

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
8005.980	2623.500	1.789	2625.289	77.00	20.49	6.52	2631.81	.00	2.46	2.26	2.500	.000	.00	1 .0
6.462	.0890					.0462	.30	1.79	2.80	1.44	.013	.00	.00	PIPE
8012.442	2624.075	1.831	2625.906	77.00	19.98	6.20	2632.11	.00	2.46	2.21	2.500	.000	.00	1 .0
10.250	.0890					.0425	.44	1.83	2.67	1.44	.013	.00	.00	PIPE
8022.692	2624.988	1.918	2626.906	77.00	19.05	5.64	2632.54	.00	2.46	2.11	2.500	.000	.00	1 .0
8.208	.0890					.0383	.31	1.92	2.43	1.44	.013	.00	.00	PIPE
8030.899	2625.718	2.014	2627.732	77.00	18.16	5.12	2632.86	.00	2.46	1.98	2.500	.000	.00	1 .0
6.559	.0890					.0348	.23	2.01	2.19	1.44	.013	.00	.00	PIPE
8037.458	2626.302	2.124	2628.426	77.00	17.32	4.66	2633.08	.00	2.46	1.79	2.500	.000	.00	1 .0
5.117	.0890					.0321	.16	2.12	1.93	1.44	.013	.00	.00	PIPE
8042.575	2626.758	2.256	2629.014	77.00	16.51	4.23	2633.25	.00	2.46	1.48	2.500	.000	.00	1 .0
3.175	.0890					.0314	.10	2.26	1.64	1.44	.013	.00	.00	PIPE
8045.750	2627.040	2.459	2629.499	77.00	15.74	3.85	2633.35	.00	2.46	.63	2.500	.000	.00	1 .0
1.089	.0200					.0326	.04	2.46	1.00	2.50	.013	.00	.00	PIPE
8046.839	2627.062	2.500	2629.562	77.00	15.69	3.82	2633.38	.00	2.46	.00	2.500	.000	.00	1 .0
3.911	.0200					.0343	.13	2.50	.00	2.50	.013	.00	.00	PIPE
8050.750	2627.140	2.560	2629.700	77.00	15.69	3.82	2633.52	.00	2.46	.00	2.500	.000	.00	1 .0
55.690	.0110					.0352	1.96	2.56	.00	2.50	.013	.00	.00	PIPE

WATER SURFACE PROFILE LISTING
Ranch-Fort Apache Storm Drain Project
Echelon Lateral
FKR 06/13/2012, Checked By:JSD 07/11/2012

Date: 7-11-2012 Time: 8: 1:45

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
8106.440	2627.750	3.912	2631.662	77.00	15.69	3.82	2635.48	.00	2.46	.00	2.500	.000	.00	1 .0
JUNCT STR	.0200					.0298	.15	3.91	.00		.013	.00	.00	PIPE
8111.440	2627.850	6.234	2634.084	64.00	13.04	2.64	2636.72	.00	2.42	.00	2.500	.000	.00	1 .0
70.130	.0552					.0243	1.71	6.23	.00	1.49	.013	.00	.00	PIPE
8181.570	2631.720	4.072	2635.792	64.00	13.04	2.64	2638.43	.00	2.42	.00	2.500	.000	.00	1 .0
JUNCT STR	.0200					.0205	.10	4.07	.00		.013	.00	.00	PIPE
8186.570	2631.820	5.611	2637.431	53.00	10.80	1.81	2639.24	.00	2.33	.00	2.500	.000	.00	1 .0
72.357	.0411					.0167	1.21	5.61	.00	1.45	.013	.00	.00	PIPE
8258.927	2634.792	3.847	2638.639	53.00	10.80	1.81	2640.45	.00	2.33	.00	2.500	.000	.00	1 .0
HYDRAULIC JUMP														
8258.927	2634.792	1.492	2636.284	53.00	17.34	4.67	2640.96	.00	2.33	2.45	2.500	.000	.00	1 .0
44.408	.0411					.0368	1.64	1.49	2.74	1.45	.013	.00	.00	PIPE
8303.335	2636.615	1.512	2638.128	53.00	17.07	4.52	2642.65	.00	2.33	2.44	2.500	.000	.00	1 .0
49.563	.0411					.0340	1.69	1.51	2.67	1.45	.013	.00	.00	PIPE
8352.898	2638.651	1.574	2640.225	53.00	16.27	4.11	2644.34	.00	2.33	2.41	2.500	.000	.00	1 .0
28.234	.0411					.0302	.85	1.57	2.47	1.45	.013	.00	.00	PIPE
8381.133	2639.811	1.640	2641.451	53.00	15.52	3.74	2645.19	.00	2.33	2.38	2.500	.000	.00	1 .0
18.848	.0411					.0268	.51	1.64	2.28	1.45	.013	.00	.00	PIPE

