EXHIBITS

Recommended Plan, Sheet 1

Channel Cost

ID	Excavated Volume (cy)	Unit Cost ($/cy)	Excavation Cost	Concrete Volume (cy)	Unit Cost ($/cy)	Concrete Cost	Utility Relocation Cost	Channel Length (ft)	Left Access Road Width (ft)	Right Access Road Width (ft)	6" ABC Access Road Unit Cost ($/sf)	Access Road Cost	Total Corridor Width-Channel+Access Rd (ft)	Existing Right-of-Way Width (ft.)	New Right-of-Way Width Required (ft.)	Landscape Unit Cost ($/sf)	Total Landscape Cost	Required Land Acquisition (Ac.)	Zoning	Land Acquisition Cost	Total Construction Cost	Channel Contingencies Cost	Total Construction, Land, Landscape, and Contingencies Costs
DROC01	58025	$6	$348,151	0	n/a	n/a	$0	2689.7	16	16	$0.65	$55,946	164.6	0	190	$1.80	$919,877	11.7	Res / Ag	$505,933	$404,096	121,229	**$1,951,135**
DROC02a	13170	$6	$79,017	0	n/a	n/a	$45,000	920.5	16	16	$0.65	$19,146	136.3	0	150	$1.80	$248,535	3.2	Res / Ag	$136,694	$143,164	42,949	**$571,342**
DROC02b	18794	$6	$112,762	0	n/a	n/a	$0	1559.8	16	16	$0.65	$32,444	131.2	0	150	$1.80	$421,146	5.4	Res / Ag	$231,630	$145,206	43,562	**$841,544**
DROC03	67699	$6	$406,195	0	n/a	n/a	$0	2501.3	16	16	$0.65	$52,027	195.0	0	220	$1.80	$990,515	12.6	Res / Ag	$544,783	$458,222	137,467	**$2,130,987**
DROC04	54819	$6	$328,913	0	n/a	n/a	$4,000	2176.8	16	16	$0.65	$45,277	182.7	0	210	$1.80	$822,830	10.5	Res / Ag	$452,557	$378,190	113,457	**$1,767,035**
DROC05a	15922	$6	$95,532	0	n/a	n/a	$26,000	1166	16	16	$0.65	$24,253	129.3	0	150	$1.80	$314,820	4.0	Res / Ag	$173,151	$145,785	43,735	**$677,491**
DROC05b	39016	$4	$156,063	0	n/a	n/a	$22,000	2857.2	16	16	$0.65	$59,430	129.3	0	150	$1.80	$771,444	9.8	Res / Ag	$424,294	$237,493	71,248	**$1,504,479**
DROC06a	44216	$6	$265,297	0	n/a	n/a	$51,000	2558	16	16	$0.65	$53,206	147.0	0	170	$1.80	$782,748	10.0	Res / Ag	$430,511	$369,504	110,851	**$1,693,614**
DROC06b	15243	$4	$60,973	2115	310	655692	$53,000	2664	16	16	$0.65	$55,411	56.0	0	70	$1.80	$220,579	4.3	Res / Ag	$184,615	$825,076	247,523	**$1,477,793**
DROC07	29980	$6	$179,879	0	n/a	n/a	$33,000	2482.4	16	16	$0.65	$51,634	122.7	0	140	$1.80	$625,565	8.0	Res / Ag	$344,061	$264,512	79,354	**$1,313,492**
99LTa	14863	$6	$89,177	0	n/a	n/a	$0	1572.9	16	16	$0.65	$32,716	110.7	0	130	$1.80	$368,059	4.7	Res / Ag	$202,432	$121,893	36,568	**$728,952**
99LTb	5266	$4	$21,064	0	n/a	n/a	$9,000	557.3	16	16	$0.65	$11,592	110.7	0	130	$1.80	$130,408	1.7	Res / Ag	$71,725	$41,656	12,497	**$256,286**
91LT	18114	$6	$108,686	0	n/a	n/a	$16,000	1105.6	16	16	$0.65	$22,996	151.2	0	170	$1.80	$338,314	4.3	Res / Ag	$186,072	$147,682	44,305	**$716,373**
47CH01a	40941	$4	$163,763	0	n/a	n/a	$0	1302.2	16	16	$0.65	$27,086	212.2	0	240	$1.80	$562,550	7.2	Res / Ag	$309,403	$190,849	57,255	**$1,120,056**
47CH01b	79473	$4	$317,893	0	n/a	n/a	$48,250	2527.8	16	16	$0.65	$52,578	212.2	0	240	$1.80	$1,092,010	13.9	Res / Ag	$600,605	$418,721	125,616	**$2,236,952**
47CH02	66919	$4	$267,677	0	n/a	n/a	$18,875	2476.2	16	16	$0.65	$51,505	189.3	0	210	$1.80	$936,004	11.9	Res / Ag	$514,802	$338,057	101,417	**$1,890,280**
47CH03	32163	$4	$128,651	3610	310	1119076	$0	2678	16	16	$0.65	$55,702	87.0	0	100	$1.80	$482,040	6.1	Res / Ag	$265,122	$1,303,429	391,029	**$2,441,620**
47CH04	21850	$4	$87,399	0	n/a	n/a	$130,000	1175.3	16	16	$0.65	$24,446	152.6	0	170	$1.80	$359,642	4.6	Res / Ag	$197,803	$241,845	72,553	**$871,843**

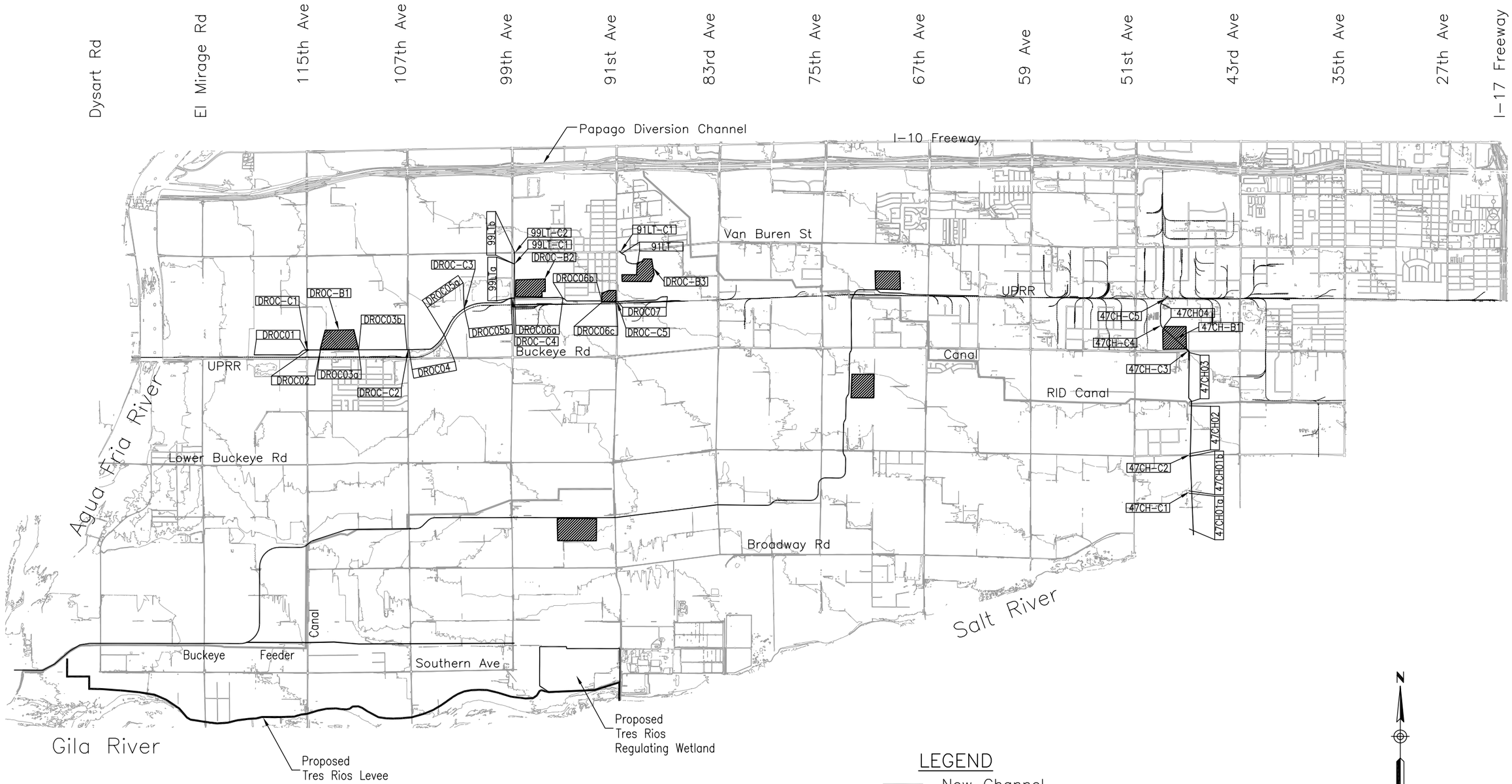
Culvert Cost

Location	ID	Length (ft.)	Number of Barrels	Culvert Dia./ Height	Unit	Width ft)	Length of Pipe/ Box Culvert (ft.)	Unit Cost ($/ft.)	Pipe/Box Culvert Cost	Inlet Headwall	Unit Cost ($/Ea.)	Inlet Headwall Cost	Outlet Headwall	Unit Cost ($/Ea.)	Outlet Headwall Cost	Required Land Acquisition (Ac.)	Zoning	Unit Cost ($/sf)	Culvert Land Acquisition Cost	Culvert Materials Cost	Culvert Contingencies Cost	Total Land, Construction, and Contingencies Costs
DROC / 115th Ave	DROC-C1	130	4	5	ft.	10	130	$2,100	$273,000	1	$5,700	$5,700	1	$9,900	$9,900	0.0	N/A	$0.00	$0	$288,600	$86,580	**$375,180**
DROC / 107th Ave	DROC-C2	110	3	5	ft.	10	110	$1,575	$173,250	1	$6,050	$6,050	1	$10,500	$10,500	0.0	N/A	$0.00	$0	$189,800	$56,940	**$246,740**
DROC / 103rd Ave RR Spur	DROC-C3	242.4	3	5	ft.	10	242.4	$1,575	$381,780	1	$4,800	$4,800	1	$8,300	$8,300	0.0	N/A	$0.00	$0	$394,880	$118,464	**$513,344**
DROC / 99th Ave	DROC-C4	110	2	5	ft.	10	110	$1,050	$115,500	1	$4,950	$4,950	1	$8,600	$8,600	0.0	N/A	$0.00	$0	$129,050	$38,715	**$167,765**
DROC / 91st Ave	DROC-C5	150	2	5	ft.	10	150	$1,050	$157,500	1	$4,700	$4,700	1	$8,100	$8,100	0.0	N/A	$0.00	$0	$170,300	$51,090	**$221,390**
99th Ave Lateral / 1/8 mile S. of Van Buren	99LT-C1	100	2	5	ft.	10	100	$1,050	$105,000	1	$5,500	$5,500	1	$9,500	$9,500	0.0	N/A	$0.00	$0	$120,000	$36,000	**$156,000**
99th Ave Lateral / Van Buren St	99LT-C2	110	3	4	ft.	10	110	$1,575	$173,250	1	$6,200	$6,200	1	$10,700	$10,700	0.0	N/A	$0.00	$0	$190,150	$57,045	**$247,195**
91st Ave Lateral / Van Buren St	91LT-C1	185	3	4	ft.	10	185	$1,575	$291,375	1	$4,800	$4,800	1	$8,300	$8,300	0.0	N/A	$0.00	$0	$304,475	$91,343	**$395,818**
47th Ave Channel / 1/2 mile S. of Lower Bu	47CH-C1	111	7	5	ft.	10	111	$3,675	$407,925	1	$8,300	$8,300	1	$14,400	$14,400	0.0	N/A	$0.00	$0	$430,625	$129,188	**$559,813**
47th Ave Channel / Lower Buckeye Rd	47CH-C2	110	5	5	ft.	10	110	$2,625	$288,750	1	$8,300	$8,300	1	$14,400	$14,400	0.0	N/A	$0.00	$0	$311,450	$93,435	**$404,885**
47th Ave Channel / Buckeye Rd	47CH-C3	323	3	5	ft.	8	323	$1,200	$387,600	1	$4,800	$4,800	1	$8,300	$8,300	0.0	N/A	$0.00	$0	$400,700	$120,210	**$520,910**
47th Ave Channel / Det. Basin Entrance	47CH-C4	427	4	5	ft.	10	427	$2,100	$896,700	1	$6,500	$6,500	1	$11,200	$11,200	0.0	N/A	$0.00	$0	$914,400	$274,320	**$1,188,720**

Retention/Detention Basin Cost

I.D.	Basin Excavation Volume (cy)	Unit Cost ($/cy)	Detention Basin Excavation Cost	Length of Drain Pipe/ Box Culvert (ft.)	Unit Cost ($/ft.)	Pipe/Box Culvert Cost	# Of Manholes	Manhole Unit Cost ($)	Manhole Total Cost ($)	Headwall	Unit Cost ($/Ea.)	Headwall Cost	Inflow Spillway Area (ft^2)	Inflow Spillway Unit Cost ($/sf)	Inflow Spillway Cost	Basin Top Area (ac)	Required Land Acquisition (Ac.)	Unit Cost ($/sf)	Total Land Acquisition Cost	Landscape Restoration (sf)	Landscape Unit Cost ($/sf)	Total Construction Cost	Total Landscape Cost	Detention Basin Contingincies Cost	Total Construction, Land, Landscape and Contingencies Costs
DRO Basin #1 - 111th Ave	279,897	$4.00	$1,119,588	156	$55	$8,580	1	$4,500	$4,500	1	$1,100	$1,100	3450.319	$5	$17,252	18	37	$0.99	$1,595,603	1611720	$1.80	$1,151,020	$2,901,096	$345,306	**$5,993,024**
DRO Basin #2 - 99th Ave	231,400	$4.00	$925,600	155	$55	$8,525	1	$4,500	$4,500	1	$1,100	$1,100	8933.477	$5	$44,667	28	34	$0.99	$1,466,230	1481040	$1.80	$1,003,552	$2,665,872	$301,066	**$5,436,720**
DRO Basin #3a - 91st Ave	184,000	$4.00	$736,000	2280	$55	$125,400	6	$4,500	$27,000	1	$1,100	$1,100	0	$5	$0	21	24	$0.99	$1,034,986	1045440	$1.80	$889,500	$1,881,792	$266,850	**$4,073,128**
DRO Basin #3b - 91st Ave	39,800	$4.00	$159,200	91	$55	$5,005	1	$4,500	$4,500	2	$1,100	$2,200	5889.458	$5	$29,447	7	7	$0.99	$301,871	304920	$1.80	$200,352	$548,856	$60,106	**$1,111,185**
47th Ave Basin	260,633	$4.00	$1,042,532	0	$55	$0	0	$4,500	$0	0	$1,100	$0	19153	$5	$95,767	35.1	43.875	$0.99	$1,892,083	1911195	$1.80	$1,157,847	$3,440,151	$347,354	**$6,837,435**

* Contingencies are based on 30% of total construction cost and include design and construction administration costs



LEGEND

- New Channel
- XXX-# New Channel Reach Identifier
- New Culvert
- XXX-C# New Culvert Identifier
- New Detention Basin
- XXX-B# New Detention Basin Identifier

