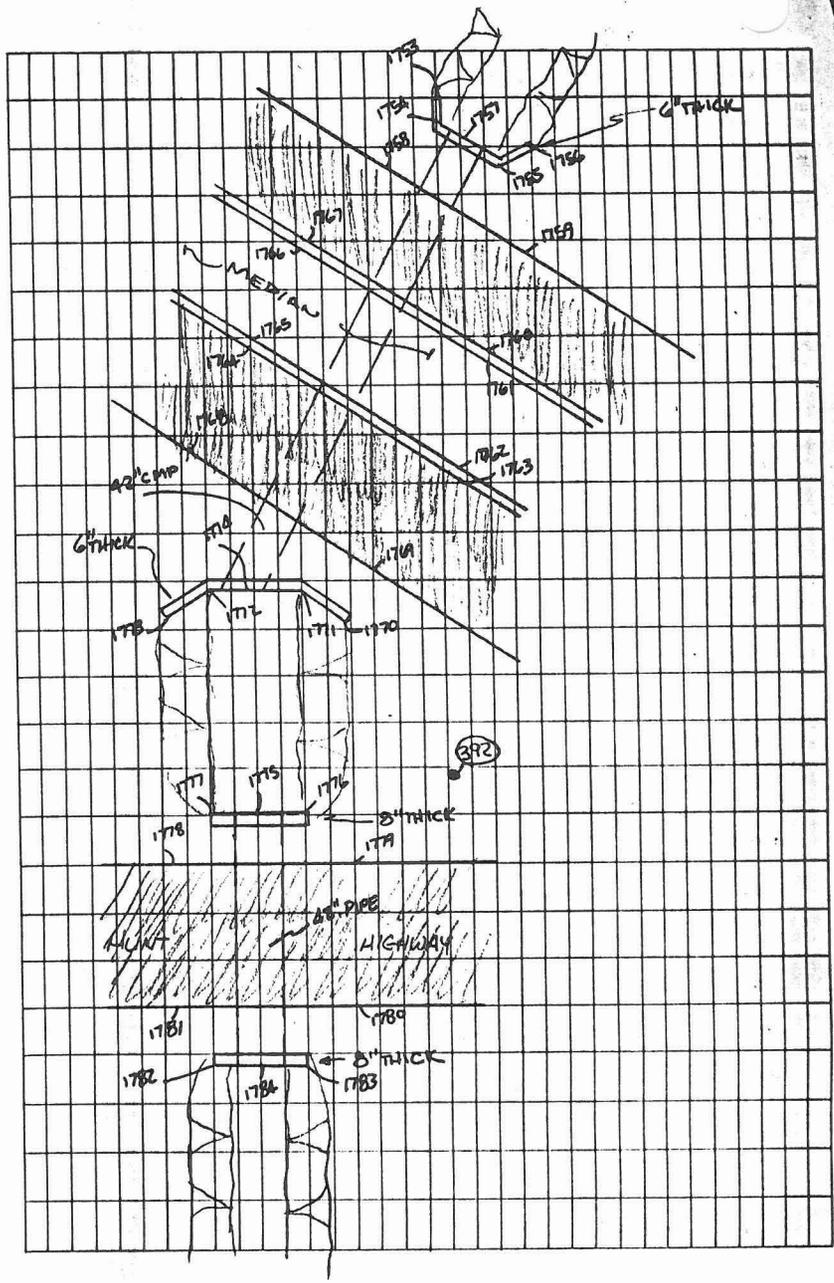


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STA	ROD	DESCR.
1737	4.95	EP
1738	}	EP
1739		P
1740		EP
1741		H.W
1742		W.W
1743	4.95	W.W
1744	8.50	# Conc.
1745	}	# Conc.
1746		W.W
1747		W.W.
1748	8.50	H.W
1749	}	TOP
1750		TOE
1751		TOE
1752	8.50	TOP



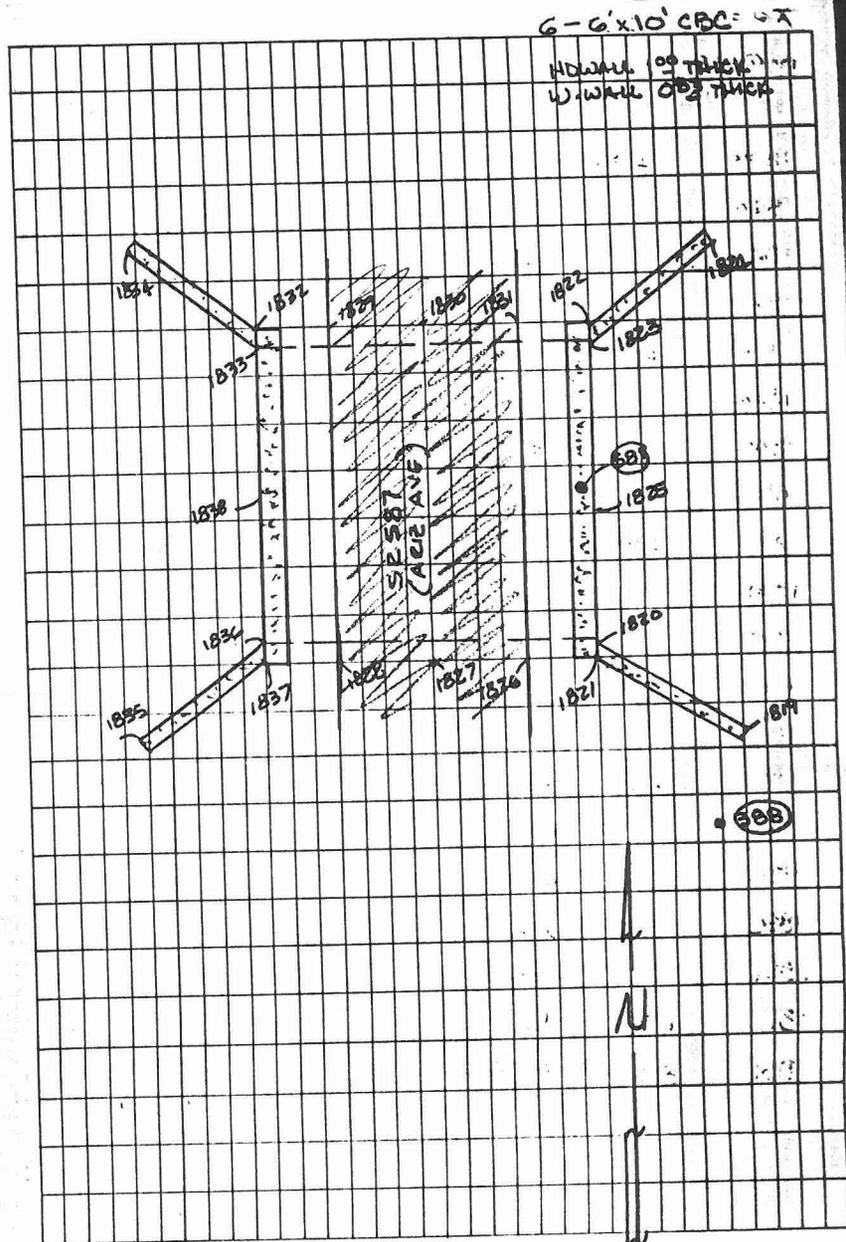
STA	ROD	DESCRIPTION	
X@392	5.42		
BSC@391	4.58	H.D. = 172.994    VERT = -1.580	
1753	4.95	W.W	
1754	}	H.W	
1755		H.W	
1756		W.W	
1757		4.95	INV.
1758	}	EP	
1759		EP	
1760		P	
1761	4.95	TC	
1762	}	TC	
1763		P	
1764		P	
1765	4.95	TC	
1766	}	TC	
1767		P	
1768		EP	
1769	}	EP	
1770		4.95	WW
1771		H.W	
1772	}	H.W	
1773		W.W	
1774	}	INV	
1775		4.95	INV





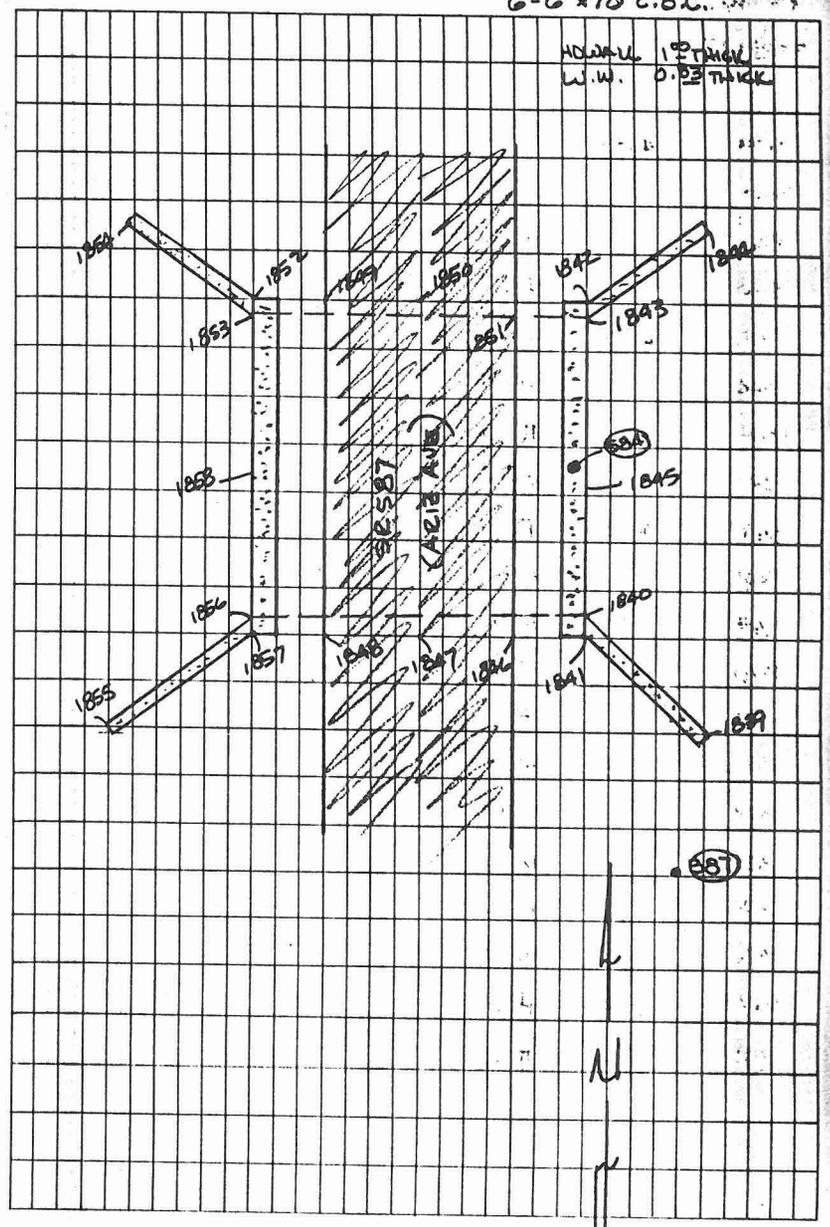


STA	ROD	DESC.	
A@388	5.34		
B@387	5.40	H.D = 2320.126	VERT = -0.742
1819	4.95	W.W	
1820		W.W	
1821		H.W	
1822		H.W	
1823	4.95	W.W	
1824		W.W	
1825		# Conc	
1826		EP	
1827	4.95	P	
1828		EP	
1829		EP	
1830		P	
1831		EP	
1832	4.95	H.W	
1833		W.W	
1834		W.W	
1835		W.W	
1836		W.W	
1837	4.95	H.W	
1838	8.50	# Conc.	



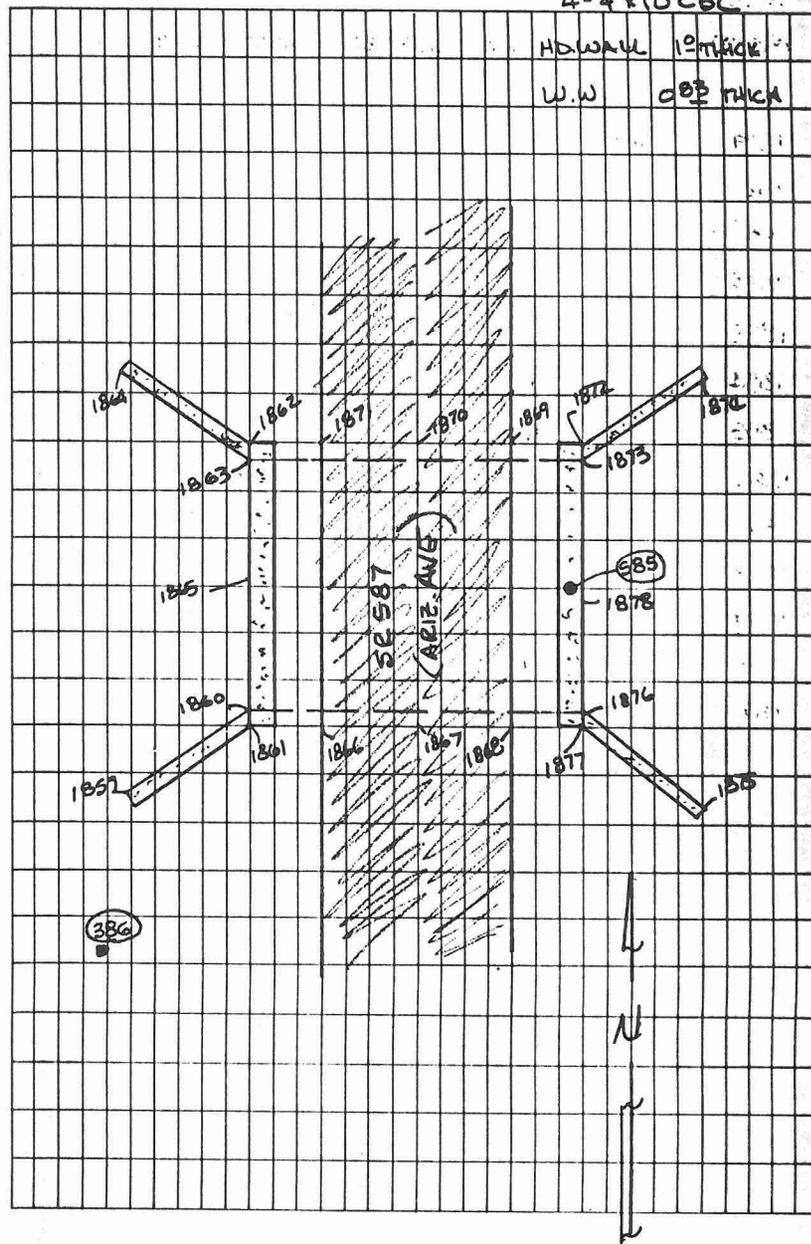
6-6'x10' C.B.C.