WATER SURFACE PROFILE LISTING
Ranch-Fort Apache Storm Drain Project
Echelon Lateral
FKR 06/13/2012, Checked By: JSD 07/11/2012

Date: 7-11-2012 Time: 8: 1:45

*****															*****	
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip		
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****		
8399.980	2640.585	1.711	2642.296	53.00	14.79	3.40	2645.70	.00	2.33	2.32	2.500	.000	.00	1 .0		
13.498	.0411	-	-	-	-	.0239	.32	1.71	2.10	1.45	.013	.00	.00	PIPE		
8413.479	2641.139	1.788	2642.927	53.00	14.11	3.09	2646.02	.00	2.33	2.26	2.500	.000	.00	1 .0		
10.037	.0411	-	-	-	-	.0214	.21	1.79	1.93	1.45	.013	.00	.00	PIPE		
8423.516	2641.552	1.871	2643.423	53.00	13.45	2.81	2646.23	.00	2.33	2.17	2.500	.000	.00	1 .0		
7.506	.0411	-	-	-	-	.0192	.14	1.87	1.76	1.45	.013	.00	.00	PIPE		
8431.021	2641.860	1.962	2643.822	53.00	12.82	2.55	2646.38	.00	2.33	2.05	2.500	.000	.00	1 .0		
5.522	.0411	-	-	-	-	.0173	.10	1.96	1.59	1.45	.013	.00	.00	PIPE		
8436.544	2642.087	2.063	2644.150	53.00	12.23	2.32	2646.47	.00	2.33	1.90	2.500	.000	.00	1 .0		
3.646	.0411	-	-	-	-	.0158	.06	2.06	1.43	1.45	.013	.00	.00	PIPE		
8440.189	2642.236	2.182	2644.418	53.00	11.66	2.11	2646.53	.00	2.33	1.67	2.500	.000	.00	1 .0		
1.551	.0411	-	-	-	-	.0148	.02	2.18	1.24	1.45	.013	.00	.00	PIPE		
8441.740	2642.300	2.334	2644.634	53.00	11.11	1.92	2646.55	.00	2.33	1.24	2.500	.000	.00	1 .0		
JUNCT STR	.0250	-	-	-	-	.0097	.04	2.33	1.00	-	.013	.00	.00	PIPE		
8445.740	2642.400	4.365	2646.765	29.00	9.23	1.32	2648.09	.00	1.85	.00	2.000	.000	.00	1 .0		
41.616	.0445	-	-	-	-	.0164	.68	4.37	.00	1.13	.013	.00	.00	PIPE		
8487.356	2644.251	3.197	2647.448	29.00	9.23	1.32	2648.77	.00	1.85	.00	2.000	.000	.00	1 .0		
HYDRAULIC JUMP																

Date: 7-11-2012 Time: 8: 1:45

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
8487.356	2644.251	1.126	2645.377	29.00	15.92	3.94	2649.31	.00	1.85	1.98	2.000	.000	.00	1 .0
85.245	.0445					.0445	3.79	1.13	2.93	1.13	.013	.00	.00	PIPE
8572.602	2648.042	1.126	2649.168	29.00	15.92	3.94	2653.10	.00	1.85	1.98	2.000	.000	.00	1 .0
121.129	.0445					.0442	5.35	1.13	2.93	1.13	.013	.00	.00	PIPE
8693.730	2653.430	1.130	2654.560	29.00	15.84	3.90	2658.46	.00	1.85	1.98	2.000	.000	.00	1 .0