



Technical Data Notebook  
Section 3 – Survey

# Upper Rawhide Wash Floodplain Delineation Study (FCD 98-12)

## Volume 2 of 4

Prepared for:  
Flood Control District of Maricopa County

Kimley-Horn and Associates, Inc.  
March, 2002  
KHA Project #091131.02



Kimley-Horn  
and Associates, Inc.

# ***Technical Data Notebook*** ***Section 3 - Survey***

## **Upper Rawhide Wash** *Floodplain Delineation Study*

**FCD 98-12**

**Volume 2 of 4**

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KHA 091131.02  
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### 3.1 FIELD SURVEY INFORMATION

Field survey was conducted by Project Engineering Consultants (PEC). The survey was conducted during the month of December 1998. The survey benchmark information was obtained at the City of Scottsdale's website at [www.ci.scottsdale.az.us/inspections/system\\_manual.asp](http://www.ci.scottsdale.az.us/inspections/system_manual.asp). The horizontal control used within the City of Scottsdale (COS) is modified slightly from Arizona State Plane Coordinate (central) system. For a further explanation, refer to printout in Appendix C or at Scottsdale's web site. The vertical control used is North American Vertical Datum 1988 (NAVD 88).

The City of Scottsdale Survey Department performed additional field survey work (August 2001) to verify elevations for COS GPS points 6172, 6091, 6163, and 6173. Survey notes are located in Appendix C.

Appendix C contains two sections; 1) **Project Engineering Consultants Survey Information** contains a summary table of PEC's survey points and survey notes from PEC's field survey and 2) **City of Scottsdale Survey Information** contains Land Survey System Manual Horizontal and Vertical Datum (City of Scottsdale), City of Scottsdale Global Positioning System (GPS) point description for ERM's available through the COS web site and a letter referencing the ERM points verified by COS survey crews. The ERM point numbers referenced in the letter have changed. The new numbers are listed below.

New ERM number	Old ERM number	City of Scottsdale GPS point number
5	12	6172
6	14	6091
9	23	6163
10	24	6173

### 3.2 MAPPING

Aerial mapping provided by the City of Scottsdale through the Flood Control District of Maricopa County. See section 3.1 for information on survey control for aerial mapping.

# APPENDIX C

# Survey Field Notes

## C.1 SURVEY FIELD NOTES FOR AERIAL MAPPING CONTROL

Aerial mapping provided by the City of Scottsdale through the Flood Control District of Maricopa County

## C.2 SURVEY FIELD NOTES

Field survey notes are contained in this appendix as described previously in Section 3.

### Rawhide Wash Floodplain Delineation-Elevation Reference Marks

ERM#	COS	Northing	Easting	Hgt.(USft)	Description
1	1362	997233.402	707761.530	2276.320	City of Scottsdale Brass Cap Flush
2	1253	999864.534	707775.218	2306.391	3/4 Inch Iron Pipe, East Side Pima Road
3	6192	1007797.993	713029.071	2484.711	Government Land Office Brass Cap, 1919, UP 1.2 Feet
4	6183	1010439.177	713027.449	2504.249	Government Land Office Brass Cap, 1919, UP 0.8 Feet
5	6172	1013091.944	718306.406	2614.744	Government Land Office Brass Cap, 1919, North of Fence Line, UP 1.2 Feet
6	6091	1018383.224	720940.530	2730.484	Government Land Office Brass Cap, 1919, East of Power Line Road, UP 1.2 Feet
7	6043	1021029.925	723568.059	2810.807	Government Land Office Brass Cap, 1919, West of Dirt Road, UP 1.08 Feet
8	6042	1023671.736	723565.586	2849.537	Government Land Office Brass Cap, 1919, Along E-W Fence Line Under Power Line, UP 1.2 Feet
9	6163	1010463.086	723574.789	2715.431	Government Land Office Brass Cap, 1919, UP 1.53 Feet
10	6173	1010455.801	718307.976	2619.247	Government Land Office Brass Cap, 1919, UP 0.8 Feet
11	6041	1023669.896	720921.881	2803.589	Government Land Office Brass Cap, 1919, Along E-W Fence Line, UP 1.1 Feet
12	6301	1002520.960	710395.323	2379.173	Government Land Office Brass Cap, 1919, at End of Fence Line, UP 0.9 Feet

\*COS – City of Scottsdale GPS Survey Point Number

Reference information for ERMs 1 through 12 was supplied by the City of Scottsdale Land Survey Unit. Accuracy standards for these points are as follows:

All ERMs meet Third Order vertical standards.

ERMs 1, 2, 3, 4, 7, 8, 11, and 12 meet Second Order Class II horizontal standards.

ERMs 5, 6, 9, and 10 meet Third Order Class I horizontal standards.



## C.2 SURVEY FIELD NOTES

*Project Engineering Consultants Survey Information*

## Rawhide Wash Delineation Study

Project Engineering Consultants Ltd  
24-Feb 1999

Basis of Horizontal Datum - Scottsdale City Grid (COS Datum) (Intl Ft)  
Vertical Datum - NAVD 88 (COS Datum) (Intl Ft)

Note - What is designated in the PEC survey notes as Point 1252 is not actually the point that is shown in City Of Scottsdale Datum. It has been renumbered as Point 101252 on the list below.

Pt #	Northing	Easting	Elevation	Remarks
59	1011219.312	716528.6239	2568.41895	Chiseled Box on SE Ftg PP 231-3
60	1013118.808	717635.9408	2606.75488	Chiseled Box on SE Ftg PP 231-1
64	1017116.643	719967.1244	2701.31909	Chiseled Box on SE Ftg PP 230-1
500	997764.0297	705796.4533	2243.82495	Set 1/2" Rebar
501	997564.5464	705981.919	2232.802	Set 1/2" Rebar
502	1000666.544	707072.1656	2289.41309	Set 1/2" Rebar
503	1000495.802	707408.8317	2289.72412	Set 1/2" Rebar
504	1005533.53	710207.3156	2414.01611	Set 1/2" Rebar
505	1005356.689	710849.5449	2422.47998	Set 1/2" Rebar
506	1010612.041	714515.8999	2536.49292	Set 1/2" Rebar
507	1010166.818	714736.0382	2535.43311	Set 1/2" Rebar
508	1014595.567	718284.8082	2645.15088	Set 1/2" Rebar
509	1014270.969	718487.2822	2638.19897	Set 1/2" Rebar
510	1016560.113	719692.4944	2684.22607	Set 1/2" Rebar
511	1016263.243	719973.0871	2689.43896	Set 1/2" Rebar
512	1019076.671	721285.3056	2748.6709	Set 1/2" Rebar
513	1018898.766	721696.4556	2752.54297	Set 1/2" Rebar
514	1021192.929	722667.4549	2795.06909	Set 1/2" Rebar
515	1020895.373	723048.9128	2795.22998	Set 1/2" Rebar
516	1010511.433	717775.5983	2610.33496	Set 1/2" Rebar
517	1010155.175	717728.2102	2615.88306	Set 1/2" Rebar
518	1012448.572	719947.3984	2641.01001	Set 1/2" Rebar
519	1012121.73	719888.8141	2634.30811	Set 1/2" Rebar
520	1013535.035	721519.8301	2676.55811	Set 1/2" Rebar
521	1012980.382	721549.3411	2679.19312	Set 1/2" Rebar
522	1015536.541	720665.5465	2688.47412	Set 1/2" Rebar
523	1015202.492	720935.793	2679.13989	Set 1/2" Rebar
524	1011548.329	715583.3522	2564.64209	Set 1/2" Rebar
591	1001741.759	707611.1984	2309.6103	Nail

Pt #	Northing	Easting	Elevation	Remarks
594	1001828.759	707722.9571	2311.54233	Nail
595	1002360.039	707719.4389	2319.35233	Nail
597	997249.942	705682.7218	2229.961	Nail
598	1020968.25	723003.7702	2795.39625	Nail
599	1000549.719	707217.1468	2700	Nail
600	1010577.53	714532.5601	2531.69847	TOE
601	1010528.725	714556.9543	2529.69212	NG
602	1010480.436	714579.092	2527.41453	TOP
603	1010477.799	714582.0261	2527.17112	TOE
604	1010446.482	714598.1585	2527.03269	NG
605	1010414.132	714613.5224	2526.79344	TOE
606	1010396.873	714626.1355	2528.92869	TOP
607	1010378.808	714631.6348	2527.9929	TOP
608	1010376.749	714632.8217	2527.02269	TOE
609	1010371.743	714635.6885	2527.17308	TOE
610	1010367.195	714637.9559	2528.77977	TOP
611	1010309.061	714663.416	2528.10008	NG
612	1010263.448	714687.9197	2526.96385	TOE
613	1010198.528	714719.7613	2530.66185	NG
614	1014288.134	718476.1787	2638.88699	TOP
615	1014331.694	718449.1665	2635.8074	NG
616	1014368.061	718426.9406	2632.45022	TOE
617	1014394.099	718410.3961	2631.60159	TOP
618	1014397.801	718408.3204	2630.71633	TOE
619	1014400.54	718406.6541	2630.62942	TOE
620	1014404.83	718403.3453	2631.83401	TOP
621	1014424.993	718390.3196	2632.23904	NG
622	1014440.336	718381.4403	2631.70462	TOP
623	1014444.854	718378.334	2629.1658	BOTTOM
624	1014450.374	718375.4248	2631.96194	TOP
625	1014462.953	718367.5816	2631.68093	TOP
626	1014467.446	718364.6439	2629.06741	TOE
627	1014476.507	718359.413	2629.62942	TOE
628	1014480.098	718357.1792	2632.7261	TOP
629	1014523.946	718329.9002	2637.47927	NG
630	1014566.208	718303.1695	2643.69607	NG
631	997534.2603	705954.3864	2231.75882	NG
632	997570.9762	705929.5482	2232.17898	NG
633	997613.4111	705900.7038	2232.51761	NG
634	997646.6999	705871.6816	2232.12454	GB
635	997652.344	705868.3726	2230.90359	GB

Pt #	Northing	Easting	Elevation	Remarks
636	997665.6664	705858.9176	2231.13943	TOP
637	997675.0424	705853.0719	2228.52859	TOE
638	997694.6707	705836.8132	2228.52737	CLWASH
639	997717.5745	705824.3913	2228.35013	TOE
640	997736.1873	705813.197	2235.57449	GB
641	997738.6911	705811.8736	2239.12063	GB
642	997796.6602	705776.3427	2243.9368	NG
643	997840.9441	705750.162	2245.68558	NG
644	1000486.645	707438.4877	2289.70881	NG
645	1000498.901	707373.2433	2289.57795	TOP
646	1000500.306	707367.5068	2289.15778	TOE
647	1000506.835	707347.1999	2289.24714	TOE
648	1000508.424	707341.4468	2290.08747	TOP
649	1000536.924	707274.348	2289.49933	ER
650	1000538.8	707266.2019	2288.82551	NG
651	1000540.744	707259.2453	2289.58283	ER
652	1000576.709	707183.0836	2289.12751	NG
653	1000606.29	707145.9335	2288.84357	TOP
654	1000612.618	707136.1791	2286.66804	TOE
655	1000616.605	707131.1608	2286.77424	TOE
656	1000620.797	707126.7785	2289.31476	TOP
657	1000632.735	707114.7132	2289.54255	NG
658	1000646.701	707099.4183	2288.43317	TOP
659	1000649.785	707095.4435	2287.41389	TOE
660	1000660.44	707081.8268	2287.08869	TOE
661	1000663.298	707077.7457	2289.33991	TOP
662	1000682.028	707053.3328	2289.86023	TOP
663	1000683.3	707051.0497	2288.44983	TOE
664	1000712.161	707015.0218	2288.29577	NG
665	1000740.203	706977.2038	2289.07629	NG
666	1000765.131	706954.8278	2289.42492	TOE
667	1000772.894	706944.8318	2291.16882	TOP
668	1000776.616	706939.9435	2289.65197	TOE
669	1000794.235	706922.2458	2289.60437	TOE
670	1000799.838	706909.174	2292.09436	NG
671	1005358.107	710838.3426	2421.62591	TOP
672	1005364.008	710804.7522	2409.02582	TOE
673	1005384.774	710747.0999	2408.40253	GB
674	1005397.165	710692.5891	2413.51312	GB
675	1005403.26	710648.8174	2408.87787	NG
676	1005412.057	710614.8208	2407.47528	TOP

Pt #	Northing	Easting	Elevation	Remarks
677	1005414.21	710607.7605	2406.25506	TOE
678	1005425.932	710562.0767	2406.07489	TOE
679	1005429.562	710550.7365	2407.11102	TOP
680	1005432.619	710542.3981	2405.8537	TOE
681	1005436.568	710533.7039	2406.81171	TOP
682	1005447.753	710485.1295	2407.17303	NG
683	1005458.695	710444.0112	2407.57025	NG
684	1005474.931	710411.2597	2407.95404	TOP
685	1005477.749	710401.9031	2406.48553	TOE
686	1005485.699	710372.9837	2405.05243	NG
687	1005496.825	710341.6616	2404.87616	NG
688	1005507.517	710312.1753	2404.89447	TOE
689	1005510.476	710303.8742	2406.5578	TOP
690	1005520.433	710258.1249	2407.41498	NG
700	1016279.35	719959.3987	2689.01345	NG
701	1016304.244	719936.4856	2687.21511	NG
702	1016326.699	719911.5986	2683.85647	NG
703	1016341.311	719904.9902	2680.7322	TOP
704	1016346.313	719899.8305	2677.75198	TOE
705	1016361.308	719885.6989	2677.2969	TOE
706	1016365.335	719881.5873	2678.5884	TOP
707	1016394.748	719852.8922	2679.0093	NG
708	1016424.336	719817.5303	2679.32742	NG
709	1016458.311	719785.4026	2679.7864	NG
710	1016484.102	719760.6016	2680.66458	NG
711	1016517.049	719736.0695	2679.74441	TOP
712	1016520.528	719732.8512	2677.23489	TOE
713	1016524.081	719729.6121	2679.29739	TOP
714	1016540.894	719712.2931	2681.14553	NG
715	1018912.067	721671.0405	2750.62915	NG
716	1018930.389	721624.6403	2745.13233	GB
717	1018942.295	721597.9511	2747.94605	GB
718	1018959.375	721566.863	2748.10913	GB
719	1018974.112	721536.5254	2743.60132	NG
720	1018979.021	721503.1353	2740.11206	TOP
721	1018980.098	721501.1374	2739.5332	TOE
722	1018997.717	721463.0115	2739.81055	TOE
723	1018998.635	721459.971	2740.26563	TOP
724	1019021.889	721414.4849	2739.67554	NG
725	1019038.637	721375.6497	2741.44068	NG
726	1019057.778	721333.9427	2746.23071	NG

Pt#	Northing	Easting	Elevation	Remarks
727	1021176.469	722695.9403	2793.21295	NG
728	1021158.626	722720.5066	2791.14532	NG
729	1021148.644	722735.1811	2789.87872	TOP
730	1021144.706	722741.2795	2789.24297	TOE
731	1021136.667	722755.0955	2789.20709	TOE
732	1021134.511	722758.4022	2791.35381	TOP
733	1021110.23	722794.8932	2792.68829	NG
734	1021084.548	722832.8383	2792.85943	NG
735	1021057.086	722873.3167	2793.34112	NG
736	1021028.689	722912.3199	2794.14703	TOP
737	1021023.421	722916.9273	2793.42486	TOE
738	1021007.098	722942.8987	2793.85626	TOE
739	1021002.887	722950.0019	2794.44122	TOP
740	1020985.654	722975.3916	2795.42364	NG
741	1020931.002	723023.347	2795.43389	NG
742	1010192.706	717731.3579	2615.03764	NG
743	1010232.345	717739.7191	2614.76469	NG
744	1010273.686	717746.0153	2610.54203	NG
745	1010304.52	717750.5505	2607.88188	TOP
746	1010308.036	717750.6939	2607.2581	TOE
747	1010311.343	717751.5782	2608.00712	TOP
748	1010329.518	717753.6053	2606.83207	TOE
749	1010334.619	717753.5781	2607.72978	TOP
750	1010354.043	717755.7336	2608.41679	TOP
751	1010364.061	717755.532	2607.5601	TOE
752	1010387.769	717758.3471	2607.72343	NG
753	1010414.509	717760.9935	2607.54594	TOE
754	1010419.999	717761.0254	2607.98515	TOP
755	1010450.081	717766.8956	2607.92704	TOP
756	1010458.552	717767.6869	2606.98441	TOE
757	1010475.44	717770.2685	2606.75565	TOE
758	1010481.665	717771.2414	2607.73563	TOP
759	1010554.361	717782.8998	2612.33183	NG
760	1012174.977	719899.9953	2634.86132	TOP
761	1012182.228	719900.7115	2633.59447	TOE
762	1012192.354	719902.361	2633.48241	TOE
763	1012197.602	719903.0965	2634.11547	TOP
764	1012210.161	719905.746	2634.6997	TOP
765	1012215.929	719906.3119	2633.84887	TOE
766	1012223.026	719907.4706	2633.75268	TOE
767	1012227.277	719908.275	2634.71361	TOP

Pt #	Northing	Easting	Elevation	Remarks
768	1012242.969	719913.3313	2634.85912	TOP
769	1012250.611	719913.3082	2634.11205	TOE
770	1012257.872	719915.1048	2634.04516	TOE
771	1012260.207	719915.6599	2634.51293	TOP
772	1012293.816	719919.4789	2634.93651	NG
773	1012327.77	719933.7842	2634.18554	TOP
774	1012331.235	719934.9058	2632.76952	TOE
775	1012344.384	719936.5095	2632.36645	TOE
776	1012351.63	719937.923	2634.55272	TOP
777	1012382.552	719947.6913	2634.46068	TOP
778	1012386.187	719947.3957	2633.86156	TOE
779	1012390.462	719947.1578	2634.18383	TOP
780	1012418.549	719947.1622	2637.53319	NG
781	1013001.135	721557.0034	2676.94628	NG
782	1013026.717	721555.9033	2673.67626	NG
783	1013064.292	721553.0647	2671.92846	NG
784	1013107.983	721549.8657	2670.10351	TOP
785	1013115.238	721549.6376	2669.43872	TOE
786	1013126.81	721548.997	2669.18041	TOE
787	1013129.376	721549.2011	2670.02514	TOP
788	1013185.962	721549.5521	2670.21459	NG
789	1013230.28	721547.5892	2670.11791	NG
790	1013292.538	721550.8651	2670.07763	TOP
791	1013300.535	721550.7052	2669.11718	TOE
792	1013305.341	721549.4892	2669.71142	TOP
793	1013348.642	721547.2059	2670.30639	NG
794	1013376.673	721544.6897	2670.12109	TOP
795	1013383.938	721544.396	2668.92187	TOE
796	1013397.006	721542.5186	2668.88037	TOE
797	1013401.004	721541.194	2669.68603	TOP
798	1013425.699	721541.3963	2670.08642	TOP
799	1013430.703	721539.6147	2668.91674	TOE
800	1013434.81	721538.8359	2668.54345	TOE
801	1013440.419	721538.1304	2669.2705	TOP
802	1013479.032	721529.7866	2673.4812	NG
803	1015212.318	720928.4219	2678.58494	TOP
804	1015217.592	720924.8379	2677.87376	TOE
805	1015222.247	720920.1242	2678.66111	TOP
806	1015253.458	720895.7788	2679.22801	NG
807	1015284.617	720868.9314	2679.46287	NG
808	1015313.967	720846.1513	2678.98338	TOP

Pt #	Northing	Easting	Elevation	Remarks
809	1015317.612	720842.0364	2678.04685	TOE
810	1015321.562	720838.0726	2677.77757	TOE
811	1015323.355	720836.5153	2679.17259	TOP
812	1015339.736	720827.0964	2679.19627	TOP
813	1015346.24	720822.2186	2678.09153	TOE
814	1015381.888	720801.157	2678.38279	TOE
815	1015386.795	720797.1195	2679.48777	TOP
816	1015406.51	720778.7813	2679.62718	NG
817	1015418.389	720753.9228	2678.49021	TOP
818	1015421.657	720751.7091	2677.38279	TOE
819	1015424.771	720749.3731	2678.09544	TOP
820	1015454.756	720726.7373	2680.15696	NG
821	1015490.501	720699.2343	2682.89427	NG
830	997264.0449	705686.9386	2228.45166	HW
831	997264.7452	705686.933	2228.46997	HW
832	997264.1488	705632.459	2228.45801	HW
833	997264.8996	705632.3305	2228.45361	HW
834	997270.8392	705627.2415	2225.14453	VWV
835	997271.0989	705627.5226	2225.12744	VWV
836	997270.8945	705691.4024	2225.2749	VWV
837	997270.475	705691.8803	2225.27026	VWV
838	997265.07	705670.6819	2220.99829	FL
839	997190.8563	705687.2073	2227.15478	HW
840	997190.2779	705687.198	2227.14087	HW
841	997190.7583	705632.3449	2227.31592	HW
842	997189.9909	705632.3541	2227.31714	HW
843	997181.7354	705629.2855	2222.82153	VWV
844	997181.5624	705629.7658	2222.80981	VWV
845	997181.5339	705689.3287	2222.57495	VWV
846	997181.8234	705689.8832	2222.60815	VWV
847	997189.9873	705677.6093	2219.7229	FL
848	1002375.307	707657.7917	2321.78275	NG
849	1002363.598	707657.8327	2317.07315	NG
850	1002351.071	707657.9863	2317.6016	NG
851	1002321.171	707658.108	2317.42704	NG
852	1002291.139	707658.2474	2316.99259	NG
853	1002261.134	707658.4321	2316.70548	NG
854	1002231.034	707658.6455	2316.50406	NG
855	1002218.157	707658.7313	2316.11978	NG
856	1002205.954	707658.775	2320.97086	NG
857	1002220.323	707658.6312	2320.43814	TO