PROJECT TITLE:
DURANGO AREA DRAINAGE MASTER PLAN
PROJECT NO. FCD 99-41

CONSULTANT:
DIBBLE & ASSOCIATES
CONSULTING ENGINEERS
Since 1962

EXHIBIT TITLE:
RECOMMENDED PLAN, SHEET 1
07/24/02

Recommended Plan, Sheet 2

Channel Cost

ID	Excavated Volume (cy)	Unit Cost ($/cy)	Excavation Cost	Concrete Volume (cy)	Unit Cost ($/cy)	Concrete Cost	Utility Relocation Cost	Channel Length (ft)	Left Access Road Width (ft)	Right Access Road Width (ft)	6" ABC Access Road Unit Cost ($/sf)	Access Road Cost	Total Corridor Width-Channel+Access Rd (ft)	Existing Right-of-Way Width (ft.)	New Right-of-Way Width Required (ft.)	Landscape Unit Cost ($/sf)	Total Landscape Cost	Required Land Acquisition (Ac.)	Zoning	Land Acquisition Cost	Total Construction Cost	Channel Contingencies Cost	Total Construction, Land, Landscape, and Contingencies Costs
DRCC01a	2591	$6	$15,546	1431	310	443611	$0	4229.6	16	16	$0.65	$87,976	36.0	0	40	$1.80	$304,531	3.9	Res / Ag	$167,492	$547,133	164,140	**$1,183,296**
DRCC01b	21989	$6	$131,934	0	n/a	n/a	$0	500	16	16	$0.65	$10,400	268.1	0	300	$1.80	$270,000	3.4	Res / Ag	$148,500	$142,334	42,700	**$603,534**
DRCC02a	110503	$6	$663,020	0	n/a	n/a	$0	2512.7	16	16	$0.65	$52,264	268.1	0	300	$1.80	$1,356,858	17.3	Res / Ag	$746,272	$715,284	214,585	**$3,032,999**
DRCC02b	110508	$4	$442,031	0	n/a	n/a	$0	2512.8	16	16	$0.65	$52,266	268.1	0	300	$1.80	$1,356,912	17.3	Res / Ag	$746,302	$494,297	148,289	**$2,745,800**
DRCC03a	138383	$6	$830,299	0	n/a	n/a	$0	3376.8	16	16	$0.65	$70,237	253.5	0	280	$1.80	$1,701,907	21.7	Res / Ag	$936,049	$900,536	270,161	**$3,808,653**
DRCC03b	103685	$4	$414,739	0	n/a	n/a	$0	2530.1	16	16	$0.65	$52,626	253.5	0	280	$1.80	$1,275,170	16.3	Res / Ag	$701,344	$467,366	140,210	**$2,584,089**
DRCC04	149479	$6	$896,871	0	n/a	n/a	$401,200	2645.9	16	16	$0.65	$55,035	323.6	0	360	$1.80	$1,714,543	21.9	Res / Ag	$942,999	$1,353,106	405,932	**$4,416,579**
DRCC05	140818	$6	$844,907	0	n/a	n/a	$405,150	2492.6	16	16	$0.65	$51,846	323.6	0	360	$1.80	$1,615,205	20.6	Res / Ag	$888,363	$1,301,904	390,571	**$4,196,042**
DRCC06a	53795	$6	$322,771	0	n/a	n/a	$280,950	2724.6	16	16	$0.65	$56,672	157.8	0	180	$1.80	$882,770	11.3	Res / Ag	$485,524	$660,392	198,118	**$2,226,804**
DRCC06b	47984	$4	$191,937	0	n/a	n/a	$280,800	2430.3	16	16	$0.65	$50,550	157.8	0	180	$1.80	$787,417	10.0	Res / Ag	$433,079	$523,288	156,986	**$1,900,771**
DRCC07	41224	$6	$247,341	0	n/a	n/a	$2,000	2778.2	16	16	$0.65	$57,787	136.1	0	150	$1.80	$750,114	9.6	Res / Ag	$412,563	$307,128	92,138	**$1,561,943**
DRCC08a	16589	$6	$99,537	0	n/a	n/a	$0	1079.1	16	16	$0.65	$22,445	146.0	0	170	$1.80	$330,205	4.2	Res / Ag	$181,613	$121,982	36,595	**$670,394**
DRCC08b	41229	$6	$247,376	0	n/a	n/a	$0	1250.2	16	16	$0.65	$26,004	218.0	0	240	$1.80	$540,086	6.9	Res / Ag	$297,048	$273,380	82,014	**$1,192,528**
DRCC09a	82977	$6	$497,860	0	n/a	n/a	$2,000	2484.3	16	16	$0.65	$51,673	218.7	0	250	$1.80	$1,117,935	14.3	Res / Ag	$614,864	$551,534	165,460	**$2,449,793**
DRCC09b	84617	$4	$338,467	0	n/a	n/a	$20,000	2533.4	16	16	$0.65	$52,695	218.7	0	250	$1.80	$1,140,030	14.5	Res / Ag	$627,017	$411,162	123,348	**$2,301,556**
DRCC10a	53924	$6	$323,545	0	n/a	n/a	$0	2564.6	16	16	$0.65	$53,344	163.2	0	180	$1.80	$830,930	10.6	Res / Ag	$457,012	$376,888	113,067	**$1,777,897**
DRCC10b	66746	$4	$266,984	0	n/a	n/a	$41,250	3174.4	16	16	$0.65	$66,028	163.2	0	180	$1.80	$1,028,506	13.1	Res / Ag	$565,678	$374,261	112,278	**$2,080,723**
DRCC11	39921	$6	$239,527	0	n/a	n/a	$15,000	2417.2	16	16	$0.65	$50,278	142.9	0	160	$1.80	$696,154	8.9	Res / Ag	$382,884	$304,805	91,441	**$1,475,284**
DRCC12	42113	$6	$252,678	0	n/a	n/a	$12,500	3037.1	16	16	$0.65	$63,172	131.4	0	150	$1.80	$820,017	10.5	Res / Ag	$451,009	$328,349	98,505	**$1,697,881**
DRCC13a	6581	$6	$39,488	0	n/a	n/a	$0	815.3	16	16	$0.65	$16,958	104.4	0	120	$1.80	$176,105	2.2	Res / Ag	$96,858	$56,447	16,934	**$346,343**
DRCC13b	12734	$6	$76,403	0	n/a	n/a	$0	1287.7	16	16	$0.65	$26,784	112.7	0	130	$1.80	$301,322	3.8	Res / Ag	$165,727	$103,187	30,956	**$601,192**
DRCC14	41250	$6	$247,501	0	n/a	n/a	$46,000	2421.5	16	16	$0.65	$50,367	144.4	0	160	$1.80	$697,392	8.9	Res / Ag	$383,566	$343,868	103,161	**$1,527,986**
DRCC15	18661	$6	$111,964	0	n/a	n/a	$30,000	2441	16	16	$0.65	$50,773	102.5	0	120	$1.80	$527,256	6.7	Res / Ag	$289,991	$192,737	57,821	**$1,067,805**
DRCC16	8488	$6	$50,931	1220	310	378105	$0	1287	16	16	$0.65	$26,770	67.0	0	80	$1.80	$185,328	2.4	Res / Ag	$101,930	$486,693	146,008	**$919,960**
DRCC17	14201	$6	$85,203	2135	310	661855	$10,000	2492.5	16	16	$0.65	$51,844	62.0	0	70	$1.80	$314,055	4.0	Res / Ag	$172,730	$868,722	260,617	**$1,616,124**
SUN01	63115	$6	$378,690	0	n/a	n/a	$0	3027.4	16	16	$0.65	$62,970	162.8	0	180	$1.80	$980,878	12.5	Res / Ag	$539,483	$441,660	132,498	**$2,094,518**
SUN02a	6493	$6	$38,956	993	310	307882	$0	1388.5	16	16	$0.65	$28,881	52.0	0	60	$1.80	$149,958	1.9	Res / Ag	$82,477	$375,719	112,716	**$720,869**
SUN02b	17203	$6	$103,218	0	n/a	n/a	$0	1203.2	16	16	$0.65	$25,027	132.8	0	150	$1.80	$324,864	4.1	Res / Ag	$178,675	$128,245	38,474	**$670,258**
SUN02c	35902	$6	$215,410	0	n/a	n/a	$0	2511	16	16	$0.65	$52,229	132.8	0	150	$1.80	$677,970	8.6	Res / Ag	$372,884	$267,639	80,292	**$1,398,784**
SUN03a	29398	$6	$176,391	0	n/a	n/a	$0	2469.7	16	16	$0.65	$51,370	122.1	0	140	$1.80	$622,364	7.9	Res / Ag	$342,300	$227,761	68,328	**$1,260,754**
SUN03b	29528	$6	$177,169	0	n/a	n/a	$0	2480.6	16	16	$0.65	$51,596	122.1	0	140	$1.80	$625,111	8.0	Res / Ag	$343,811	$228,766	68,630	**$1,266,318**

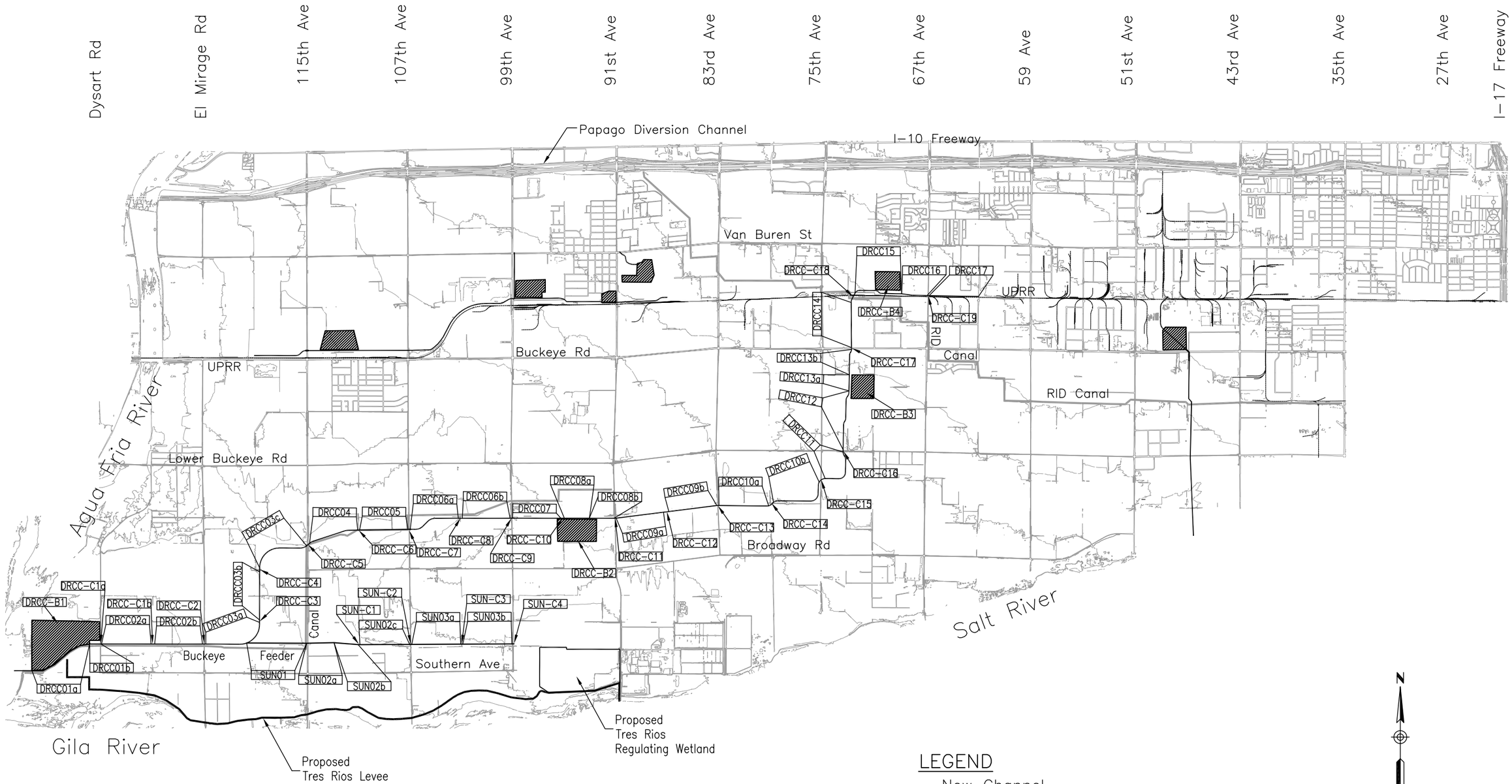
Culvert Cost

Location	ID	Length (ft.)	Number of Barrels	Culvert Dia./ Height	Unit	Width ft)	Length of Pipe/ Box Culvert (ft.)	Unit Cost ($/ft.)	Pipe/Box Culvert Cost	Inlet Headwall	Unit Cost ($/Ea.)	Inlet Headwall Cost	Outlet Headwall	Unit Cost ($/Ea.)	Outlet Headwall Cost	Required Land Acquisition (Ac.)	Zoning	Unit Cost ($/sf)	Culvert Land Acquisition Cost	Culvert Materials Cost	Culvert Contingencies Cost	Total Land, Construction, and Contingencies Costs
DRCC / Dysart Rd	DRCC-C1a	110	9	5	ft.	10	110	$4,725	$519,750	1	$8,900	$8,900	1	$15,400	$15,400	0.0	N/A	$0.00	$0	$544,050	$163,215	**$707,265**
DRCC / 1/2 mile W. of El Mirage Rd	DRCC-C1b	110	9	5	ft.	10	110	$4,725	$519,750	1	$9,300	$9,300	1	$16,100	$16,100	0.0	N/A	$0.00	$0	$545,150	$163,545	**$708,695**
DRCC / 1/2 mile S. of Broadway Rd	DRCC-C3	110	9	5	ft.	10	110	$4,725	$519,750	1	$8,900	$8,900	1	$15,400	$15,400	0.0	N/A	$0.00	$0	$544,050	$163,215	**$707,265**
DRCC / Broadway Rd	DRCC-C4	110	9	5	ft.	10	110	$4,725	$519,750	1	$8,300	$8,300	1	$14,400	$14,400	0.0	N/A	$0.00	$0	$542,450	$162,735	**$705,185**
DRCC / 115th Ave	DRCC-C5	151	8	5	ft.	10	151	$4,200	$634,200	1	$8,300	$8,300	1	$14,400	$14,400	0.0	N/A	$0.00	$0	$656,900	$197,070	**$853,970**
DRCC / 111th Ave	DRCC-C6	110	8	5	ft.	10	110	$4,200	$462,000	1	$6,400	$6,400	1	$11,100	$11,100	0.0	N/A	$0.00	$0	$479,500	$143,850	**$623,350**
DRCC / 107th Ave	DRCC-C7	110	6	5	ft.	10	110	$3,150	$346,500	1	$6,400	$6,400	1	$11,100	$11,100	0.0	N/A	$0.00	$0	$364,000	$109,200	**$473,200**
DRCC / 103rd Ave	DRCC-C8	110	6	5	ft.	10	110	$3,150	$346,500	1	$6,700	$6,700	1	$11,600	$11,600	0.0	N/A	$0.00	$0	$364,800	$109,440	**$474,240**
DRCC / 99th Ave	DRCC-C9	110	4	5	ft.	10	110	$2,100	$231,000	1	$6,050	$6,050	1	$10,500	$10,500	0.0	N/A	$0.00	$0	$247,550	$74,265	**$321,815**
DRCC / 95th Ave	DRCC-C10	140	8	4	ft.	10	140	$4,200	$588,000	1	$6,200	$6,200	1	$10,700	$10,700	0.0	N/A	$0.00	$0	$604,900	$181,470	**$786,370**
DRCC / 91st Ave	DRCC-C11	110	5	5	ft.	10	110	$2,625	$288,750	1	$8,300	$8,300	1	$14,400	$14,400	0.0	N/A	$0.00	$0	$311,450	$93,435	**$404,885**
DRCC / 87th Ave	DRCC-C12	110.4	5	5	ft.	10	110.4	$2,625	$289,800	1	$8,300	$8,300	1	$14,400	$14,400	0.0	N/A	$0.00	$0	$312,500	$93,750	**$406,250**
DRCC / 83rd Ave	DRCC-C13	110.5	4	5	ft.	10	110.5	$2,100	$232,050	1	$6,500	$6,500	1	$11,200	$11,200	0.0	N/A	$0.00	$0	$249,750	$74,925	**$324,675**
DRCC / 79th Ave	DRCC-C14	220	4	5	ft.	10	220	$2,100	$462,000	1	$6,500	$6,500	1	$11,200	$11,200	0.0	N/A	$0.00	$0	$479,700	$143,910	**$623,610**
DRCC / 75th Ave	DRCC-C15	146	4	5	ft.	10	146	$2,100	$306,600	1	$6,050	$6,050	1	$10,500	$10,500	0.0	N/A	$0.00	$0	$323,150	$96,945	**$420,095**
DRCC / Lower Buckeye Rd	DRCC-C16	110.2	4	5	ft.	8	110.2	$1,600	$176,320	1	$4,800	$4,800	1	$8,300	$8,300	0.0	N/A	$0.00	$0	$189,420	$56,826	**$246,246**
DRCC / Buckeye Rd	DRCC-C17	110	3	5	ft.	8	110	$1,200	$132,000	1	$4,800	$4,800	1	$8,300	$8,300	0.0	N/A	$0.00	$0	$145,100	$43,530	**$188,630**
DRCC / Railroad	DRCC-C18	380.5	3	4	ft.	8	380.5	$1,200	$456,600	1	$3,900	$3,900	1	$6,700	$6,700	0.0	N/A	$0.00	$0	$467,200	$140,160	**$607,360**
DRCC / 67th Ave	DRCC-C19	110	4	4	ft.	10	110	$2,100	$231,000	1	$5,300	$5,300	1	$9,200	$9,200	0.0	N/A	$0.00	$0	$245,500	$73,650	**$319,150**
SAC / 111th Ave	SUN-C1	110	3	5	ft.	10	110	$1,575	$173,250	1	$5,300	$5,300	1	$9,200	$9,200	0.0	N/A	$0.00	$0	$187,750	$56,325	**$244,075**
SAC / 107th Ave	SUN-C2	110	3	5	ft.	8	110	$1,200	$132,000	1	$5,300	$5,300	1	$9,200	$9,200	0.0	N/A	$0.00	$0	$146,500	$43,950	**$190,450**
SAC / 103rd Ave	SUN-C3	110	2	5	ft.	10	110	$1,050	$115,500	1	$5,300	$5,300	1	$9,200	$9,200	0.0	N/A	$0.00	$0	$130,000	$39,000	**$169,000**
SAC / 99th Ave	SUN-C4	110	2	5	ft.	8	110	$800	$88,000	1	$5,300	$5,300	1	$9,200	$9,200	0.0	N/A	$0.00	$0	$102,500	$30,750	**$133,250**