HOWALL 1 FT THICK  
W.W. 0.83 THICK

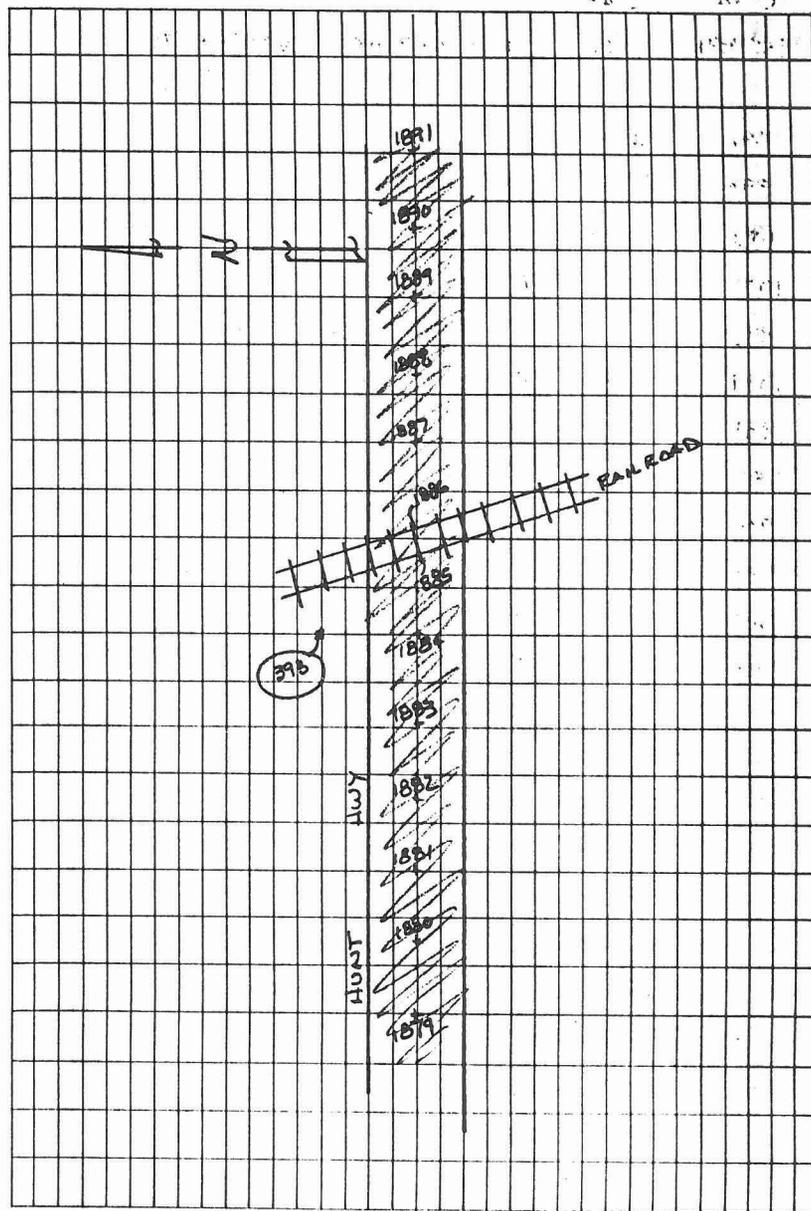


STA	ROD	DESC.
Te 387	5.64	
BS@ 388	-	
1839	4.95	W.W.
1840		W.W.
1841		H.W.
1842		H.W.
1843	4.95	W.W.
1844		W.W.
1845		Fe Conc.
1846		EP
1847	4.95	P
1848		EP
1849		EP
1850		P
1851		EP
1852	4.95	H.W.
1853		W.W.
1854		W.W.
1855		W.W.
1856		W.W.
1857	4.95	H.W.
1858	8.50	Fe Conc.

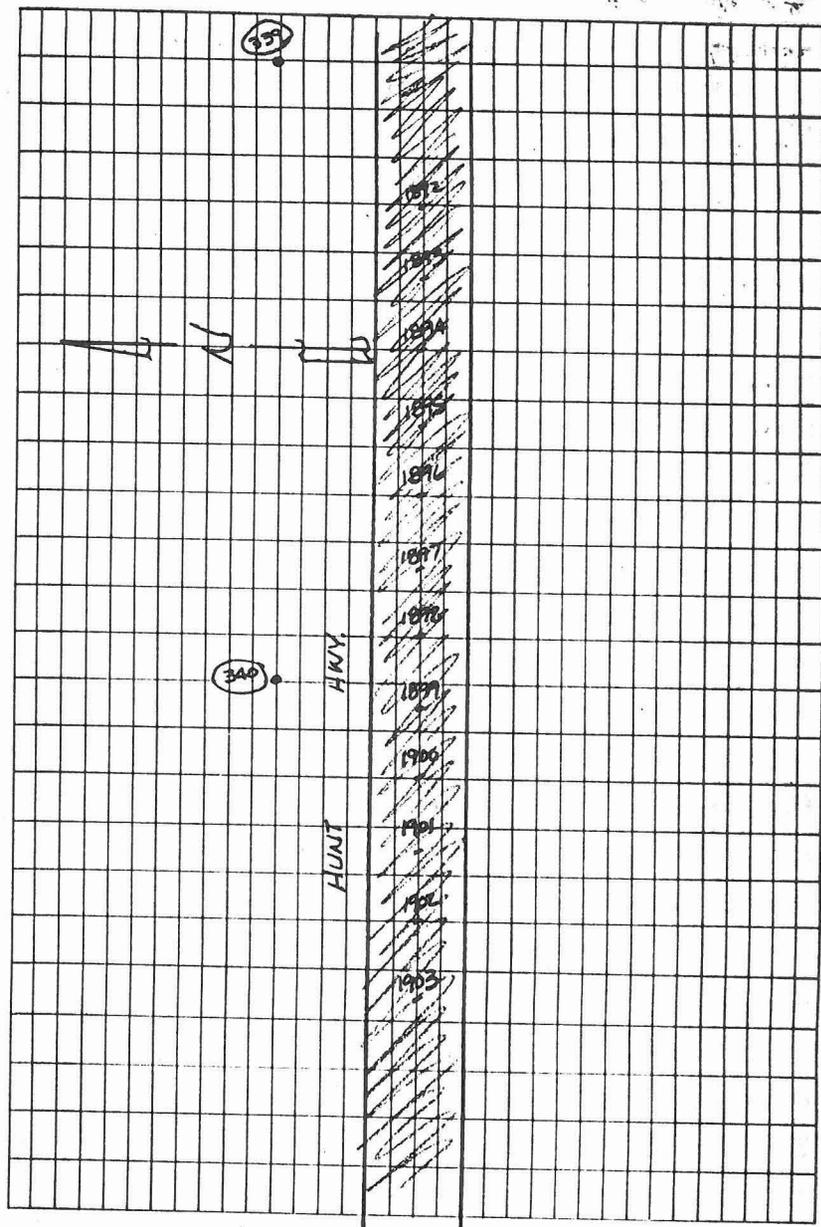
STA	R.O.D.	DESC.
TE386	5.26	
BS0387	5.40	H.D. = 2742.326 VER. = -0.172
1859	4.95	W.W.
1860	}	W.W.
1861		H.W.
1862		H.W.
1863	4.95	W.W.
1864	}	W.W.
1865		ft. Cone.
1866		EP
1867	4.95	P
1868	}	EP
1869		EP
1870		P
1871		EP
1872	4.95	H.W.
1873	}	W.W.
1874		W.W.
1875		W.W.
1876		W.W.
1877	4.95	H.W.
1878	8.50	ft. Cone.



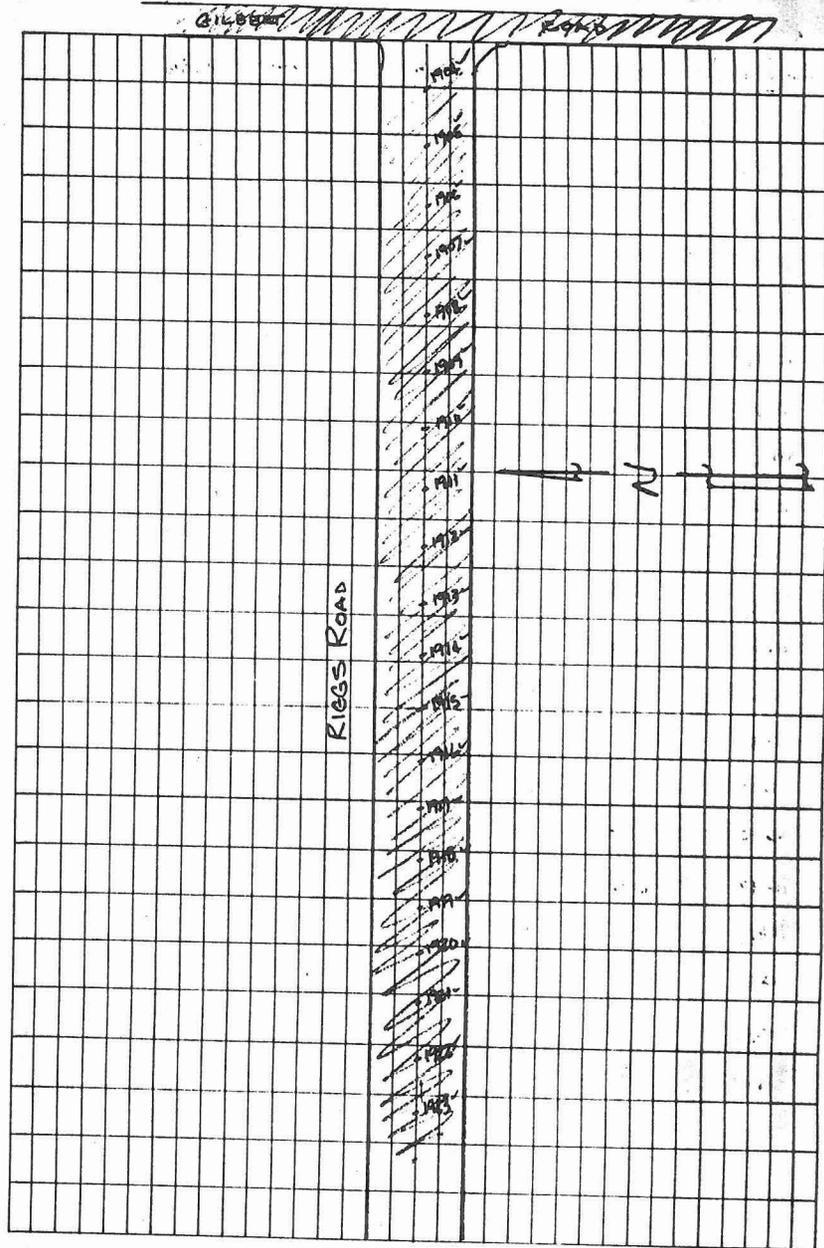
STI	ROD	DESCRIPTION
AC 393	5.43	
BS @ 391	4.66	H.D. = 2167.620    VERT. = - 8.176
1879	4.95	P
1880	}	}
1881		
1882		
1883	}	}
1884		
1885	4.95	P
1886	}	R.R.
1887		
1888	4.95	P
1889	}	P
1890		
1891	4.95	P



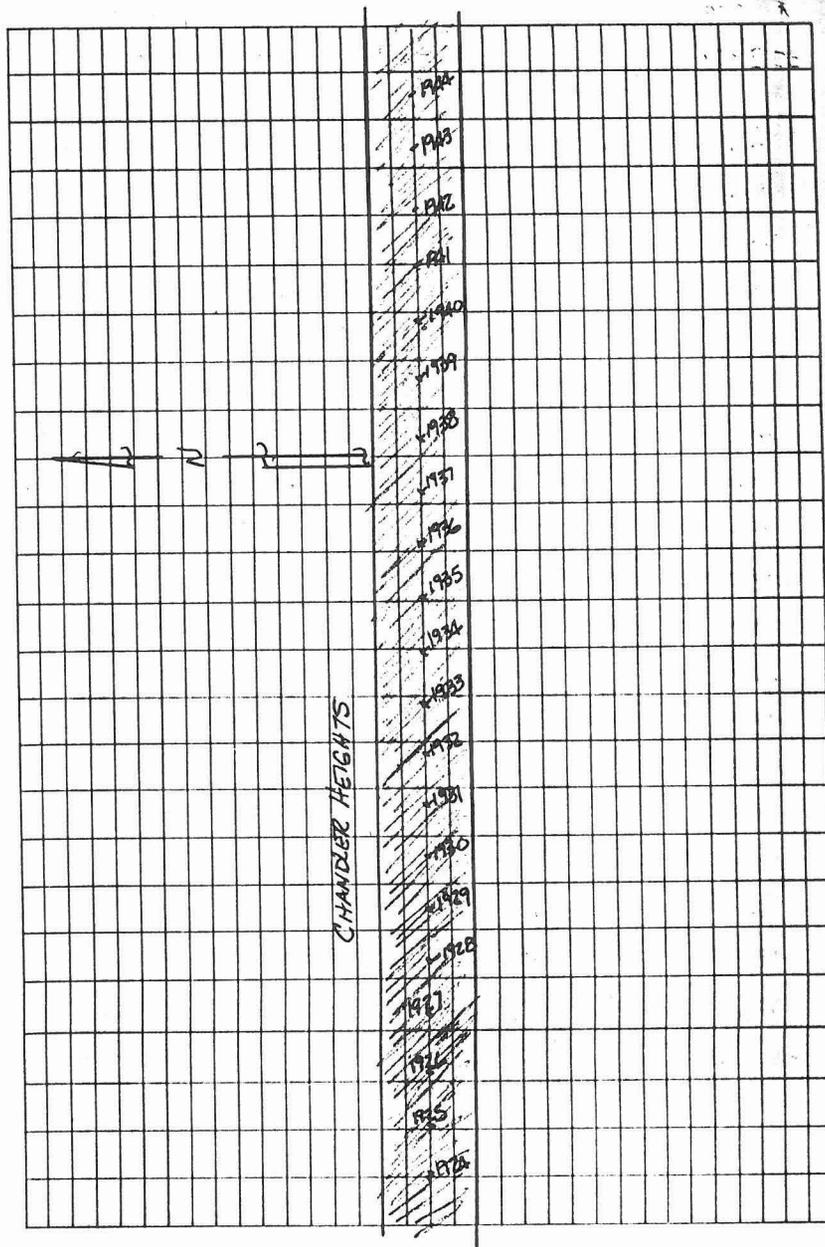
STA	ROD	DESCRIPTION		
TC 340	5.43			
BSC 339	5.19	H.D = 683.44Z	VERT = +2.744	
1892	4.95	P		
1893	}	P		
1894		P		
1895		P		
1896		P		
1897	4.95	P		
1898	}	P		
1899		P		
1900		P		
1901		P		
1902	}	P		
1903		4.95	P	



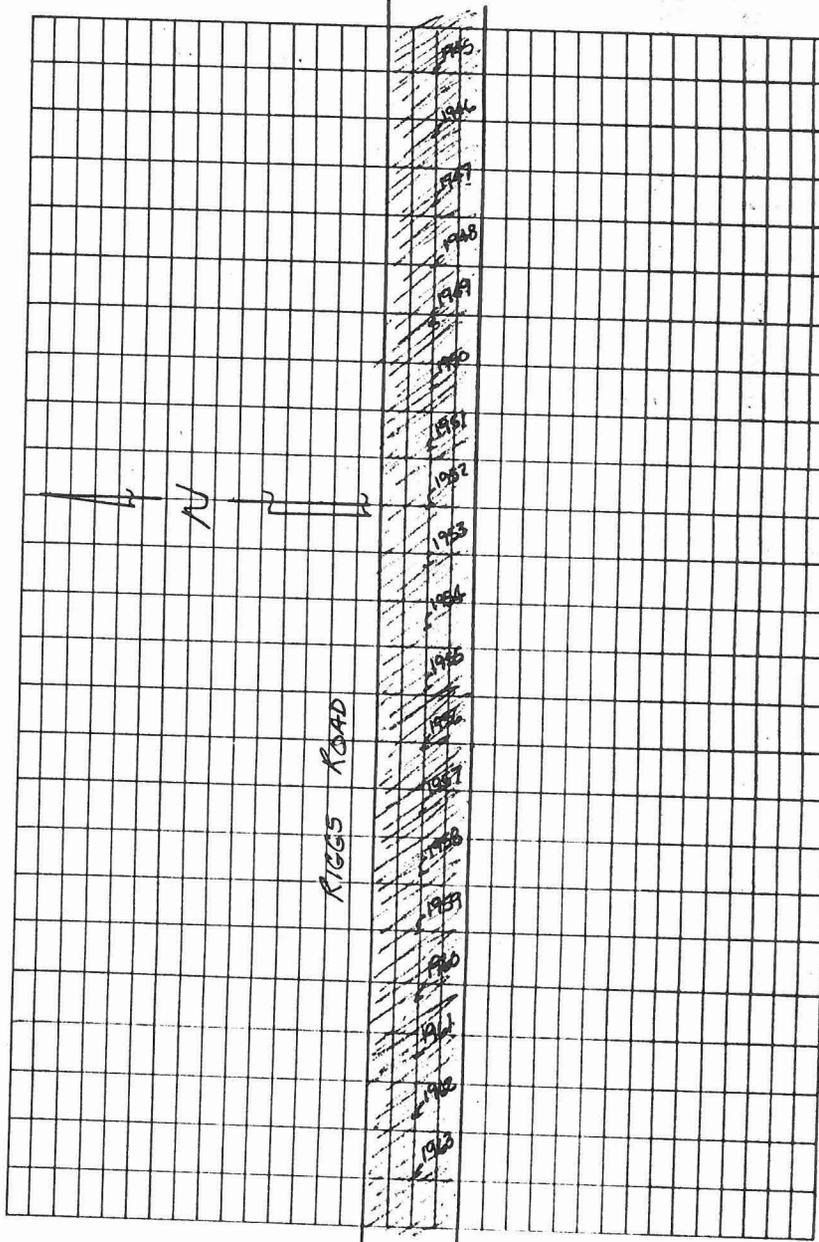
STA	ROD	DESCRIPTION
X 385	5.73	
BS @ 327	4.68	H.D. = 341.728 VERT. = +0.396
1904	4.95	P
1905	}	P
1906		P
1907		P
1908		P
1909	4.95	P
1910	}	P
1911		P
1912		P
1913		P
1914	4.95	P
1915	}	P
1916		P
1917		P
1918		P
1919	4.95	P
1920	}	P
1921		P
1922		P
1923	4.95	P