Pt #	Northing	Easting	Elevation	Remarks
858	1002245.804	707658.5237	2320.62674	TO
859	1002275.728	707658.3144	2320.97037	TO
860	1002305.74	707658.1674	2321.28067	TO
861	1002335.964	707657.9877	2321.5391	TO
862	1002362.326	707657.8364	2321.84598	TO
863	1002376.078	707656.6792	2323.36295	C
864	1002372.713	707647.6137	2323.31107	C
865	1002347.264	707647.6572	2323.08023	C
866	1002348.836	707656.9154	2323.06461	C
867	1002319.408	707657.0216	2322.73929	C
868	1002317.552	707647.877	2322.76883	C
869	1002287.68	707648.0302	2322.48807	C
870	1002290.528	707657.1571	2322.49796	C
871	1002258.938	707657.3125	2322.18082	C
872	1002257.577	707648.1638	2322.17044	C
873	1002227.597	707648.2725	2321.83438	C
874	1002229.462	707657.4587	2321.86502	C
875	1002205.706	707657.6108	2321.58133	C
876	1002202.278	707648.3972	2321.59842	C
877	1002202.02	707648.014	2320.97696	NG
878	1002372.808	707647.3122	2322.7786	NG
879	1002355.979	707645.1676	2317.51322	NG
880	1002346.873	707647.7712	2317.65824	NG
881	1002318.002	707647.8062	2317.47196	NG
882	1002288.019	707647.9201	2317.13126	NG
883	1002257.995	707648.0837	2316.75138	NG
884	1002227.961	707648.2242	2316.38309	NG
885	1001796.9	707669.6023	2312.39683	WW
886	1001797.239	707669.0929	2312.40977	WW
887	1001784.413	707661.4326	2314.6793	WW
888	1001770.658	707662.4478	2314.61241	WW
889	1001770.097	707662.4606	2314.60863	WW
890	1001770.577	707669.9036	2312.46104	WW
891	1001771.157	707669.8959	2312.43199	WW
892	1001770.889	707660.6081	2309.76304	FL
893	1001782.674	707660.6885	2309.81541	FL
894	1001764.89	707650.2854	2309.81468	FL
895	1001750.187	707641.6771	2312.50938	WW
896	1001750.53	707641.1859	2312.50438	WW
897	1001776.339	707640.9763	2312.52916	WW
898	1001776.898	707640.991	2312.54442	WW

Pt #	Northing	Easting	Elevation	Remarks
899	1001777.335	707649.3411	2314.67283	C
900	1001776.65	707650.3413	2314.66856	C
901	1001783.41	707659.406	2314.68553	C
902	1001768.868	707659.2454	2314.61949	C
903	1001763.681	707650.4422	2314.64	C
904	1001764.545	707650.3098	2314.63463	C
905	1001234.312	707143.8343	2302.06019	X
906	1001228.892	707218.1769	2302.56435	C
907	1001238.03	707221.503	2302.57241	C
908	1001238.417	707221.5671	2302.16127	NG
909	1001238.217	707207.9172	2296.93373	NG
910	1001238.229	707196.3652	2297.13246	NG
911	1001238.303	707166.389	2297.02895	NG
912	1001238.4	707136.355	2296.704	NG
913	1001238.442	707106.2306	2296.67568	NG
914	1001238.531	707076.2663	2296.36147	NG
915	1001238.539	707063.6025	2296.26393	NG
916	1001238.455	707050.9338	2301.10659	NG
917	1001238.375	707051.1011	2301.55434	C
918	1001229.225	707047.6828	2301.5436	C
919	1001228.228	707047.3578	2301.01137	NG
920	1001228.194	707061.4547	2295.95522	NG
921	1001228.177	707072.5057	2296.21413	NG
922	1001228.078	707102.6968	2296.40151	NG
923	1001228.037	707132.7746	2296.60573	NG
924	1001228.128	707162.8036	2296.81777	NG
925	1001228.026	707192.8234	2296.99294	NG
926	1001228.029	707202.9086	2296.78408	NG
927	1001227.988	707218.0442	2302.28383	NG
1132	1013074.809	707742.343	2455.789	Fd MC Brass Cap ✓
1253	999864.534	707775.218	2306.391	Fd 3/4" I.P.
1362	997233.402	707761.53	2276.32	Fd COS Brass Cap ✓
6041	1023669.896	720921.881	2803.58911	Fd Brass Cap N1/4 Cor Sec 4 ✓
6042	1023671.736	723565.586	2849.53711	Fd GLO Brass Cap ✓
6043	1021029.925	723568.059	2810.80688	Fd GLO Brass Cap ✓
6052	1023661.68	718282.194	2765.77393	Fd Brass Cap NE Cor Sec 5 ✓
6172	1013091.71	718306.577	2614.52808	Fd GLO Brass Cap
6183	1010439.177	713027.449	2504.24902	Fd GLO Brass Cap
6192	1007797.993	713029.071	2484.71094	Fd GLO Brass Cap
6311	997233.411	710394.01	2332.257	Fd Brass Cap ✓
101252	1002522.736	707795.7537	2324.74097	Fd Rebar w/COS Alum Cap (Not Pt 1252)

#98052

E	L	A	N

Field Book  
E 64-8x4 W

RAWHIDE WASH  
DELINEATION STUDY

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



STA.	PT. No	B.S	FS	ELEV.	REMARKS
P.O.B	SD			2276.320	
		5.801			
TP 1			2.780	2279.341	
		6.222			
TP 2			3.067	2282.496	
		6.670			
TP 3			2.694	2286.473	
		6.943			
TP 4			2.723	2290.692	
		7.989			
TP 5			1.752	2296.730	
		6.569			
TP 6			3.719	2299.779	
		4.953			
TP 7			2.091	2302.641	
		6.987			
TP 8	51		3.212	2306.417	
		6.917			
TP 9			5.098	2308.736	
		3.692			
TP 10			6.110	2305.818	
		5.484			
TP 11			4.116	2307.185	
		4.024			
TP 12			5.429	2305.780	

FLUSHIE  
 Ed. B.C. ~~W.H.H.~~ 2 X OF PIMA RD. & DYNAMITE BLK

Ed. 3/4 T.P. 30' EAST OF PIMA 2 X OF PIMA RD. & VIA PIMA RD.  
 G.P.S. # 1253

STA.	PT. No.	B.S.	I.S.	ELEV.	REMARKS
		5.112			
TP 13		6.749	2.792	2308.100	
TP 14		8.159	2.075	2312.774	
TP 15		6.468	2.036	2318.897	
TP 16	52	5.646	2.582	2322.783	
TP 17		7.291	2.123	2326.306	
TP 18		6.095	2.474	2331.122	
TP 19		7.517	2.634	2334.584	
TP 20		9.424	2.949	2339.152	
TP 21		3.556	2.929	2345.646	
TP 22		5.820	6.295	2342.907	
TP 23		6.019	4.275	2344.452	
TP 24		12.853	2.097	2348.274	

FD. 1/2" REBAR 25' EAST OF PIMA RD. 2' W. OF PIMA RD. 4' DIM. LTR. 10' C.P.S.?

STA.	PT. No	B.S.	F.S.	ELEV.	REMARKS
TP 25			0.826	2360.401	
		8.214			
TP 26			3.247	2365.367	
		7.387			
TP 27			12.243	2360.512	
		7.193			
TP 28			3.688	2364.017	
		8.540			
TP 29			2.473	2370.084	
		8.472			
TP 30			4.520	2374.055	
		8.346			
TP 31	153		3.439	2378.962	
		4.255			
TP 32	54		4.044	2379.173	
		6.069			
TP 33			1.819	2383.423	
		9.929			
TP 34			1.389	2389.963	
		10.853			
TP 35			2.126	2400.691	
		9.681			
TP 36			2.067	2408.305	
		9.973			
TP 37			2.170	2416.109	

Fd.  $\frac{1}{2}$ " REBAR G.P.S. PT# 181

Fd. B.C.  $\frac{1}{4}$   $\frac{5.19}{5.30}$



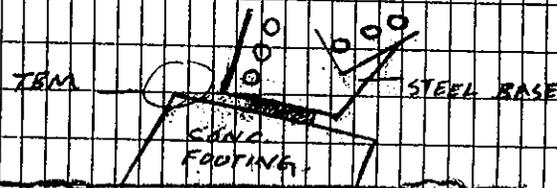
STA.	PT#	B.S.	F.S.	ELEV.	Remarks
TP 50			8.822	2467.551	
		9.042			
TP 51			1.593	2475.000	
		10.065			
TP 52			0.795	2484.271	
		9.391			
TP 53	55		3.323	2490.339	
		4.452			
TP 54			1.040	2493.751	
		9.654			
TP 55			1.259	2502.147	
		13.358			
TP 56			11.723	2503.787	
		3.196			
TP 57			4.463	2502.514	
		9.903			
TP 58			6.960	2505.457	
		7.663			
TP 59			3.626	2509.494	
		3.710			
TP 60			3.474	2509.730	
		0.669			
TP 61			0.478	2509.921	
		2.46			

Fnd. AL. CAP. IN 3 1/2" IRON PIPE 1/4 COR. 19.20 (195)



STA.	PT#	B.S.	F.S.	ELEV.	Remarks
TP 74			2.791	2510.352	
		8.577			
TP 75			3.344	2515.585	
		6.530			
TP 76	57		3.962	2518.153	
		5.987			
TP 77			7.299	2516.842	
		4.252			
TP 78			4.312	2516.782	
		10.527			
TP 79			5.628	2521.680	
		10.478			
TP 80			0.989	2531.169	
		9.829			
TP 81			1.348	2539.650	
		12.671			
TP 82			1.723	2550.598	
		4.466			
TP 83			5.242	2549.821	
		7.262			
TP 84	58		2.919	2554.165	
		4.340			
TP 85			5.008	2553.497	
		10.165			
TP 86			3.218	2560.443	

SET: TBM ON S.E. FOOTING OF E. POWER LINE  
TOWER #232-2 ("CUT-BOX" @ HIGH PT) ON SEC. LINE.



SET TBM ON SE FOOTING OF E. POWER LINE  
(2:40 TOWER N. OF #57) TOWER NO. 231-5  
CUT BOX @ HIGH PT.

STA.	PT. No.	B.S.	I.S.	ELEV.	REMARKS
		10.115			
TP 87			7.845	2582.713	
		9.241			
TP 88			1.976	2569.978	
		5.161			
TP 89			0.834	2574.305	
		9.637			
TP 90			1.656	2582.286	
		1.041			
TP 91			11.339	2576.988	
		2.933			
TP 92	59		6.751	2568.570	
		4.264			
TP 93			3.846	2568.988	
		6.206			
TP 94			1.605	2573.589	
		9.564			
TP 95			2.452	2580.697	
		11.327			
TP 96			6.130	2585.894	
		6.547			
TP 97			2.884	2589.558	
		5.612			
TP 98			2.118	2593.051	
		11.448			

SET TBM ON SE FOOTING OF E. POWER LINE  
 THE 2<sup>ND</sup> TOWER N. OF # 58 TOWER # 731-7  
 (SEE PLAN B SKETCH)

STA.	PT. No	B.S.	F.S.	ELEV.	REMARKS
TP 99			2.829	2601.670	
		6.790			
TP 100	60		1.542	2606.918	
		0.123			
TP 101			5.537	2601.504	
		7.406			
TP 102			8.548	2600.363	
		2.006			
TP 103			5.312	2597.057	
		9.852			
TP 104			1.710	2605.200	
		3.270			
TP 105			6.559	2601.911	
		3.779			
TP 106			8.187	2597.503	
		6.047			
TP 107			11.628	2591.922	
		6.378			
TP 108			8.228	2590.072	
		2.212			
TP 109			13.174	2579.111	
		3.411			
TP 110			3.578	2578.944	
		8.181			

SET TBM ON E.F. FOOTING OF EAST POWER LINE  
 THE 2<sup>ND</sup> TOWER N OF # 5  
 TOWER # 231-1 (CUT BOX & HIGH PT) ON SEC. LINE 5  
 (SEE PL. 8 SKETCH)

STA.	PT. #	BS.	F.S.	ELEV.	Remarks
TP 111			5.945	2581.181	
		4.040			
TP 112	61		6.192	2579.029	
		6.115			
TP 113			3.963	2581.181	
		5.942			
TP 114			8.179	2578.944	
		3.489			
TP 115			3.316	2579.117	
		11.156			
TP 116			2.624	2587.648	
		10.666			
TP 117			5.329	2592.985	
		11.298			
TP 118			2.292	2601.991	
		7.013			
TP 119			9.144	2599.860	
		1.965			
TP 120			4.732	2597.094	
		11.759			
TP 121			7.416	2601.436	
		6.538			
TP 122			1.038	2606.936	
		4.368			
TP 123			3.421	2607.883	

FND.: BC ON 1" PIPE GILD  $\frac{1}{4}$  58  
4 517

= TP #100 PT #60 (SEE PG. 8 FOR SKETCH)

STA.	PT No	B.S.	I.S.	ELEV.
		11.061		
TP 124		6.663	7.906	2611.038
TP 125	62	3.920	2.994	2614.707
TP 126		7.004	5.801	2612.825
TP 127		10.386	5.290	2614.538
TP 128		6.149	0.633	2624.292
TP 129		6.584	10.384	2620.057
TP 130		6.669	4.971	2621.671
TP 131		6.923	4.422	2623.918
TP 132		2.714	3.151	2627.690
TP 133		6.572	1.633	2629.771
TP 134		5.670	5.450	2630.893
TP 135			3.835	2632.728

Ed. B. C. SEC COR. 5.819  
 5.19511

STA.	PT. No.	B.S.	I.S.	ELEV.
		6.447		
TP 136			3.193	2635.982
		6.187		
TP 137			4.605	2637.565
		6.867		
TP 138			3.677	2640.754
		4.701		
TP 139	63		4.568	2640.888
		7.389		
TP 140			3.679	2644.598
		5.827		
TP 141			4.907	2645.518
		9.188		
TP 142			1.066	2653.640
		10.932		
TP 143			8.745	2655.827
		7.179		
TP 144			3.989	2659.017
		7.725		
TP 145			3.548	2663.193
		7.914		
TP 146			3.124	2667.983
		6.012		
TP 147			4.947	2669.048
		11.020		

Ed. 1/2" REBAR PANEL PT. D X SEC. OF  $\frac{59}{516}$

SET: C.P.S.  $\pm$  1/4 mi. E FROM 63 ALONG SEC. LINE  
 @ FENCE INTERSECTION



STA	PT. No	BS	FS	ELEV	Remarks
TP 160			3.861	2705.060	
		4.922			
TP 161			4.635	2709.347	
		3.492			
TP 162			11.675	2701.165	
		5.035			
TP 163			10.488	2695.712	
		7.150			
TP 164			2.783	2700.079	
		2.416			
TP 165	64		0.990	2701.505	
		6.889			
TP 166			1.339	2707.055	
		7.054			
TP 167			0.681	2713.428	
		12.212			
TP 168			0.170	2725.480	
		7.956			
TP 169			1.106	2732.330	
		7.501			
TP 170	65		9.138	2730.693	
		8.721			
TP 171			1.467	2737.947	
		9.167			
TP 172			1.058	2746.057	

SET: TBM CUT BOX ON S.E. COR. FOOTING ON  
 EAST TOWER # 230-1 (SEE PG. 2 FOR SKETCH)  
 2<sup>ND</sup> TOWER SOUTH OF SEC. LINE  $\frac{4}{9}$

Fd. B.C.  $\frac{1}{4}$  SEC. COR.  $\frac{54}{59}$

STA.	PT. NO.	B.S.	F.S.	ELEV.	Remarks
		6.504			
TP 173			8.447	2744.114	
		6.644			
TP 174			0.842	2749.915	
		9.599			
TP 175			0.620	2758.894	
		7.959			
TP 176			7.719	2759.134	
		5.514			
TP 177	66		0.650	2763.998	
		5.000			
TP 178			2.174	2766.825	
		13.216			
TP 179			0.329	2779.712	
		8.283			
TP 180			4.038	2783.957	
		4.441			
TP 181			3.162	2785.236	
		12.203			
TP 182			0.166	2797.273	
		7.617			
TP 183			0.210	2804.681	
		13.307			
TP 184			3.586	2814.402	
		4.213			

SET: TBM "OUT-BOX" IN S.E. FOOTING ON E. TOWER  
 #229-3 (SEE PG. 8 FOR SKETCH) THE 2ND TOWER  
 NORTH OF SEC. LINE  $\frac{54}{59}$

STA.	PT NO	BS	FS	ELEV.	Remarks
TP 185	67		5.256	2813.359	
		12.083			
TP 186			1.627	2823.815	
		11.372			
TP 187			1.062	2834.125	
		10.842			
TP 188			0.290	2844.677	
		7.595			
TP 189			2.883	2849.389	
		9.503			
TP 190			10.583	2848.309	
		5.446			
TP 191	68		4.053	2849.701	
		17.248			
TP 192			0.263	2861.686	
		2.644			
TP 193			9.928	2854.402	
		9.771			
TP 194			3.301	2860.877	
		13.468			
TP 195			7.317	2867.024	
		13.280			
TP 196			1.262	2879.041	
		5.013			

SET TBM ON S.E. FOOTING OF EAST TOWER  
#229 - (SEE PG. 8 FOR SKETCH)

FD: B.C. ON 2" PIPE 538 534 G.L.O. TUN. R. SE  
54 53







STA.	PT. No	B.S.	I.S.	ELEV.	REMARKS
P.O.B	68			2849.701	
		2.557			
TP 1			2.777	2849.482	
		6.129			
TP 2			11.327	2844.283	
		-0.253			
TP 3			2.365	2841.664	
		3.654			
TP 4			5.479	2839.839	
		6.245			
TP 5			11.494	2834.591	
		1.229			
TP 6			12.565	2823.255	
		3.520			
TP 7			8.784	2817.996	
		6.209			
TP 8			11.573	2812.626	
		10.292			
TP 9			13.057	2809.062	
		10.885			
TP 10			7.690	2813.057	
		1.197			
TP 11	72		10.499	2803.755	
		9.423			

FD: RC ON 2" PIPE		S 33	S 34	GLO
		S 4	S 3	
FD: BRASS CAP ON 1" PIPE		S 33	1/4 CAR.	"GLO"
		S 4		

STA	PT NO	B.S.	F.S.	ELEV.	Remarks
TP12			12.335	2800.843	
		0.719			
TP13			7.613	2793.950	
		11.273			
TP14			4.776	2800.447	
		2.479			
TP15			12.857	2790.069	
		0.265			
TP16			12.805	2777.529	
		1.360			
TP17			3.492	2775.397	
		6.247			
TP18			12.690	2768.953	
		1.253			
TP19			5.208	2764.999	
		9.620			
TP20	73		8.678	2765.940	
		4.982			
TP21			7.636	2763.286	
TP22			6.996	2764.427	
		0.773			
TP23			9.890	2755.260	
		4.497			

FD: BC ON 2" PIPE

S32	S33
S4	S4

T6N, R5E 'GLO'



STA	BS	HI	FS	ELEV	ADS. ELEV
PDB. 50				2276.32	
	0.47	2279.79			
TP 1			13.27	2263.52	
	0.26	2263.78			
TP 2			13.57	2250.21	
	0.43	2250.64			
TP 3			16.21	2234.43	
	0.48	2234.91			
TBM # 75			6.38	2228.53	
	6.51	2235.04			
TP			0.61	2234.43	
	16.37	2250.80			
TP			0.56	2250.24	
	13.80	2264.04			
TP			0.49	2263.55	
	13.36	2276.91			
√in			0.58	2276.33(01)	