Detention Basin Cost

I.D.	Basin Excavation Volume (cy)	Unit Cost ($/cy)	Detention Basin Excavation Cost	Length of Drain Pipe/ Box Culvert (ft.)	Unit Cost ($/ft.)	Pipe/Box Culvert Cost	# Of Manholes	Manhole Unit Cost ($)	Manhole Total Cost ($)	Headwall	Unit Cost ($/Ea.)	Headwall Cost	Inflow Spillway Area (ft^2)	Inflow Spillway Unit Cost ($/sf)	Inflow Spillway Cost	Basin Top Area (ac)	Required Land Acquisition (Ac.)	Unit Cost ($/sf)	Total Land Acquisition Cost	Landscape Restoration (sf)	Landscape Unit Cost ($/sf)	Total Construction Cost	Total Landscape Cost	Detention Basin Contingincies Cost	Total Construction, Land, Landscape and Contingencies Costs
DRC Basin #1 - Dysart Rd	0	$4.00	$0	500	$55	$27,500	2	$4,500	$9,000	1	$1,100	$1,100	253571.9	$5	$1,267,859	137	150	$0.99	$6,468,660	6534000	$1.80	$1,305,459	$11,761,200	$391,638	**$19,926,957**
DRC Basin #2 - 95th Ave	202,900	$4.00	$811,600	221	$55	$12,155	1	$4,500	$4,500	1	$1,100	$1,100	4407.338	$5	$22,037	30	48	$0.99	$2,069,971	2090880	$1.80	$851,392	$3,763,584	$255,418	**$6,940,364**
DRC Basin #3 - 73rd Ave	79,000	$4.00	$316,000	200	$55	$11,000	1	$4,500	$4,500	1	$1,100	$1,100	2129.961	$5	$10,650	9.1	16.53	$0.99	$712,846	720046.8	$1.80	$356,826	$1,296,084	$107,048	**$2,472,804**
DRC Basin #4 - 71st Ave	180,000	$4.00	$720,000	1161	$55	$63,855	3	$4,500	$13,500	1	$1,100	$1,100	6748.109	$5	$33,741	16	29.25	$0.99	$1,261,389	1274130	$1.80	$850,448	$2,293,434	$255,134	**$4,660,405**

* Contingencies are based on 30% of total construction cost and include design and construction administration costs



LEGEND

- New Channel
- XXX-# New Channel Reach Identifier
- New Culvert
- XXX-C# New Culvert Identifier
- New Detention Basin
- XXX-B# New Detention Basin Identifier

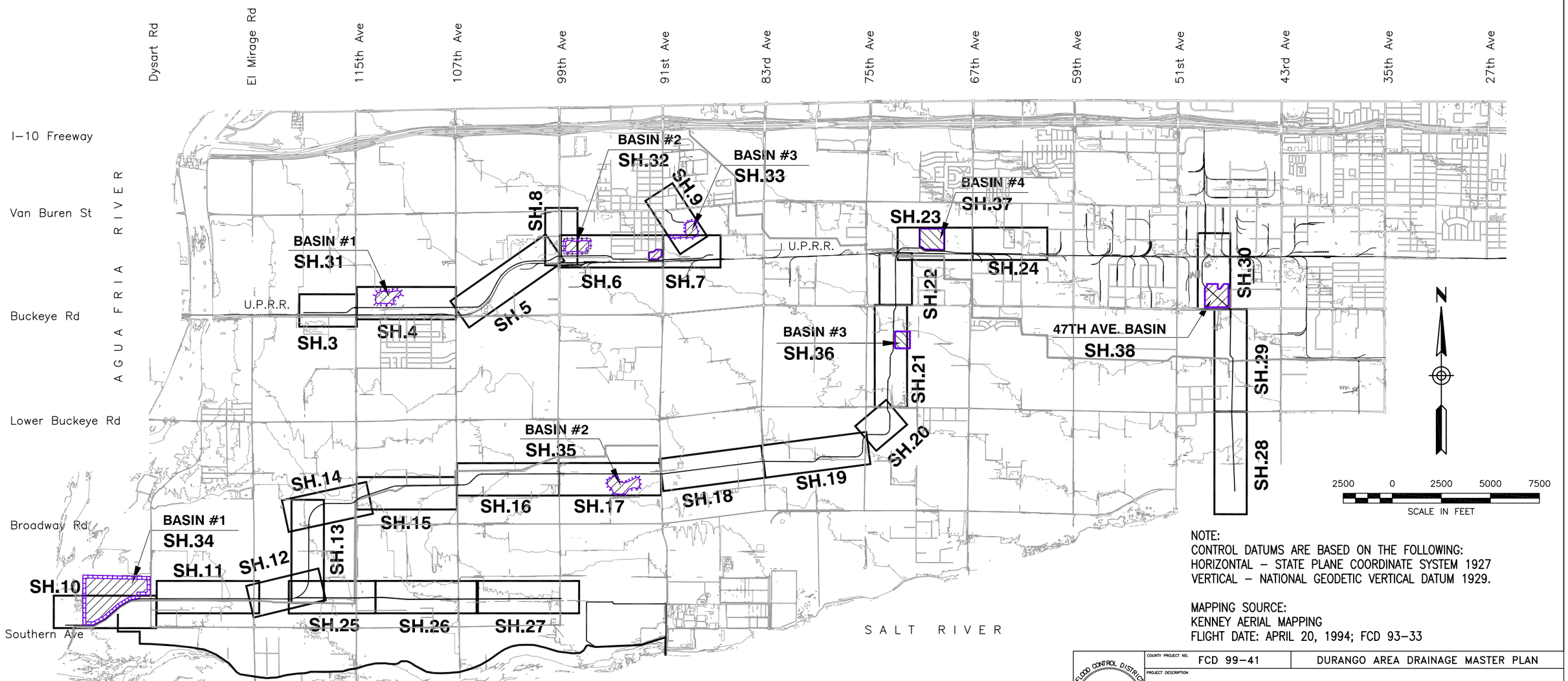
PROJECT TITLE:
DURANGO AREA DRAINAGE MASTER PLAN
PROJECT NO. FCD 99-41

CONSULTANT:
DIBBLE & ASSOCIATES
CONSULTING ENGINEERS
Since 1962

EXHIBIT TITLE:
RECOMMENDED PLAN, SHEET 2
10/08/02

Durango
Area Drainage Master Plan
FCD #99-41
Preliminary Design Plans

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

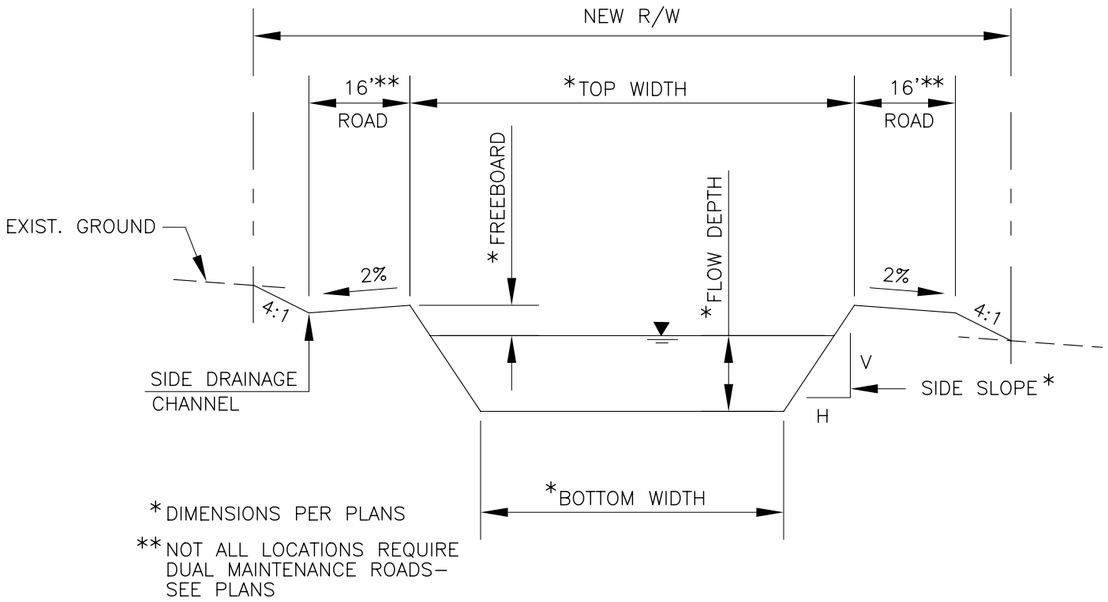


NOTE:
CONTROL DATUMS ARE BASED ON THE FOLLOWING:
HORIZONTAL – STATE PLANE COORDINATE SYSTEM 1927
VERTICAL – NATIONAL GEODETIC VERTICAL DATUM 1929.

MAPPING SOURCE:
KENNEY AERIAL MAPPING
FLIGHT DATE: APRIL 20, 1994; FCD 93-33

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: COVER SHEET		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS (Since 1962)	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE: HORIZONTAL / VERTICAL
SHEETS: NO. 1 OF 38		

FILE:J:\9935\Acad\Prelim_Design\plan01-covr.dwg DATE:Oct, 10 2002 TIME: 01:53 pm



TYPICAL CHANNEL SECTION

N.T.S.

LEGEND

XX–1	CHANNEL REACH
	NEW CHANNEL
	NEW DETENTION BASIN SLOPE
	NEW DRAIN PIPE
	NEW CULVERT
	PROPERTY LINE
	RIGHT–OF–WAY LINE
8	PARCEL NUMBER
	EXISTING ROAD
1410	EXIST. INDEX CONTOUR
	EXIST. INTERMEDIATE CONTOUR
15"S	EXISTING UTILITY
	EXISTING VEGETATION
	EXISTING POWER POLE
	EXISTING STREET LIGHT
	EXISTING STRUCTURE
	IMPACTED STRUCTURE
304	ENVIRONMENTAL SITE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99–41

DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION

TYPICAL SECTION/LEGEND

PRIME CONSULTANT

DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: –

DES. JLM DATE: –

CKD. BJF DATE: –

SCALE HORIZONTAL VERTICAL

SHEETS NO. 2 OF 38

FILE:J:\9935\Acad\Prelim_Design\plan02–typs.dwg DATE:Oct, 10 2002 TIME: 01:55 pm

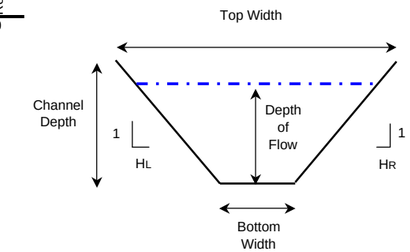
Durango Area Drainage Master Plan
Durango Regional Outfall Channel

Sheet 3

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DROC01	MCKDKA	920	920	975.5	977.2	2690	0.0006	0.0006	0.0	0	0.0	GR	0.0400	60.0	4.8	6	6	429.2	118.7	0.20	Sub	2.1	1.2	6.0	132.6	190

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

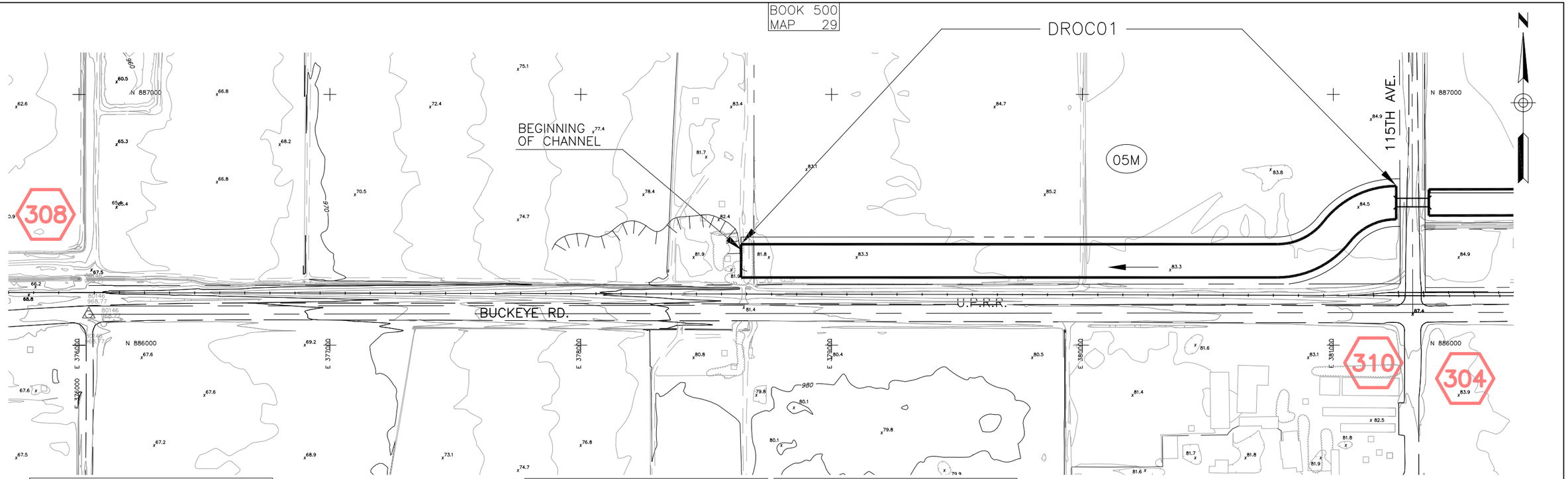
Environmental Sites

No.	Name	Address	Database
304	Littleton Elementary School	1252 S 115th Ave	LUST, UST
310	Vacant Property Farm Equipment Y	S of SWC 115th Ave / Buckeye R	LUST, UST

Landscape Notes

Parklike theme combined with formal promenade and railroad theme along the UPRR
- Incorporate channel into Coldwater Springs Golf Course
- Multi-use trail link to the Agua Fria River
- River Enhancement

BOOK 500
MAP 29



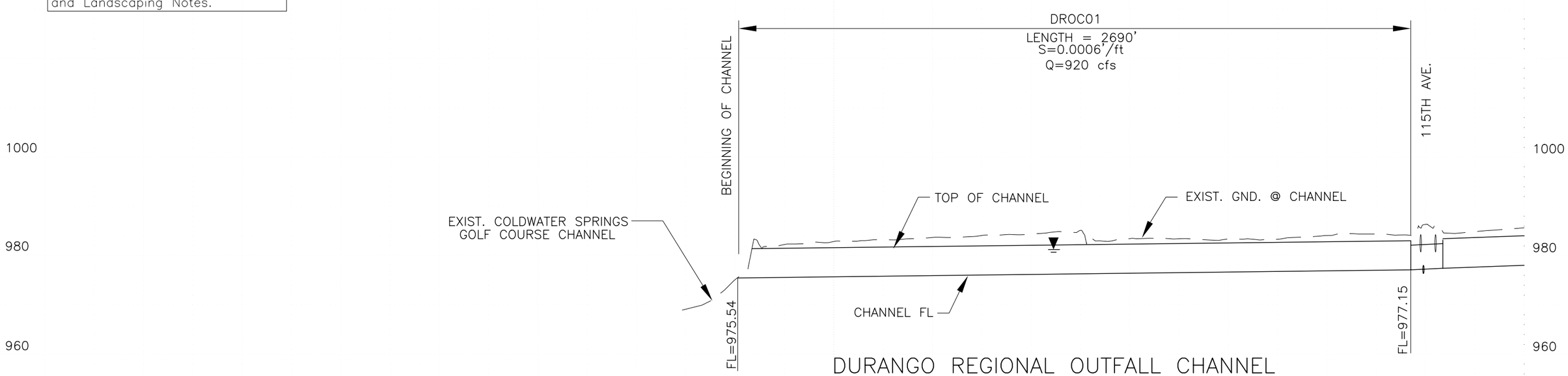
CAUTION: Buried Petroleum Pipe Line. Contact Kinder–Morgan Co. 714–560–4940

CAUTION: Buried Fiber Optic Cable Contact MCI WORLDCOM 602–734–1273

CAUTION: Overhead High Voltage Electric Lines. Contact APS 602–371–6965

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915–496–5562

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL OUTFALL CHANNEL

COUNTY PROJECT NO. FCD 99–41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL OUTFALL CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 3 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FILE:J:\9935\Acad\Prelim_Design\plpr03-droc.dwg DATE:Oct, 10 2002 TIME: 02:16 pm

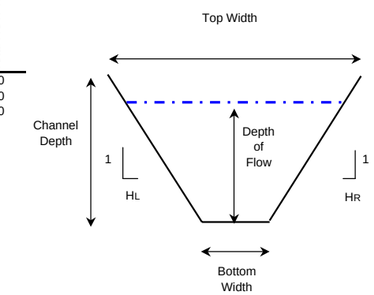
Durango Area Drainage Master Plan
Durango Regional Outfall Channel

Sheet 4

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DROC02a	MCLEKD	920	920	977.5	979.1	921	0.0018	0.0018	0.0	0	0.0	GR	0.0400	40.0	4.3	6	6	278.4	91.7	0.33	Sub	3.3	1.1	5.4	104.3	150
DROC02b	MCDBY1	700	700	979.1	982.0	1560	0.0018	0.0018	0.0	0	0.0	GR	0.0400	45.0	3.5	6	6	232.2	87.7	0.33	Sub	3.0	1.0	4.5	99.2	150
DROC03	MCOBLE	1093	1093	982.0	983.2	2501	0.0005	0.0005	0.0	0	0.0	GR	0.0400	95.0	4.5	6	6	552.0	150.0	0.18	Sub	2.0	1.1	5.7	163.0	220