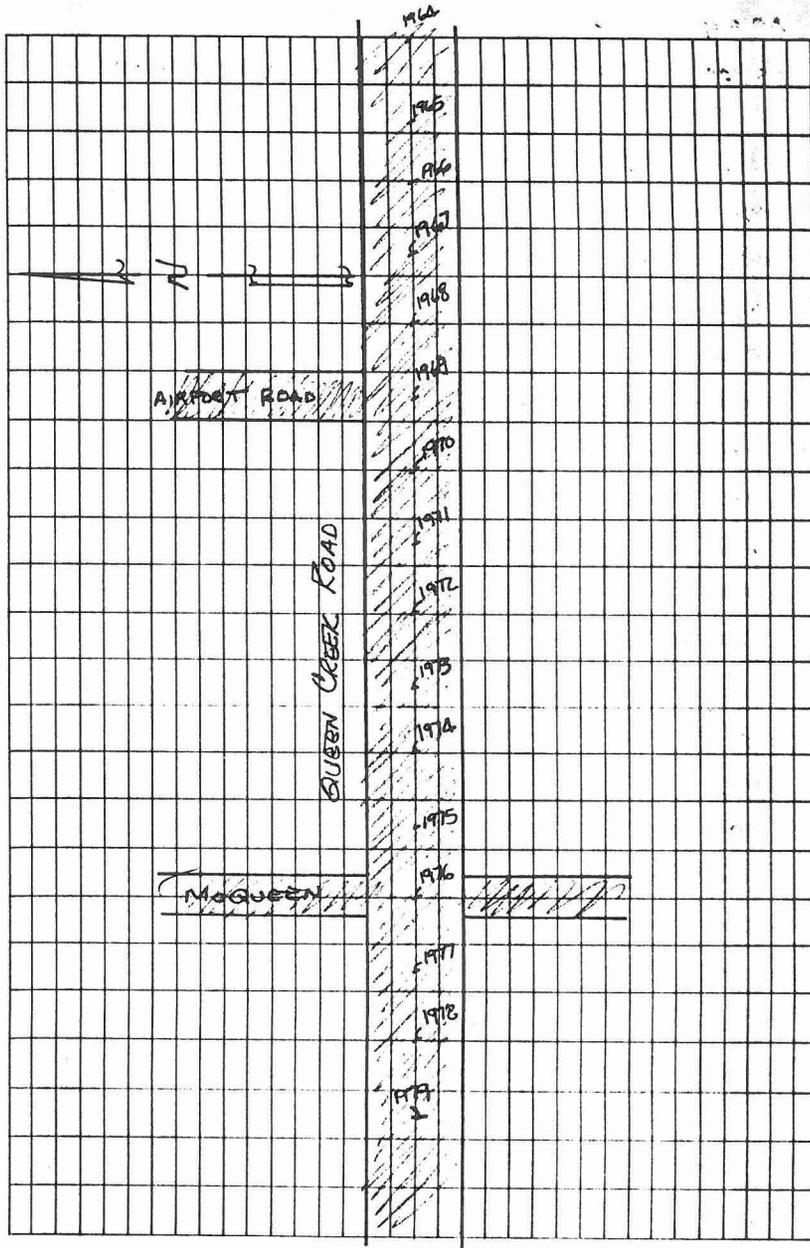
STA	ROD	DESCRIPTION
TC325	5.37	
BS324	4.64	H.D. = 158.738 VERT. = -1.868
1924	4.95	P
1925	}	P
1926		P
1927		P
1928		P
1929	4.95	P
1930	}	P
1931		P
1932		P
1933		P
1934	4.95	P
1935	}	P
1936		P
1937		P
1938		P
1939	4.95	P
1940	}	P
1941		P
1942		P
1943		P
1944	4.95	P



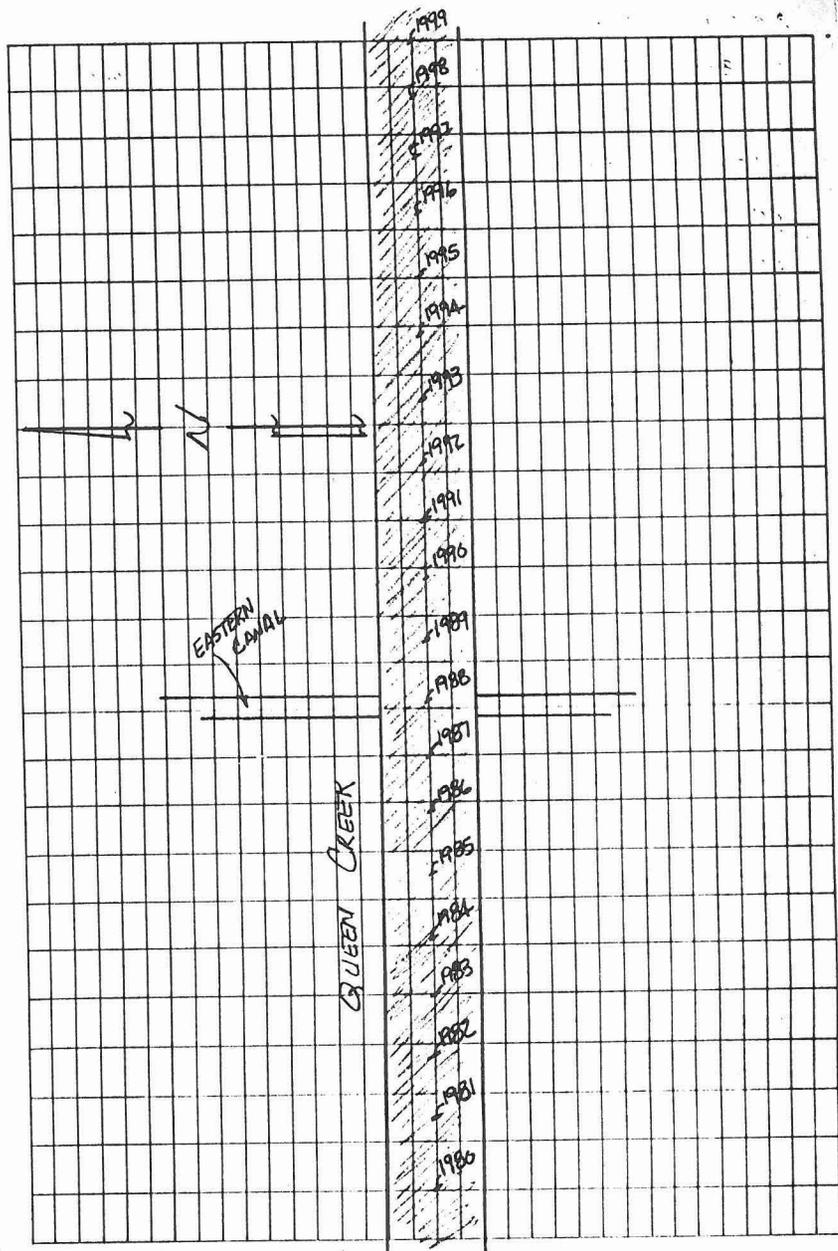
STA	ROD	DESCRIPTION
AC 384	5.65	
BSC 326	4.85	H.D = 214.966 VERT = -0.080
1945	4.95	P
1946	}	P
1947		P
1948		P
1949		P
1950	4.95	P
1951	}	P
1952		P
1953		P
1954	4.95	P
1955	}	P
1956		P
1957		P
1958		P
1959	4.95	P
1960	}	P
1961		P
1962		P
1963	4.95	P



STATION	ROD	DESCRIPTION		
AC 333	5.63			
BS 332	4.69	H.D = 83.246	VERT = -0.200	
1964	4.95	P		
1965	}	P		
1966		P		
1967		P		
1968		P		
1969		4.95	P	
1970	}	P		
1971		P		
1972		P		
1973		P		
1974		4.95	P	
1975	}	P		
1976		P		
1977		P		
1978		P		
1979		4.95	P	

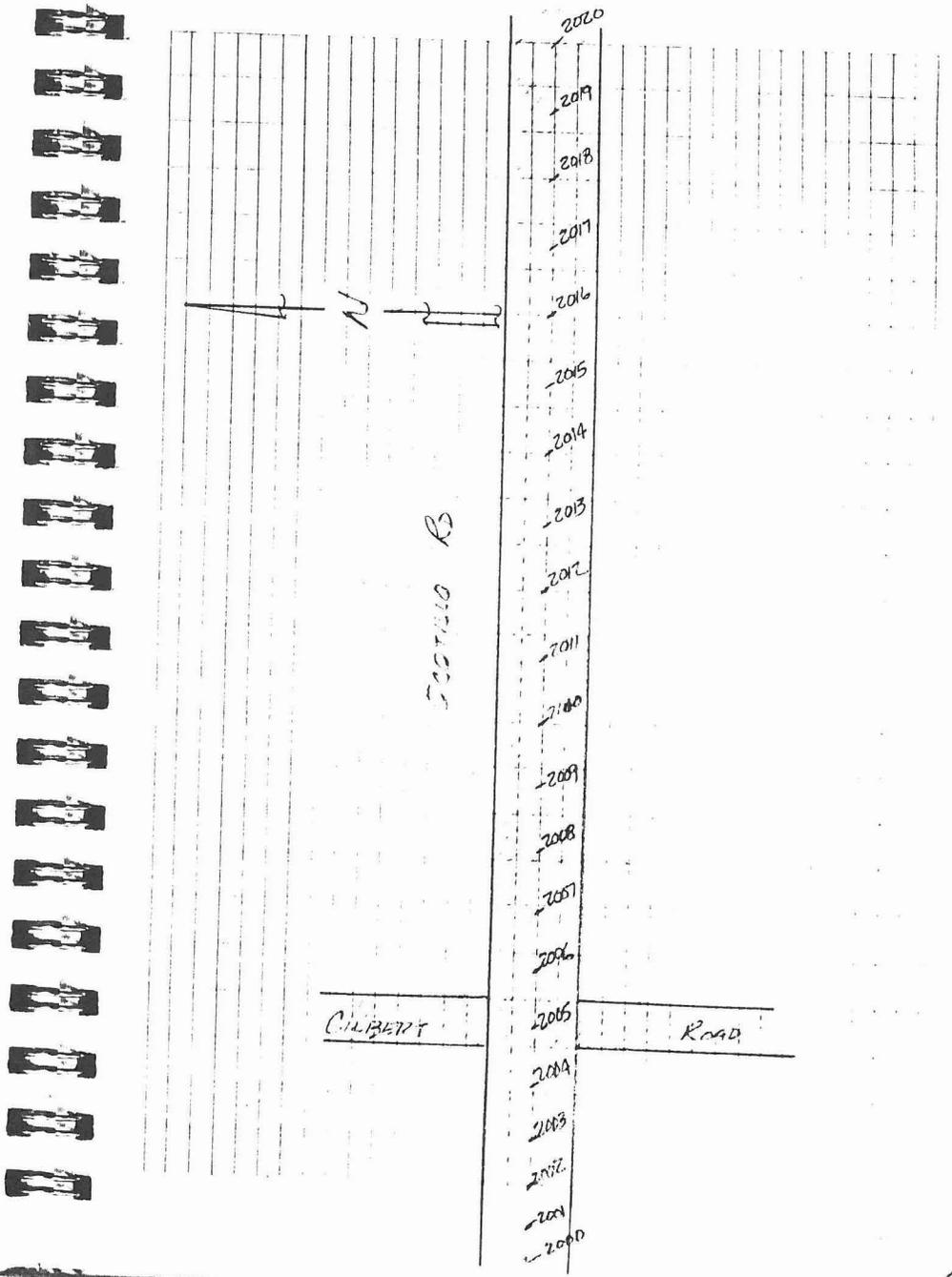


STA	ROD	DESCRIPTION		
AC 309	5.46			
BS 308	4.45	H.D = 100.544	VERT = - 1.942	
1980	4.95	P		
1981		P		
1982		P		
1983		P		
1984		P		
1985	4.95	P		
1986		P		
1987		P		
1988		P		
1989		P		
1990	4.95	P		
1991		P		
1992		P		
1993		P		
1994		P		
1995	4.95	P		
1996		P		
1997		P		
1998		P		
1999	4.95	P		



STA EOL DESCRIPTION  
 N@ 382 5.53  
 B5@ 383 5.50 H.D= 1180.480 VERT= -6.850

STA	EOL	DESCRIPTION
2000	4.95	P
2001		P
2002		P
2003		P
2004		P
2005	4.95	P
2006		P
2007		P
2008		P
2009		P
2010	4.95	P
2011		P
2012		P
2013		P
2014		P
2015	4.95	P
2016		P
2017		P
2018		P
2019		P
2020	4.95	P



98045

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### CURVE FORMULAS

$T = R \tan \frac{1}{2} I$ $T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$ $\text{Sin. } \frac{1}{2} D = \frac{50}{R}$ $\text{Sin. } \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$	$R = T \cot. \frac{1}{2} I$ $R = \frac{50}{\text{Sin. } \frac{1}{2} D}$ $E = R \text{ ex. sec } \frac{1}{2} I$ $E = T \tan \frac{1}{4} I$	Chord def. = $\frac{\text{Chord}}{R}$ No. chords = $\frac{I}{D}$ Tan. def. = $\frac{1}{2}$ chord def.
---	--	---

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

### GENERAL DATA

**RIGHT ANGLE TRIANGLES.** Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt.  $10 \cdot 10^2 + 200 = .5$ .  $100 + .5 = 100.5$  hyp.

Given Hyp. 100, Alt.  $25 \cdot 25^2 + 200 = 3.125$ .  $100 - 3.125 = 96.875 = \text{Base}$ .

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 1760 and divide by 7.

**LEVELING.** The correction for curvature and refraction, in feet and inches of feet is equal to  $0.574 d^2$ , where  $d$  is the distance in miles. Correction for curvature alone is closely,  $\frac{1}{3}d^2$ . The combined correction is negative.