B.C. FLUSH @ INT. OF PIMARD + DYNAMITE

SEE PAGE 2

PAINT - EP

PAINT EP

PAINT EP

CHISELED "N" N.E. COR BOX CULVERT HEADWALL - DYNAMITE  
WEST OF PIMARD 1/2 MILE



### CURVE FORMULAS

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

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 .0745 (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 .0745, 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.  $10.10^2 + 200 = 5$ .  $100 + 5 = 100.5$  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 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  $\Sigma d^2$  = 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

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

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

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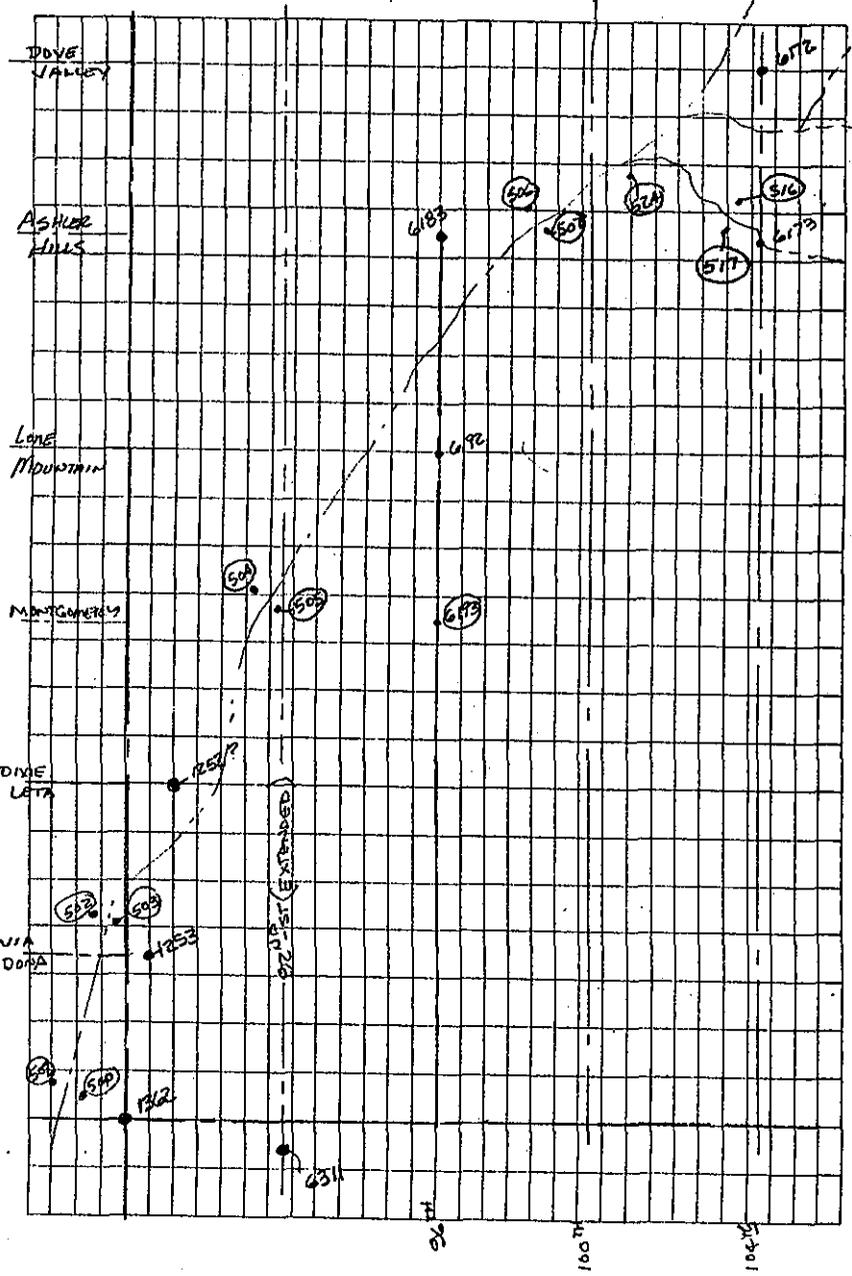
RAVHIDE WASH

DEC. 1998

J. Ross

B. ANKUM

B. SOUTH



SESSION "A" 12-30-98

STA	ROD	OPERATOR	ON	OFF	EPOCHS
63H	1.831	J.K.R.	7:24	12:23	UNIT 3
1252(?)	1.889	J.K.R.	7:53	12:16	UNIT 2
R501	2.034	J.K.R.	8:07	8:17	120
R500	2.034	J.K.R.	8:24	8:34	120
1362	2.034	J.K.R.	8:54	8:55	12
1253	2.034	J.K.R.	9:02	9:12	120
R502	2.034	J.K.R.	9:20	9:30	120
R503	2.034	J.K.R.	9:34	9:44	120
R504	2.034	J.K.R.	10:07	10:17	120
R505	2.034	J.K.R.	10:23	10:33	120
R506	2.034	J.K.R.	11:07	11:17	120
R507	2.034	J.K.R.	11:21	11:31	120
R524	2.034	J.K.R.	11:41	11:51	10 MIN

B.O. - 30' S. OF E.P. DYNAMITE Rd. W/4 Cor. Sect 31  
 END REBAR W/ CLOS. AL CAP & DIVE LITH (EXT) 30' S.E. OF PIMARD E.P.

SET REBAR

SET REBAR

B.C. FLUSH DYNAMITE &amp; PIMA

END REBAR IN POT HOLE 10' E OF PIMA @ VIA DONA (EXTENDED)

SET REBAR

SET REBAR

SET REBAR

SET REBAR

SET REBAR

SET REBAR

SET NAIL TO CLOSE SESSION





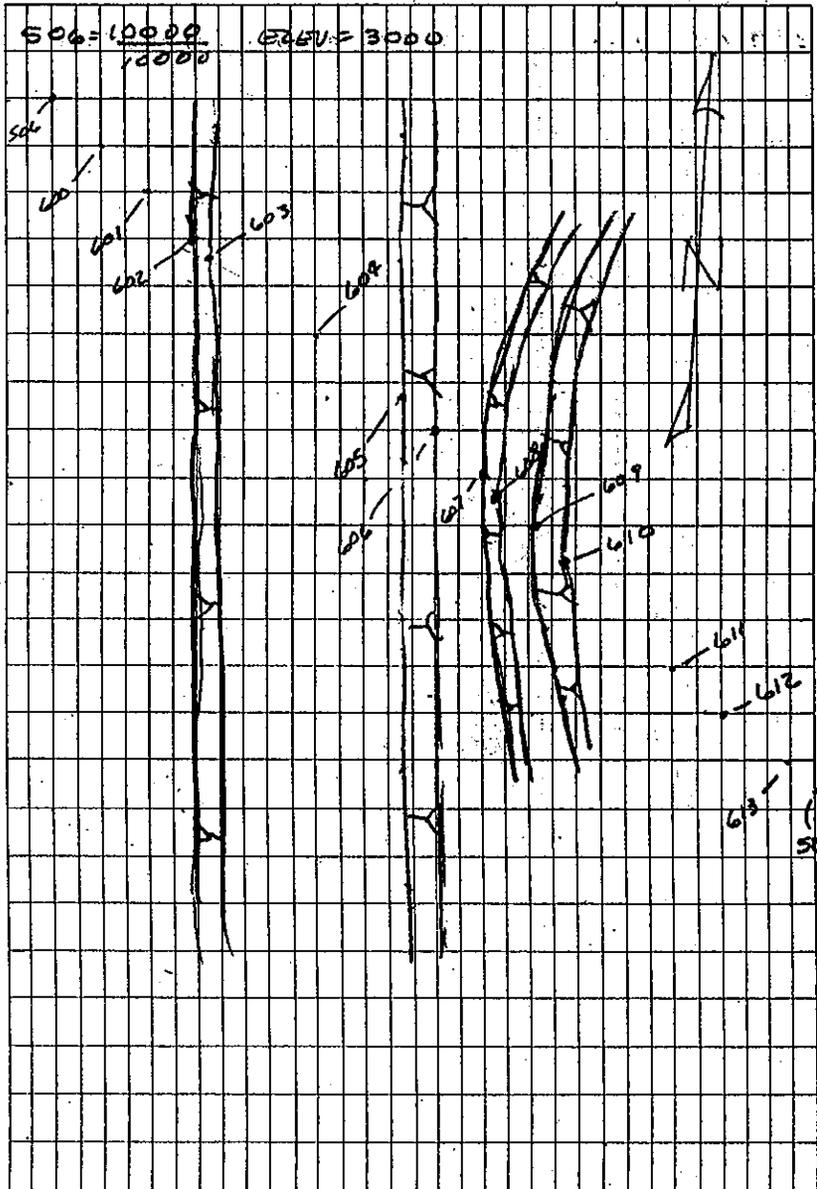
200

T@506 5.38

BS@507 5.00

HDT@507 = 496.680' VERT TO # 507 = -1.536

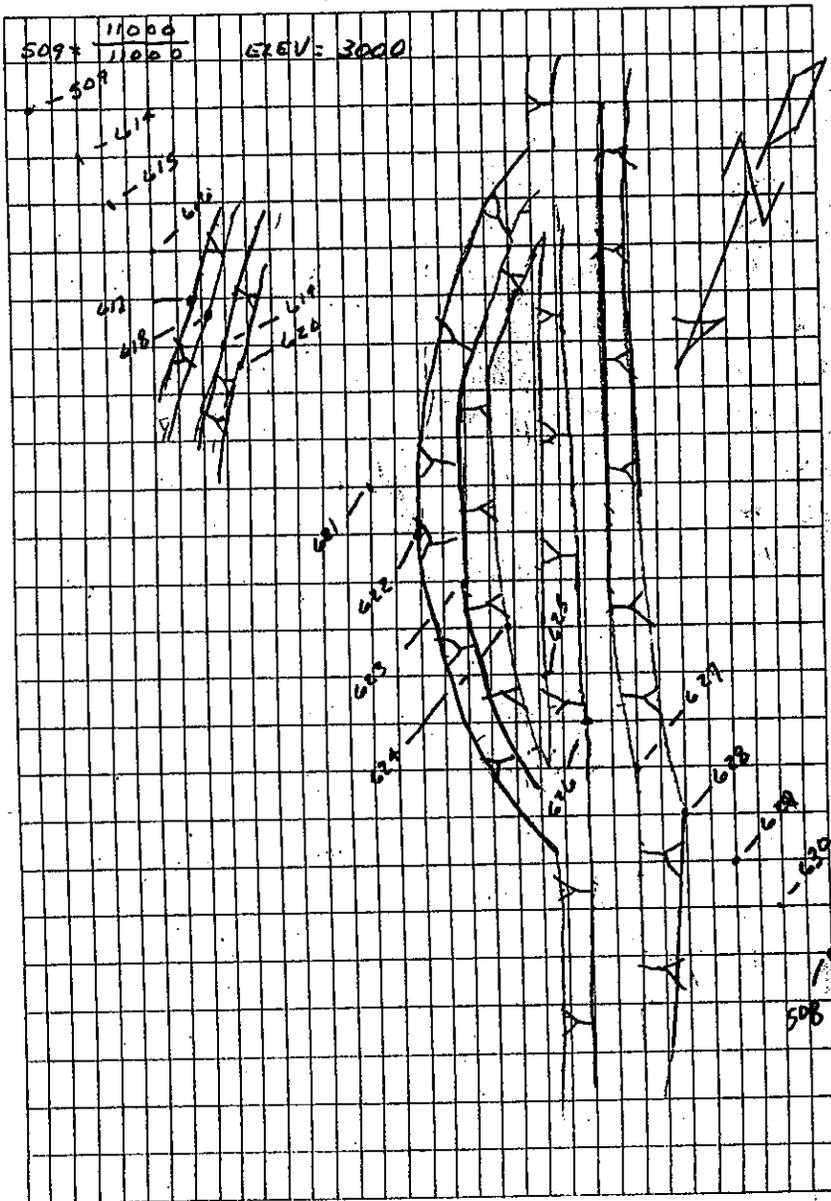
600	8.94	TDE
601		NG
602		TDP
603		TDE
604		NG
605		TDE
606		TDP
607		TDP
608		TDE
609		TDE
610		TDP
611		NG
612		TDE
613	8.94	NG



RSD \* NOTE: WENT SMALLER WITH COORDINATES. SHOULD HAVE GONE BIGGER.

X @ 509	5.03	
BS @ 508	4.23	HD TO 508 382.614' VERT. TO 509 + 6.280
614	12.94	TOP
615		NG
616		TDE
617		TDP
618		TDE
619		TDE
620		TOP
621		NG
622		TOP
623		BOTTOM
624		TDP
625		TOP
626		TDE
627		TDE
628		TOP
629		NG
630	12.94	NG

$$\begin{array}{r} 11000.00 \\ - 382.614 \\ \hline 10617.386 \end{array}$$



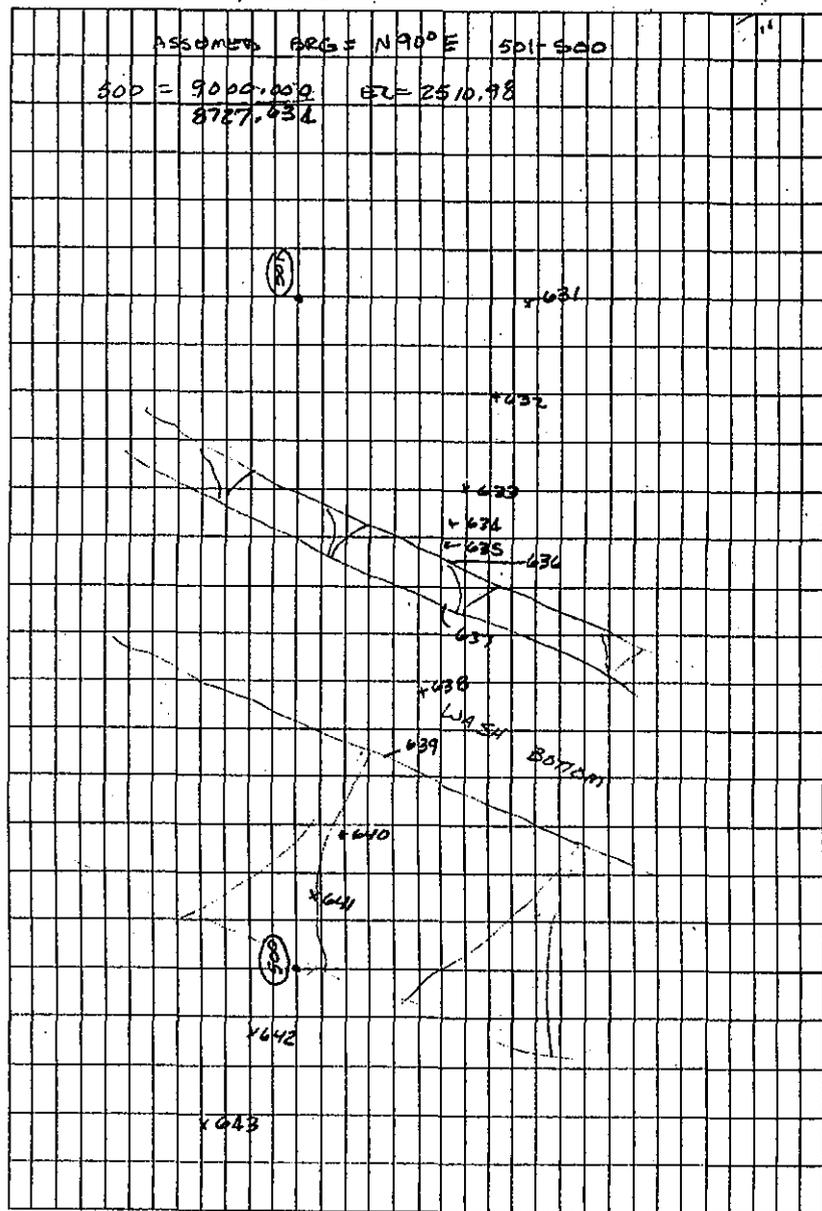


RAWHIDE TOPO

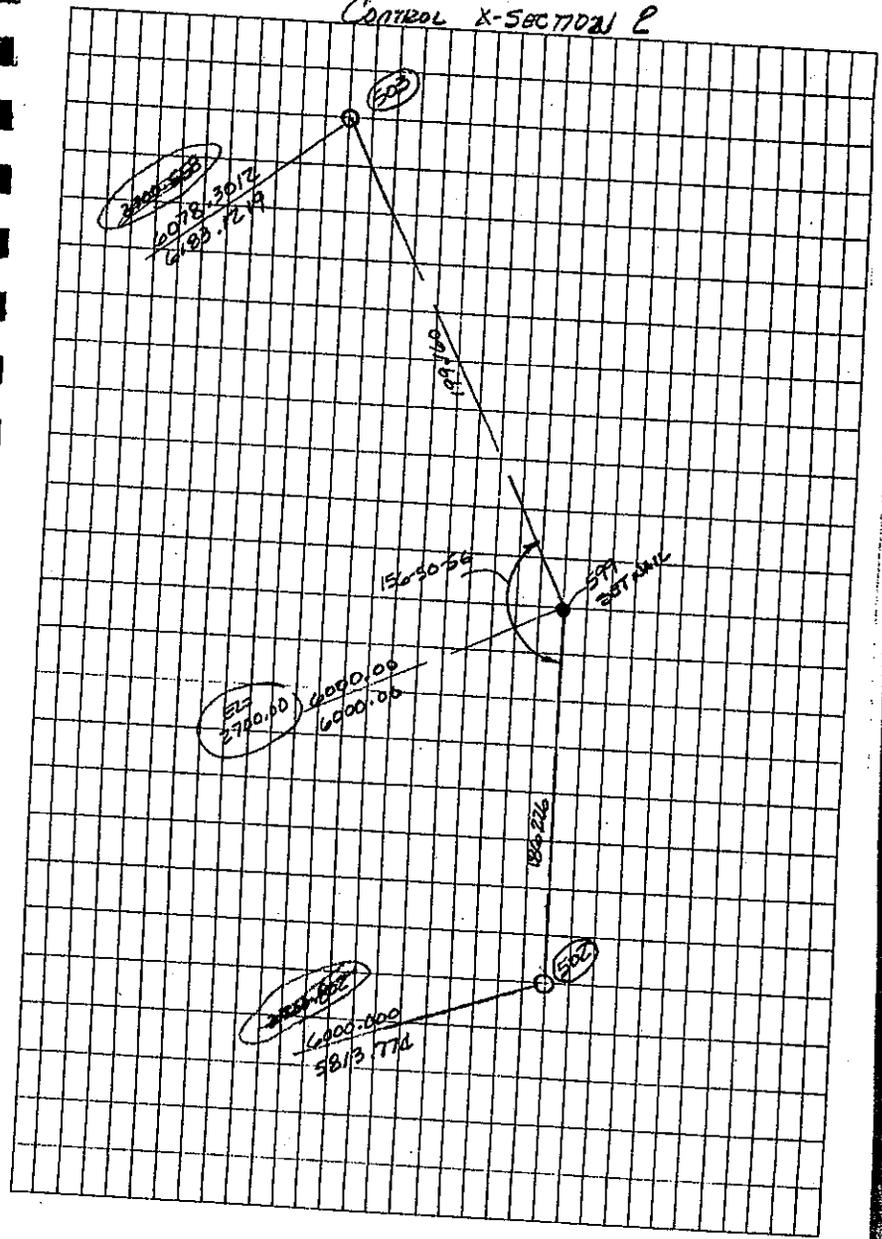
STA	ROD	DESC.	
PCSD0	5.16		
BS@S01	9.40	HD TO * S04 = 272.366	VERT TO * S04 = -6.742
631	8.95	NG	
632	}	NG	
633		NG	
634		GB	
635	8.95	GB	
636	}	TOP	
637		TOE	
638		WASH	
639	8.95	TDB	
640	}	GB	
641		GB	
642		NG	
643	8.95	NG	