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DROC-C1	~CPKD	920	920	130	977.5	977.2	0.0026	RCBC	0.012	4	5	ft.	10	RCBC	Wingwall	4.82	5.04	1.01	TW

Utility Crossings

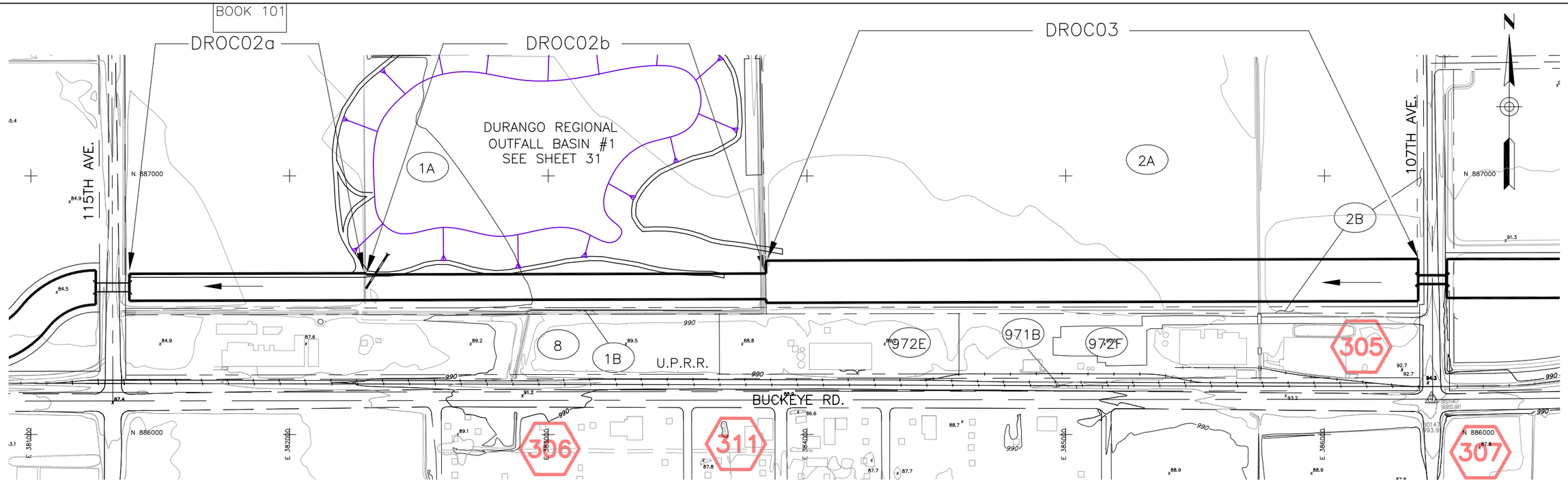
I.D.	Alignment	Type	Size	Location
DROC-02a	DROC	Irrigation	42"	115th Avenue
DROC-02a	DROC	Irrigation	42"	115th Avenue
DROC-02a	DROC	Natural Ga	20"	115th Avenue

Environmental Sites

No.	Name	Address	Database
305	IMC Western Operations Cashion	107th Ave & Buckeye Rd	FINDS, RCRIS-LQG
306	Englund Equipment Co	11498 W Buckeye Rd	RCRIS-SQG, FINDS
307	Austin	10508 W Buckeye Rd	UST
311	Savco #4	11123 W Buckeye Rd	LUST, UST

Landscape Notes

Parklike theme combined with formal promenade and railroad theme along the UPRR
- Active recreation uses in multi-level graded basins
- Meandering multi-use pathway
- Future Light Rail Corridor Potential
- Vary channel side slopes



CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

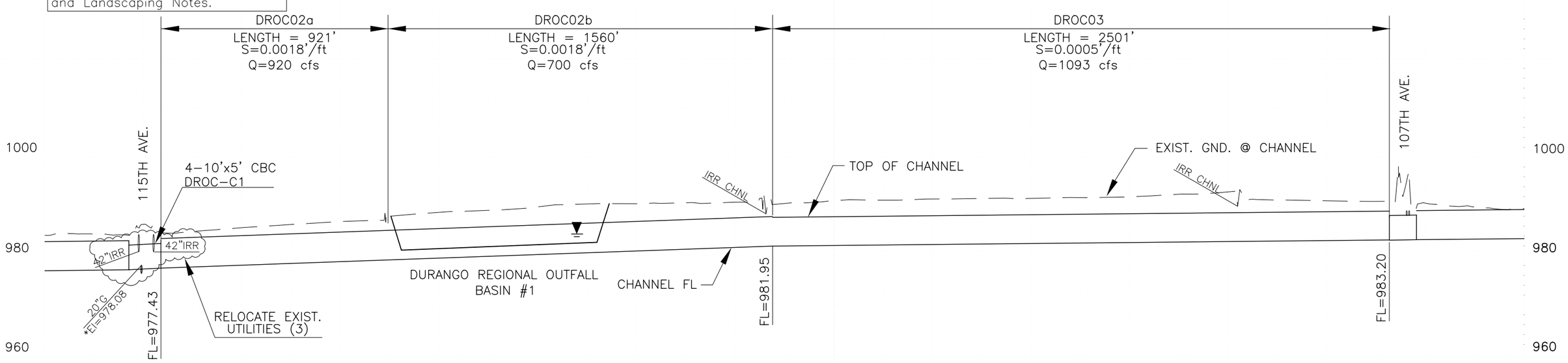
CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

CAUTION: Buried Petroleum Pipe Line. Contact Kinder-Morgan Co. 714-560-4940

CAUTION: Buried Fiber Optic Cable Contact MCI WORLDCOM 602-734-1273

CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL OUTFALL CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL OUTFALL CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 4 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

* Indicates Potholed Elevation

FILE:J:\9935\Acad\Prelim_Design\plpr04-droc.dwg DATE:Oct, 10 2002 TIME: 02:17 pm

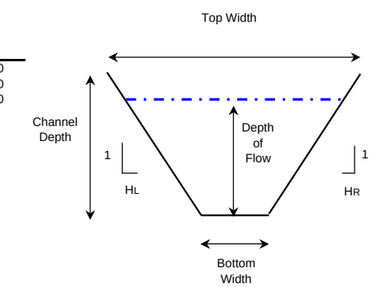
Durango Area Drainage Master Plan
Durango Regional Outfall Channel

Sheet 5

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DROC04	MCOFOB	1013	1013	983.3	984.3	2177	0.0005	0.0005	0.0	0	0.0	GR	0.0400	80.0	4.7	6	6	508.9	137.2	0.18	Sub	2.0	1.2	5.9	150.7	210
DROC05a	MCOGOF	905	905	984.3	986.7	1166	0.0020	0.0020	0.0	0	0.0	GR	0.0400	25.0	4.8	6	6	256.9	83.2	0.35	Sub	3.5	1.2	6.0	97.3	150
DROC05b	MCOGOF	905	905	987.2	992.9	2857	0.0020	0.0020	0.0	0	0.0	GR	0.0400	25.0	4.8	6	6	256.9	83.2	0.35	Sub	3.5	1.2	6.0	97.3	150

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DROC-C2	~CPOB	1013	1013	110	983.3	983.2	0.0005	RCBC	0.012	3	5	ft.	10	RCBC	Wingwall	4.52	5.62	1.12	TW
DROC-C3	~CPOF	905	905	242.4	987.2	986.7	0.0020	RCBC	0.012	3	5	ft.	10	RCBC	Wingwall	4.78	5.38	1.08	TW

Utility Crossings

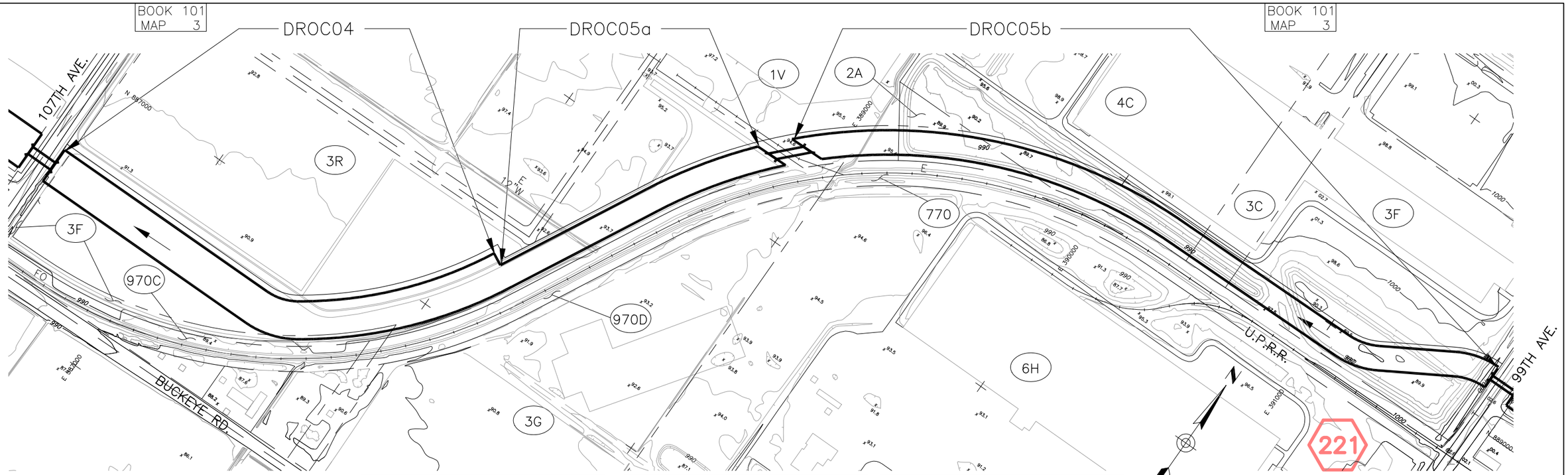
I.D.	Alignment	Type	Size	Location
DROC-04	DROC	Telephone	N/A	107th Avenue
DROC-04	DROC	Telephone	N/A	107th Avenue
DROC-05a	DROC	Water	12"	104th Avenue
DROC-05a	DROC	Water	12"	104th Avenue
DROC-05a	DROC	UG Electric	N/A	104th Avenue
DROC-05b	DROC	Irrigation	24"	103rd Avenue
DROC-05b	DROC	Irrigation	24"	103rd Avenue
DROC-05b	DROC	UG Electric	N/A	103rd Avenue

Environmental Sites

No.	Name	Address	Database
221	Puregro #174 Tolleson Facility	99th Ave / Harrison	LUST, UST

Landscape Notes

Parklike theme combined with formal promenade and railroad theme along the UPRR
- Active recreation uses in multi-level graded basins
- Meandering multi-use pathway
- Future Light Rail Corridor Potential
- Vary channel side slopes

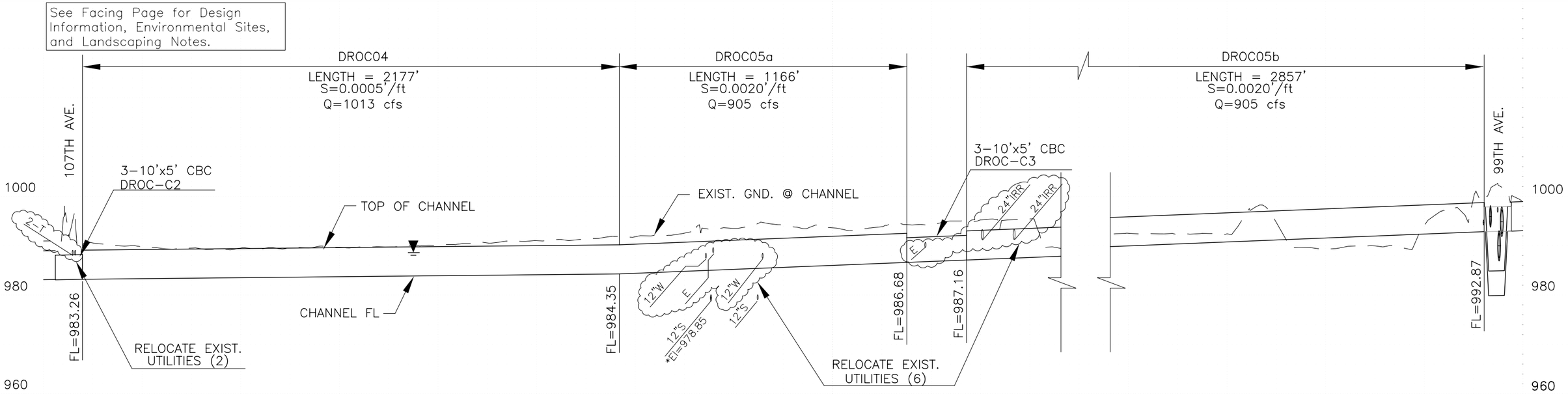


CAUTION: Buried Petroleum Pipe Line. Contact Kinder–Morgan Co. 714–560–4940

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915–496–5562

CAUTION: Buried Fiber Optic Cable Contact MCI WORLDCOM 602–734–1273

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL OUTFALL CHANNEL

* Indicates Potholed Elevation

COUNTY PROJECT NO. FCD 99–41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL OUTFALL CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
		SHEETS NO. 5 OF 38

FILE:J:\9935\Acad\Prelim_Design\plpr05–droc.dwg DATE:Oct, 10 2002 TIME: 02:19 pm

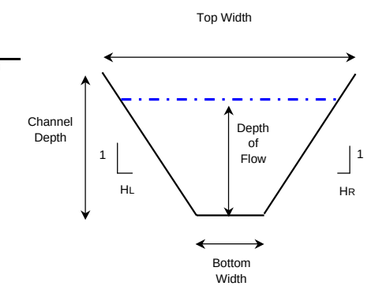
Durango Area Drainage Master Plan
Durango Regional Outfall Channel

Sheet 6

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DROC06a	MCRHOG	1214	1214	993.0	997.9	2558	0.0019	0.0019	0.0	0	0.0	GR	0.0400	45.0	4.6	6	6	336.6	101.3	0.35	Sub	3.6	1.2	5.8	115.0	170
DROC06b	MCRHOG	1214	1214	997.9	1002.9	2664	0.0019	0.0019	0.0	0	0.0	C	0.0140	24.0	4.8	0	0	115.3	33.6	0.85	Sub	10.5	1.6	6.4	24.0	70

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DROC-C4	~CPOG	628	628	110	993.0	992.9	0.0011	RCBC	0.012	2	5	ft.	10	RCBC	Wingwall	4.78	5.67	1.13	TW

Utility Crossings

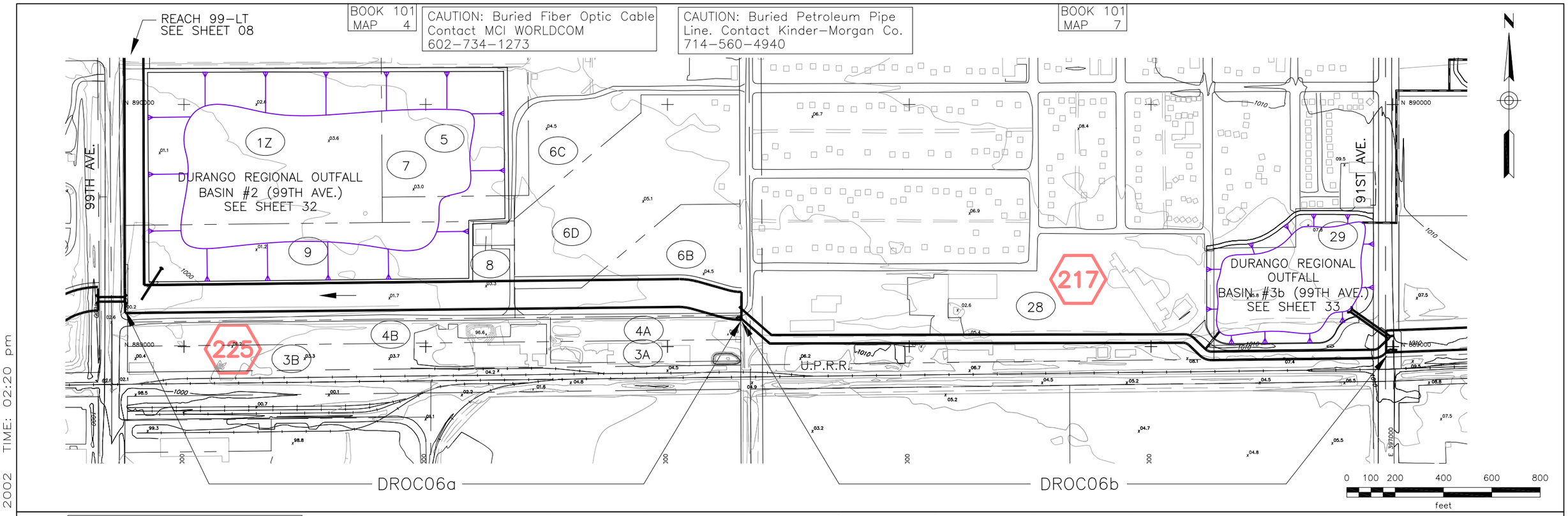
I.D.	Alignment	Type	Size	Location
DROC-06a	DROC	Water	12"	99th Avenue
DROC-06a	DROC	Water	12"	97th Avenue
DROC-06a	DROC	Sewer	10"	97th Avenue
DROC-06a	DROC	Irrigation	Channel	99th Avenue
DROC-06b	DROC	Water	12"	95th Avenue
DROC-06b	DROC	Irrigation	Unk	95th Avenue
DROC-06c	DROC	Water	6"	91st Avenue