**PROBABLE ERROR.** If  $d_1, d_2, d_3$ , etc. are the discrepancies of various observations from the mean, and if  $\Sigma d^2$  = the sum of the squares of these differences, and  $n$  = the number of observations, then the probable error of the mean =

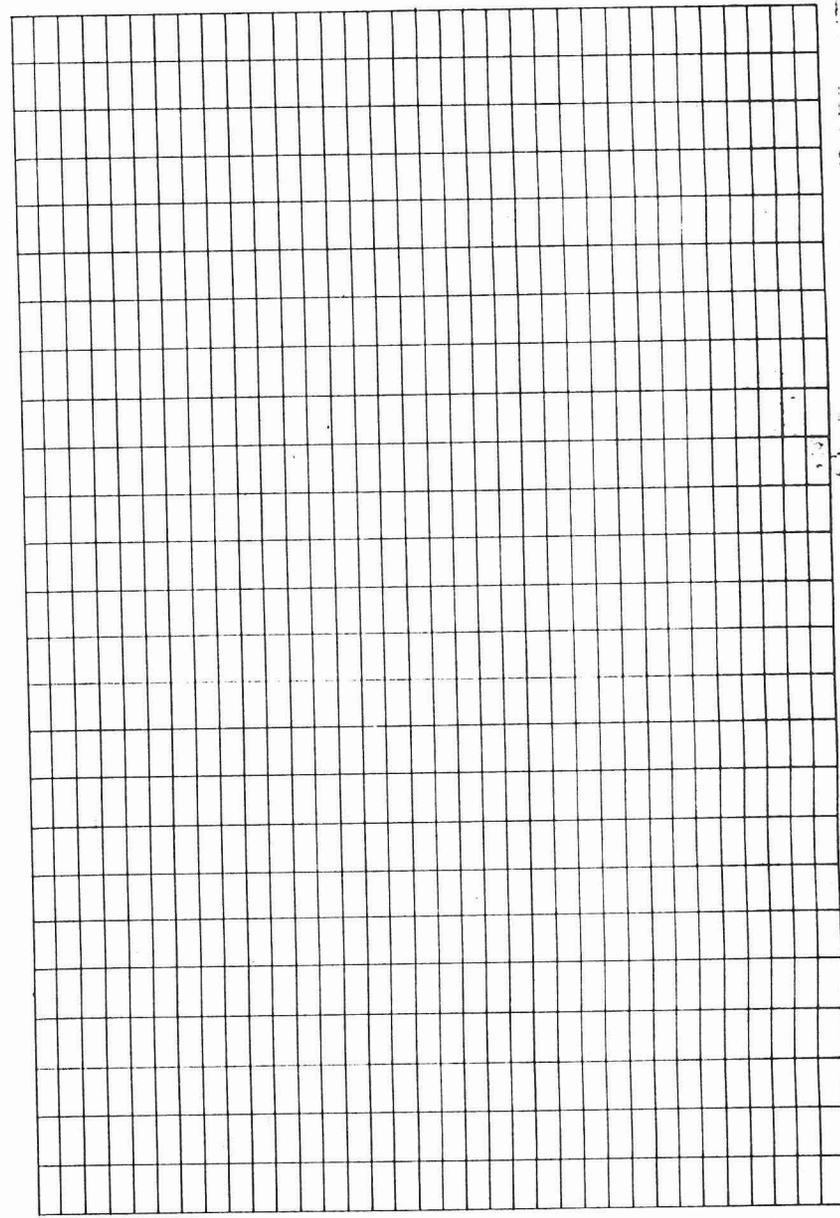
$$\pm 0.6745 \sqrt{\frac{\Sigma d^2}{n(n-1)}}$$

#### MINUTES IN DECIMALS OF A DEGREE

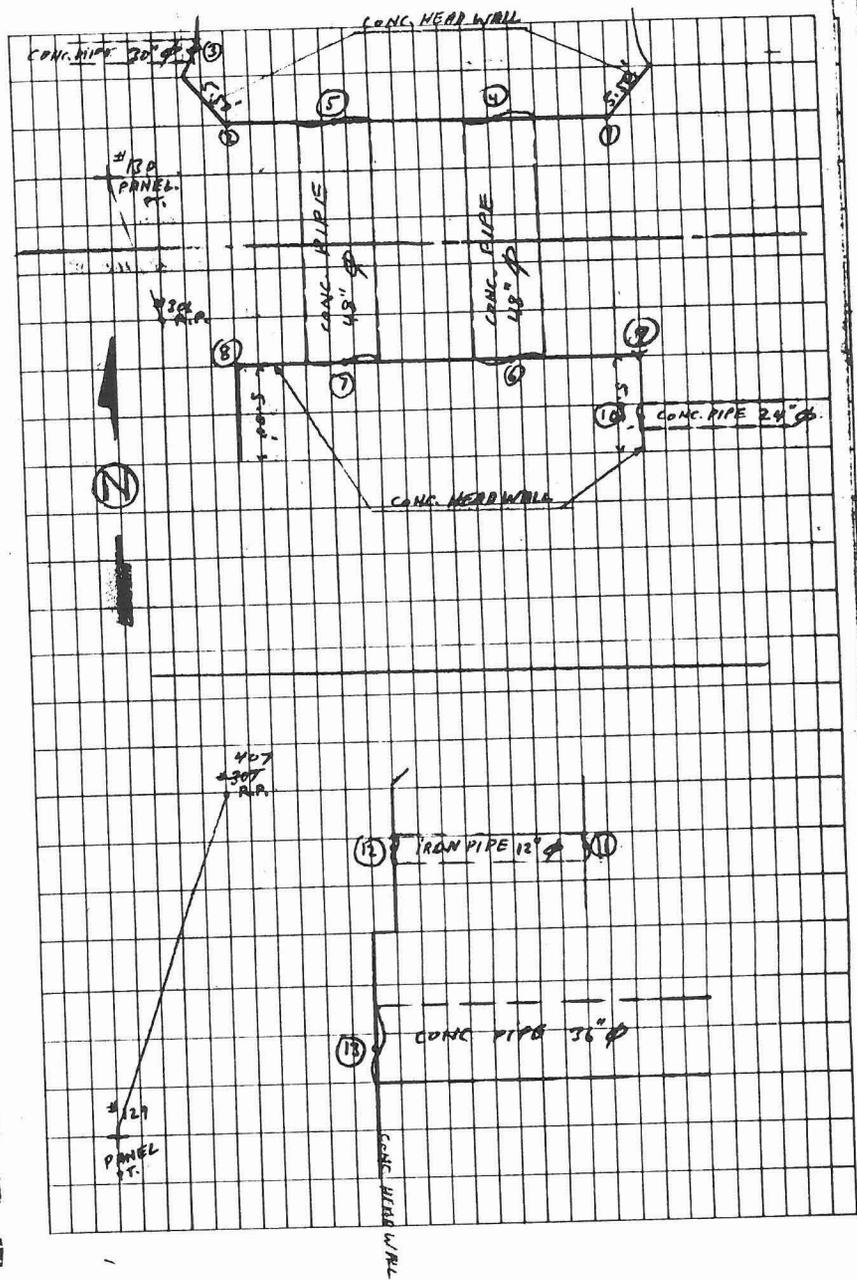
.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
.0333	12'	.2000	22'	.3667	32'	.5333	42'	.7000	52'	.8667
.0500	13'	.2167	23'	.3833	33'	.5500	43'	.7167	53'	.8833
.0667	14'	.2333	24'	.4000	34'	.5667	44'	.7333	54'	.9000
.0833	15'	.2500	25'	.4167	35'	.5833	45'	.7500	55'	.9167
.1000	16'	.2667	26'	.4333	36'	.6000	46'	.7667	56'	.9333
.1167	17'	.2833	27'	.4500	37'	.6167	47'	.7833	57'	.9500
.1333	18'	.3000	28'	.4667	38'	.6333	48'	.8000	58'	.9667
.1500	19'	.3167	29'	.4833	39'	.6500	49'	.8167	59'	.9833
.1667	20'	.3333	30'	.5000	40'	.6667	50'	.8333	60'	1.0000

#### INCHES IN DECIMALS OF A FOOT

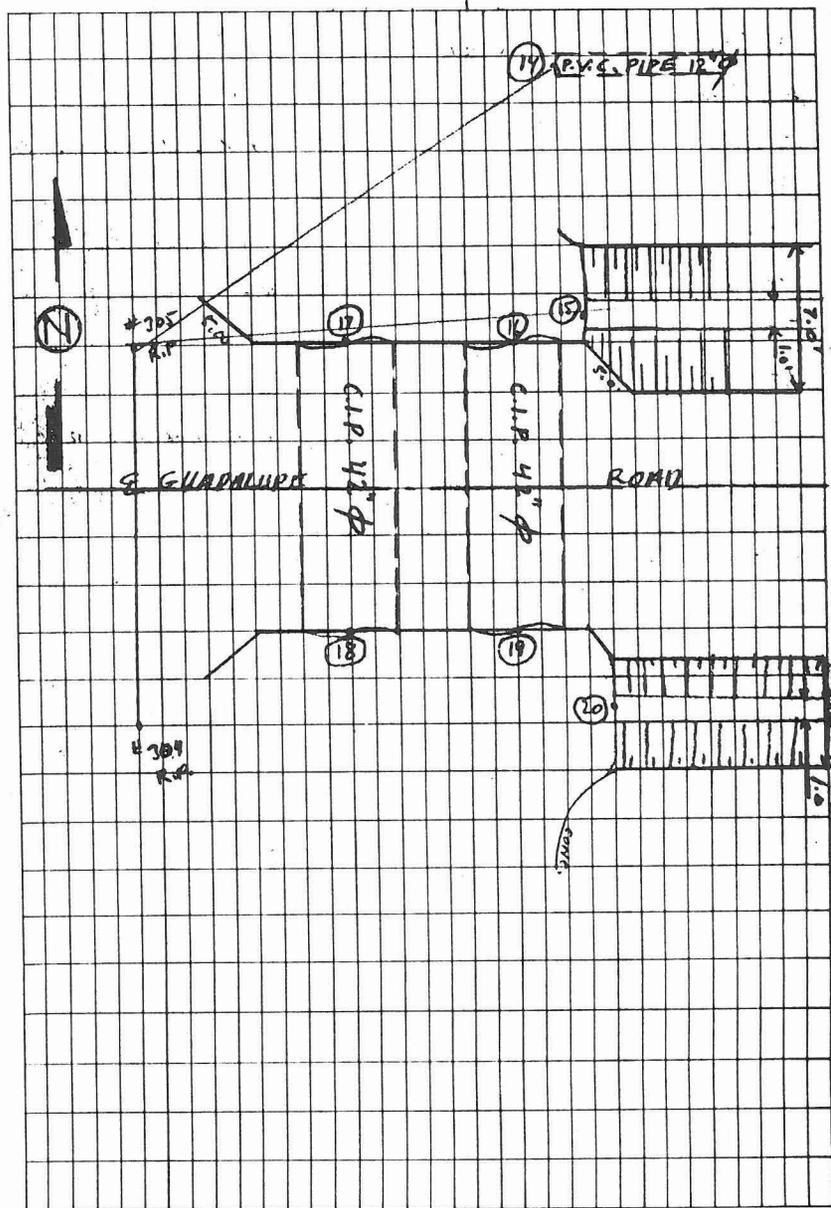
1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	7/8"
.0625	.1250	.1875	.2500	.3125	.3750	.4375	.5000	.5625	.6250
1/8"	3/8"	1/2"	5/8"	3/4"	7/8"	1 1/8"	1 1/4"	1 3/8"	1 1/2"
.1250	.3750	.5000	.6250	.7500	.8750	1.1250	1.3750	1.6250	1.8750



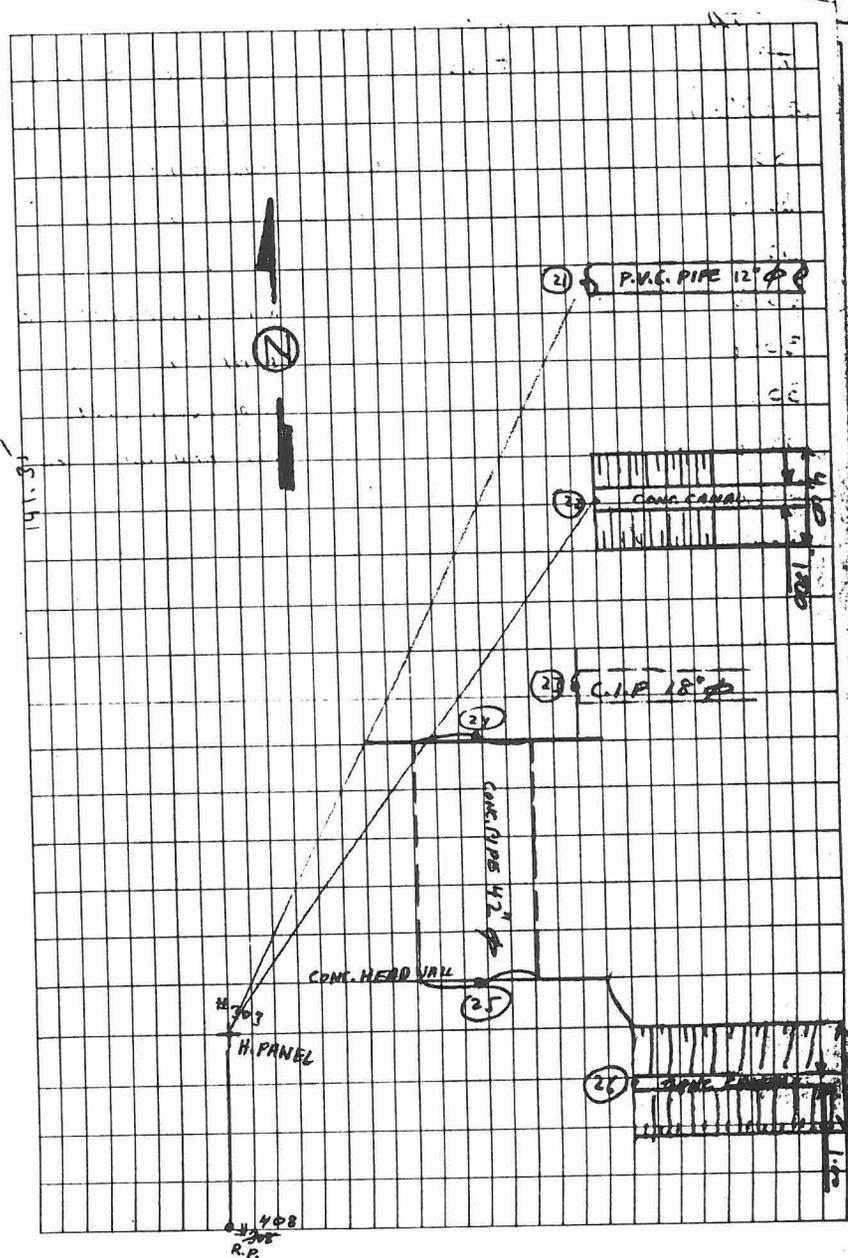
STA.	H.I.	H.R.	REMARKS
T2 <sup>4</sup> 306	5.72		FD. 1/2" REBAR
B.S. 2 <sup>4</sup> 120			P.M. PANEL POINT
3001		8.42	N.E. CORN.
3002		"	N.W. CORN.
3003		11.42	INV. 30" IRON PIPE
3004		8.42	N.E. INV. CONC. PIPE 24" Ø
3005		"	N.W. "
3006		7.42	S.E. "
3007		"	S.W. "
3008		"	S.W. CORN.
3009		"	S.E. CORN.
3010		"	INV. 24" Ø CONC. PIPE
<hr/>			
T2 <sup>4</sup> 407 T2 <sup>4</sup> 307			SOUTH SIDE RAINWALL
B.S. 2 <sup>4</sup> 129			PANEL POINT
3011		4.67	E. INV. IRON PIPE 12" Ø
3012		"	W. "
3013		"	INV. CONC. PIPE 36" Ø



	H.L.	H.R.	
T. 2# 305	S. 51		FD. 1/2" REBAR RANDOM PT.
B.S. 2# 304			" " " "
3014		25.32	P.V.C. PIPE 12" $\phi$
3015		8.42	E.H. CONC. CANAL
3016		"	N.E. C.I.P. 42" $\phi$
3017		"	N.W. " "
3018		"	" " " "
3019		"	N.E. " "
3020		"	E.H. CONC. CANAL