ASSUMED

S01 =  $\frac{9000.00}{9000.00}$  EL = 2500.00

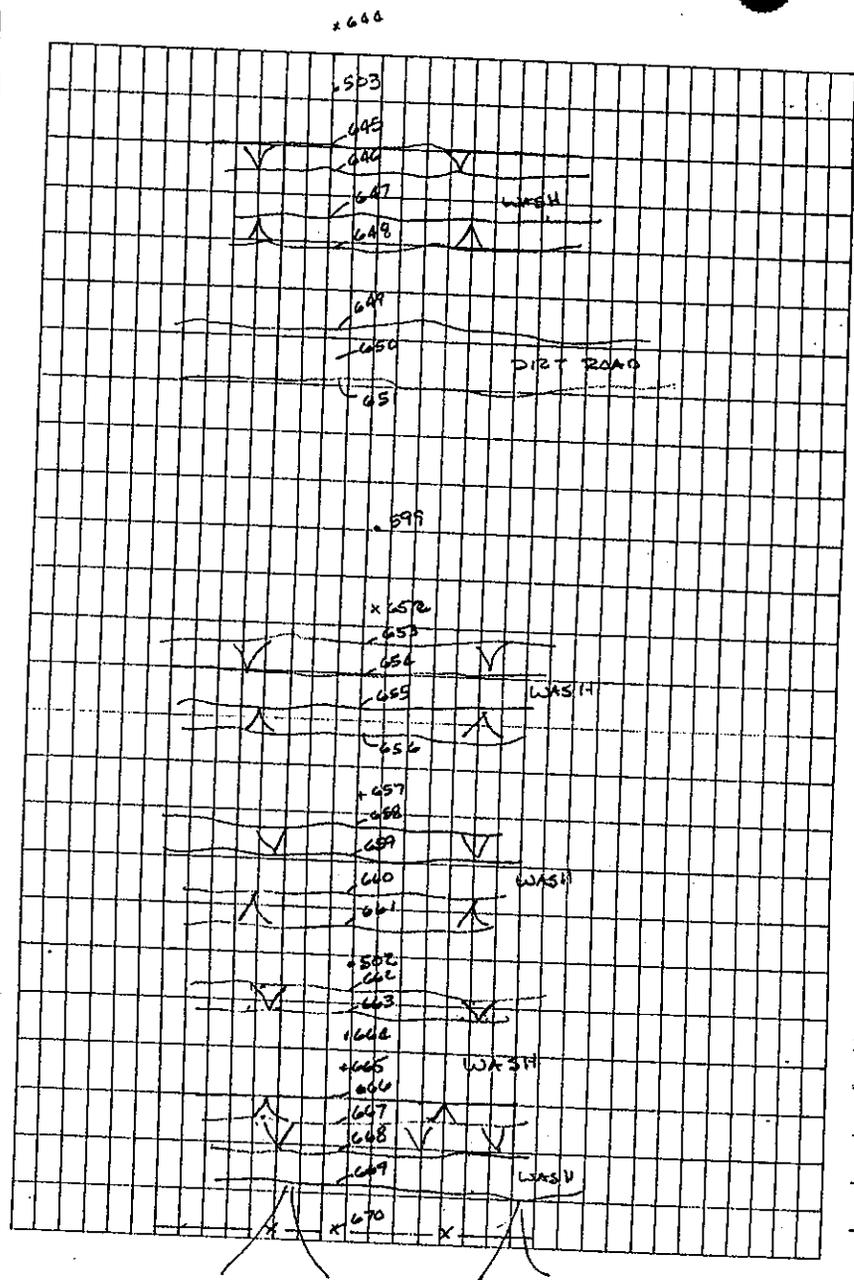


CONTROL X-SECTION 2



	2700.802	2285.7241
- .802		
2699.9665	2700.000	2288.8216
+ .558		
	2700.558	2289.4131
- .244		.3110

Sta	Rod	Desc	
RC 599	5.36		
BSC 503	9.11		
644	8.95	N.G	
645	}	TOP	
646		TDE	
647		TDE	
648	8.95	TOP	
649	}	ER	
650		Rom NG	
651		ER	
652	8.95	NG	
653	}	TOP	
654		TDE	
655		TDE	
656	}	TOP	
657		8.95	NG
658		}	TOP
659	TDE		
660	TDE		
661	8.95	TOP	
RC 502	5.32		
BSC 599	9.17		
662	8.95	TOP	

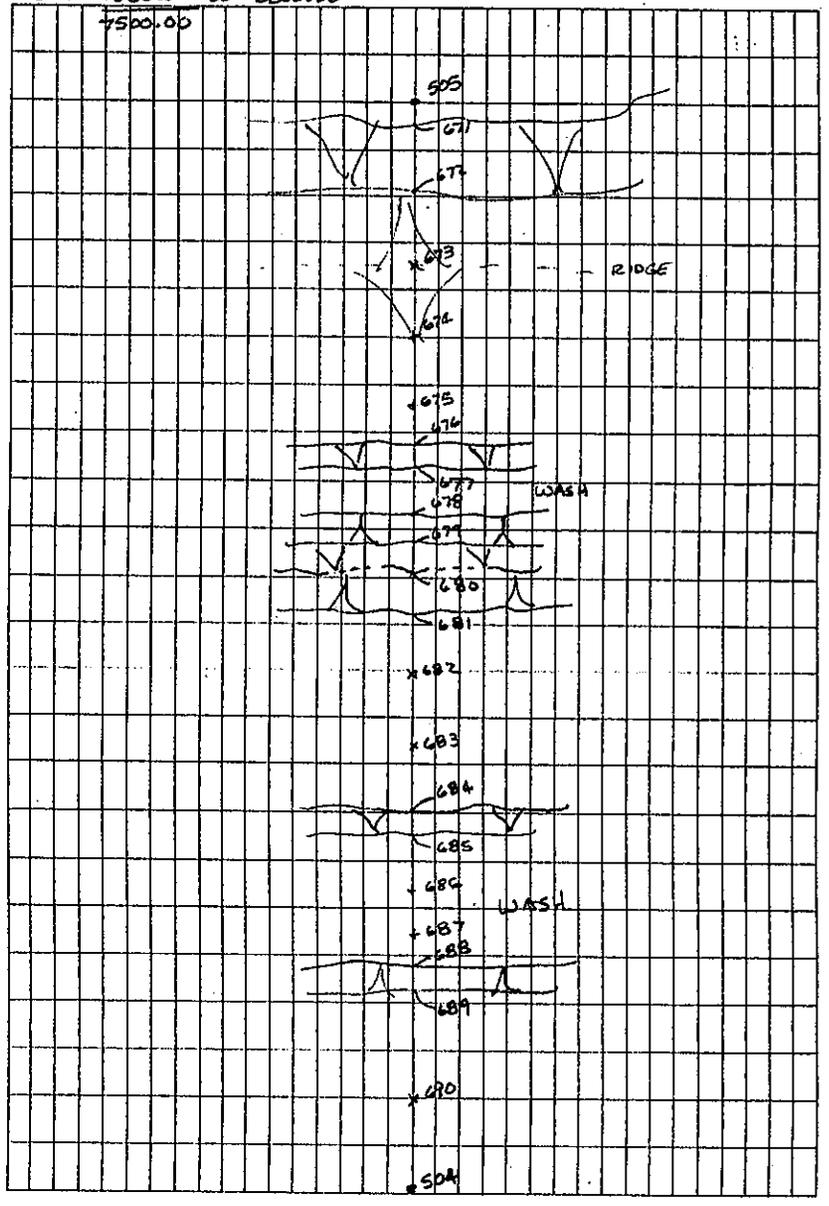




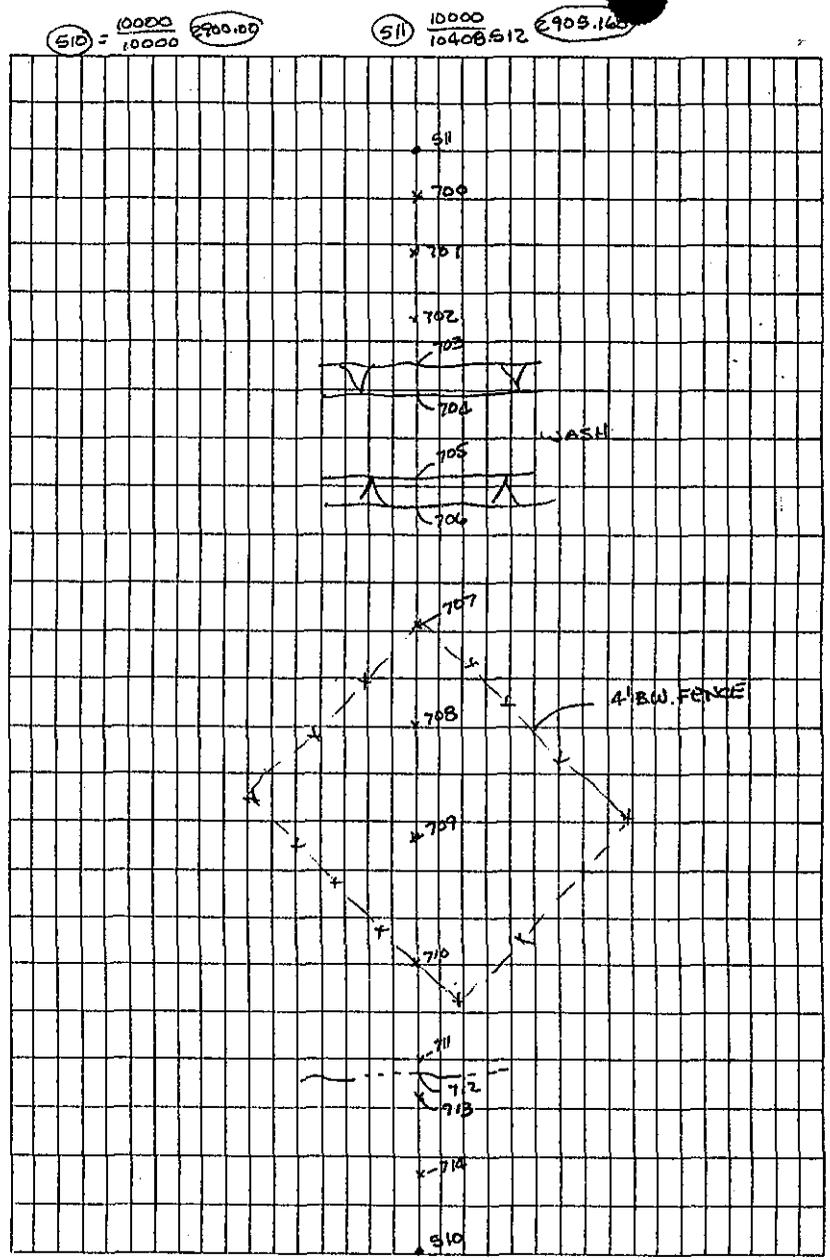
STA	ROD	DESCRIPTION
K@504	5.44	
B5@505	5.19	HD = 666.160 VERT = +8.148
671	8.95	TOP
672	}	TDE
673		GB
674		GB (RIDGE)
675	8.95	NG
676	}	TOP
677		TDE
678		TDE
679		TOP
680	8.95	TDE
681	}	TOP
682		NG
683		NG
684		TOP
685	8.95	TDE
686	}	WASH NG
687		WASH NG
688		TDE
689		TOP
690	8.95	GB NG

2419.2161

SCA = 7500.00 BL = 2800.00  
7500.00



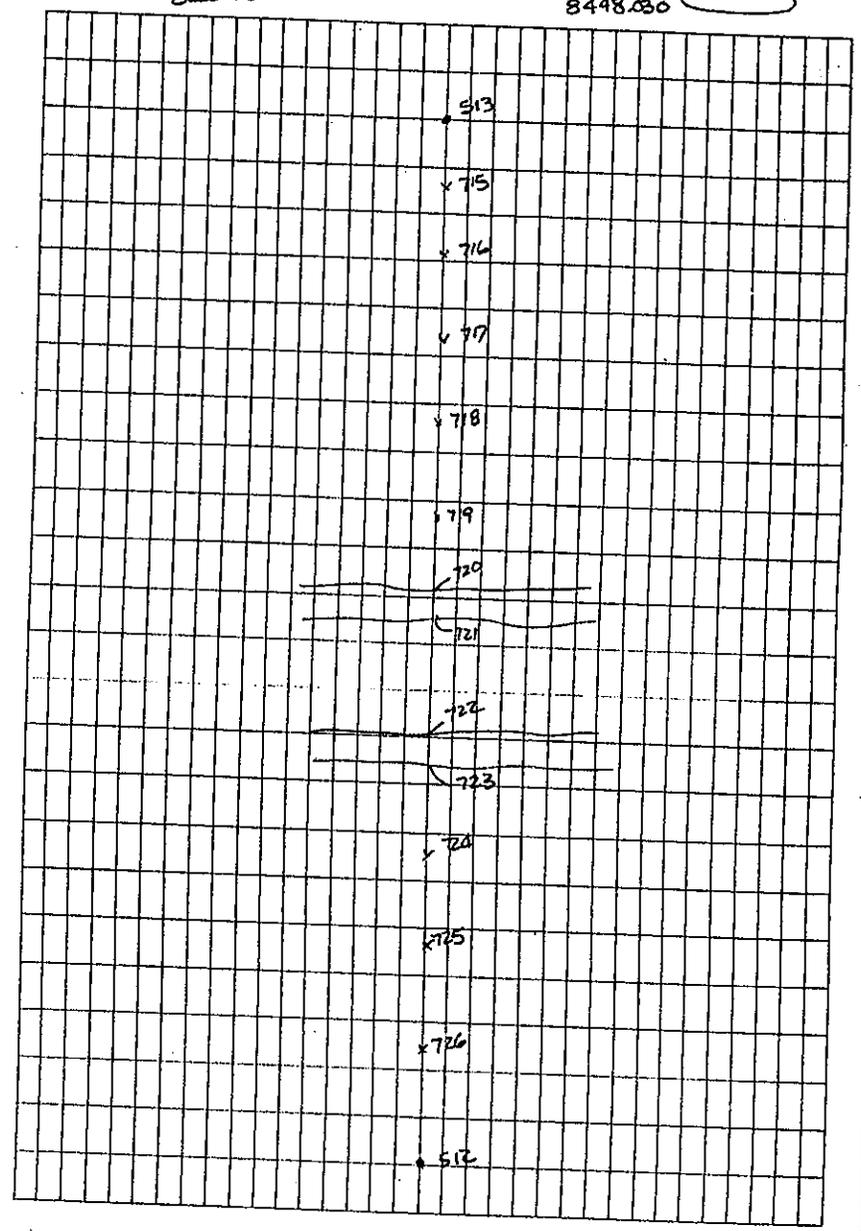
TA	R.O.D	DESCRIP	
A@S10	5.46		
BS@S11	5.00	H.D= 408.512	VERT= +4.708
700	8.95	NG	
701		NG	
702		NG	
703		TDE	
704		TDE	
705	8.95	TDE	
706		TOP	
707		NG@Fc	
708		NG	
709		NG	
710	8.95	NG@Fc	
711		TOP	
712		TDE	
713		TOP	
714	8.95	NG	



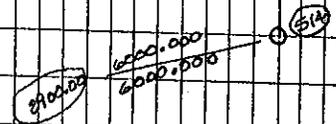
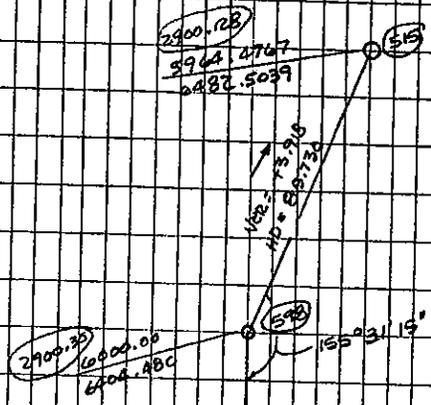
	ROD	DESCRIP	
512	5.38		
BS@SB	5.05	H.D = 448.030	VERT = +3.528
715	8.95	NG	
716	}	GB	
717		GB	
718		GB	
719		NG	
720	8.95	TOP	
721	}	TDE	
722		TDE	
723		TOP	
724		NG	
725		NG	
726	8.95	NG	

$$512 = \frac{8000.00}{8000.00} \text{ } 2700.00$$

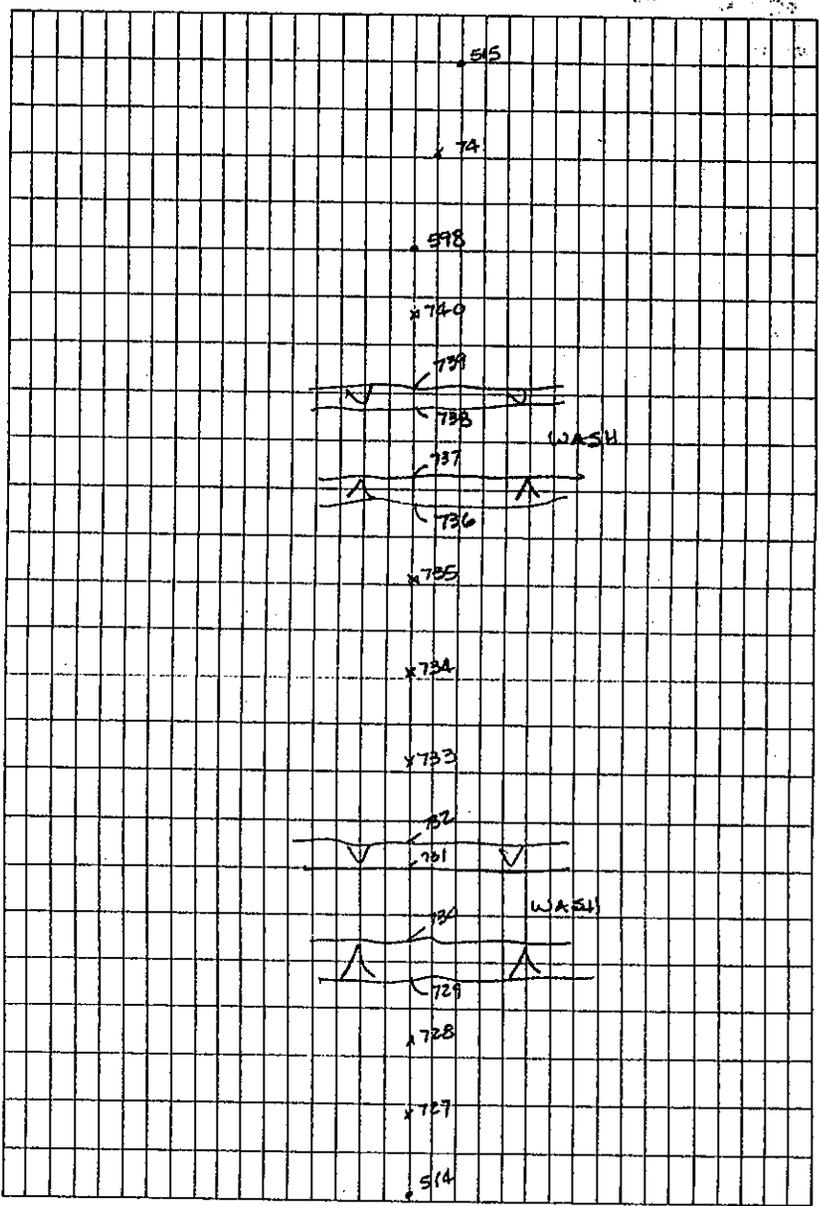
$$513 = \frac{8000}{8448.030} \text{ } 2703.258$$



Control & Section 8



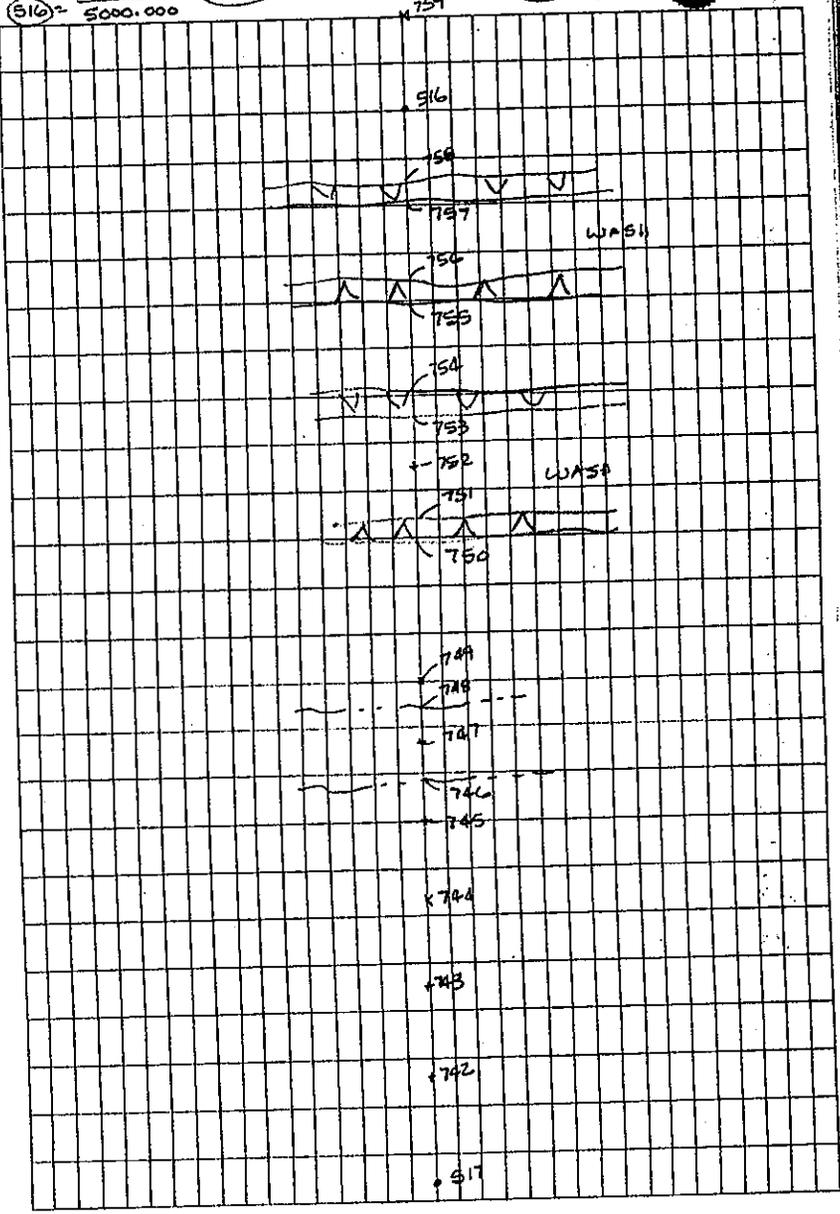
	ROD	DESC
RC 598	5.38	
BS@514	9.00	
727	8.95	NG
728	}	NG
729		TDP
730		TDE
731		8.95
732	}	TDP
733		NG
734		NG
735		NG
736	8.95	TDP
737	}	TDE
738		TDE
739		TDP
740		NG
741	8.95	NG