Environmental Sites

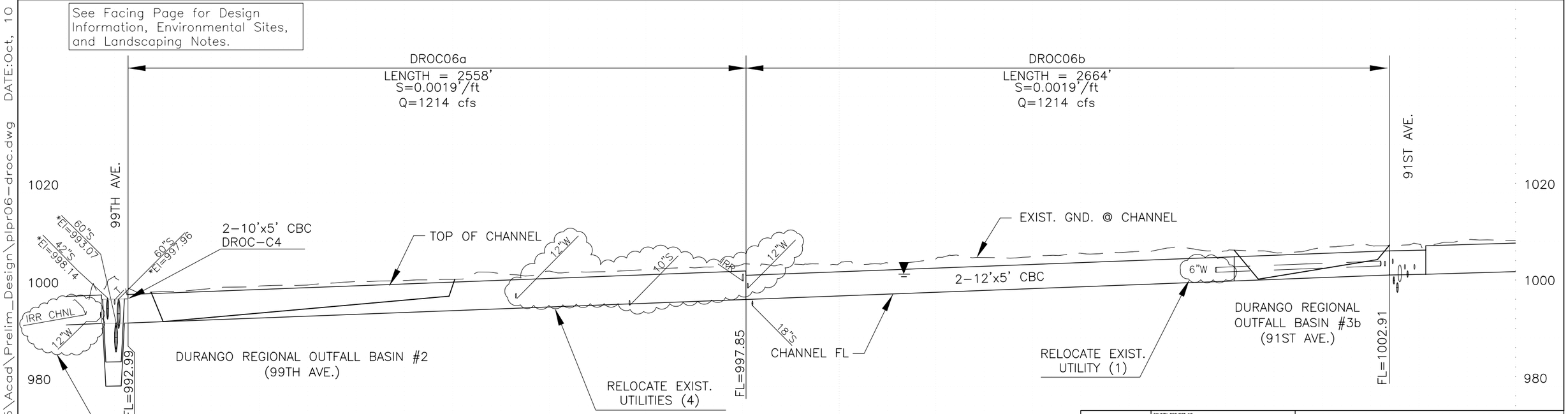
No.	Name	Address	Database
217	Everkrisp Vegetables	9202 W Harrison	LUST, UST
225	Puregro Co	99th Ave / Harrison St	RCRIS-SQG, FINDS, CERCLIS-NFRAP

Landscape Notes

Parklike theme combined with formal promenade and railroad theme along the UPRR
- Active recreation uses in multi-level graded basins
- Meandering multi-use pathway
- Future Light Rail Corridor Potential
- Vary channel side slopes
- Existing formal rows of pecan trees south of railroad



See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL OUTFALL CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL OUTFALL CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 6 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

* Indicates Potholed Elevation

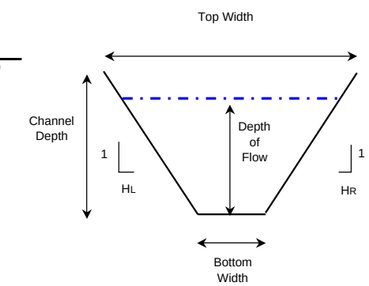
FILE:J:\9935\Acad\Prelim_Design\plpr06-droc.dwg DATE:Oct, 10 2002 TIME: 02:20 pm

Durango Area Drainage Master Plan
Durango Regional Outfall Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DROC07	MCRIRH	664	664	1003.1	1006.8	2482	0.0015	0.0015	0.0	0	0.0	GR	0.0400	20.0	4.7	6	6	225.5	77.0	0.30	Sub	2.9	1.2	5.9	90.7	140

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DROC-C5	~@CPRH	662	662	150	1003.1	1002.9	0.0010	RCBC	0.012	2	5	ft.	10	RCBC	Wingwall	4.81	5.83	1.17	TW

Utility Crossings

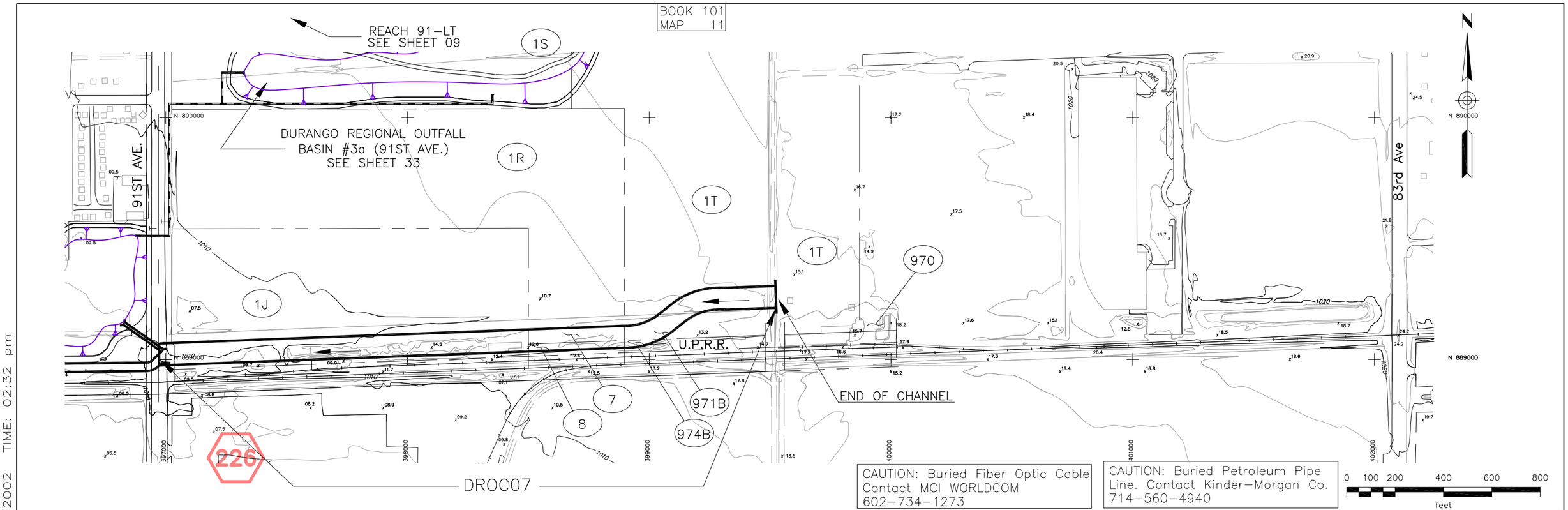
I.D.	Alignment	Type	Size	Location
DROC-07	DROC	Water	12"	91st Avenue
DROC-07	DROC	Telephone	N/A	91st Avenue
DROC-07	DROC	Telephone	N/A	91st Avenue
DROC-07	DROC	Irrigation	42"	91st Avenue
DROC-07	DROC	Gas	3"	91st Avenue
DROC-07	DROC	Water	4"	91st Avenue

Environmental Sites

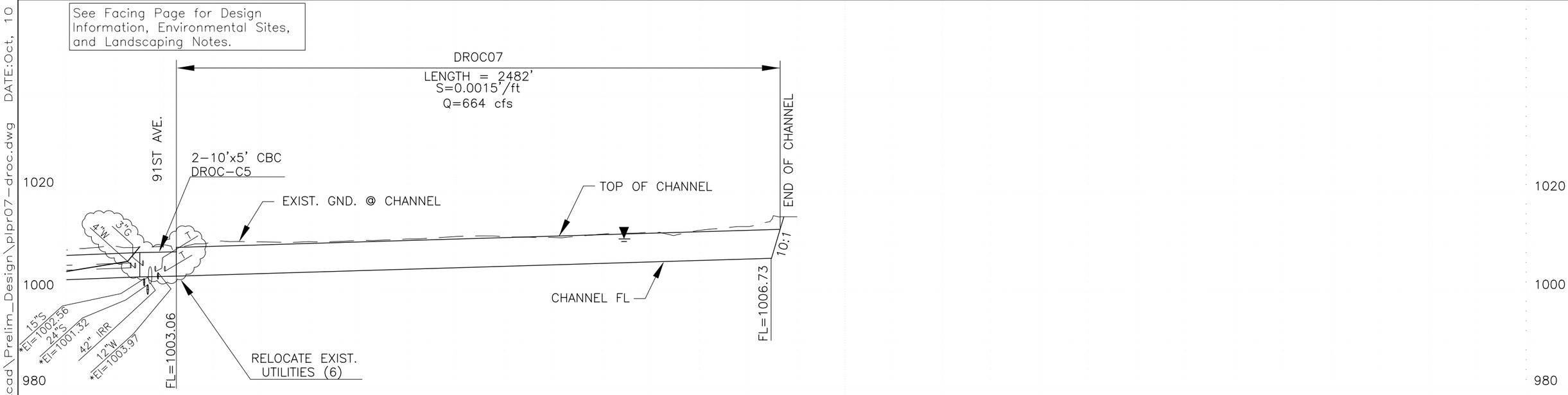
No.	Name	Address	Database
226	Swift Independent Packing Co	91st Ave	CERCLIS-NFRAP, HWS

Landscape Notes

Parklike theme combined with formal promenade and railroad theme along the UPRR
- Active recreation uses in multi-level graded basins
- Meandering multi-use pathway
- Future Light Rail Corridor Potential
- Vary channel side slopes



See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL OUTFALL CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL OUTFALL CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 7 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

* Indicates Potholed Elevation

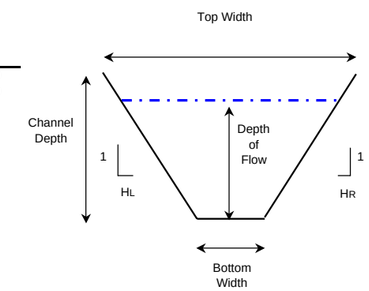
FILE:J:\9935\Acad\Prelim_Design\plpr07-droc.dwg DATE:Oct, 10 2002 TIME: 02:32 pm

Durango Area Drainage Master Plan
99th Ave Lateral

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
99LTa	MCRFOG	730	730	993.1	999.2	1573	0.0039	0.0039	0.0	0	0.0	GR	0.0400	8.0	4.7	6	6	167.0	64.6	0.48	Sub	4.4	1.2	5.9	78.7	130
99LTb	MCRFOG	730	730	999.6	1001.8	557	0.0039	0.0039	0.0	0	0.0	GR	0.0400	8.0	4.7	6	6	167.0	64.6	0.48	Sub	4.4	1.2	5.9	78.7	130

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
99LT-C1	~CPRF	730	730	100	999.6	999.2	0.0039	RCBC	0.012	2	5	ft.	10	RCBC	Wingwall	4.65	5.60	1.12	IC
99LT-C2	~CPRF	730	730	110	1001.9	1001.8	0.0011	RCBC	0.012	3	4	ft.	10	RCBC	Wingwall	4.65	5.50	1.38	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
99LTb	99th Lateral	Water	12"	Van Buren Street

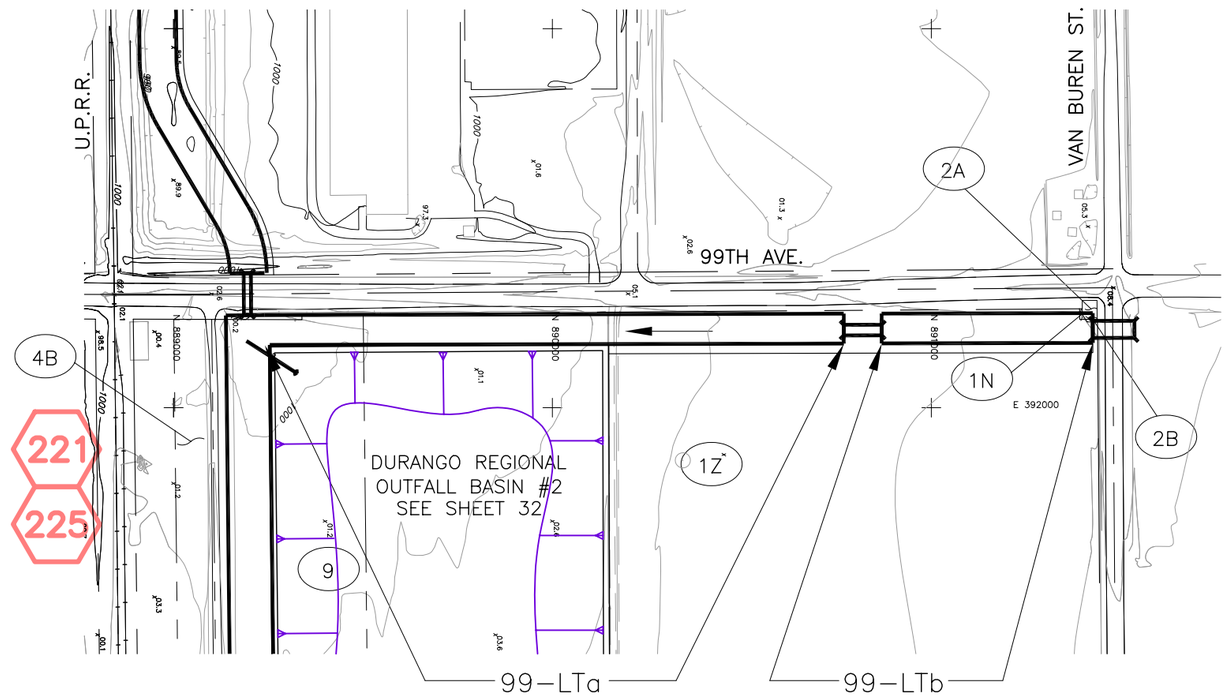
Environmental Sites

No.	Name	Address	Database
221	Puregro #174 Tolleson Facility	99th Ave / Harrison	LUST, UST
225	Puregro Co	99th Ave / Harrison St	RCRIS-SQG, FINDS, CERCLIS-NFRAP

Landscape Notes

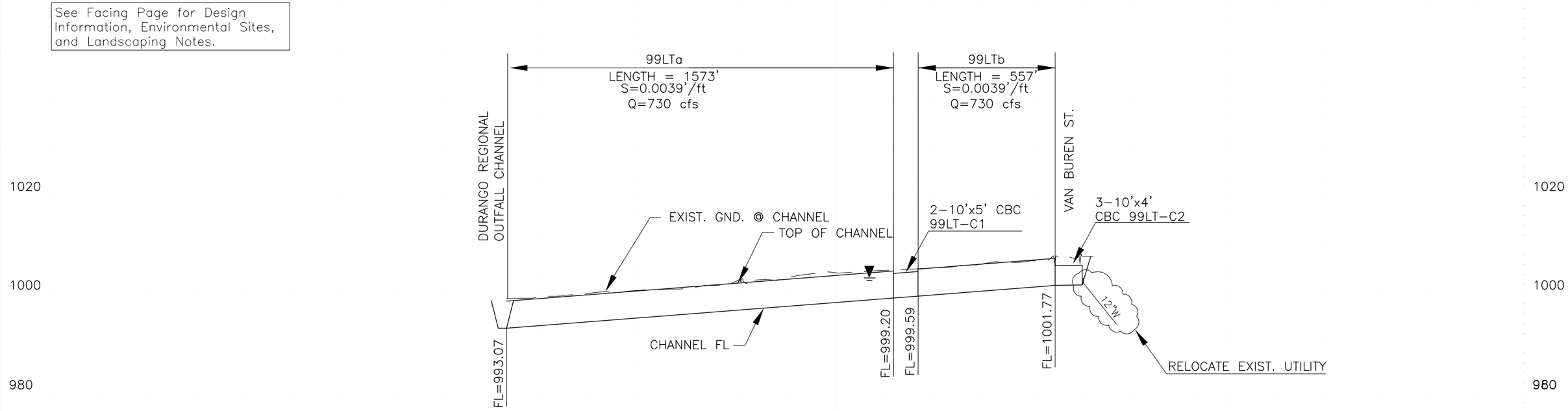
Parklike theme combined with formal promenade and railroad theme along the UPRR
- Active recreation uses in multi-level graded basins
- Meandering multi-use pathway
- Future Light Rail Corridor Potential
- Vary channel side slopes

BOOK 101
MAP 4



0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



99TH AVE. LATERAL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION 99TH AVE. LATERAL		
PRIME CONSULTANT DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 8 OF 38		

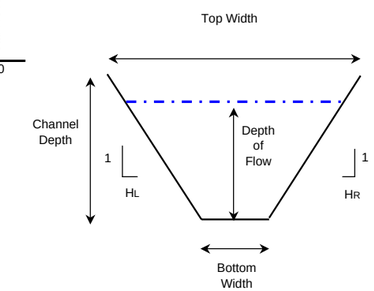
FILE:J:\9935\Acad\Prelim_Design\plpr08-99LT01.dwg DATE:Oct, 10 2002 TIME: 02:32 pm

Durango Area Drainage Master Plan
91st Ave Lateral

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
91LT	MCSARH	811	811	1008.5	1009.6	1106	0.0010	0.0010	0.0	0	0.0	GR	0.0400	60.0	3.9	6	6	328.5	107.8	0.25	Sub	2.5	1.0	4.9	119.2	170