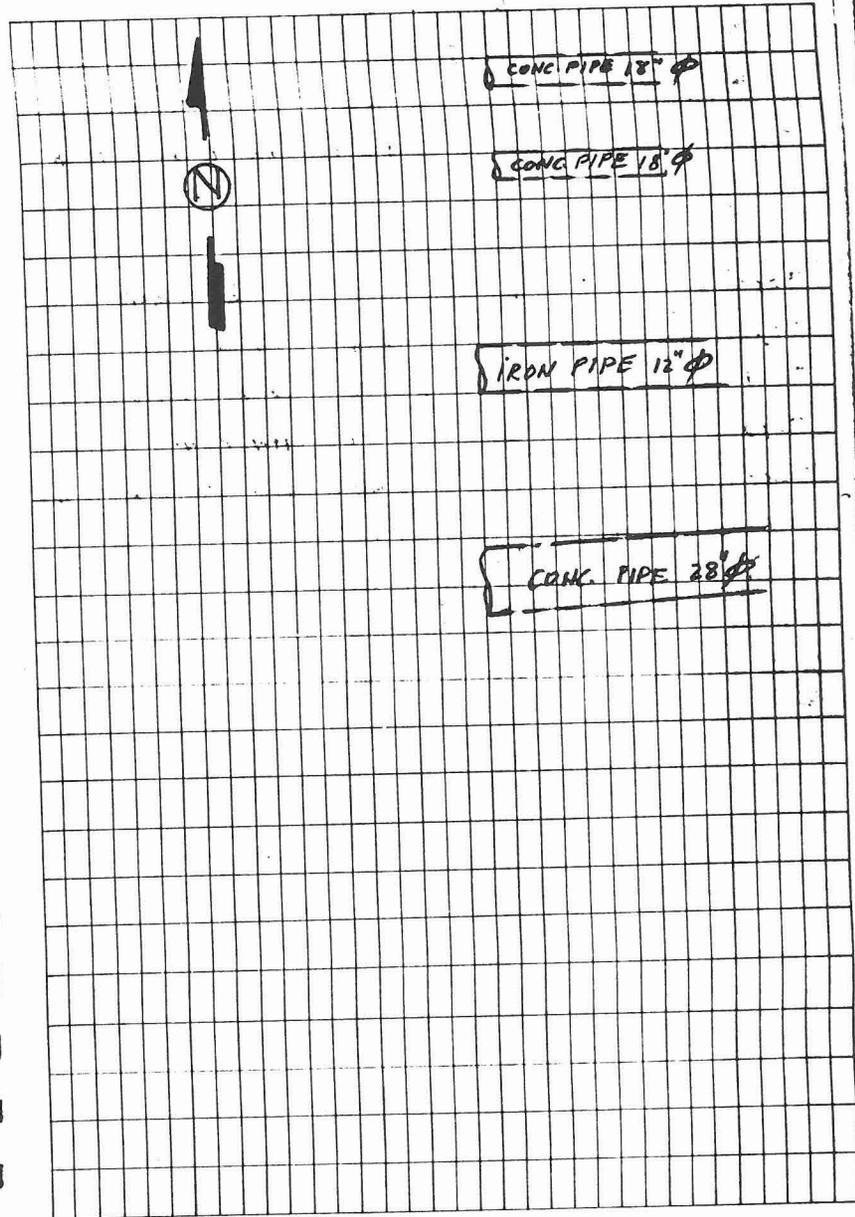


STA	H.I.	H.R.	
703	5.50		ED. 1/2 REBAR PANEL PT
408			SET 1/2 REBAR RANDOM PT.
3021		4.67	INV. P.V.C. PIPE 12" $\phi$
3022		8.42	E-W CONG. CANAL
3023		"	INV. C.I.P. 18" $\phi$
3024		"	NORTH INV. CONG. PIPE 42" $\phi$
3025		"	SOUTH. " " "
3026		"	E-W CONG. CANAL
3027		4.67	INV. IRON PIPE 12" $\phi$
3028		"	" " " "
3029		"	" " " "

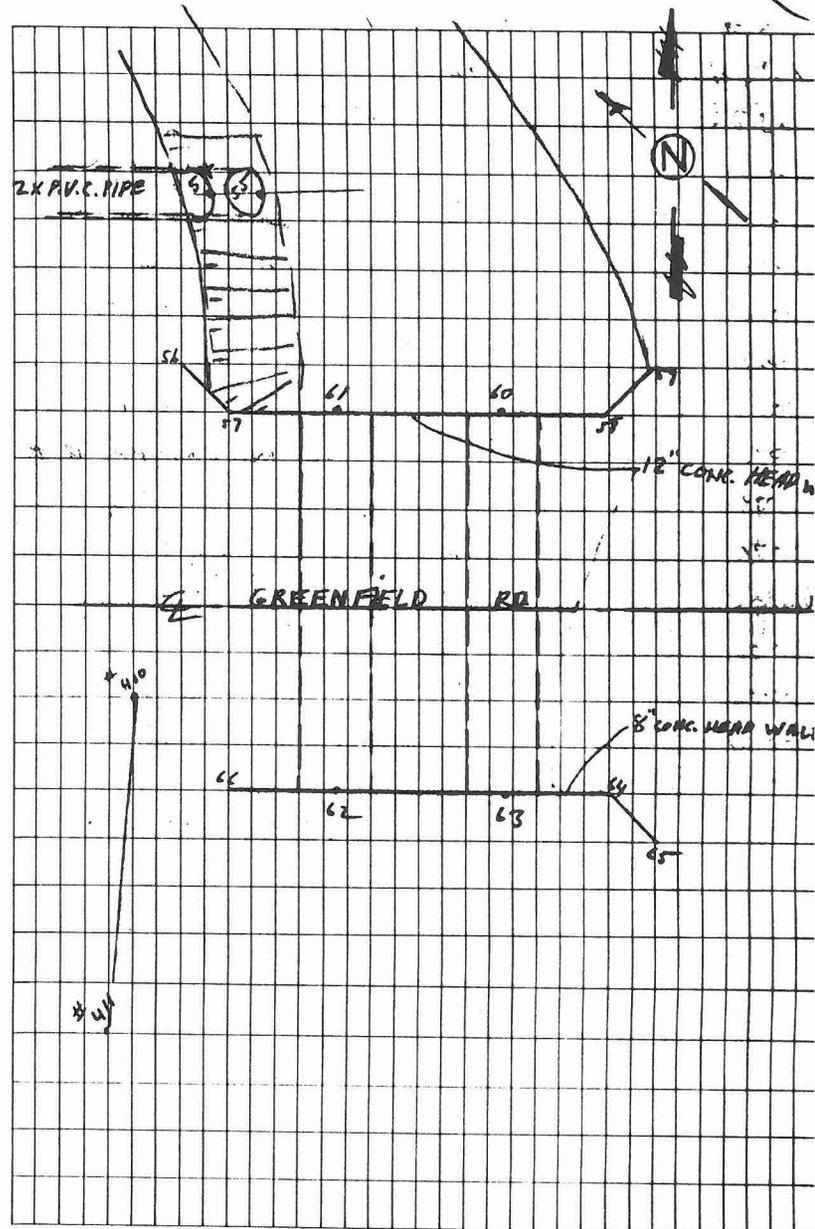




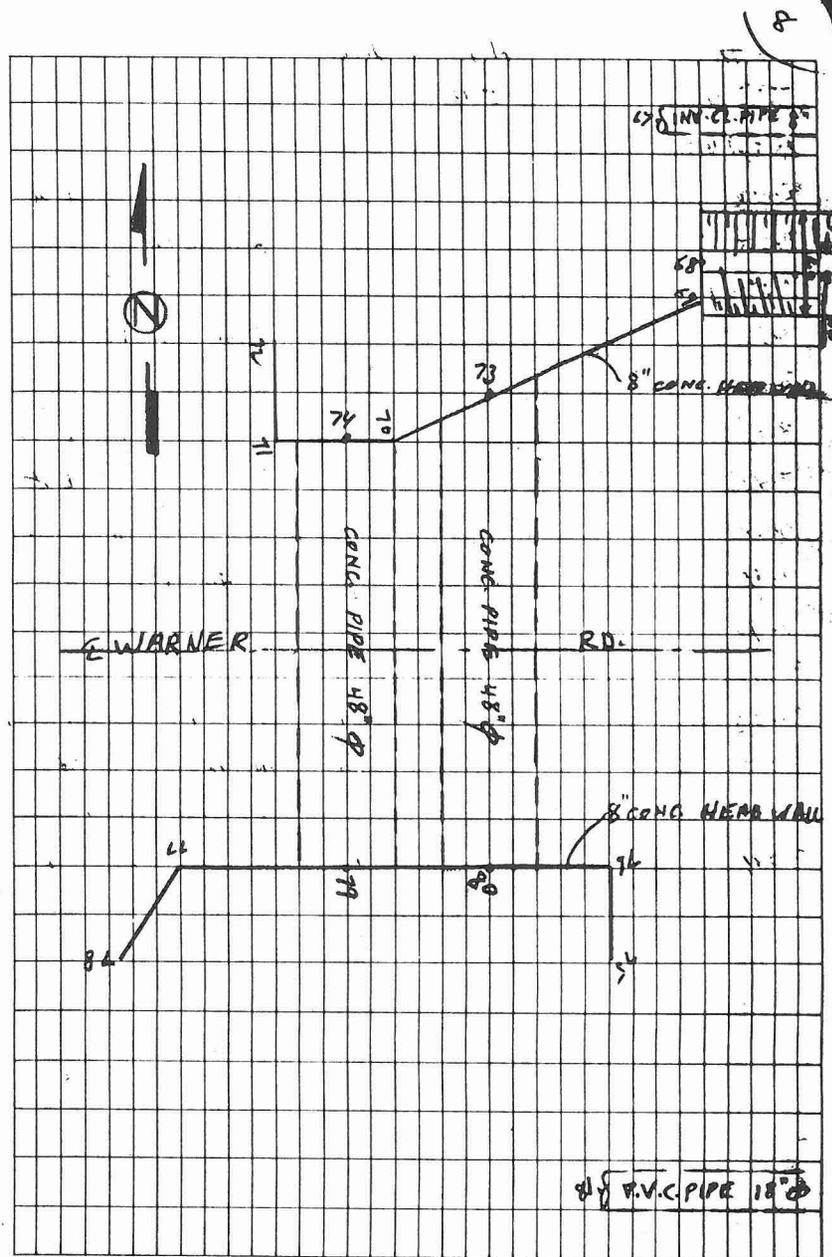
STA.	H.I.	H.R.	
3041	5.37		
3042			
3049		8.42	INV. CONC. PIPE 18" $\phi$
3050		"	" " " "
NW 300	5.35		FD. 1/2" REBAR
BSW 409		4.67	SET 1/2" REBAR
3051		"	IRON PIPE 12" $\phi$ WEST INV.
3052		"	EAST INV. " "
3053		8.42	INV. CONC. PIPE 28" $\phi$

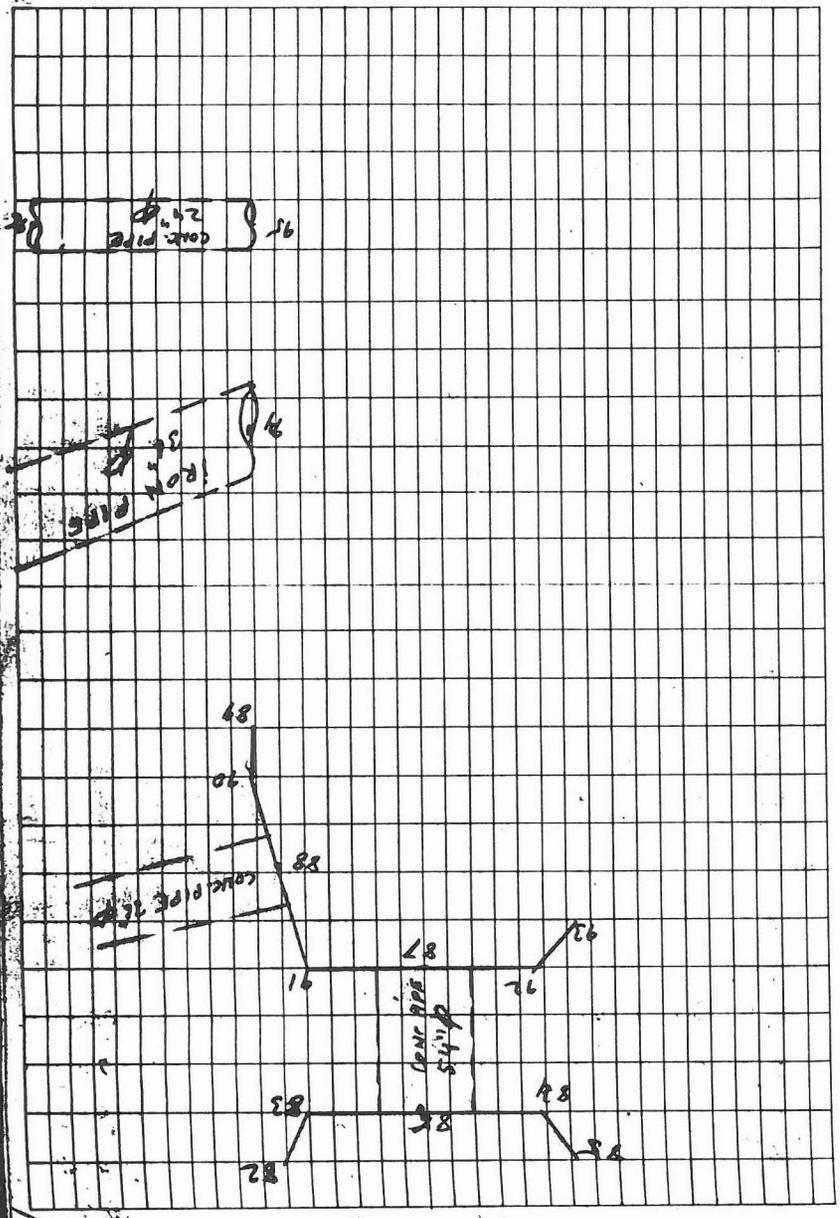


STA.	H.I.	H.R.	
TJ 410	5.39		SET 1/2" REBAR
BS 411		4.67	" " "
3054		12.42	ING. PVC PIPE 18" Ø
3055		15.00	" " " "
3056		4.67	N.W. END
3057		"	* POINT
3058		"	" "
3059		"	N.E. END
3060		12.42	8" ING. CONC PIPE 48" Ø
3061		"	" " " " "
3062		"	" " " " "
3063		"	E " " " "
3064		4.67	E
3065		"	
3066		"	



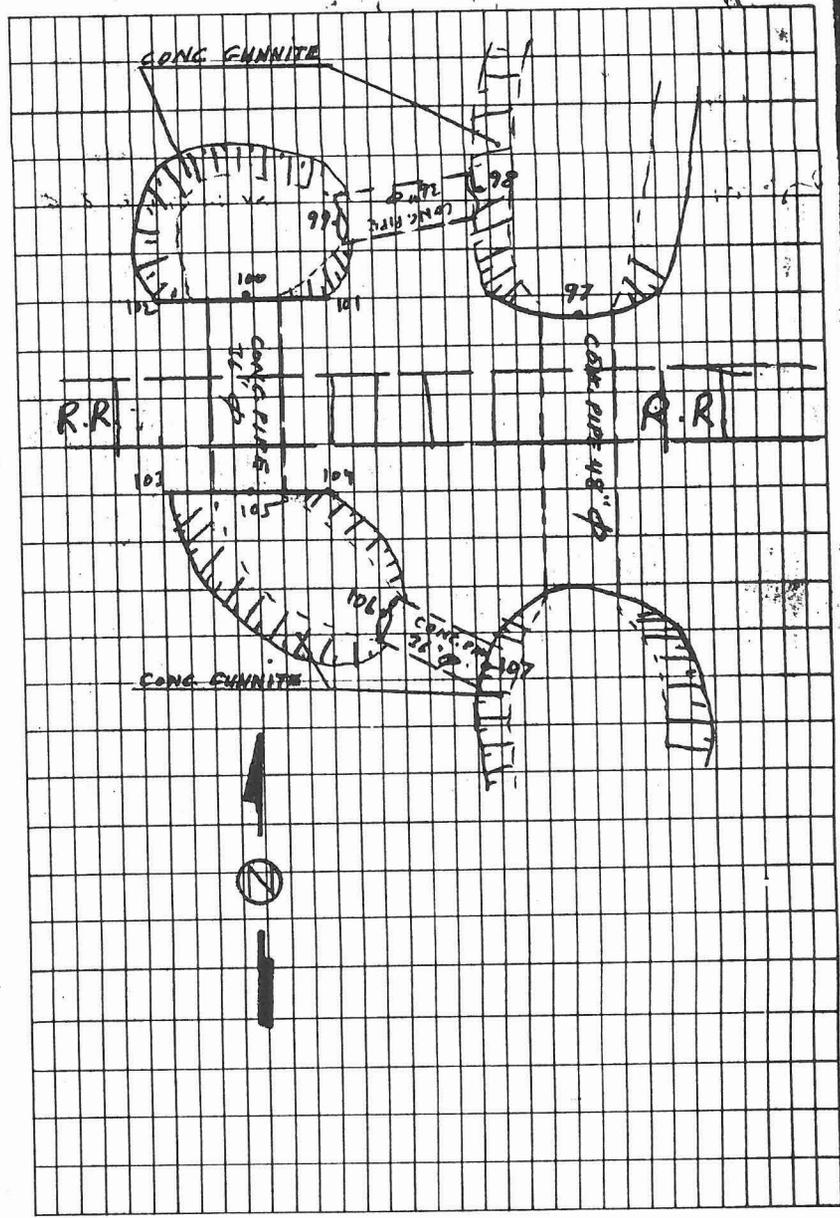
STA	H.I.	H.R.	
T2441	5.19		
B.S.D 410		4.17	
3067		"	INV. CLAY PIPE 8" $\phi$
3068		"	G.P.E. CONC. CANAL
3069		"	N.E. END CONC. HEAD WALL
3070		"	X POINT
3071		"	"
3072		"	N.W. END CONC. HEAD WALL
3073		8.42	INV. CONC. PIPE 48" $\phi$
3074		"	"
3075		4.67	S.E. END CONC. HEAD WALL
3076		"	X POINT
3077		"	"
3078		"	S.W. END
3079		8.42	INV. CONC. PIPE 48" $\phi$
3080		12.42	"
3081		8.42	INV. PVC PIPE 18" $\phi$