ST	ROD	DESCR
KC 516	5.14	
BSE 517	5.24	HD = 359.41    VERT = +5.670
742	8.98	NG
743	}	NG
744		NG
745		TDP
746	8.95	TDE
747	}	TDP
748		TDE
749		TDP
750	8.95	TDP
751	}	TDE
752		NG WASH
753		TDE
754	8.95	TDP
755	}	TDP
756		TDE
757		TDE
758	}	TDP
759		8.95    NG

516 = 5359.410    3000.00  
5000.000

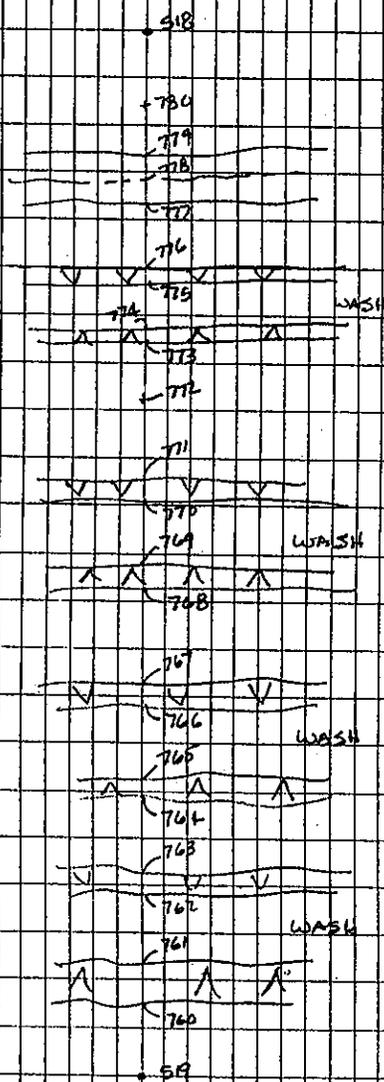
517 =  $\frac{5000}{5000}$     517



	ROD	DESC	
K@518	5.20		
B50519	5.46	HD = 332.050 VERT = -6.480	
760	8.95	TOP	
761	}	TDE	
762		TDE	
763		TOP	
764	}	TOP	
765		8.95	TDE
766		TDE	
767	}	TOP	
768		TOP	
769		TDE	
770	8.95	TDE	
771	}	TOP	
772		NG	
773		TOP	
774	}	TDE	
775		8.95	TDE
776		TOP	
777	}	TOP	
778		TDE	
779		TOP	
780	8.95	NG	

S18 = 4332.050 5000.00  
6000.00

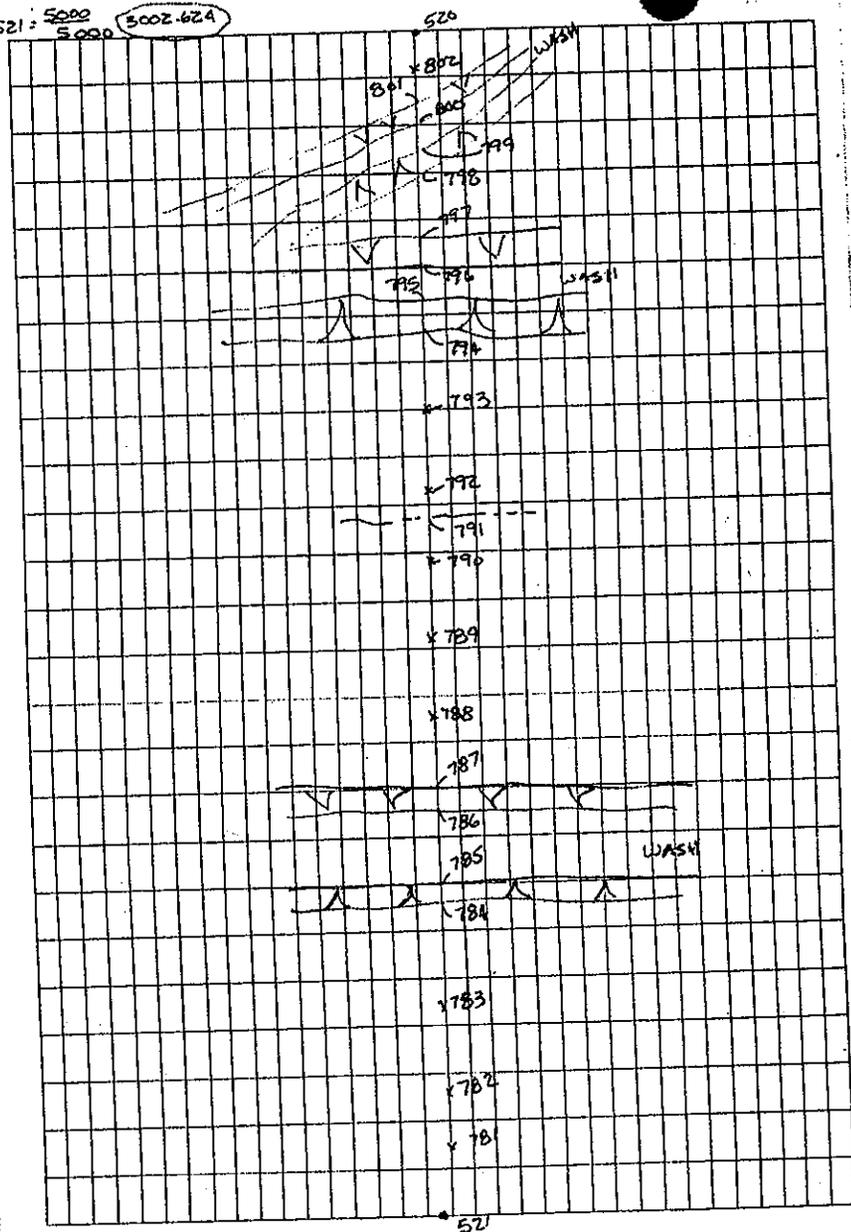
S19 = 6000.00 2993.86  
6000.00



	ROD	DESCRIP
KC520	5.23	
BS0521	4.78	HD: 555.520 Vert = +2.74
781	12.50	NG
782	}	NG
783		NG
784		TOP
785		TDE
786	12.50	TDE
787	}	TDP
788		NG
789		NG
790		TDP
791	12.50	TDE
792	}	TDP
793		NG
794		TDP
795		TDE
796	12.50	TDE
797	}	TDP
798		TDP
799		TDE
800		TDE
801	}	TDP
802		12.50

520 =  $\frac{5655.520}{5000.000}$  (3000)

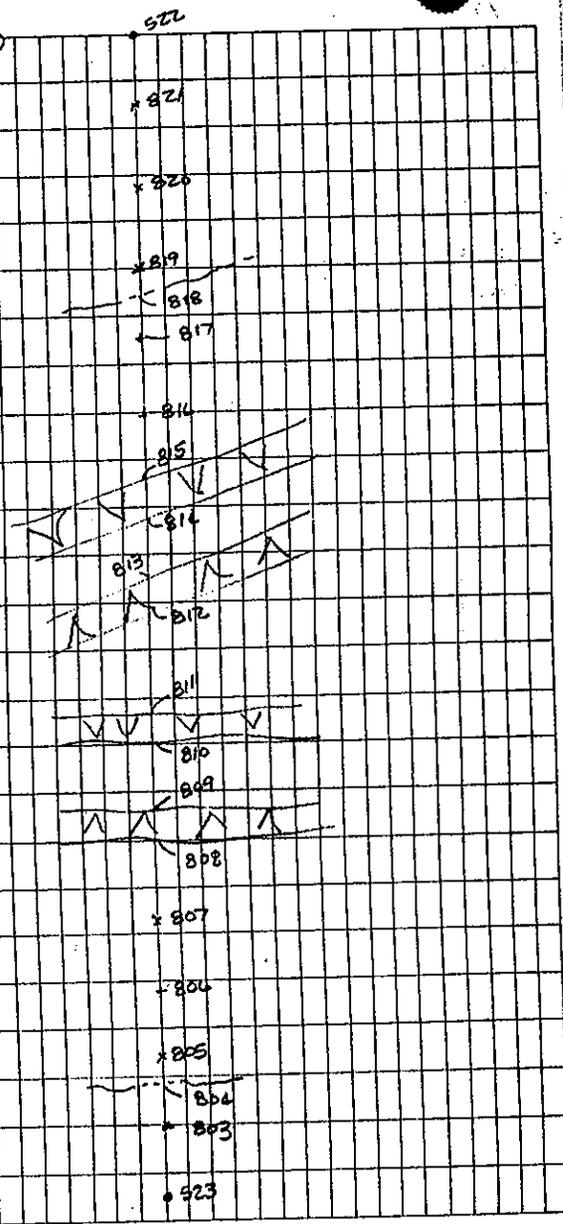
521 =  $\frac{5000}{5000}$  (5002.624)



STA	ROD	DESC	
K@ 522	5.22		
BSC 523	5.09	HD = 429.728	VERT. = -9.456
803	8.95	TOP	
804		TOE	
805		TDP	
806		NG	
807		NG	
808	8.95	TOP	
809		TOE	
810		TOE	
811		TOP	
812		TOP	
813	8.95	TOE	
814		TOE	
815		TOP	
816		NG	
817	8.95	TOP	
818		TOE	
819		TDP	
820		NG	
821	8.95	NG	

$$\textcircled{522} = \frac{5429.728}{5000.000} \textcircled{3000.00}$$

$$\textcircled{523} = \frac{5000.00}{5000.00} \textcircled{2990.474}$$



## SESSION "D"

Pjt	ROD	OPER	TIME ON	TIME OFF	EPOCHS
R510	1.939	JLR	11:09	12:53	UNIT 3
R512	1.799	JLR	11:25	1:01 PM	UNIT 2
<sup>BM#88</sup> * 6042?	2.034	JLR	11:38	11:48	120
* R522	2.034	JLR	12:19	12:29	120
* R523	2.034	JLR	12:33	12:42	10 MIN

\* Batter on lower kept shutting off  
if they are no good sets throw them away

TOW



GLO BICAP

R5F

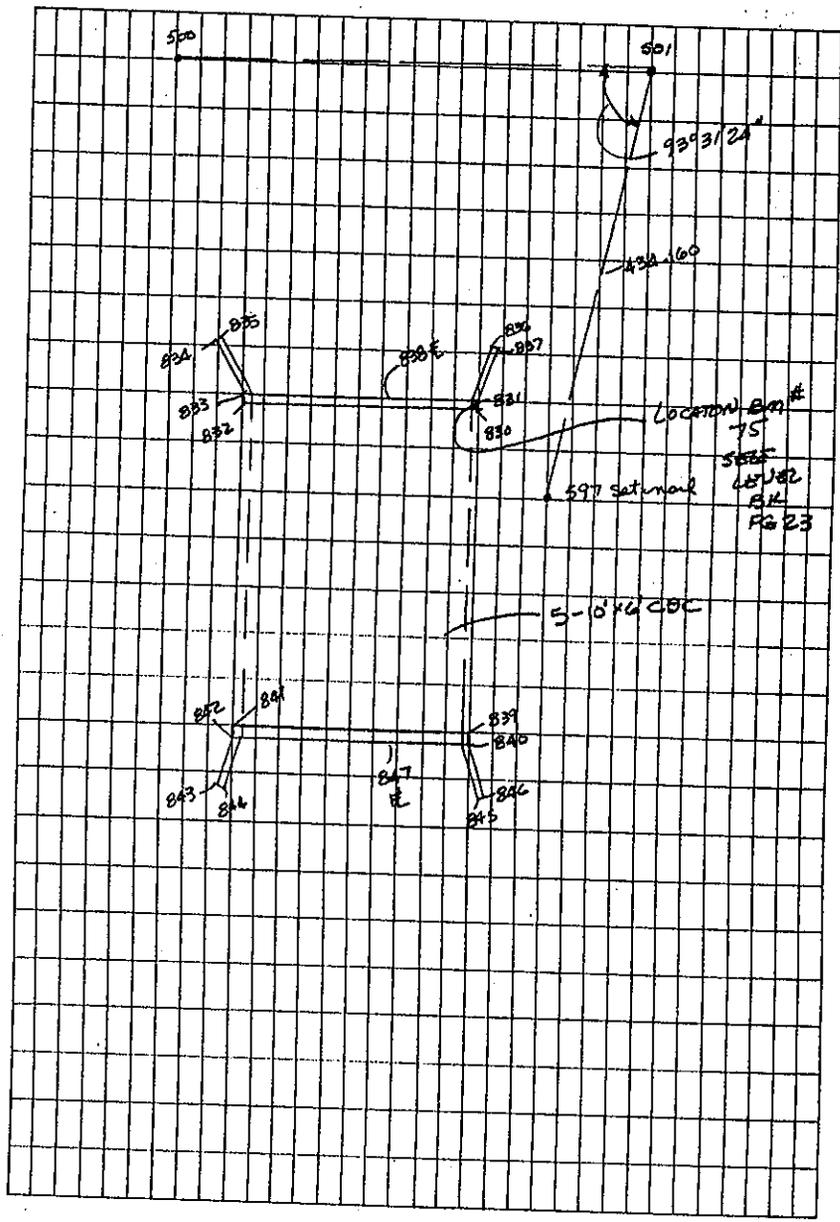
SET REBAR

SET REBAR



829	8.97	
830	8.95	H.W
831		H.W
832		H.W
833		H.W
834		W.W
835	8.95	W.W
836		W.W
837		W.W
838		#
839		H.W
840	8.95	H.W
841		H.W
842		H.W
843		W.W
844		W.W
845		W.W
846		W.W
847	8.95	#

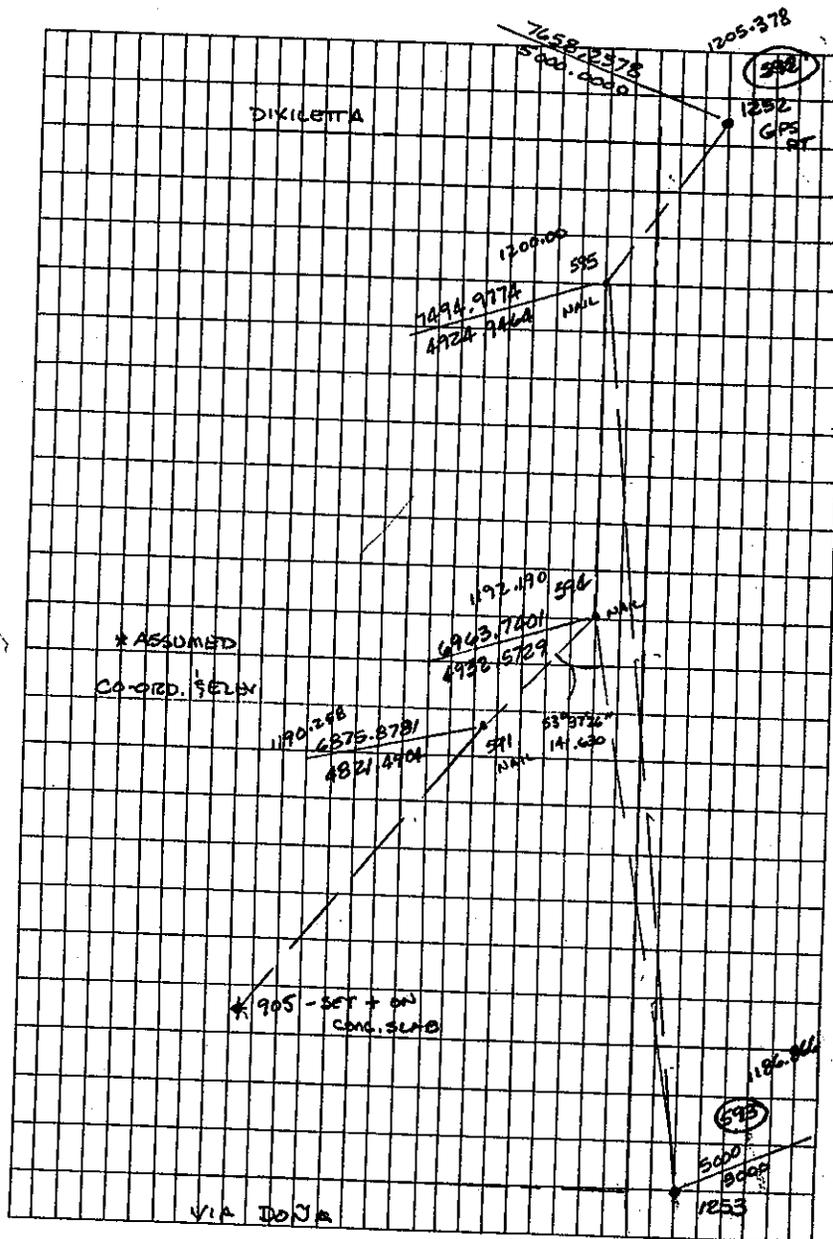
\*NOTE GLEV @ 847 DROPPED 0.60  
 IN DATA COLLECTOR TO GET TO #  
 JKR 2/22/99



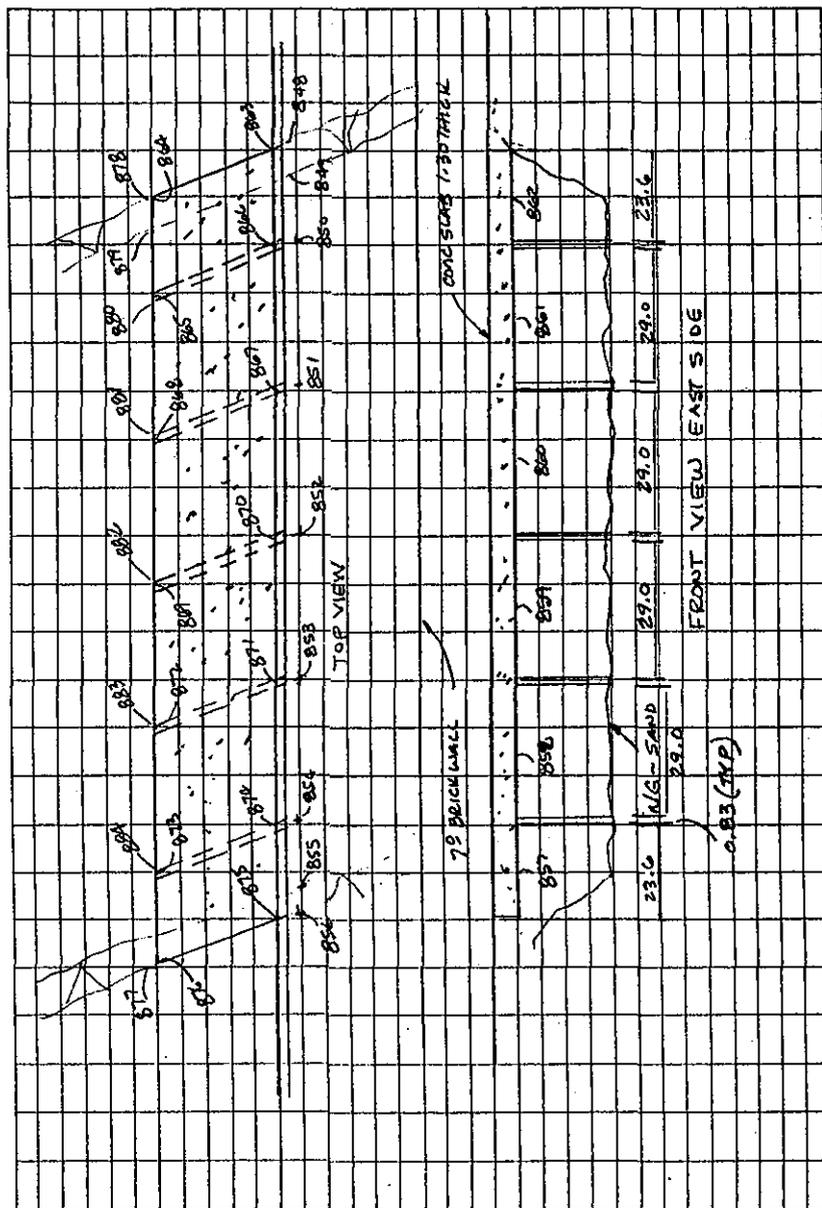
	ROD	Hoe 3	Hoe Dist	Vert Diff	ELEV
↑ C 595	5.55	—	—	—	1200.00
BSE 1253	5.82	00-00-00	2496.106	-12.864	
FSC 1252	5.34	206-24-34	179.704	+5.168	
FSC 594	4.95	0°54'02"	531.292	-8.410	