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
91LT-C1	SUBSA	811	811	185	1009.8	1009.6	0.0010	RCBC	0.012	3	4	ft.	10	RCBC	Wingwall	3.93	5.08	1.27	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
91LTb	91st Lateral	Telephone	N/A	Van Buren Street
91LTb	91st Lateral	Telephone	N/A	Van Buren Street
91LTb	91st Lateral	Water	12"	Van Buren Street
91LTb	91st Lateral	Water	8"	Van Buren Street

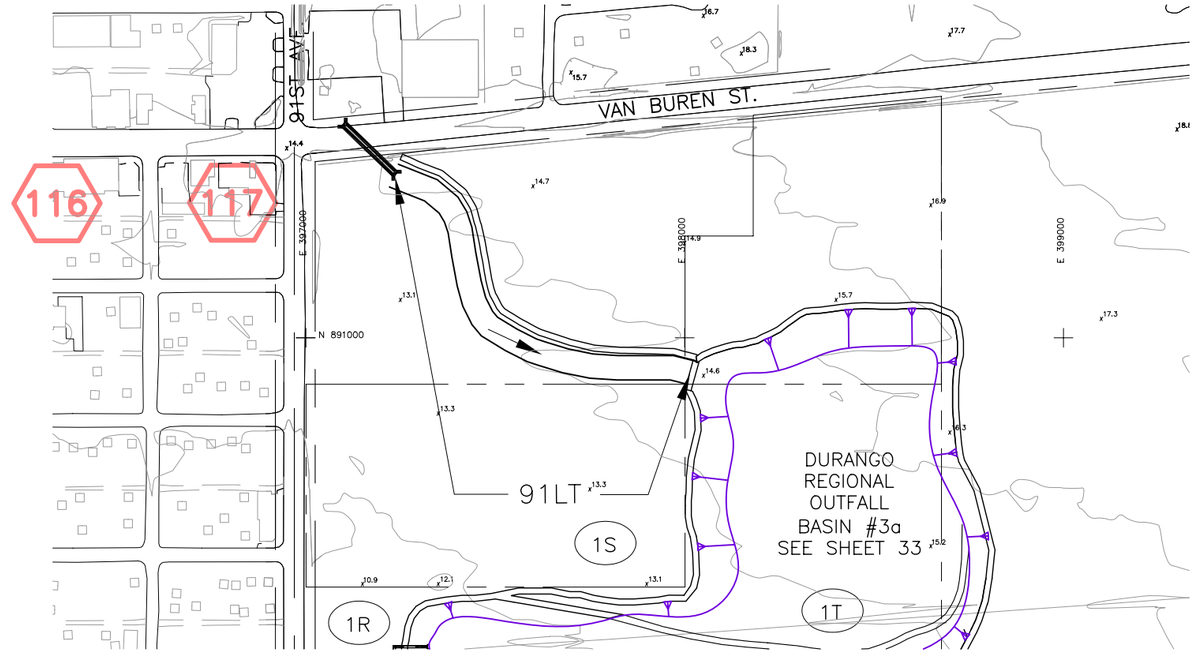
Environmental Sites

No.	Name	Address	Database
116	Tolleson Elementary SD#17	9261 W Van Buren St	FINDS
117	Circle K #8872	9110 W Van Buren St	UST
117	WR Grace Co	91st Ave / Van Buren	AZ_SPILL
117	Clark's Automotive Service	9123 W Van Buren St	UST

Landscape Notes

Parklike theme combined with formal promenade and railroad theme along the UPRR
- Active recreation uses in multi-level graded basins
- Meandering multi-use pathway
- Future Light Rail Corridor Potential
- Vary channel side slopes
- Existing formal rows of pecan trees north of Van Buren

BOOK 101
MAP 11



N

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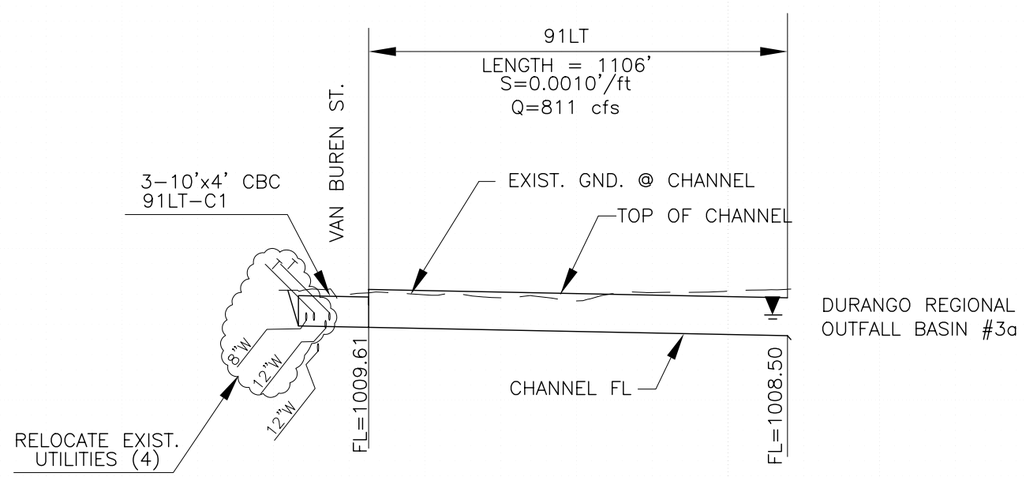
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



91ST AVE. LATERAL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION 91ST AVE. LATERAL		
PRIME CONSULTANT DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
		SHEETS NO. 9 OF 38

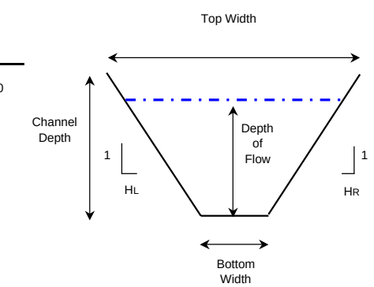
FILE:J:\9935\Acad\Prelim_Design\plpr09-91LT01.dwg DATE:Oct, 10 2002 TIME: 02:33 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC01a	- See Below																									40
DRCC01b	MCCABC	3224	3224	917.2	917.9	500	0.0014	0.0014	0.0	0	0.0	GR	0.0400	165.0	4.7	6	6	907.6	222.2	0.31	Sub	3.6	1.2	5.9	236.1	300

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Storm Drain Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Pipes	Pipe Diameter (in)
DRCC01a	MCCABC	34	915.0	917.2	4230	0.0005	C	0.0140	1	48

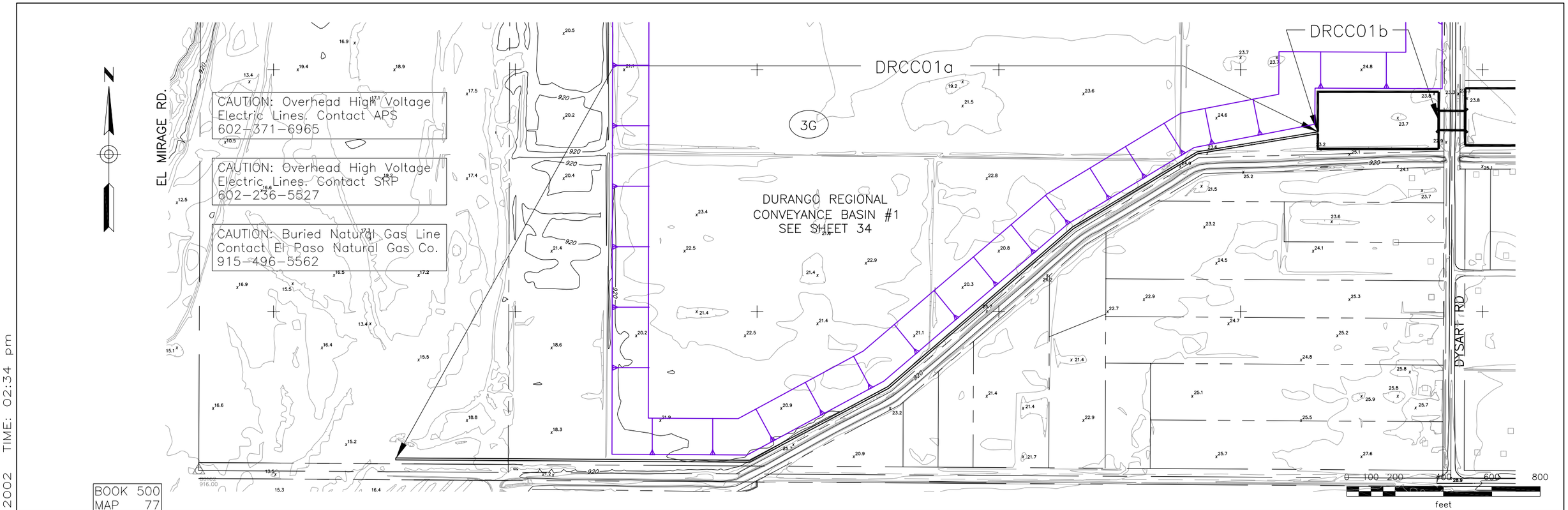
Environmental Sites

No.	Name	Address	Database

No known environmental sites

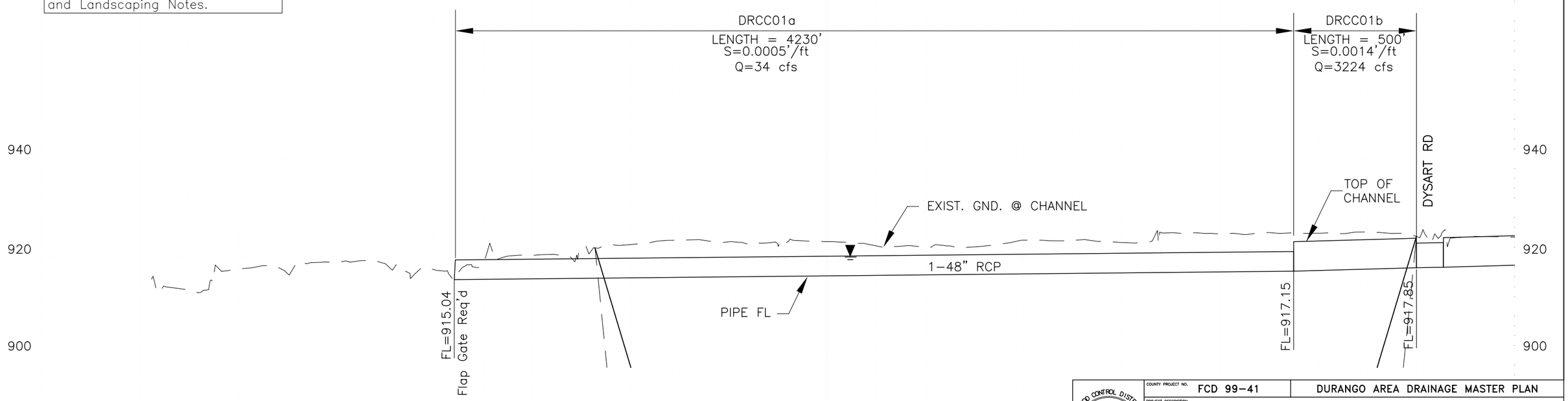
Landscape Notes

Natural landscape theme
Enhancement of river area



BOOK 500
MAP 77

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99-41

DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL

PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: –
DES. JLM DATE: –
CKD. BJF DATE: –

SCALE: 1"=400' HORIZONTAL; 1"=20' VERTICAL

SHEETS NO. 10 OF 38

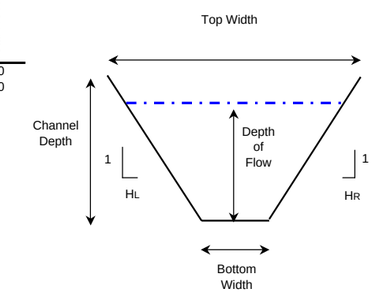
FILE:J:\9935\Acad\Prelim_Design\plpr10-drcc.dwg DATE:Oct, 10 2002 TIME: 02:34 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC02a	MCCBCA	3224	3224	918.0	921.5	2513	0.0014	0.0014	0.0	0	0.0	GR	0.0400	165.0	4.7	6	6	907.6	222.2	0.31	Sub	3.6	1.2	5.9	236.1	300
DRCC02b	MCCBCA	3224	3224	921.6	925.1	2513	0.0014	0.0014	0.0	0	0.0	GR	0.0400	165.0	4.7	6	6	907.6	222.2	0.31	Sub	3.6	1.2	5.9	236.1	300

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C1a	~CPCA2	3225	3225	110	918.0	917.9	0.0010	RCBC	0.012	9	5	ft.	10	RCBC	Wingwall	4.70	5.89	1.18	TW
DRCC-C1b	~CPCA2	3225	3225	110	921.6	921.5	0.0014	RCBC	0.012	9	5	ft.	10	RCBC	Wingwall	4.70	5.85	1.17	TW

Environmental Sites

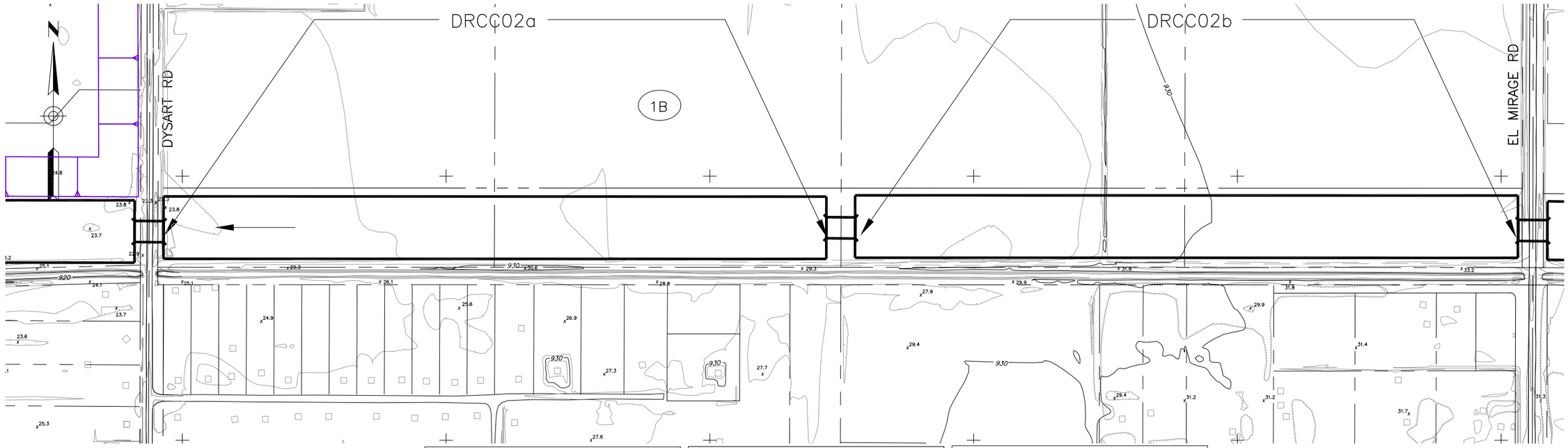
No.	Name	Address	Database

No known environmental sites

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes

BOOK 500
MAP 72



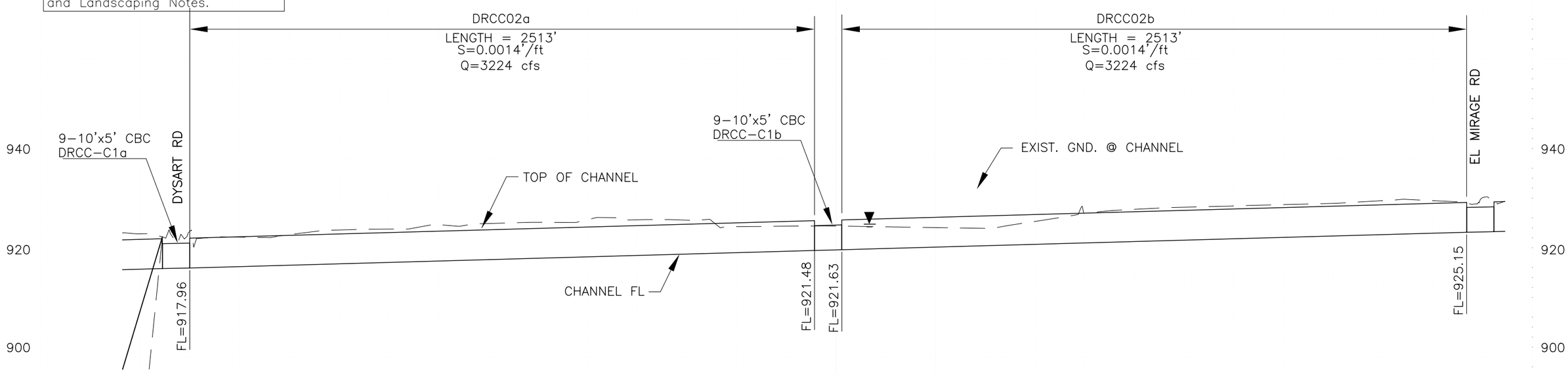
CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
		SHEETS NO. 11 OF 38