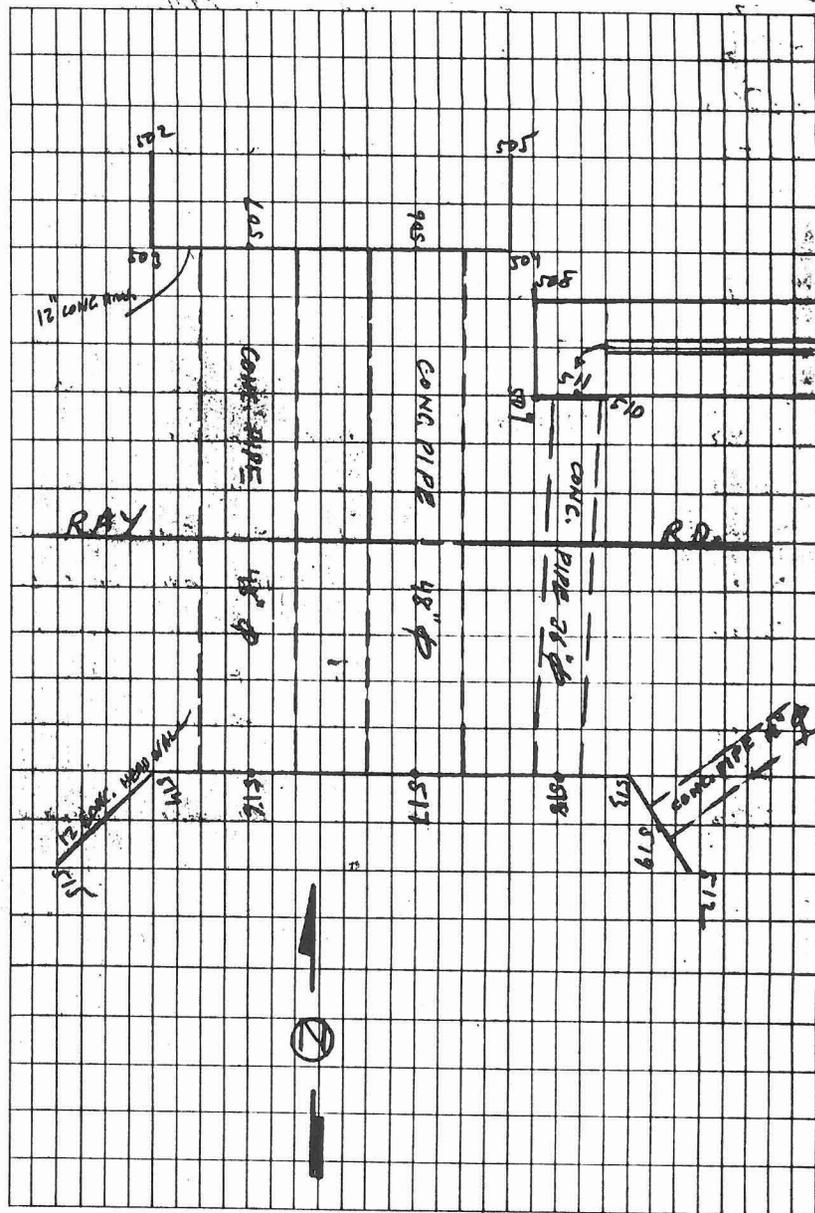
STN.	H.I.	H.R.	REMARKS
3104			E. END CON. HEAD WALL
3103			" " " "
3102			" " " "
3101	12.42		E. END CON. HEAD WALL
3100			" " " "
3099	15.42		" " " "
3098			INV. CONC. PIPE 24" φ
3097	12.42		INV. CONC. PIPE 48" φ
3096			" " " "
3095			INV. CONC. PIPE 24" φ
3094			INV. CONC. PIPE 36" φ
3093	4.67		S.W. END CONC. H.W.
3092			" " " "
3091			" " " "
3090			± PT.
3089	4.67		S.E. END CON. HEADW.
3088			" " " 36" φ
3087			" " " "
3086	8.42		INV. CONC. PIPE 54" φ
3085			N-W END CON. H.W.
3084			" " " "
3083			± POINT
3082	4.67		N.E. END CONC. HEAD W.
8521413			
8521412	5.41		

STA	H.I.	H.R.	
3105		15.42	INV. CONC. PIPE 24" $\phi$
3106		"	" " " " "
3107		"	" " " " "
3108		"	INV. CONC. PIPE 24" $\phi$



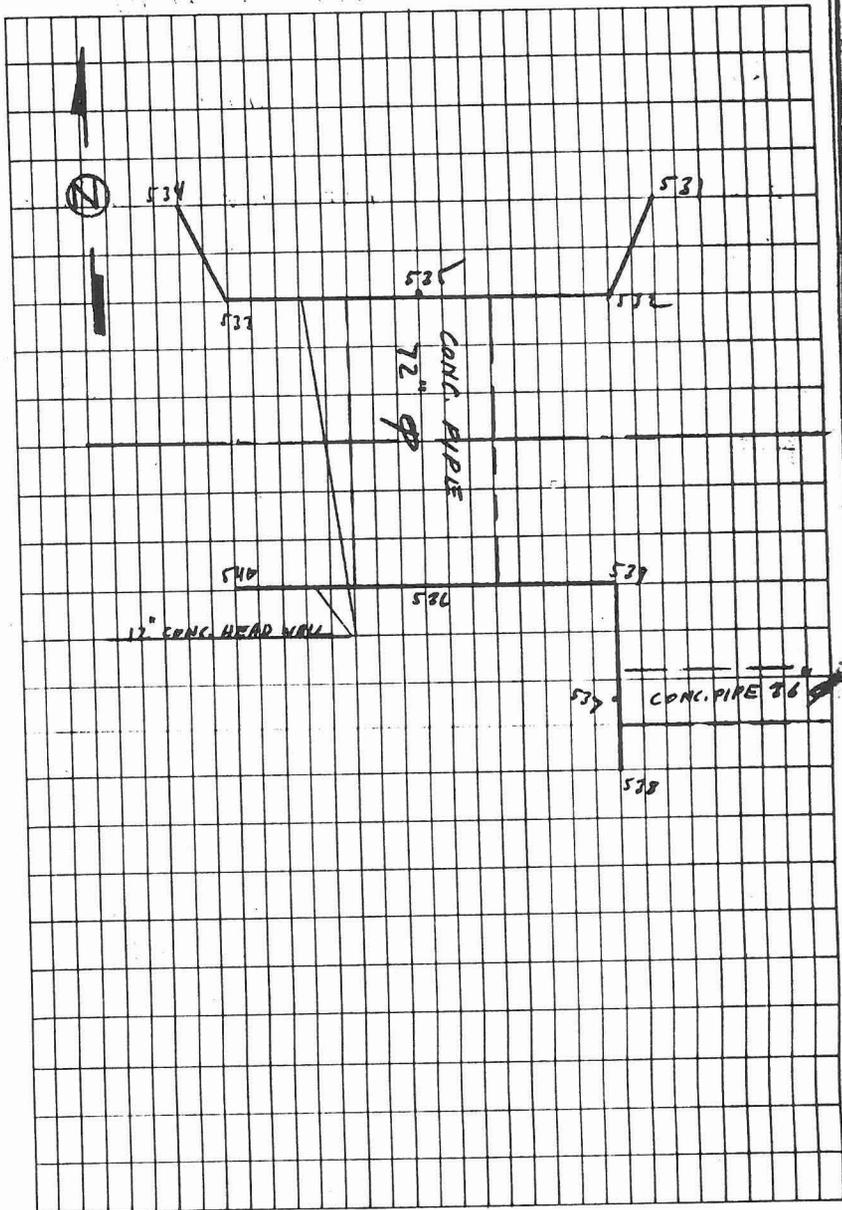


STA.	H.I.	H.R.	REMARKS
TD# 416	5.18		
252# 311			
3502		4.67	N.W. END OF CONC. H.W.
3503		"	± PTI
3504		"	± PTI
3505		"	N.E. END OF CONC. H.W.
3506		8.42	INV. CONC. PIPE 48" φ
3507		"	" " " "
3508		4.67	N.E. END OF CONC. H.W.
3509		"	± PTI
3510		"	E. END OF CONC. H.W.
3511		8.42	INV. CONC. PIPE 36" φ
3512		"	S.E. END OF CONC. H.W.
3513		"	± PTI
3514		"	± PTI
3515		"	S.W. END OF CONC. H.W.
3516		12.42	INV. CONC. PIPE 48" φ
3517		"	" " " "
3518		"	" " " " 36" φ
3519		"	" " " " 18" φ





STA	H.L.	H.R.	REMARKS
TD# 419	542		SET 1/2 REBAR
B.S.D# 114			ED. B.L. IN H.H. 2' W. WALL FLD. RD. & CANAL
3521		4.67	N.E. END CONC. H.W.
3522		"	✗ PT.
3523		"	✗ PT.
3524		"	N.W. END CONC. H.W.
3525		12.42	INV. CONC. PIPE 26"
3526		"	" " " "
3527		"	" " " "
3528		4.67	S.E. END CONC. H.W.
3529		"	✗ PT.
3540		"	S.W. END CONC. H.W.





TC 302 FIELD B.S. 301

2302 FILE 2301

HI 5.06

HR

2500 PV. APPROX PAVEMENT ELEV RD 496

01 11

02 11

03 11

04 11

05 11

06 11

07 11

08 11

09 11

2510 11

11 11

12 11

13 11

14 11

15 11

16 11

17 11

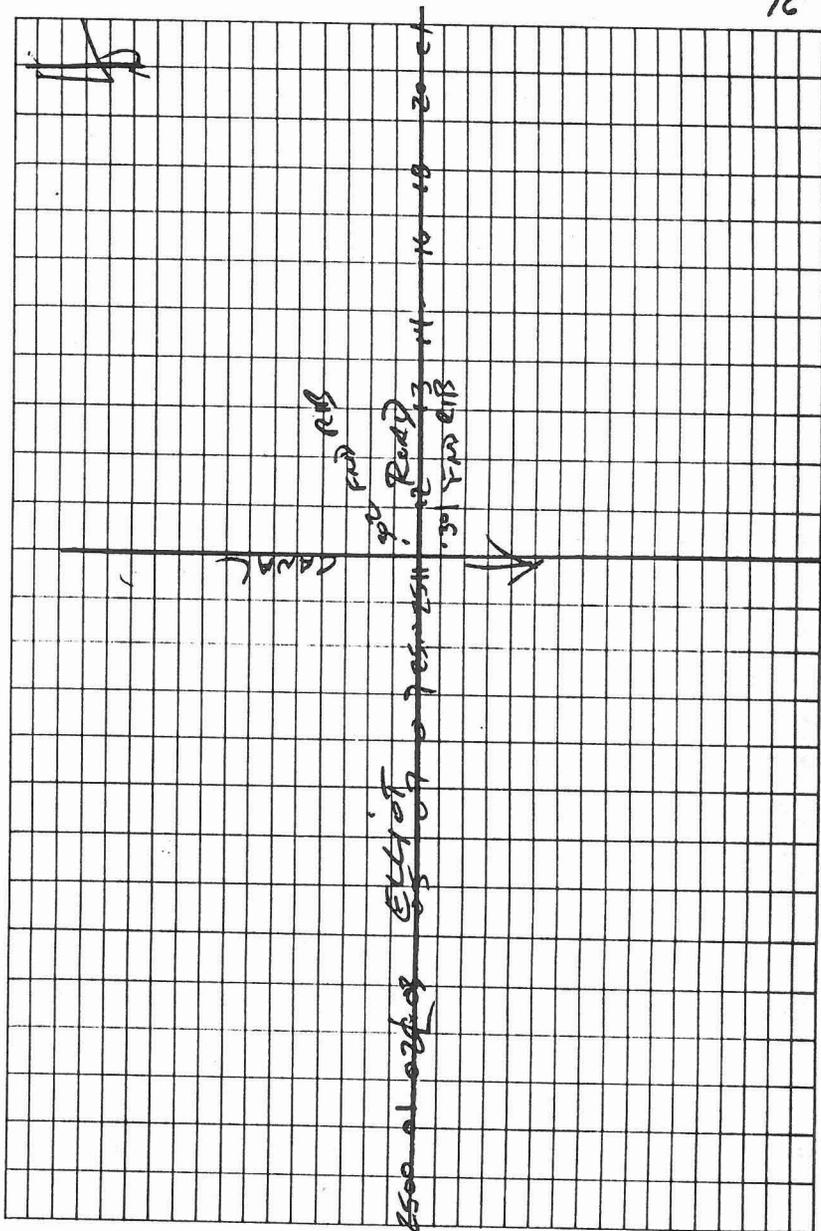
18 11

19 11

2520 11

2521 11

\* NOTE ALL POINTS  
ARE ASSUMED  
H & ✓



98045

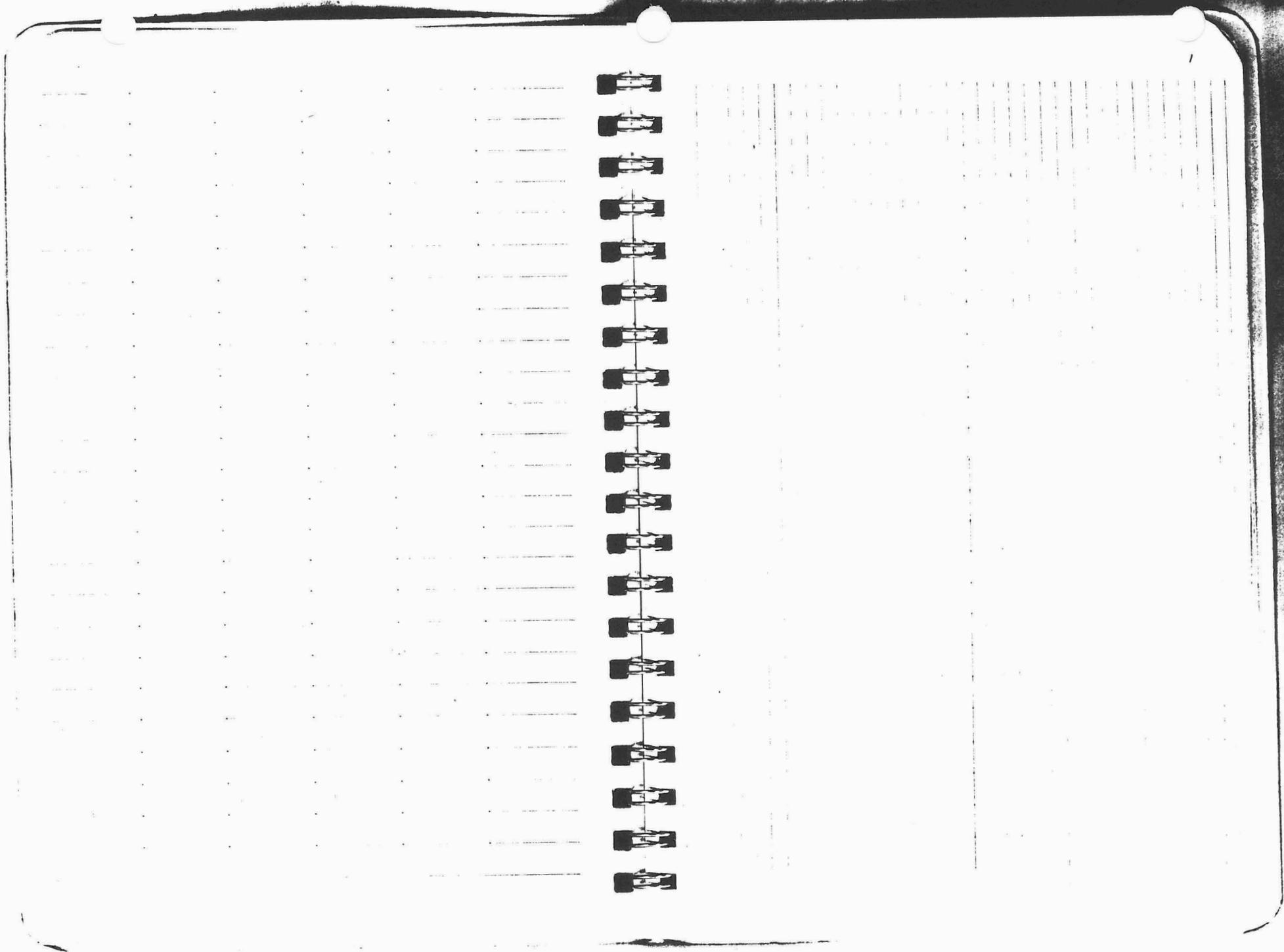
E	L	A	N

Field Book  
E 64-8x4 W

Book Top

Higley Topo

50% cotton-content paper  
water resistant surface  
50 sheets.....4 1/2" X 7 1/2"



Hilary

12/3/98

File  
TC 311 RIB  
2311 FILE  
C. CANAL

BS. 4/6 Field  
2416 File  
RIB

VALUISTA E RAY

NI 5.30 H.R.