\* 1252 = 592 IN CONTROL FILE

\* 1253 = 593 IN CONTROL FILE

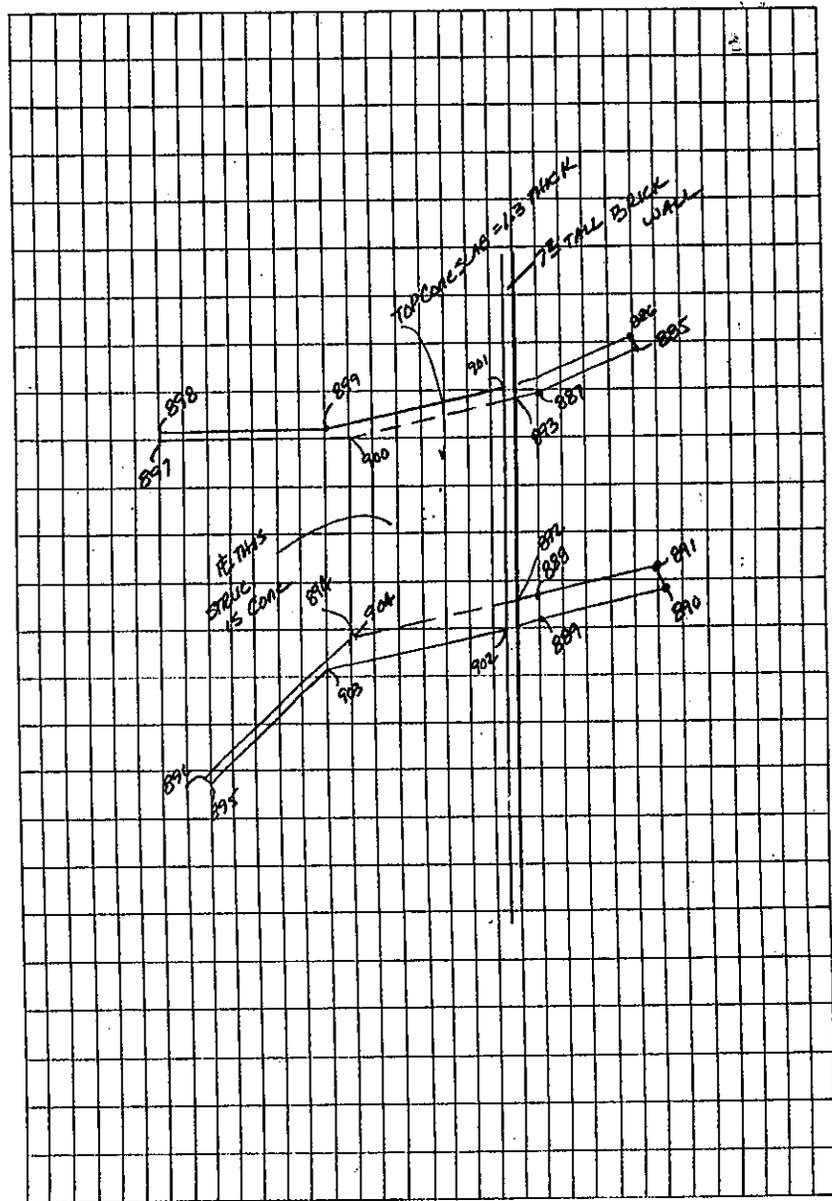


	ROD	DESC.
R@595	5.55	
B5@593	5.82	
848	4.95	NG
849		"
850		"
851		"
852	4.95	NG
853		"
854		"
855		"
856		NG
857	4.95	TOP OF OPENING
858		" "
859		" "
860		" "
861		" "
862	4.95	" "
863	12.95	Conc
864		"
865		"
866		"
867	12.95	Conc
868		"
869		"
870	12.95	"

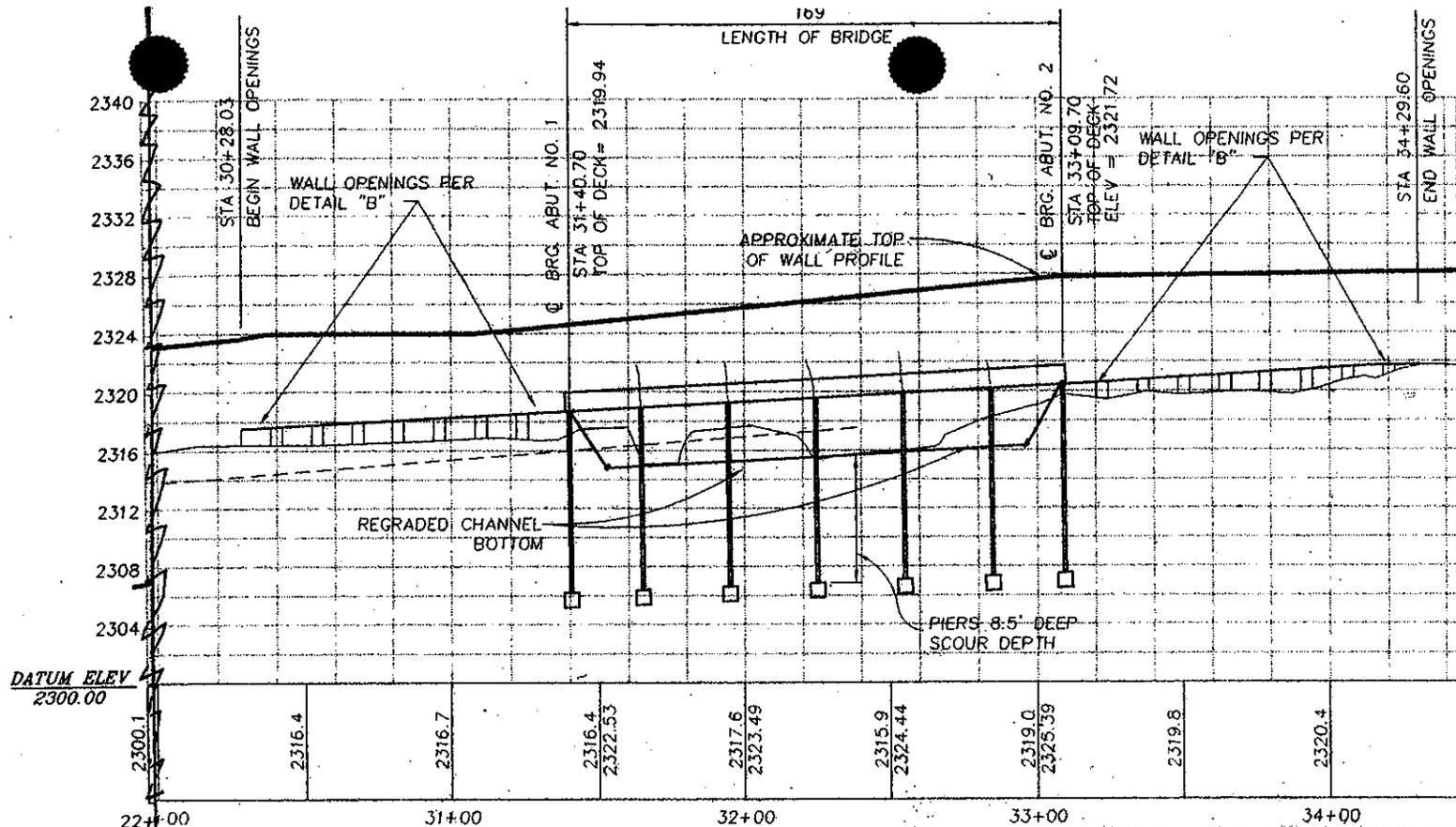




STA	RCD	DESC
KE 594	5.41	
BSC 593	5.82	
885	4.95	W.W
886		W.W
887		W.W
888		W.W
889	4.95	W.W
890		W.W
891		W.W
892		# (Conc)
893	4.95	# (Conc)
894	0.25	# (Conc)
895	12.95	W.W
896		W.W
897		W.W
898		W.W
899	12.95	Conc
900		"
901		"
902		"
903		"
904	12.95	Conc







REVISIONS:  
4/2/98

REGISTERED PROFESSIONAL ENGINEER  
CERTIFICATE NO. 20887  
FRANK BOXBERGER  
SIGNED 4/9/98  
ARIZONA, U.S.A.

JOB NUMBER  
47019

## WALL PROFILES FOR THE NE 1/4 NE 1/4 SECTION 25, T5N, R4E

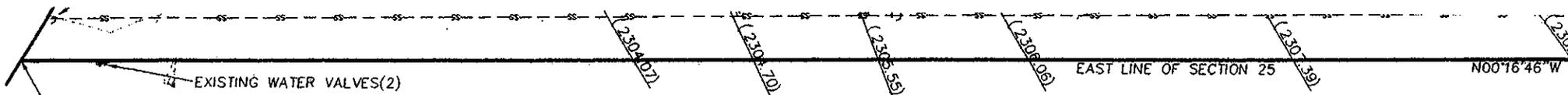
DESIGN	DRAWN	CHECKED	DATE	FILE NAME	SHEET
WC	JR	FB	9-97	47019S4	4 OF 6



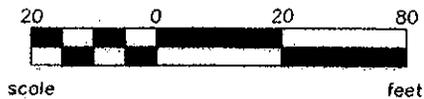
**PINNACLE  
ENGINEERING, INC.**

8712 EAST VISTA BONITA  
SCOTTSDALE, ARIZONA 85255 • (602) 585-6013  
EMAIL: pinn\_eng@ix.netcom.com FAX (602) 585-1777

Two working days before  
CALL FOR THE BLUE  
**263-11**  
Blue State Call  
CALL COLLE



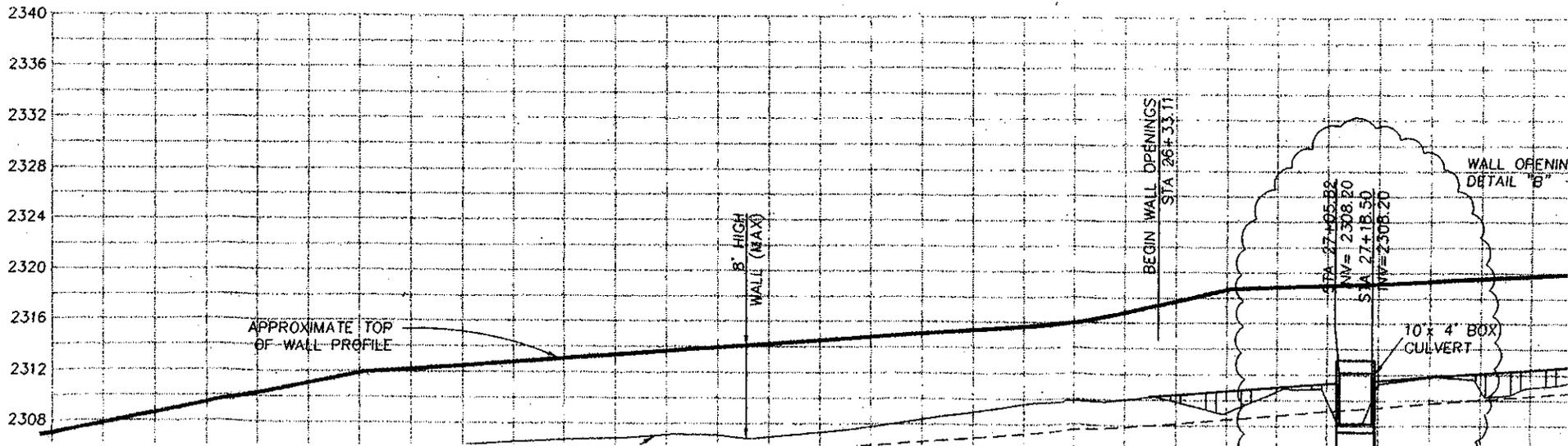
>>> CONSTRUCTION NOTES:



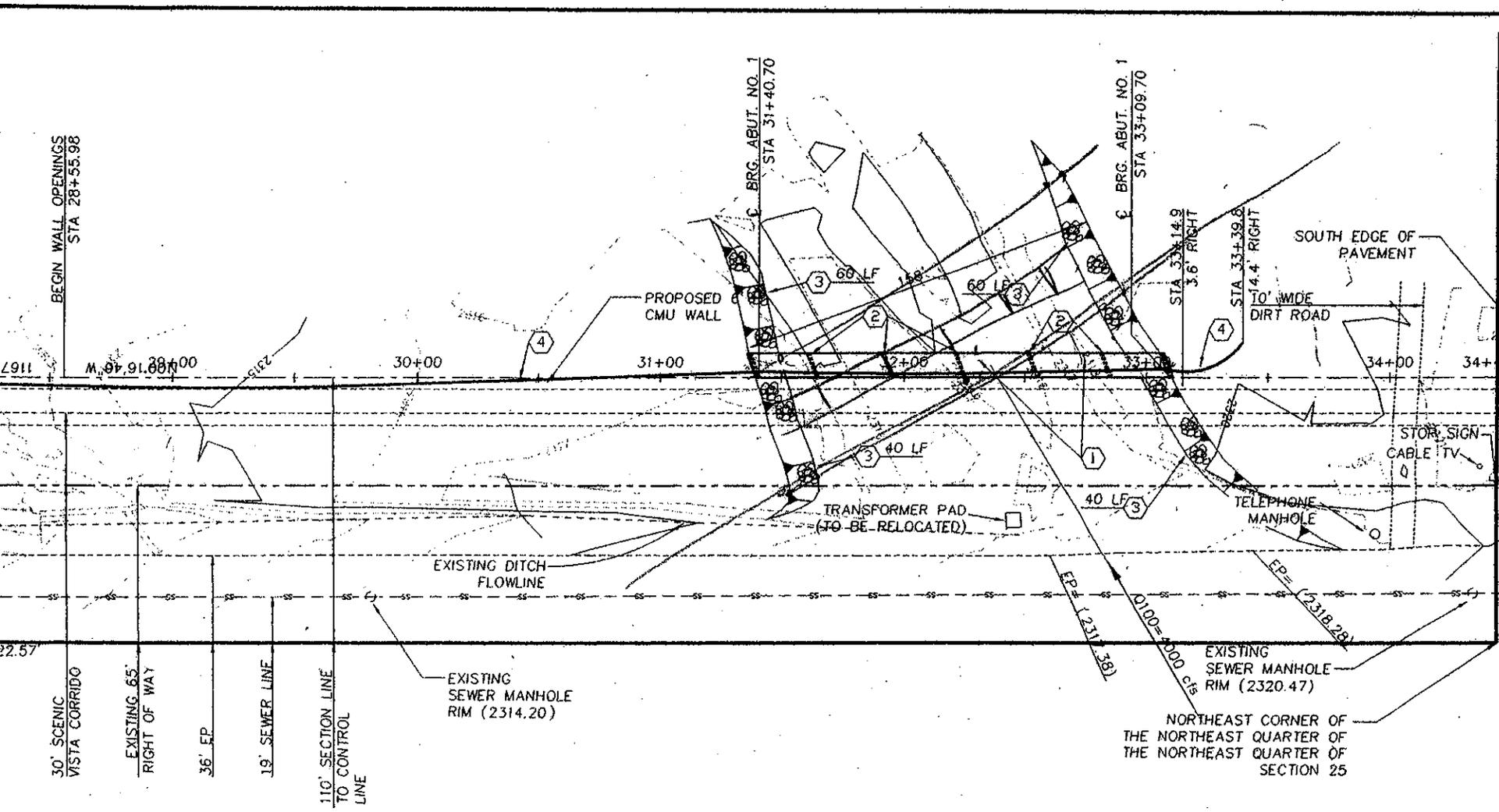
SCALE: 1" = 40' (HORZ)  
 SCALE: 1" = 8' (VERT)



- ① INSTALL CONTINUOUS SPAN SLAB, 24'-6", 30'-0" PER A.D.O.T. STD. DET. B-09.10
- ② CONSTRUCT 12" CONCRETE PIERS (SEE STRUCTURAL DRAWINGS BY GLEN CONSULTING, INC.)
- ③ REGRADE CHANNEL BANK AT 3:1 SLOPE AND INSTALL BANK PROTECTION PER DETAIL "A", SEE SHEET 6 OF 6.
- ④ CONSTRUCT WALL OPENINGS PER DETAIL "B". SEE SHEET 6 OF 6.
- ⑤ CONSTRUCT 10'x 4' BOX CULVERT PER A.D.O.T. STD. DET. B-02.10, 35° SKEW
- ⑥ CONSTRUCT INLET WING WALLS PER A.D.O.T. STD. DET. B-04.70
- ⑦ CONSTRUCT OUTLET WING WALLS PER A.D.O.T. STD. DET. B-04.50



DIXILETA BLVD



BEGIN WALL OPENINGS  
STA 28+55.98

C BRC. ABUT. NO. 1  
STA 31+40.70

C BRC. ABUT. NO. 1  
STA 33+09.70

2911  
M. 09.91.00  
30+00

31+00

STA 33+14.9  
3.6' RIGHT

STA 33+39.8  
4.4' RIGHT

34+00

34+41.8

22.57

30' SCENIC  
VISTA CORRIDO

EXISTING 65'  
RIGHT OF WAY

36' EP

19' SEWER LINE

110' SECTION LINE  
TO CONTROL  
LINE

EXISTING  
SEWER MANHOLE  
RIM (2314.20)

EXISTING  
SEWER MANHOLE  
RIM (2320.47)

NORTHEAST CORNER OF  
THE NORTHEAST QUARTER OF  
THE NORTHEAST QUARTER OF  
SECTION 25

EP = (2311.38)

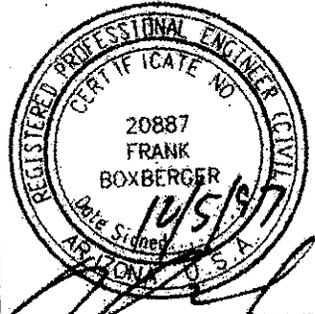
D100 = 200 C/S

EP = (2318.28)

8.5' DEEP  
DEPTH

2297.6	2297.9	2298.8	2298.7	2299.3	2300.2	2299.0	2300.1
19+00			20+00		21+00		22+00

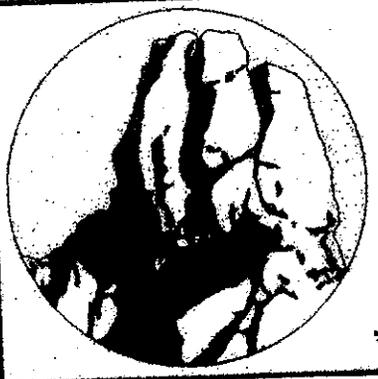
REVISIONS:

**JOB NUMBER**  
**47019**

## WALL PROFILES FOR THE NE 1/4, NE 1/4 SECTION 25, T5N, R4E

DESIGN	DRAWN	CHECKED	DATE	FILE NAME	SHEET	
WC	JR	FB	9-97	47019S5	5	OF 6

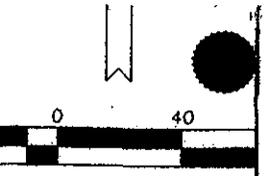


**PINNACLE  
ENGINEERING, INC.**

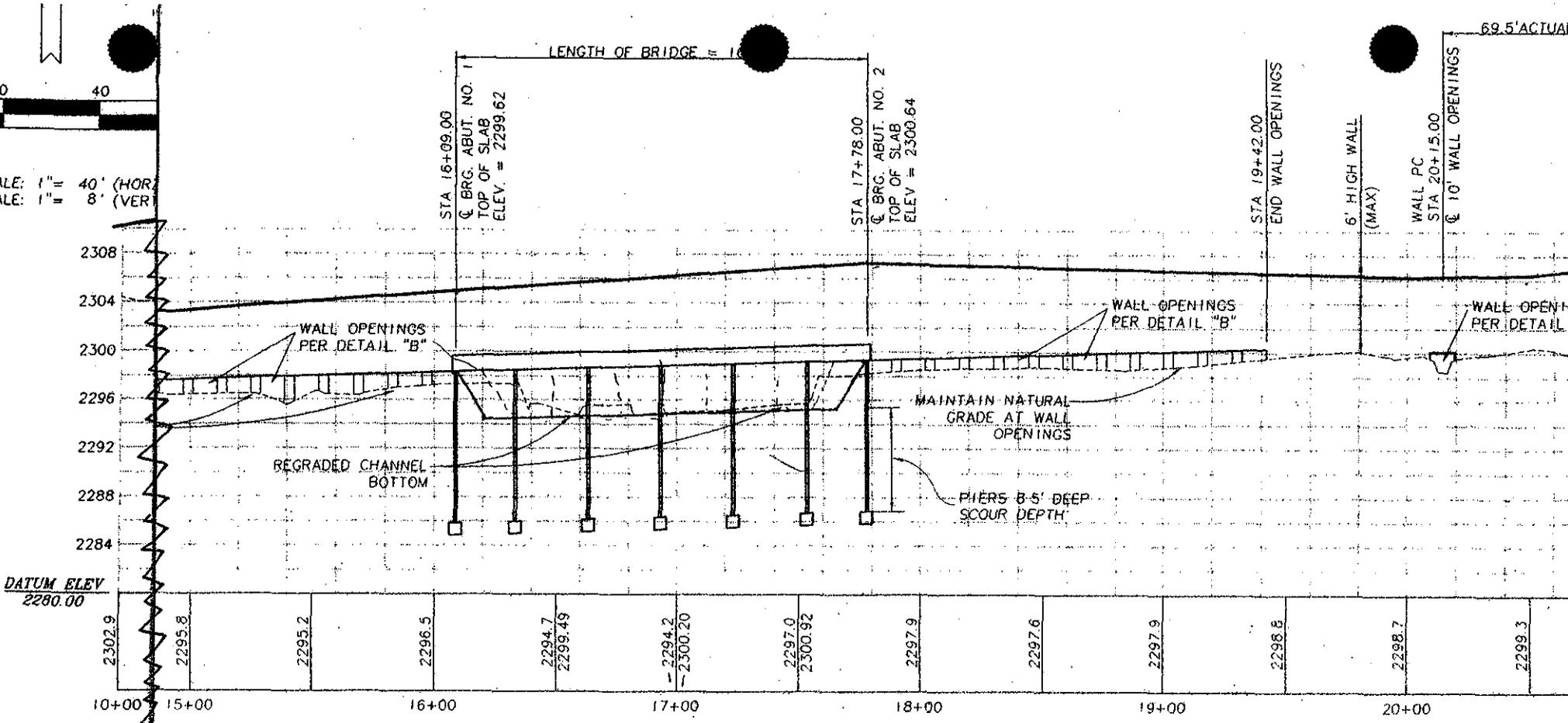
8712 EAST VISTA BONITA  
SCOTTSDALE, ARIZONA 85255 • (602) 585-6013  
EMAIL: pinn\_eng@ix.netcom.com FAX (602) 585-1717

Two working days before you dig  
CALL FOR THE BLUE STAKES  
**263-1100**  
Blue Stake Center  
CALL COLLECT

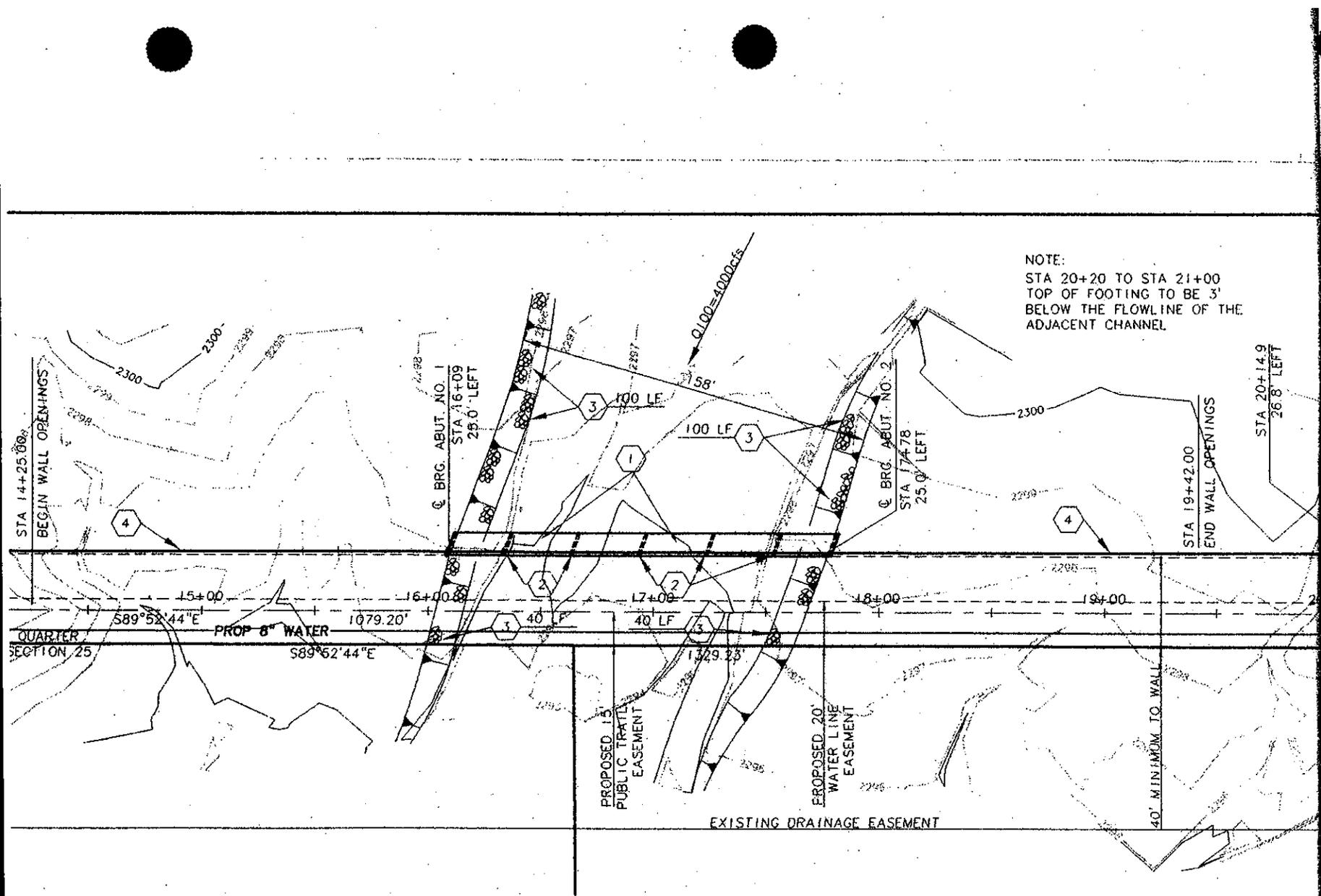




SCALE: 1" = 40' (HOR)  
SCALE: 1" = 8' (VER)



REVISIONS:		<h1>WALL F</h1> <h2>NE 1/</h2>
DESIGN	DRAW	
WC	JR	



NOTE:  
 STA 20+20 TO STA 21+00  
 TOP OF FOOTING TO BE 3'  
 BELOW THE FLOWLINE OF THE  
 ADJACENT CHANNEL

STA 14+25.00  
 BEGIN WALL OPENINGS

Q BRG. ABUT. NO. 1  
 STA 16+09  
 25.0' LEFT

Q BRG. ABUT. NO. 2  
 STA 17+78  
 25.0' LEFT

STA 19+42.00  
 END WALL OPENINGS

STA 20+14.9  
 26.8' LEFT

QUARTER SECTION 25  
 15+00  
 89°52'44"E  
 PROP 8" WATER  
 1079.20'  
 89°52'44"E

PROPOSED 15'  
 PUBLIC TRAIL  
 EASEMENT

PROPOSED 20'  
 WATER LINE  
 EASEMENT

EXISTING DRAINAGE EASEMENT

40' MINIMUM TO WALL

Q100=4000-15  
 58'

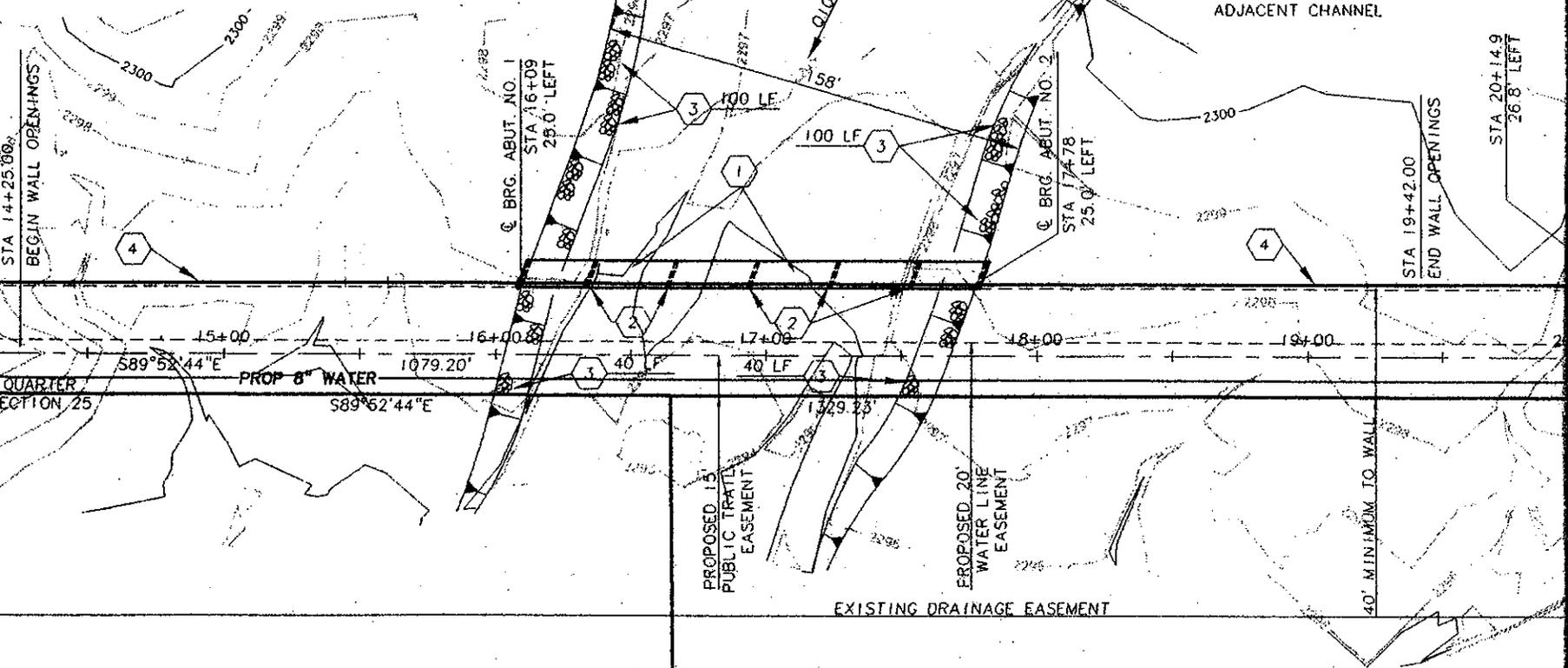
100 LF

100 LF

40 LF

40 LF

1329.23'



## **C.2 SURVEY FIELD NOTES**

*City of Scottsdale Survey Information*

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## Land Survey System Manual Horizontal and Vertical Datum

Published by Land Survey Unit, Inspection Services Division,  
and the Community Development Department.  
Revised: 11/3/98

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- [Horizontal Control System](#)
- [City of Scottsdale - Prime Network](#)
- [Vertical Control System](#)
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- [Abbreviations](#)
- [Data Column Explanation](#)

## For Use By:

Geographic Information System  
Land Surveyors  
Civil Engineers  
Architects  
Land Developers

## Datum Search

### **Station Numbering System** [top](#)

The City of Scottsdale Land Survey Unit has elected to utilize the GPS station numbering system established by Hunsaker and Associates and described in their report of 1990. A station number has four(4) significant digits that indicate the Township and Range, Section number and the particular corner of the section.

There are a few rules regarding the station numbering system and are explained as follows:

The first digit of the station represents the Township code.

The middle two digits represent the Section number with single digit Section numbers being preceded by a significant Zero.

The fourth digit represents a Section corner code. When corner is common to two Townships or Ranges, use code for Township to North and Range to East.

Corners unique to one Section, yet not in the Northeast quarter, use corner codes 5 through 9 (see Corner Code Table).

Township Codes	Corner Codes
T. 6 N., R. 5 E. = 0	1 = NORTH
T. 5 N., R. 4 E. = 1	2 = NORTHEAST
T. 4 N., R. 4 E. = 2	3 = EAST
T. 3 N., R. 4 E. = 3	4 = CENTER
T. 2 N., R. 4 E. = 4	5 = SOUTHEAST
T. 1 N., R. 4 E. = 5	6 = SOUTH
T. 5 N., R. 5 E. = 6	7 = SOUTHWEST
T. 4 N., R. 5 E. = 7	8 = WEST
T. 3 N., R. 5 E. = 8	9 = NORTHWEST
T. 3 N., R. 6 E. = 9	

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### The Horizontal Control System [top](#)

The basis of the horizontal control system for the City of Scottsdale is the Land Survey performed by Hunsaker and Associates (H&A) as published on January 17, 1991. H&A values were achieved through the use of the Global Positioning System (GPS). H&A data in their report included latitude and longitude values along with respective state plane coordinate values.

The City's Land Survey Unit converted the H&A state plane coordinate values into a modified coordinate system for the purpose of establishing a horizontal basis for the City's Geographic Information System (GIS). The method used in creating the modified coordinate system is unique but produced values compatible with the varying surface of the earth. The modified coordinate system will be hereinafter referred to as the "City Grid".

Station 7192 of the H&A report is the initial point of the City Grid. Station 7192 was also a primary control station of the H&A network. The state plane coordinate of this station has the same numerical value as the City Grid bearing the same station number. All other state plane values will be different when compared to City Grid values. The bearing and distance value determined by inverting between any two City Grid coordinates will be equal to actual field measurements on the surface. Station 7192 is a 1919 Government Land Office (GLO) brass cap on a 2 inch iron pipe 0.88 feet above the surface representing the Northeast corner of Section Nineteen (19), Township Four (4) North, Range Five(5) East of the Gila and Salt River Meridian, Maricopa County, Arizona, Latitude 33° 40' 01.02932" North, Longitude 111° 52' 26.82154" West and being also the intersection of Deer Valley Road and 96th Street.

A scale factor of 0.999801686 (ASF) was determined as the common scale factor. The common scale factor represents the average of all H&A station scale factors for stations within the city. The common scale factor was applied to each state plane coordinate station inverted from the initial point. This method yielded reasonable accuracy when comparing any station to station dimension for surface values.

The GIS has as its origin the City Grid as established through the above described process. The City Grid coordinates are a part of this document and are to be used when doing work within the City of Scottsdale having to do with land measurement and when data is presented to the city for its consideration.

Example:

COS ground distance = ASP Grid Distance      ASF

5000.992 = 5000.000      999801686

To ASP Distance = COS ground distance x ASF

5000.000 = 5000.992 x 0.999801686

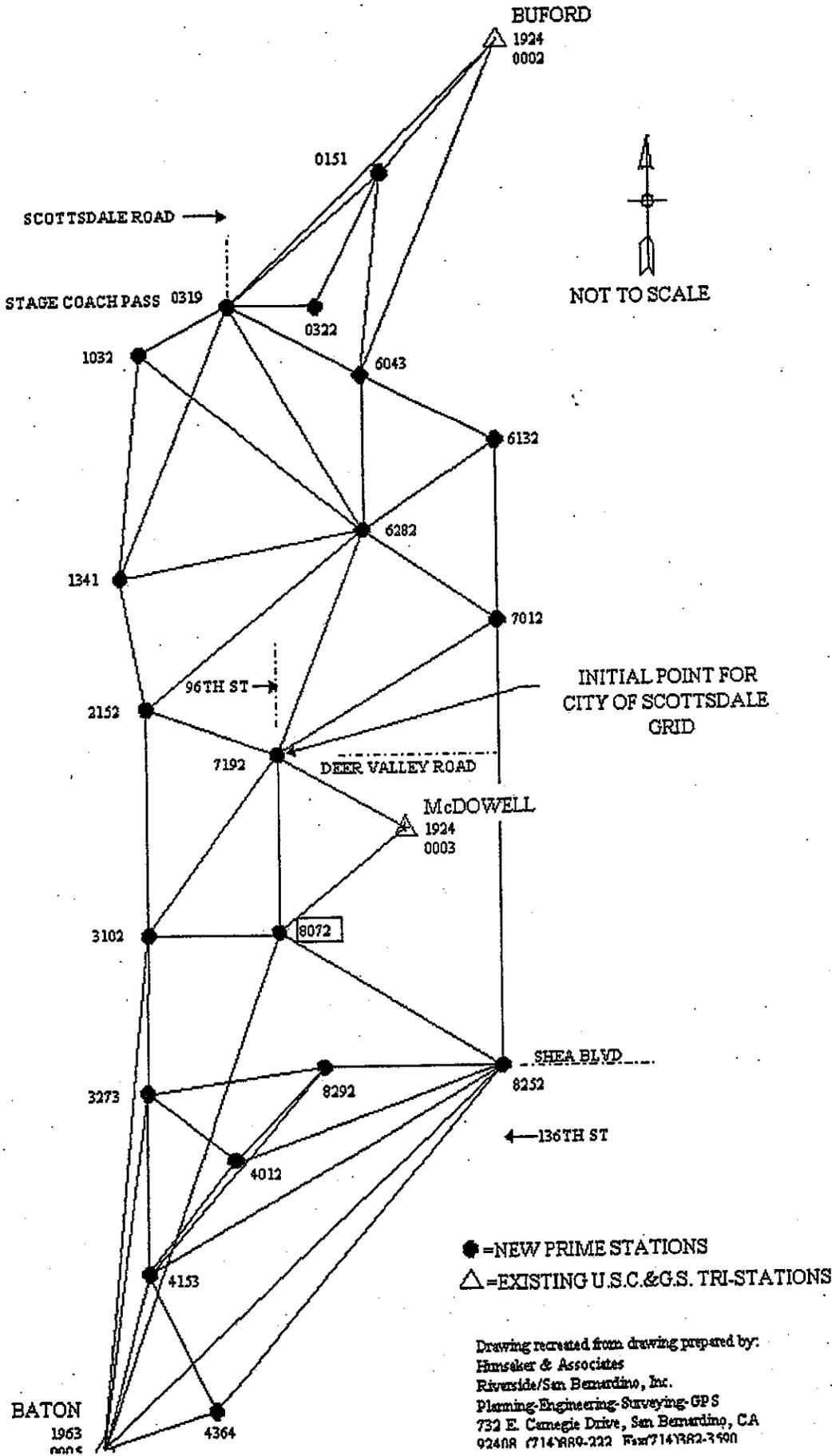
ASP refers to Arizona State Plane.

COS refers to City of Scottsdale.

ASF refers to Average Scale Factor for COS.

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**City of Scottsdale Prime Network** [top](#)



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### ***The Vertical Control System*** top

The prime benchmark used for the purpose of establishing a vertical network for the city is NGS mark "U 365" having a NAVD 88 elevation of 1449.708 feet (COS NGVD29 elevation of 1447.935 feet). The orthometric height was determined by differential leveling and adjusted by NGS in June, 1991.

Mark "U 365" is a Bench Mark Disk set by Coast and Geodetic Survey in 1967 and stamped "U 365 1967". Set in rock outcrop and flush with the ground. Horizontal coordinates at an accuracy of +/- 6 seconds are Latitude = 33 31 23 N and Longitude = 111 58 11 West.

Land Survey personnel have performed many leveling circuits throughout the city to fortify a consistent system. The prime equipment used in the leveling process was a Wild NA2002 electronic level utilizing a bar coded leveling rod. Distance balanced readings were observed and recorded electronically as well as noted in a hardbound fieldbook.