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

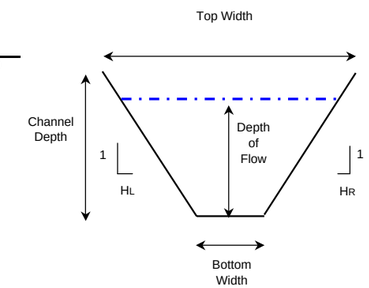
FILE:J:\9935\Acad\Prelim_Design\plpr11-drcc.dwg DATE:Oct, 10 2002 TIME: 02:35 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC03a	MCHACB	3278	3278	925.3	931.0	3377	0.0017	0.0017	0.0	0	0.0	GR	0.0400	150.0	4.7	6	6	841.4	207.4	0.34	Sub	3.9	1.2	6.0	221.5	280

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C2	~CPCB2	3522	3522	110	925.3	925.1	0.0010	RCBC	0.012	10	5	ft.	10	RCBC	Wingwall	4.70	5.84	1.17	TW

Environmental Sites

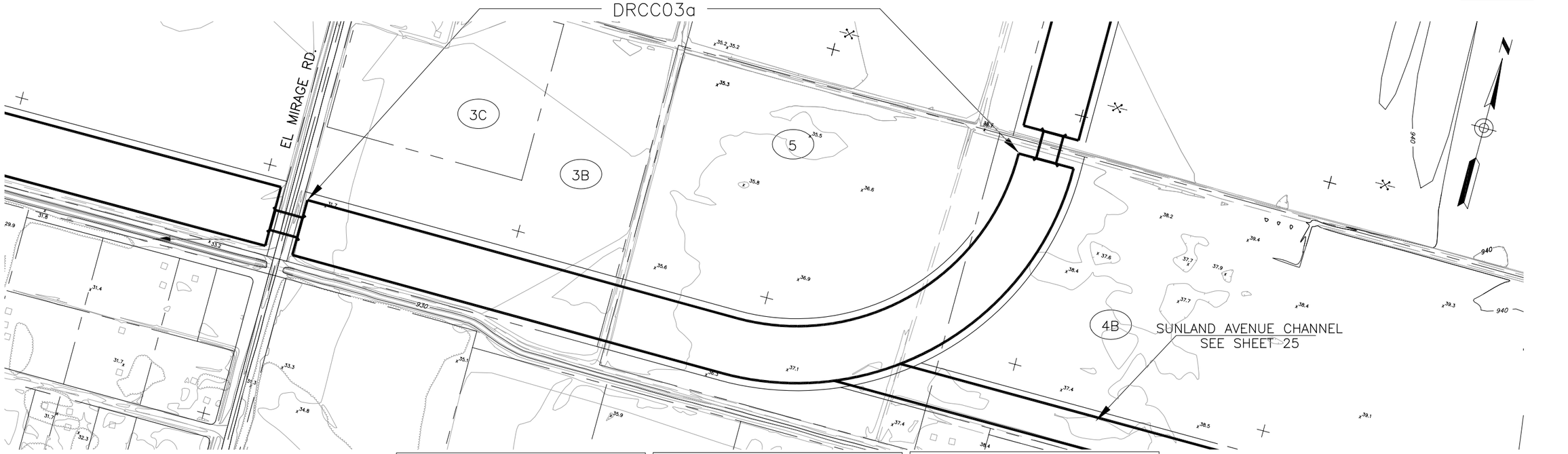
No.	Name	Address	Database

No known environmental sites

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes

BOOK 500
MAP 67



BOOK 500
MAP 70

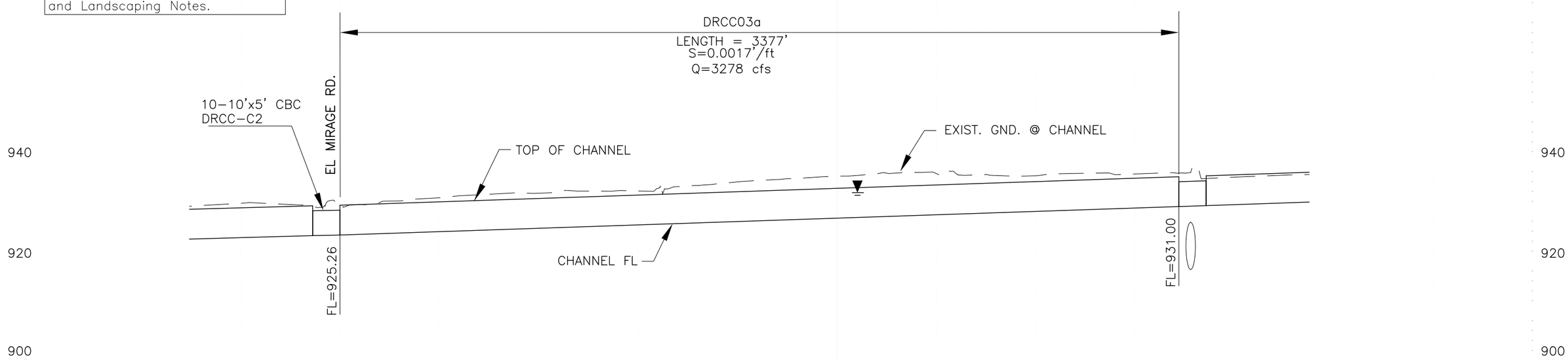
CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99-41

DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL

PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: –
DES. JLM DATE: –
CKD. BJF DATE: –

SCALE: 1"=400' HORIZONTAL; 1"=20' VERTICAL

SHEETS NO. 12 OF 38

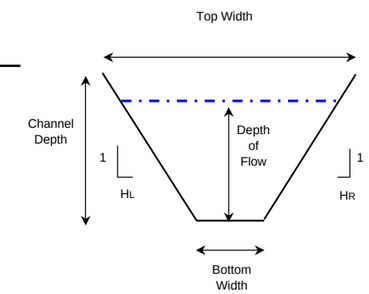
FILE:J:\9935\Acad\Prelim_Design\plpr12-drcc.dwg DATE:Oct, 10 2002 TIME: 02:36 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC03b	MCHAGD	3278	3278	931.2	935.5	2530	0.0017	0.0017	5.7	0	5.7	GR	0.0400	150.0	4.7	6	6	841.4	207.4	0.34	Sub	3.9	1.2	6.0	221.5	280

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C3	~CPCB1	3278	3278	110	931.2	931.0	0.0016	RCBC	0.012	9	5	ft.	10	RCBC	Wingwall	4.72	5.88	1.18	TW

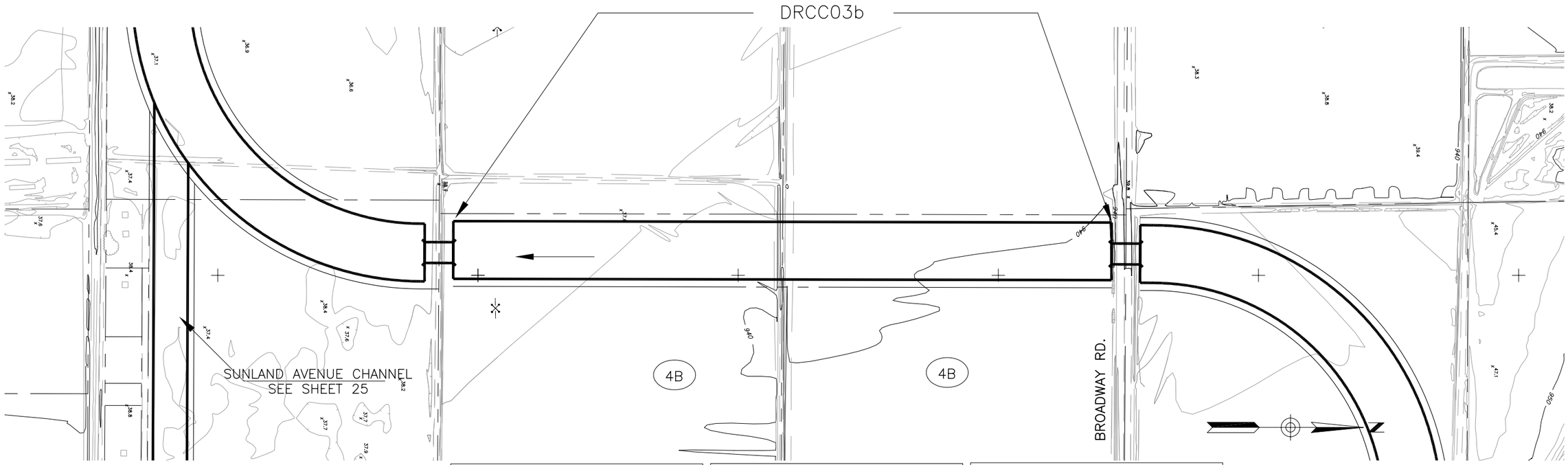
Environmental Sites

No.	Name	Address	Database

No known environmental sites

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes



CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

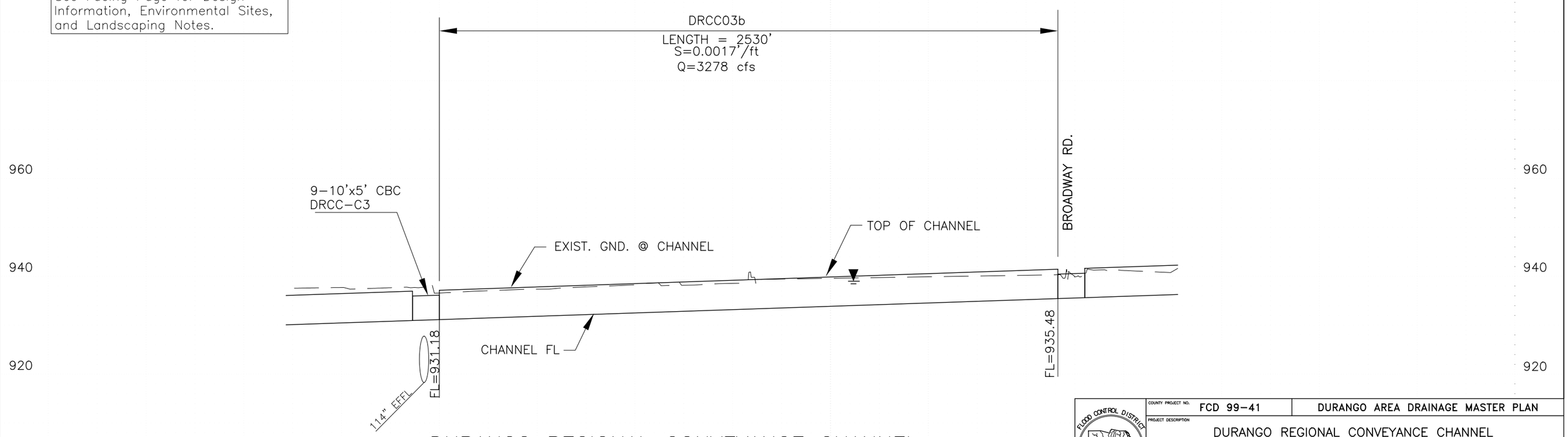
CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

BOOK 500
MAP 67

0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99-41

DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION

DURANGO REGIONAL CONVEYANCE CHANNEL

PRIME CONSULTANT

DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: –
DES. JLM DATE: –
CKD. BJF DATE: –

SCALE
1"=400' HORIZONTAL
1"=20' VERTICAL

SHEETS
NO. 13 OF 38

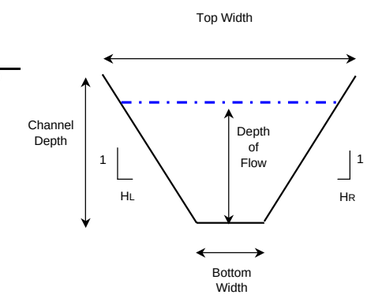
FILE:J:\9935\Acad\Prelim_Design\plpr13-drcc.dwg DATE:Oct, 10 2002 TIME: 02:37 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC03c	MCHAGD	3278	3278	935.7	940.8	3038	0.0017	0.0017	5.7	1	5.7	GR	0.0400	150.0	4.7	6	6	841.4	207.4	0.34	Sub	3.9	1.2	6.0	221.5	280

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C4	~CPCB1	3278	3278	110	935.7	935.5	0.0017	RCBC	0.012	9	5	ft.	10	RCBC	Wingwall	4.72	5.87	1.17	TW

Environmental Sites

No.	Name	Address	Database

No known environmental sites

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes

BOOK 500
MAP 66

DRCC03c

BROADWAY RD

115TH AVE.

8A

4B

CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

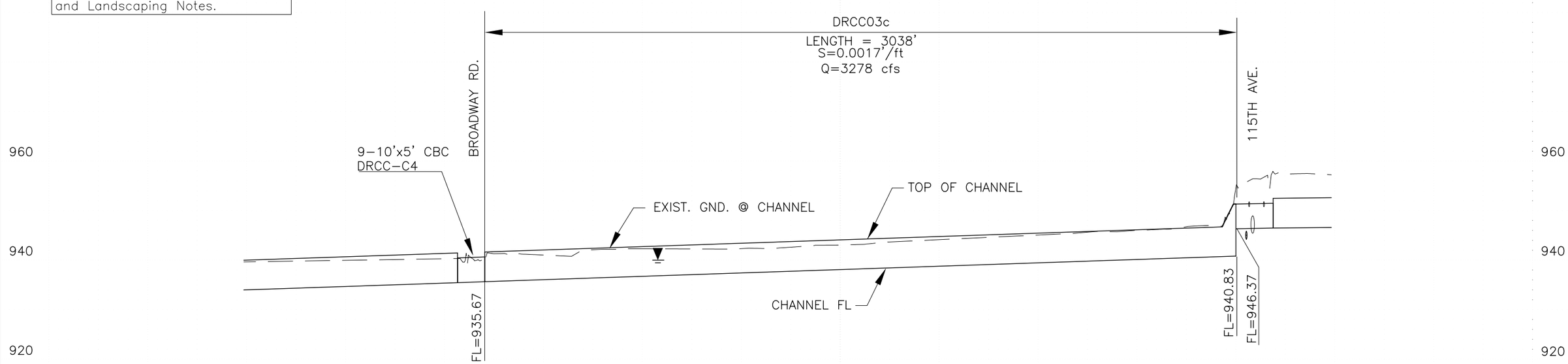
CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

BOOK 500
MAP 67

0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99-41

DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL

PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: –
DES. JLM DATE: –
CKD. BJF DATE: –

SCALE: 1"=400' HORIZONTAL; 1"=20' VERTICAL

SHEETS NO. 14 OF 38

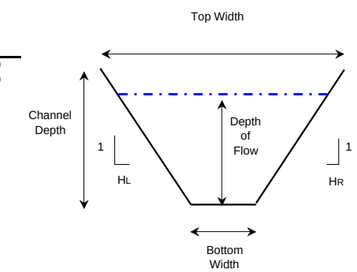
FILE:J:\9935\Acad\Prelim_Design\plpr14-drcc.dwg DATE:Oct, 10 2002 TIME: 02:38 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC04	MCIAHB	2578	2578	946.5	947.8	2646	0.0005	0.0005	0.0	0	0.0	GR	0.0400	220.0	4.8	6	6	1182.0	277.9	0.19	Sub	2.2	1.2	6.0	291.6	360
DRCC05	MCIBIA	2578	2578	947.8	949.1	2493	0.0005	0.0005	0.0	0	0.0	GR	0.0400	220.0	4.8	6	6	1182.0	277.9	0.19	Sub	2.2	1.2	6.0	291.6	360

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C5	~CPHB2	2628	2628	151	946.5	946.4	0.0010	RCBC	0.012	8	5	ft.	10	RCBC	Wingwall	4.72	5.72	1.14	TW
DRCC-C6	~CPIA	2578	2578	110	947.8	947.8	0.0000	RCBC	0.012	8	5	ft.	10	RCBC	Wingwall	4.76	5.81	1.16	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
DRCC-5	DRCC	Canal (BFC)	Assumed 48"	Parallel
DRCC-4	DRCC	Telephone	N/A	115th Avenue
DRCC-4	DRCC	Telephone	N/A	115th Avenue
DRCC-4	DRCC	Irrigation	42"	115th Avenue
DRCC-4	DRCC	Canal (BFC)	Assumed 48"	Parallel