2522 PV. APPROX E. RAY RD. H.96

23 "

24 "

25 "

26 "

27 "

28 "

29 "

2530 "

31 PV 15.45

32 "

33 "

END SET UP

ASSIGNED FILE + CORPS + ELLU

2

2527  
2528  
2529  
2530  
2531  
2532  
2533  
2534  
2535  
2536  
2537  
2538  
2539  
2540  
2541  
2542  
2543  
2544  
2545  
2546  
2547  
2548  
2549  
2550

RAY RD

VAL VISTA



Eastern  
CANAL

2531

Eastern  
Canal

Drainage Ditch

4/6

TR 419 RIB  
2419 FILE

BS 316 CROSS  
2316 FILE

HI 5.41 HR

2534 P.V. APPROX d. CHANDLER HEIGHT BLVD 4.96

35

36

37

38

39

2540

41

42

43

44

45

46

47

48

49

2550

51

52

BCHH # 114

P.V.

"

"

"

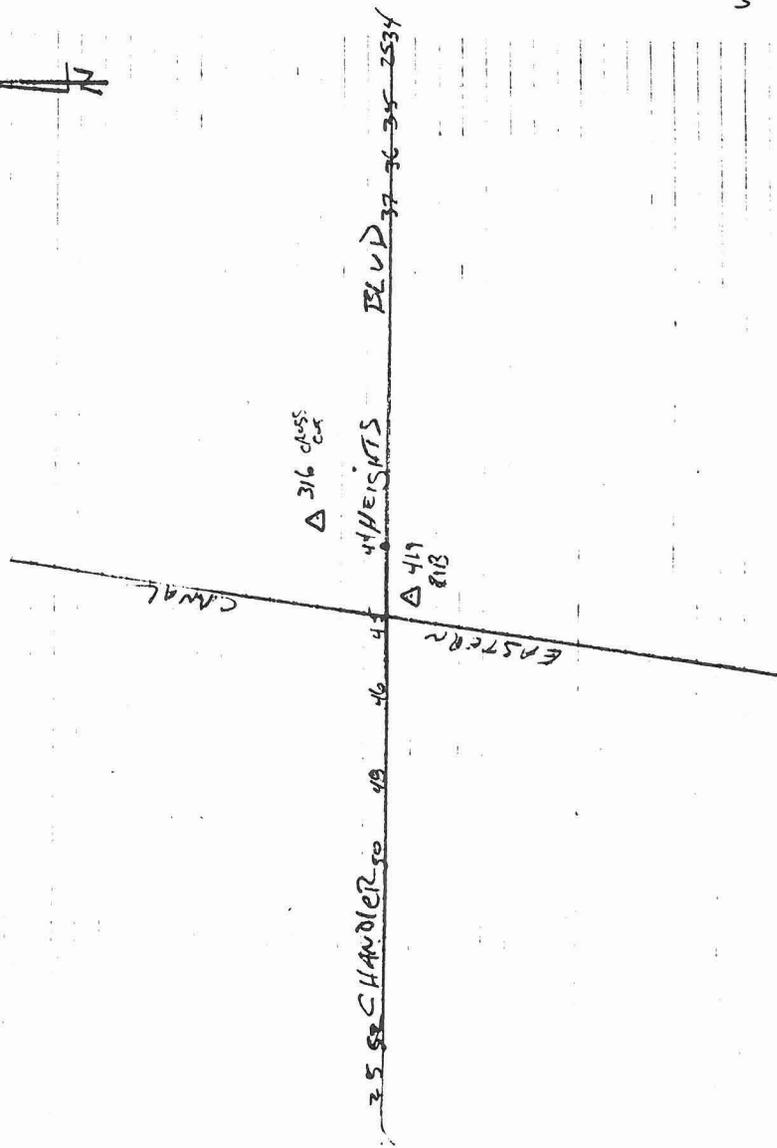
"

P.V.

"

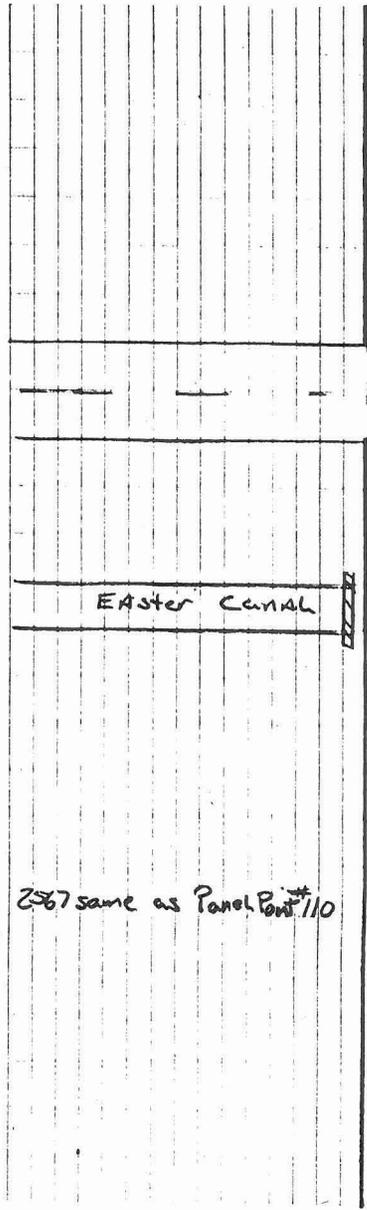
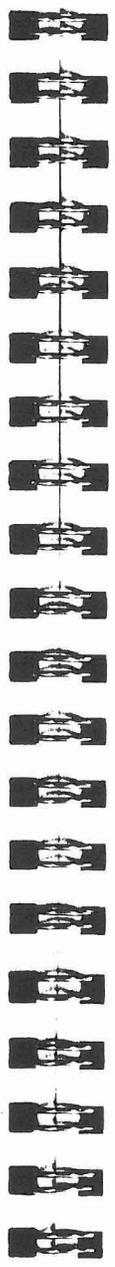
P.V.

END SET UP

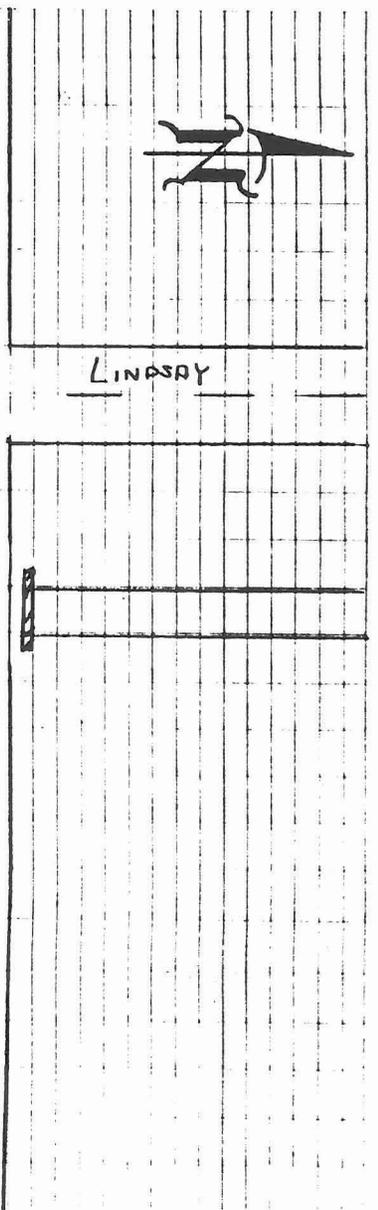


FIELD  
 NC 222 R18 BS. 223 R18  
 2317 FILE 2318 FILE  
 HI 5.19

- 2553 PV  $\frac{1}{2}$  of Pacos East to west 4.96 <sup>HR.</sup>
- 54
- 55
- 56
- 57
- 58
- 59
- 2560
- 61
- 62
- 63 BCHH East side of canal  $\frac{1}{2}$  of Road 9.96
- 64 PV
- 65 PV
- 66 PV
- 67 BCHH Intesection Pacos + Lindsay 4.96
- 68 PV
- 69 PV
- 2570 "
- 71 "
- 72 "
- 73 "



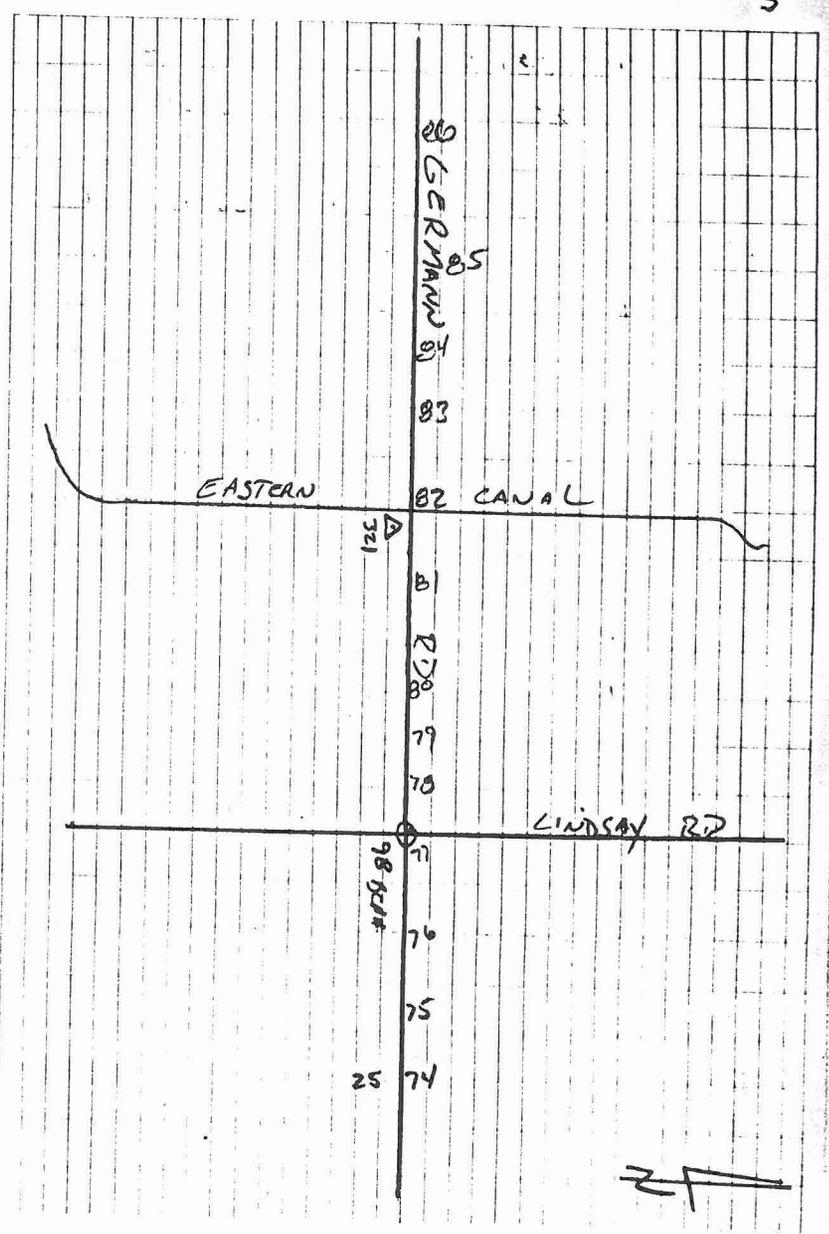
2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573



2567 same as Panel Post #110

Field  
 No 321 cc. BS. 98 BCHH  
 2319 FILE 2320

		H.I.	5.52	LR
2574	P.V. & GERMANN RD			4.96
75	P.V.			
76	"			
77	"			
78	"			
79	"			
2580	"			
81	"			
82	"			
83	"			
84	"			
85	"			
86	"			





Hig 12/4W

KQ 411

B.S 122

FIL 2411

File 2122

2608

P

4.16

" EAST to west on  
WARNER Starting  
Point East side of  
Intersection of Green Field  
& WARNER "

09

P

10

11

12

13

14

15

16

17

18

19

2620

21

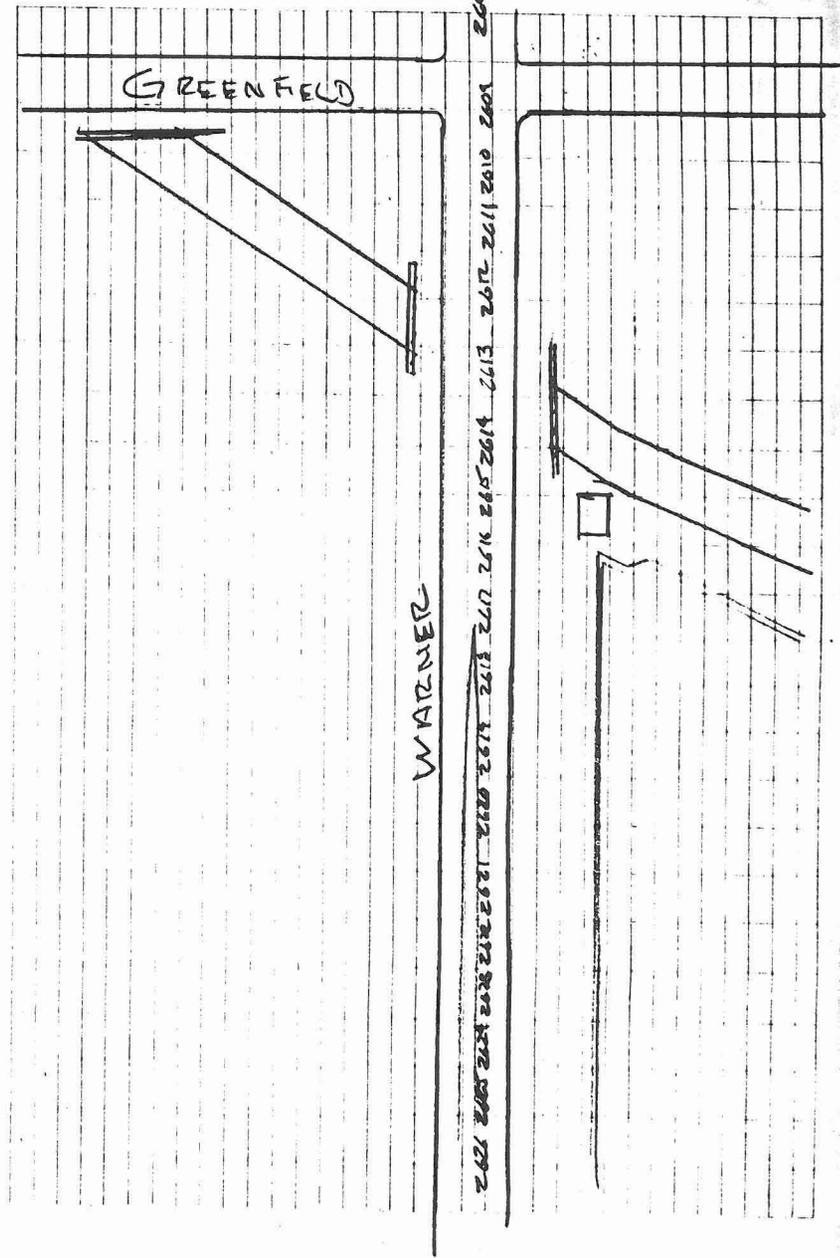
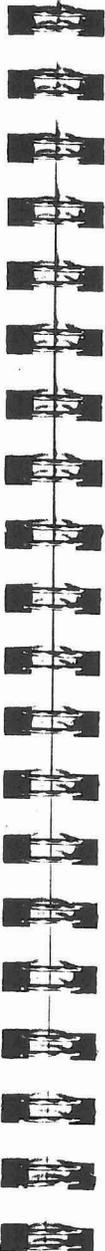
22