Elevations published herein are those that have been verified in the leveling process. Monuments with elevation values have actually been observed in the field by city personnel and are described on pages 14 through 45 in the Data Table section of this manual. It is requested that any person occupying a City of Scottsdale horizontal and/or vertical point/monument, and who's measurements differ in description and/or value, to immediately notify the Land Survey Unit to report their findings. It is the desire of the Land Survey Unit to correct and update this manual whenever discrepancies are found or reported by internal or external sources. City of Scottsdale Land Survey Unit phone number (480) 312-5782.

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### ***Metrification*** top

International System of Units, or simply SI, from the French name Le Syst International d'Unit The name metric comes from the fact that one of the base units of this system is the metre. The metric system was introduced in France in year 1790. In 1866 the United States Congress proclaimed the metric system to be legal in the United States. Metric standards were defined by an international treaty. The United States signed the treaty in 1875, and Canada, in 1907. The METRIC system will be our future system of measurement. Included with the Data Tables herein you will find along with the "X", "Y", "Z" values in the English system, the corresponding metric value.

Although the City of Scottsdale does not presently require submittals in metric, we must keep in mind the general direction of governmental agencies throughout the country adopting the metric system. Measurements made on the surface of the earth for Federal, State and County highway construction projects must conform to the metric system. This City may someday, mandate the use of metric, if only to keep in step with movement of conversion.

The Arizona Department of Transportation (ADOT) Intermodal Transportation Division has published the METRIFICATION GUIDELINE (3rd edition), January, 1996, to provide assistance in the usage of Metric. The ADOT Office of Metrication have a training manual for the Basic Metric System available to the public.

***SI units - Conversion to metres: (\* DENOTES VALUE EXACT)***

Foot multiply by  $3.048 \times 10^{-1}$ \*

Mile (International) multiply by  $1.609\,344 \times 10^{-3}$ \*

Mile, Nautical (Int'l & US) multiply by  $1.852 \times 10^{-3}$ \*

Rod (US Survey) multiply by 5.029 \*

Yard multiply by  $9.144 \times 10^{-1}$ \*

Example:

Meters = Horizontal distance (SI units) x 0.3048

100.00 (meters) = 328.084 (SI feet) x 0.3048

SI feet = Meters 0.3048

328.084 (SI feet) = 100.00 (meters) 3048

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### ***Minimum Standards for Land Boundary Surveys*** [top](#)

The Code and Rules of the Arizona State Board of Technical Registration effective May 1, 1995 state the "Minimum Standards for Arizona Land Boundary Surveys". It is the responsibility of the Professional Land Surveyor to adhere to good and accepted practices when providing land survey services in the City of Scottsdale.

Land boundary surveys and legal descriptions are prerequisite to the division of any land parcel. Observance of these minimum standards should be considered whenever the work is subject to the City review. The minimum standards section of the Code and Rules is reproduced hereon for the benefit of the public.

### ***Minimum standards for Arizona Land Boundary Surveys***

The following statements of standards for surveying practice are promulgated as minimum standards governing the creation, establishment, retracement or resurvey of land boundaries within the State of Arizona. Applicable statutes and regulation are to be observed in addition to these minimum standards of practice.

Responsibility for adherence to the minimum standards rests with the registered land surveyor in responsible charge of work.

### ***Procedure***

- The land surveyor must make a diligent search for pertinent record documents. Copies of applicable deeds, maps, title report or title opinions may be necessary. If the subject property is referenced to or described as an aliquot part of the U.S. Public Land Survey System, or a fraction thereof, relevant U.S. Government plats, field notes, appropriate Manual of Surveying Instructions and special instructions should additionally be consulted, when appropriate.
- The land surveyor must thoroughly examine the information and data required.

- The land surveyor must diligently search for and identify monuments and other physical evidence which could affect the location of the subject property's boundaries. A reasonable attempt must be made to recover controlling monuments for references thereto. The positions of controlling monuments which have been obliterated should be recovered or reestablished using the best available evidence. Physical evidence of apparent use and possible rights in the subject property by others should be evaluated. Lines of possession and occupation must be located, described, and where practical, an age determination made.
- The land surveyor must conduct field measurements necessary to adequately relate the position of all apparent evidence pertinent to the boundaries of the property. All findings resulting from the field investigation must be accurately and completely recorded and retained permanently.
- The land surveyor must make computations to verify the correctness of field data acquired and to confirm that measurement results are within acceptable tolerance limitations. Computations must be made to determine the relative positions of all found evidence.
- In the event of a material discrepancy or disagreement with the measurements or monumented corner positions of another land surveyor, the land surveyor must make a reasonable attempt to contact the other land surveyor and attempt to resolve the disagreement.
- The land surveyor must make an analysis, reach a final conclusion and set monuments so as to represent the location consistent with the best evidence available of corner positions and boundary lines. The land surveyor must advise the client of discrepancies which raise doubts concerning the boundary lines of the subject property and he should provide the client with a copy of the survey report.
- All monuments, whether set or found, must be described and specifically identified as set or found, whenever shown on maps or referred to in documents prepared by the land surveyor. Descriptions of monuments must be sufficient in detail to readily facilitate future recovery and to enable positive identification, including map references. Monuments required by this section shall be metal, magnetically detectable, not less than one-half inch in diameter, not less than sixteen inches in length, and shall bear the land surveyor's registration number affixed, except however, the monument for a corner which falls upon solid rock or concrete shall be metal, magnetically detectable, firmly embedded, and stamped with the land surveyor's registration number.
- The land surveyor shall prepare a scaled drawing of the results of survey for presentation to the client unless adequate existing information is available. In cases where a certification is required by state or local ordinance, the land surveyor must certify only those matters personally known to be absolutely true and must declare all other items only to the limit of the land surveyor's knowledge and belief.
- The land surveyor must prepare and cause to be recorded corner records and record of survey documents if a material discrepancy exists in angular and/or lineal calls as compared with new survey values as defined under Measurement Specifications paragraph 2 of these standards of practice

### ***Legal Descriptions***

When a land surveyor is called upon to prepare a legal description of real property, the land surveyor must include the following:

- Sufficient caption, body and, where applicable, qualifying clauses.

- Clearly stated relationship between the real property being described and the survey control or basis of unique location.
- Clearly stated basis of bearings or language which otherwise makes definite the method of direction and orientation for the lines of the subject property being described and the survey control related thereto when applicable.
- Full and complete citations to maps, plats, documents, and other matters of record, fact or pertinence, which are intended to be incorporated into and made a part of the legal description by reference thereto.
- When called out, complete and detailed descriptions of physical monuments, both natural and artificial, such as to facilitate future recovery and to enable positive identification.
- When appropriate, incorporated either directly or by citation, sufficient data to enable a check of mathematical closure for the subject property being described.
- The land surveyor's validated Arizona seal.

### ***Measurement Specifications***

Measurements for the performance of land surveys as defined in A.R.S. \*32-101(B)(19)(a)(b) & (c) (Land Surveying Practice shall comply with the following required.

- In order to properly apply the specifications herein to achieve the required accuracy the land surveyor must first classify the survey relative to the "Class of Survey" listed in Table 1. The land surveyor shall then apply at least the minimum specifications as listed in the appropriate column in Table 2. An error of measurement which is less than 0.03 feet between sequential monuments shall not by itself constitute a material discrepancy in any class of survey.
- The significance of a discrepancy between the angular and lineal calls of record versus that resulting from the use of these specifications may only be determined from an analysis predicted on the law of random error propagation. If such a material discrepancy is found to exist, appropriate action as outlined in these standards of practice shall be applied by the land surveyor.

TABLE NO. 1

#### **Class A. Urban Surveys:**

Surveys of land lying within or adjoining a city or town. This would also include the surveys of commercial and industrial properties, condominiums, townhouses, apartments, and other multi-unit developments, regardless of geographic location.

#### **Class B. Suburban Surveys:**

Surveys of land lying outside urban areas. This land is used almost exclusively for single family residential use or residential subdivisions.

#### **Class C. Rural Surveys:**

Surveys of land such as farms and other undeveloped land outside the suburban areas which may have a potential for future development.

#### **Class D. Mountain and Marshland Surveys:**

Surveys of land which normally lies in remote areas with difficult terrain and which usually has limited potential for development.

TABLES 1 AND 2 Extracted from "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys as adopted by American Land Title Association and American Congress on Surveying & Mapping," 1986.

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### **Abbreviations** top

ADD	ADDITIONAL
ADOT	ARIZONA DEPARTMENT OF TRANSPORTATION
AHD	ARIZONA HIGHWAY DEPARTMENT
AZ	ARIZONA
BLM	BUREAU OF LAND MANAGEMENT
B.O.R.	BUREAU OF RECLAMATION
B/C	BACK OF CURB
BC	BRASS CAP
BLK	BLOCK
BLVD	BOULEVARD
C/L	CENTER LINE OF ROAD
CHNG	CHANGED INFORMATION CODE
CONC	CONCRETE
COP	CITY OF PHOENIX
COR	CORNER
COS	CITY OF SCOTTSDALE
COT	CITY OF TEMPE
CP	COTTON PICKER
D.M.	DESERT MOUNTAIN
DEL	DELETED
DN	DOWN
DR	DRIVE
E	EAST
E.P.	EDGE OF PAVEMENT
E.S.	EAST SIDE ( PREFIX DETERMINES POLAR DIRECTION)
FG	FINISH GRADE
FL	FLUSH
FNC	FENCE
G.L.O.	GENERAL LAND OFFICE SURVEY
HH	HANDHOLE
HUNS,HUNSKR,H&AMPA	HUNSAKER & ASSOC. DESCRIPTION
HWY	HIGHWAY
ID/OD	INSIDE DIAMETER/OUTSIDE DIAMETER
INTER/INT	INTERSECTION

IP	IRON PIPE
M.C.	MARICOPA COUNTY
MCED	MARICOPA COUNTY ENGINEERING DEPARTMENT
MCHD	MARICOPA COUNTY HIGHWAY DEPARTMENT
N	NORTH
NG	NATURAL GROUND/GRADE
NS	NOT SHOT-NO ELEVATION
PH	POT HOLE
PK	PARKER-KALON NAIL
PL	PLACE
PV	PARADISE VALLEY
PVMT/PAVT	PAVEMENT
R/B	REBAR
RD	ROAD
REV	REVISED
RR	RAIL ROAD
S	SOUTH
SEC	SECTION
SRPMIC	SALT RIVER PIMA MARICOPA INDIAN COMMUNITY
ST	STREET
STA	STATION
U.S.C&AMPG.S.	UNITED STATES COAST & GEODETIC SURVEY
W	WEST
W/	WITH
WC	WITNESS CORNER
WY	WAY

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### **Data Column Explanation** [top](#)

- 1) STA.NO. IDENTIFICATION ASSIGNED BY H&A
- 2) EAST/WEST ALIGN STREET HEADING EAST/WEST
- 3) NORTH/SOUTH ALIGN STREET HEADING NORTH/SOUTH
- 4) MONUMENT DESC MONUMENT MARKINGS OR PHYSICAL LOCATION
- 5) FOUND BY POSITION DETERMINED/FOUND OR RECORDED FOR COS.
- 6) SEC SECTION NUMBER AS DEFINED BY BLM
- 7) COR CORNER POSITION OF SECTION AS DEFINED BY BLM <sup>1</sup>
- 8) TN/RN TOWNSHIP "NORTH or SOUTH" AND RANGE "EAST or WEST" AS DEFINED BY BLM <sup>1</sup>

9) ENGLISH (CITY GRID) IN INTERNATIONAL FEET

- A) NORTHING "Y" COORDINATES (LATITUDES)
- B) EASTING "X" COORDINATES (DEPARTURES)
- C) NEW 29 "Z" COORDINATES (VERTICAL) VALUES NGVD29
- D) NAVD88 "Z" COORDINATES (VERTICAL) VALUES NAVD88

10) METRIC (CITY GRID) IN SI METER UNITS

- A) NORTHING "Y" COORDINATES (LATITUDES)
- B) EASTING "X" COORDINATES (DEPARTURES)
- C) NEW 29 "Z" COORDINATES (VERTICAL) PER NGVD29
- D) NAVD88 "Z" COORDINATES (VERTICAL) PER NAVD88

11) COS DATE DATE CITY FIELD SURVEY PERFORMED

12) CHNG FOR FUTURE REVISION

13) OLD 29 PREVIOUSLY PUBLISHED CITY VERTICAL DATUM

14) OLD DESC PREVIOUSLY PUBLISHED DESCRIPTIONS (CHANGED DUE TO CONSTRUCTION, DISTURBANCE OR ACTUAL REPLACEMENT OF MONUMENT)

15) STA.NO. IDENTIFICATION ASSIGNED BY H&A

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**Acknowledgments** top

This Manual was prepared for the benefit of those doing work in the City of Scottsdale pertaining to ground surface measurement. The staff of Inspection Service's Land Survey Unit compiled the data found within the Manual. In recognition of the efforts by the Land Survey group to produce this document, the complete staff is listed below:

Land Survey Staff

- Ed Aplin<sup>1</sup>
- Brian Benedict
- Ron Dry
- Jeff Geller
- Helmuth Hack
- David Janssens
- Russell Kenney<sup>1</sup>
- Jim Miller
- Todd Pankey
- Bill Ruiz
- Victor Story
- Ryan Sturges<sup>1</sup>
- Scott Toll
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Inspection Services Director: John Smetana  
Community Development Administrator: John Faramelli

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GPS Point 1362  
 E/W Street Align DYNAMITE BOULEVARD  
 N/S Street Align PIMA ROAD (88TH STREET)  
 Description COS BC FLUSH  
 Tn/Rn T5N/R4E Fd By COS  
 Sec 36 COS Date 6/19/96  
 Cor NE  
 Northing (f) 997233.40246 Northing (m) 303956.741069808  
 Easting (f) 707761.53043 Easting (m) 215725.714475064  
 NAVD '88 Elev (f) 2276.32 NAVD '88 Elev (m) 693.822336

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GPS Point 1253

E/W Street Align VIA DONA ROAD

N/S Street Align PIMA ROAD

Description ¾" IRON PIPE, E. SIDE PIMA.

Tn/Rn	T5N/R4E	Fd By	COS
Sec	25	COS Date	6/10/96
Cor	E		
Northing (f)	999864.53425	Northing (m)	304758.7100394
Easting (f)	707775.21814	Easting (m)	215729.886489072
NAVD '88 Elev (f)	2306.391	NAVD '88 Elev (m)	702.9879768

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GPS Point 6192

E/W Street Align LONE MOUNTAIN ROAD

N/S Street Align 96TH STREET

Description GLO BC, 1919, UP 1.2'

Tn/Rn T5N/R5E Fd By COS

Sec 19 COS Date

Cor NE

Northing (f) 1007797.99257 Northing (m) 307176.828135336

Easting (f) 713029.07105 Easting (m) 217331.26085604

NAVD '88 Elev (f) NAVD '88 Elev (m)

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GPS Point 6183

E/W Street ASHLER HILLS DRIVE  
Align

N/S Street Align 96TH STREET

Description GLO BC, 1919, UP 0.8'.

Tn/Rn T5N/R5E

Fd By

COS

Sec 18

COS Date

Cor E

Northing (f) 1010439.17735

Northing (m)

307981.86125628

Easting (f) 713027.44873

Easting (m)

217330.766372904

NAVD '88 Elev  
(f)NAVD '88 Elev  
(m)[Top of Page](#)Was this page useful to you? [Yes](#) | [No](#)

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GPS Point 6172

E/W Street Align DOVE VALLEY ROAD

N/S Street Align 104TH STREET

Description GLO BC, 1919, N. OF FENCE LINE, UP 1.2'.

Tn/Rn T5N/R5E Fd By COS

Sec 17 COS Date

Cor NE

Northing (f) 1013091.71039 Northing (m) 308790.353326872

Easting (f) 718306.57666 Easting (m) 218939.844565968

NAVD '88 Elev (f) NAVD '88 Elev (m)

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GPS Point 6091

E/W Street Align CAREFREE HIGHWAY

N/S Street Align 108TH STREET

Description GLO BC, 1919, E. OF POWER LINE ROAD, UP 1.2'.

Tn/Rn T5N/R5E Fd By COS

Sec 9 COS Date

Cor N

Northing (f) 1018383.22577 Northing (m) 310403.207214696

Easting (f) 720940.19294 Easting (m) 219742.570808112

NAVD '88 Elev (f) NAVD '88 Elev (m)

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GPS Point 6043

E/W Street Align HAWKNEST ROAD

N/S Street Align 112TH STREET

Description GLO BC, 1919, W. OF DIRT ROAD, UP 1.08'.

Tn/Rn T5N/R5E Fd By COS

Sec 4 COS Date

Cor E

Northing (f) 1021029.92464 Northing (m) 311209.921030272

Easting (f) 723568.05908 Easting (m) 220543.544407584

NAVD '88 Elev (f) NAVD '88 Elev (m)

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GPS Point 6042

E/W Street Align STAGE COACH PASS

N/S Street Align 112TH STREET

Description GLO BC, 1919, ALONG E-W FENCE LINE UNDER POWER LINE, UP 1.2'.

Tn/Rn	T5N/R5E	Fd By	COS
Sec	4	COS Date	
Cor	NE		
Northing (f)	1023671.73555	Northing (m)	312015.14499564
Easting (f)	723565.58559	Easting (m)	220542.790487832
NAVD '88 Elev (f)		NAVD '88 Elev (m)	

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GPS Point 6163

E/W Street  
Align ASHLER HILLS DRIVE

N/S Street Align 112TH STREET

Description GLO BC, 1919, UP 1.35'.

Tn/Rn T5N/R5E Fd By COS

Sec 16 COS Date

Cor E

Northing (f) 1010463.28113 Northing (m) 307989.208088424

Easting (f) 723574.93144 Easting (m) 220545.639102912

NAVD '88 Elev (f) NAVD '88 Elev (m)

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GPS Point 6173

E/W Street Align ASHLER HILLS DRIVE

N/S Street Align 104TH STREET

Description GLO BC, 1919, UP 0.8'

Tn/Rn T5N/R5E Fd By COS

Sec 17 COS Date

Cor E

Northing (f) 1010455.5666 Northing (m) 307986.85669968

Easting (f) 718308.04195 Easting (m) 218940.29118636

NAVD '88 Elev (f) NAVD '88 Elev (m)

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GPS Point 6041

E/W Street Align STAGE COACH PASS

N/S Street Align 108TH STREET

Description GLO BC, 1919, ALONG E-W FENCE LINE, UP 1.1'.

Tn/Rn	T5N/R5E	Fd By	COS
Sec	4	COS Date	
Cor	N		
Northing (f)	1023669.89619	Northing (m)	312014.584358712
Easting (f)	720921.88131	Easting (m)	219736.989423288
NAVD '88 Elev (f)		NAVD '88 Elev (m)	

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GPS Point 6301

E/W Street  
Align DIXELETA DRIVE

N/S Street Align 92ND STREET

Description GLO BC, 1919, @ END OF FENCE LINE, UP 0.9'

Tn/Rn T5N/R5E Fd By COS

Sec 30 COS Date

Cor N

Northing (f) 1002520.96006 Northing (m) 305568.388626288

Easting (f) 710395.32274 Easting (m) 216528.494371152

NAVD '88 Elev (f) NAVD '88 Elev (m)

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Richard Harris  
Flood Control District of Maricopa County

Aug. 30, 2001

Re: Rawhide Wash ERM's

Mr. Harris,  
Following are the results of the survey of ERMS 12,14,23, and 24. The data was gathered by GPS RTK method. The points were occupied on two consecutive days. The first day occupations were in the morning, the second day occupations were in the afternoon. Accuracy grades for both horizontal and vertical values would be third order.

ERM #	Northing	Easting	Elevation NAVD '88	Day
12	1013091.95	718306.38	2614.59	1
	1013091.94	718306.43	2614.90	2
	<b>Mean</b> 1013091.94	<b>718306.41</b>	<b>2614.74</b>	
14	1018383.32	720940.50	2730.59	1
	1018383.13	720940.56	2730.38	2
	<b>Mean</b> 1018383.22	<b>720940.53</b>	<b>2730.48</b>	
23	1010463.02	723574.81	2715.57	1
	1010463.15	723574.77	2715.29	2
	<b>Mean</b> 1010463.09	<b>723574.79</b>	<b>2715.43</b>	
24	1010455.75	718307.92	2619.18	1
	1010455.86	718308.03	2619.31	2
	<b>Mean</b> 1010455.80	<b>718307.97</b>	<b>2619.25</b>	

  
Ron Dry RLS  
Land Survey Coordinator  
City of Scottsdale