23

24

25

26



NIG 4/126

π 331

B.S 330

File 2331

File 2330

H.I.S. 17

2330

Point 330 chissled X on west edge

2331

Point 331 " " "

2620

P

4.96

N Edge of west bound German

28

¢ of west bound German

29

S Edge of west bound German

30

Face of west bound CRUB line

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

↓

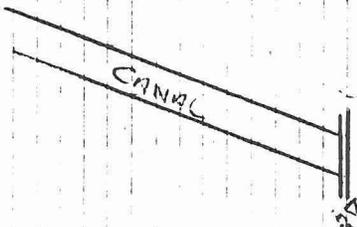
P

P

S. Lane west bound ¢

¢ of west bound lanes

of canal



↑ N

1400 812500 5892 2492 1402 972 2392 5572  
5872 812500 5892 2492 1402 972 2392 5572

AIRPORT

Cont Farm 768

2696 West bound lane  
2697 P N Edge of west bound

See } PG 8  
}

H16 12/40

T 338

BS. 337

2338

2337

H15.15

2628

EP

4.96

South Edge of outcrop

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

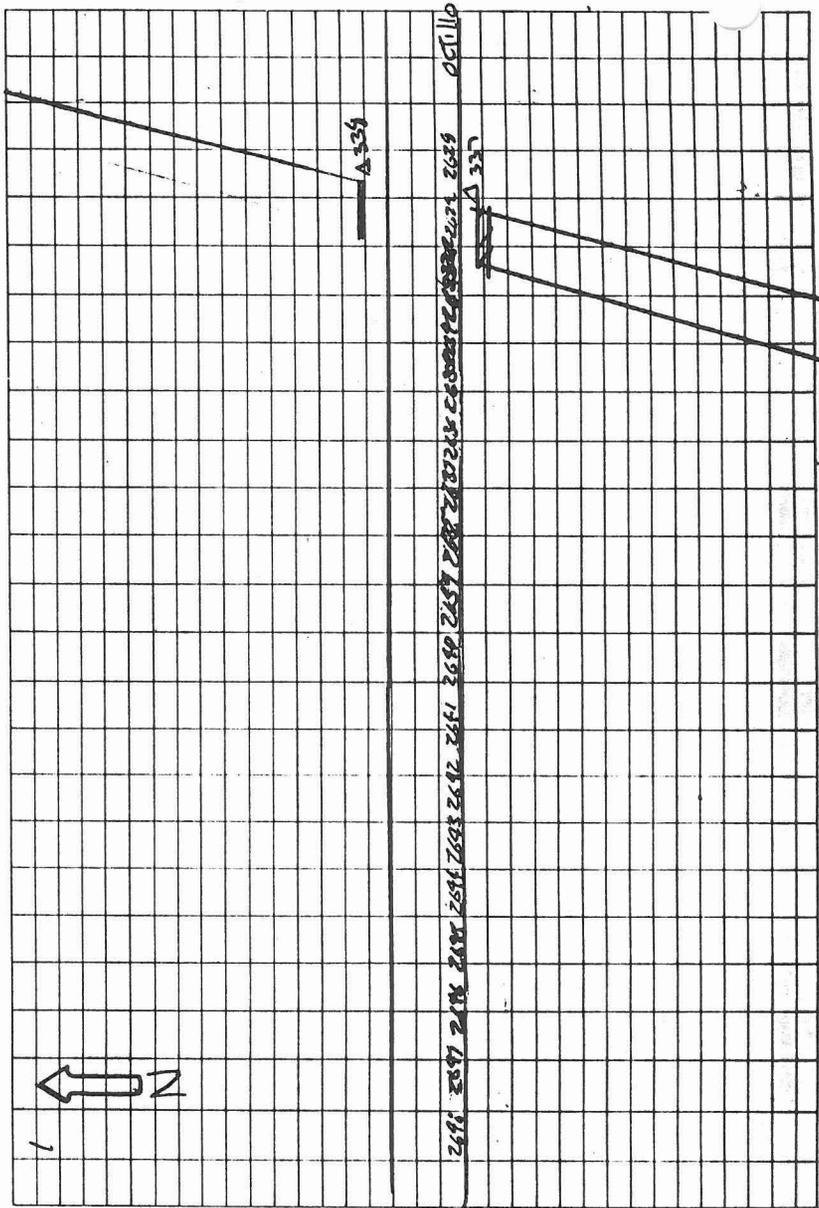
44

45

46

47

48



H19 12/4C

△ 336

2336

BS 337

2357

H1 5.05

2649

EP

4.96

South Edge of Basement

50

51

52

53

54

55

56

57

58

59

60

61

62

63

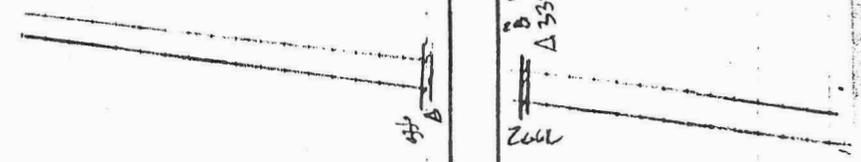
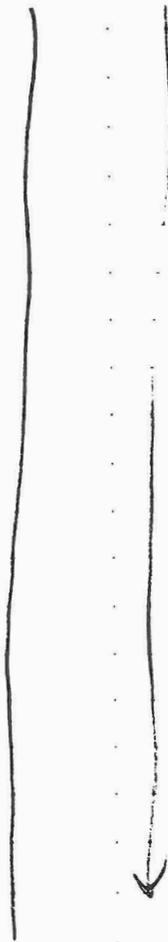
64

65

66

67

68

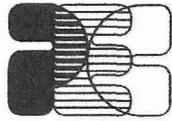


ChinDier Heights

- 2668
- 2667
- 2666
- 2665
- 2664
- 2663
- 2662
- 2661
- 2660
- 2659
- 2658
- 2657
- 2656
- 2655
- 2654
- 2653
- 2652
- 2651
- 2650
- 2649

△ 335

4



**PROJECT ENGINEERING  
CONSULTANTS, LTD.**  
ENGINEERS • PLANNERS • SURVEYORS

## **NGS Data**

San

DESIGNATION - SAN  
PID - DU2258  
STATE/COUNTY- AZ/MARICOPA  
USGS QUAD - HIGLEY

HORZ DATUM - NAD 83 (1992)  
VERT DATUM - NGVD 29

POSITION - 33 20 15.57025 (N) 111 44 17.06890 (W) ADJUSTED  
92 minus 83 +00.00702 -00.00430 ADJUSTED  
83 minus 27 - +00.17804 +02.49109 NADCON

HEIGHT - 388.9 (meters) 1276. (feet) GPS OBS  
88 minus 29 - +0.5 VERTCON

\*\*\*\*\*

LAPLACE CORR- 1.99 DEFLEC93  
GEOID HEIGHT- -29.67 GEOID93  
ELLIP HEIGHT- 360.103  
X - -1975628.502  
Y - -4954948.129  
Z - 3485503.500

HORZ ORDER - FIRST  
ELLP ORDER - FOURTH CLASS 2

The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in August 1993.

The orthometric height was determined by GPS observations.

The Laplace correction was computed from DEFLEC93 derived deflections.

The geoid height was determined by GEOID93.

The ellipsoidal height was determined by GPS observations and reference to NAD83.

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

North	East	Scale	Converg.	
SPC AZ C	- 259,210.874	229,984.479	0.99990341	+0 05 53.3 M
T				
UTM 12	- 3,688,963.937	431,315.203	0.99965816	-0 24 20.3 M
T				

STATION MARK IS A SURVEY DISK  
WITH SETTING: SET IN A MAT FOUNDATION OR CONCRETE SLAB OTHER THAN  
WITH SETTING: PAVEMENT  
STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO  
STABILITY: SURFACE MOTION  
SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

SATELLITE: SATELLITE OBSERVATIONS - October 05, 1986

HISTORY - Year Condition Recov. By  
HISTORY - 1986 STATION MONUMENTED AZ DEPT OF TRANSP

STATION DESCRIPTION

DESCRIBED BY ARIZONA DEPARTMENT OF TRANSPORTATION 1986 (HW )  
THE STATION IS LOCATED ABOUT 6.5 KM (4.0 MI) SOUTHWEST OF GILBERT,  
ARIZONA.

TO REACH THE STATION FROM THE INTERSECTION OF GILBERT ROAD AND  
WARNER ROAD, GO EAST ON WARNER ROAD FOR 4.9 KM (3.0 MI) TO THE  
INTERSECTION OF WARNER ROAD AND GREENFIELD ROAD, TURN LEFT AND GO  
NORTH ON GREENFIELD ROAD FOR 0.19 KM (0.12 MI) TO THE BRIDGE OVER  
THE EASTERN CANAL AND THE STATION ON THE RIGHT IN THE EAST ABUTMENT  
OF THE BRIDGE.

THE STATION IS A STANDARD AGS DISK  
STAMPED---SAN 1986---,  
SET INTO A DRILL HOLE IN THE CONCRETE OF A BRIDGE CURB.  
LOCATED 7.6 METERS (25 FT) NORTHEAST FROM THE SOUTHEAST END OF THE  
EAST BARRIER,  
14.0 METERS (46 FT) EAST FROM THE CENTERLINE OF GREENFIELD ROAD,  
2.59 METERS (8.5 FT) NORTHWEST FROM THE CENTERLINE OF THE SOUTHEAST  
CANAL ROAD,  
28.4 METERS (93.2 FT) SOUTH FROM THE NORTH EDGE OF THE BRIDGE.

Pecost

DESIGNATION - PECOST  
 PID - DU2253  
 STATE/COUNTY- AZ/MARICOPA  
 USGS QUAD - CHANDLER

HORZ DATUM - NAD 83 (1992)  
 VERT DATUM - NGVD 29

POSITION - 33 17 13.68542 (N) 111 47 23.20805 (W) ADJUSTED  
 92 minus 83 +00.00663 -00.00423 ADJUSTED  
 83 minus 27 - +00.18156 +02.49367 NADCON

HEIGHT - 382.3 (meters) 1254. (feet) GPS OBS  
 88 minus 29 - +0.5 VERTCON  
 \*\*\*\*\*  
 LAPLACE CORR- 0.95 DEFLEC93  
 GEOID HEIGHT- -29.77 GEOID93  
 ELLIP HEIGHT- 353.391  
 X - -1981239.538  
 Y - -4956015.821  
 Z - 3480816.712

HORZ ORDER - FIRST  
 ELLP ORDER - FOURTH CLASS 2

The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in August 1993.

The orthometric height was determined by GPS observations.

The Laplace correction was computed from DEFLEC93 derived deflections.

The geoid height was determined by GEOID93.

The ellipsoidal height was determined by GPS observations and reference to NAD83.

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

North	East	Scale	Converg.	
SPC AZ C	- 253,600.808	225,178.229	0.99990172	+0 04 10.7 M
T				
UTM 12	- 3,683,397.656	426,461.010	0.99966667	-0 26 00.5 M
T				

STATION MARK IS A SURVEY DISK  
 WITH SETTING: SET IN TOP OF CONCRETE MONUMENT (ROUND)  
 STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO  
 STABILITY: SURFACE MOTION  
 SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR  
 SATELLITE: SATELLITE OBSERVATIONS - October 07, 1986

Pecost

HISTORY - Year Condition Recov. By  
HISTORY - 1986 STATION MONUMENTED AZ DEPT OF TRANSP

STATION DESCRIPTION

DESCRIBED BY ARIZONA DEPARTMENT OF TRANSPORTATION 1986 (HW )  
THE STATION IS LOCATED ABOUT 4.9 KM (3.0 MI) SOUTHEAST OF CHANDLER,  
ARIZONA.

TO REACH THE STATION FROM THE INTERSECTION OF WILLIAMS FIELD ROAD  
AND GILBERT ROAD, GO SOUTH ON GILBERT ROAD FOR 1.6 KM (1.0 MI) TO  
PECOS ROAD, CONTINUE SOUTH ON GILBERT ROAD FOR 0.5 KM (0.3 MI) TO  
THE STATION ON THE RIGHT.

THE STATION IS A STANDARD AGS DISK  
STAMPED---PECOST 1986---,  
SET INTO THE TOP OF A ROUND CONCRETE MONUMENT  
25 CM IN DIAMETER PROJECTING 2.5 CM ABOVE GROUND. LOCATED  
1.22 METERS (4.0 FT) SOUTH FROM A WITNESS POST AND SIGN,  
0.64 METERS (2.1 FT) EAST FROM THE EAST EDGE OF AN IRRIGATION DITCH,  
10.67 METERS (35.0 FT) WEST FROM THE CENTERLINE OF GILBERT ROAD,  
24.38 METERS (80.0 FT) NORTH FROM A MAILBOX.  
THE UNDERGROUND MARK IS A STANDARD AGS DISK  
STAMPED---PECOST 1986---,  
SET INTO AN IRREGULAR MASS OF CONCRETE 0.8 METERS BELOW THE SURFACE.

Mann

DESIGNATION - MANN  
 PID - DU2248  
 STATE/COUNTY- AZ/MARICOPA  
 USGS QUAD - CHANDLER

HORZ DATUM - NAD 83 (1992)  
 VERT DATUM - NGVD 29

POSITION	-	33 16 18.55886(N)	111 47 23.02948(W)	ADJUSTED
92 minus 83		+00.00655	-00.00416	ADJUSTED
83 minus 27	-	+00.18314	+02.49279	NADCON

HEIGHT	-	380.7	(meters)	1249.	(feet)	GPS OBS
88 minus 29	-	+0.5				VERTCON

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LAPLACE CORR-	1.23	DEFLEC93
GEOID HEIGHT-	-29.76	GEOID93

ELLIP HEIGHT-	351.871
X	-1981580.726
Y	-4956881.744
Z	3479395.972

HORZ ORDER - FIRST  
 ELLP ORDER - FOURTH CLASS 2

The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in August 1993.

The orthometric height was determined by GPS observations.

The Laplace correction was computed from DEFLEC93 derived deflections.

The geoid height was determined by GEOID93.

The ellipsoidal height was determined by GPS observations and reference to NAD83.

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

North	East	Scale	Converg.		
SPC AZ C	- 251,902.633	225,184.914	0.99990172	+0 04 10.7	M
T					
UTM 12	- 3,681,699.887	426,452.788	0.99966669	-0 25 59.8	M
T					

STATION MARK IS A SURVEY DISK  
 WITH SETTING: SET IN TOP OF CONCRETE MONUMENT (ROUND)  
 STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO  
 STABILITY: SURFACE MOTION  
 SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR  
 SATELLITE: SATELLITE OBSERVATIONS - October 07, 1986

HISTORY	- Year Condition	Recov. By
HISTORY	- 1986 STATION MONUMENTED	AZ DEPT OF TRANSP

STATION DESCRIPTION

DESCRIBED BY ARIZONA DEPARTMENT OF TRANSPORTATION 1986 (HW )  
THE STATION IS LOCATED ABOUT 5.7 KM (3.5 MI) SOUTHEAST OF CHANDLER,  
ARIZONA.

TO REACH THE STATION FROM THE INTERSECTION OF WILLIAMS FIELD ROAD  
AND GILBERT ROAD, GO SOUTH ON GILBERT ROAD FOR 3.2 KM (2.0 MI) TO  
GERMANN ROAD, CONTINUE SOUTH ON GILBERT ROAD FOR 0.57 KM (0.35 MI)  
TO THE STATION ON THE RIGHT.

THE STATION IS A STANDARD AGS DISK  
STAMPED---MANN 1986---,  
SET INTO THE TOP OF A ROUND CONCRETE MONUMENT  
25 CM IN DIAMETER PROJECTING 7.6 CM ABOVE GROUND. LOCATED  
1.4 METERS (4.6 FT) SOUTH FROM A WITNESS POST AND SIGN,  
1.22 METERS (4.0 FT) NORTH FROM A WITNESS POST AND SIGN,  
0.76 METERS (2.5 FT) EAST FROM THE EDGE OF AN IRRIGATION DITCH,  
10.55 METERS (34.6 FT) WEST FROM THE CENTERLINE OF GILBERT ROAD.  
THE UNDERGROUND MARK IS A STANDARD AGS DISK  
STAMPED---MANN 1986---,  
SET INTO AN IRREGULAR MASS OF CONCRETE 0.8 METERS BELOW THE SURFACE.