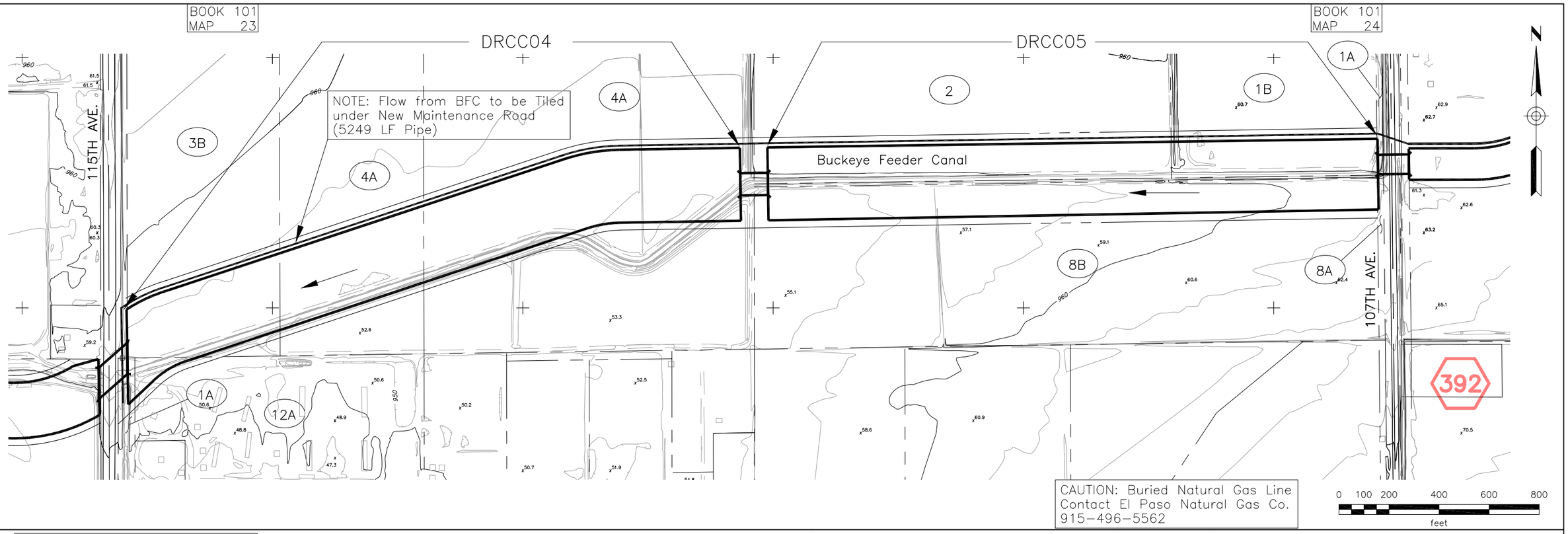
`

Environmental Sites

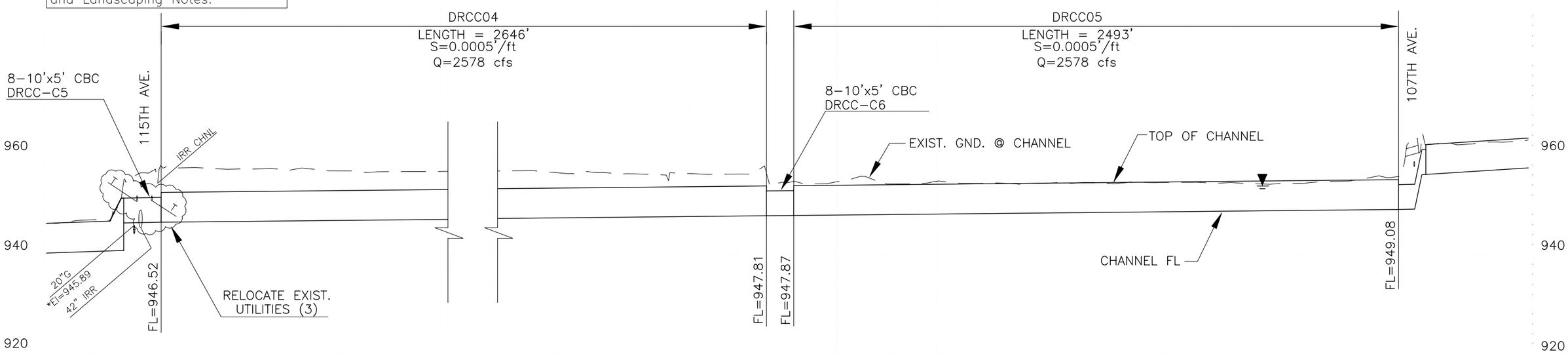
No.	Name	Address	Database
392	Cashion Gin	3436 S 107th Ave	LUST, UST

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes



See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
		SHEETS NO. 15 OF 38

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

* Indicates Potholed Elevation

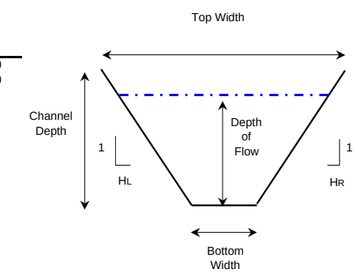
FILE:J:\9935\Acad\Prelim_Design\plpr15-drcc.dwg DATE:Oct, 10 2002 TIME: 02:39 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC06a	MCIDIB	1849	1849	956.1	964.8	2725	0.0032	0.0032	0.0	0	0.0	GR	0.0400	55.0	4.6	6	6	385.1	111.5	0.45	Sub	4.8	1.3	5.9	125.8	180
DRCC06b	MCIDIB	1849	1849	965.2	973.0	2430	0.0032	0.0032	0.0	0	0.0	GR	0.0400	55.0	4.6	6	6	385.1	111.5	0.45	Sub	4.8	1.3	5.9	125.8	180

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C7	~CPIB1	1849	1849	110	956.1	949.1	0.0010	RCBC	0.012	6	5	ft.	10	RCBC	Wingwall	4.76	5.61	1.12	TW
DRCC-C8	~CPIB1	1849	1849	110	965.2	964.8	0.0024	RCBC	0.012	6	5	ft.	10	RCBC	Wingwall	4.65	5.35	1.07	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
DRCC-6a	DRCC	Canal (BFC)	Assumed 48"	Parallel
DRCC-6b	DRCC	Canal (BFC)	Assumed 48"	Parallel

Environmental Sites

No.	Name	Address	Database

No known environmental sites

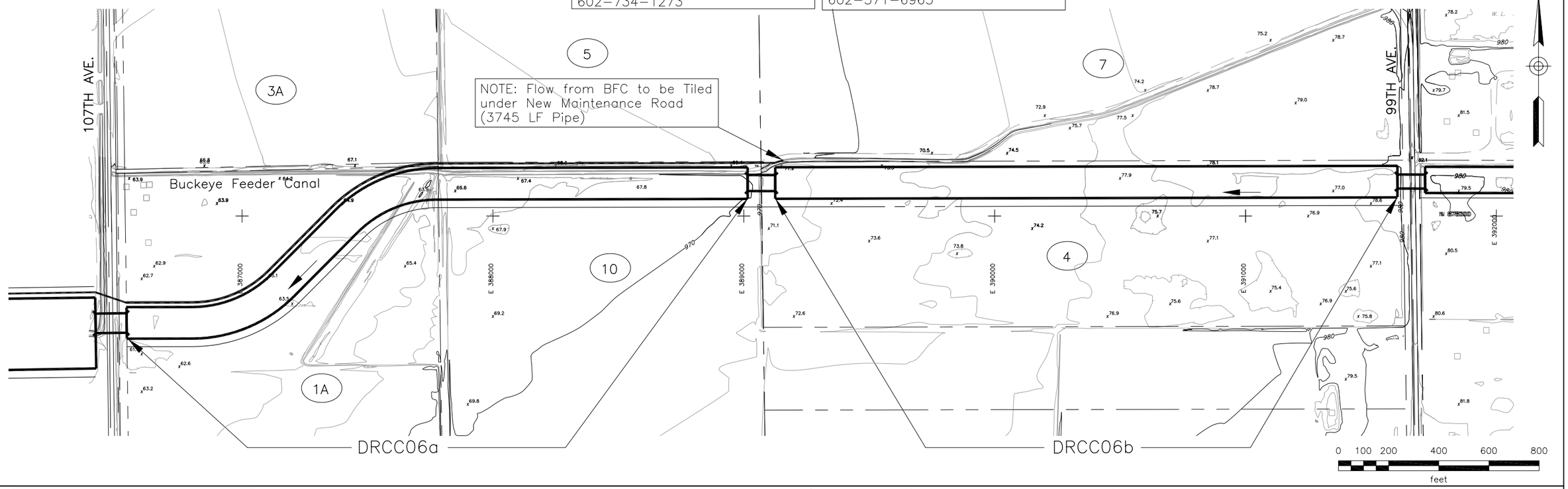
Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes
- Buffer views of transmission line corridor

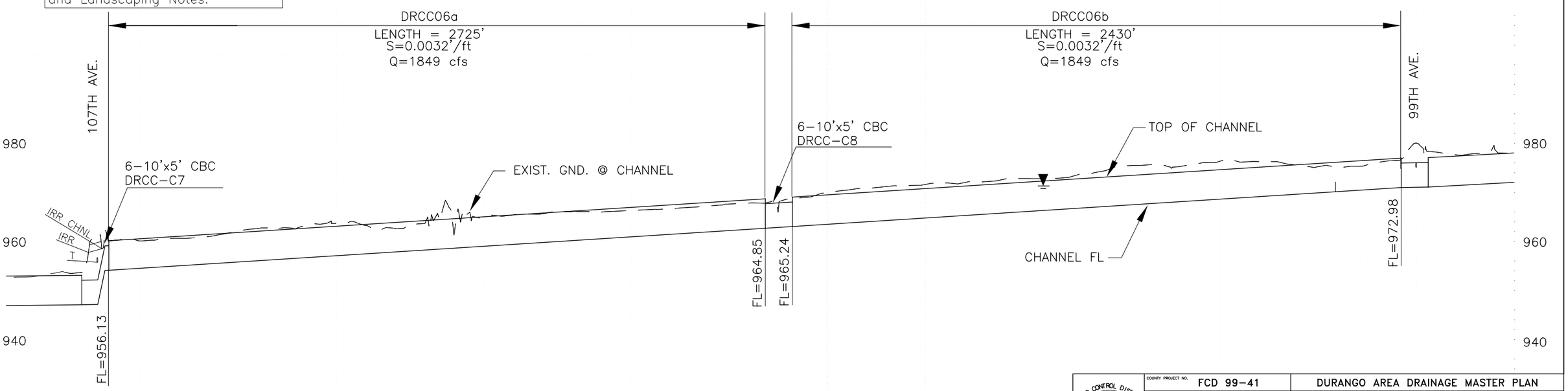
BOOK 101
MAP 25

CAUTION: Buried Fiber Optic Cable
Contact MCI WORLDCOM
602-734-1273

CAUTION: Overhead High Voltage
Electric Lines. Contact APS
602-371-6965



See Facing Page for Design
Information, Environmental Sites,
and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
		SHEETS NO. 16 OF 38

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

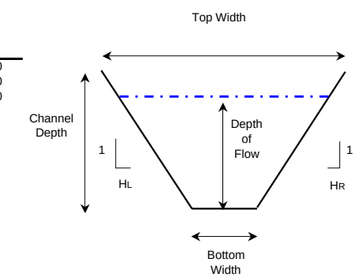
FILE:J:\9935\Acad\Prelim_Design\plpr16-drcc.dwg DATE:Oct, 10 2002 TIME: 02:39 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC07	MC95ID	1175	1175	973.1	980.6	2778	0.0027	0.0027	0.0	0	0.0	GR	0.0400	35.0	4.6	6	6	283.9	90.4	0.41	Sub	4.1	1.2	5.8	104.1	150
DRCC08a	MCBBY1	1050	1050	980.6	982.7	1079	0.0020	0.0020	0.0	0	0.0	GR	0.0400	55.0	3.9	6	6	305.1	102.4	0.35	Sub	3.4	1.0	4.9	114.0	170
DRCC08b	MCED95	1967	1967	982.8	984.0	1250	0.0010	0.0010	0.0	0	0.0	GR	0.0400	115.0	4.7	6	6	674.2	172.3	0.26	Sub	2.9	1.2	5.9	186.0	240

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C9	~CPID1	1175	1175	110	973.1	973.0	0.0010	RCBC	0.012	4	5	ft.	10	RCBC	Wingwall	4.65	5.41	1.08	TW
DRCC-C10	95PASS	1050	1050	140	980.6	980.6	0.0000	RCBC	0.012	8	4	ft.	10	RCBC	Wingwall	4.55	4.85	1.21	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
DRCC-7	DRCC	Telephone	N/A	99th Avenue

Environmental Sites

No.	Name	Address	Database

No known environmental sites

Landscape Notes

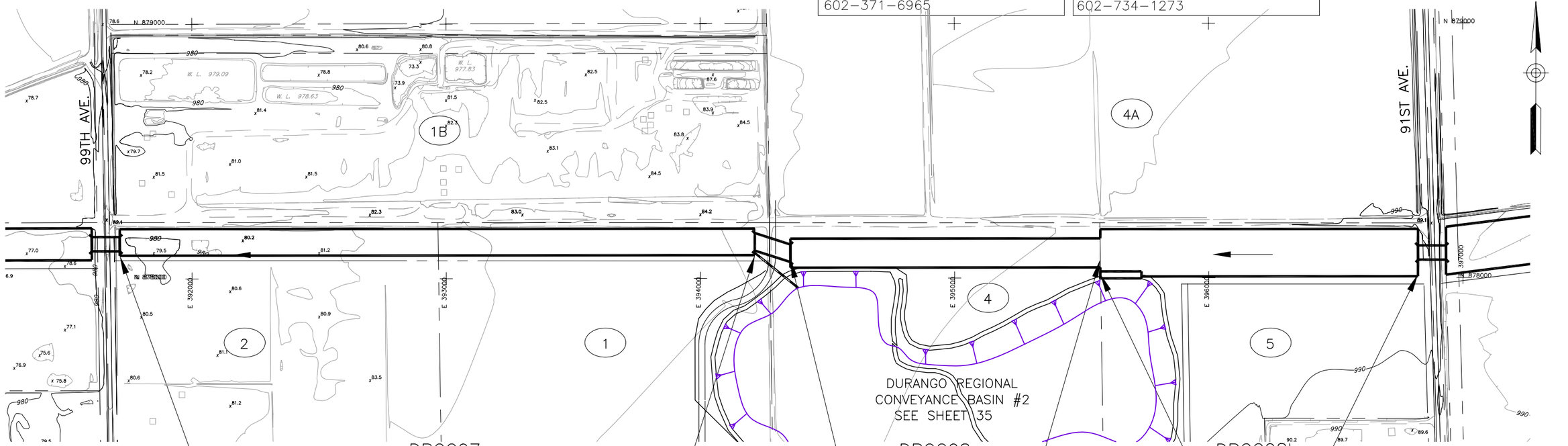
Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes
- Community Park site at basin
- Provide multi-use trail link to Union Elementary School
- Buffer views of transmission line corridor

BOOK 101
MAP 26

CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

CAUTION: Buried Fiber Optic Cable Contact MCI WORLDCOM 602-734-1273

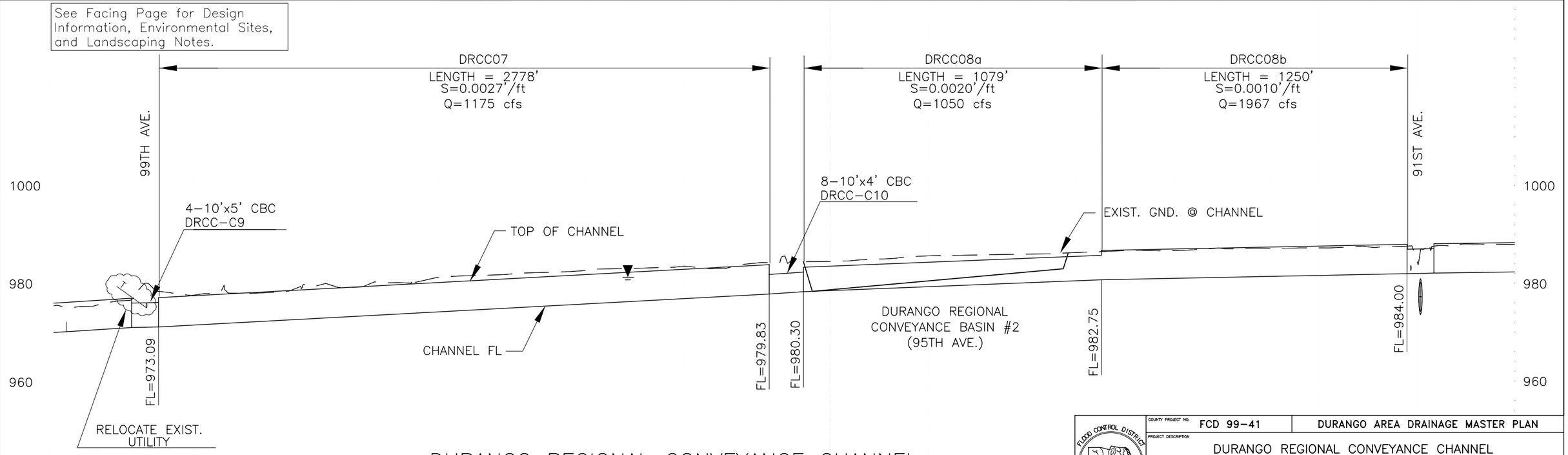
BOOK 101
MAP 27



BOOK 101
MAP 28

BOOK 101
MAP 29

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99-41

DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL

PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: –	SCALE		SHEETS
DES. JLM DATE: –	1"=400'	HORIZONTAL	NO. 17 OF 38
CKD. BJF DATE: –	1"=20'	VERTICAL	

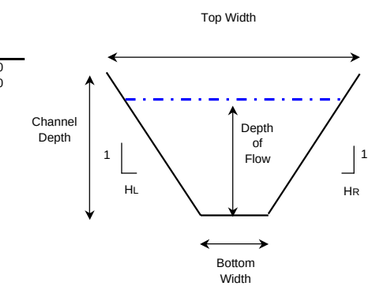
FILE:J:\9935\Acad\Prelim_Design\plpr17-drcc.dwg DATE:Oct, 10 2002 TIME: 02:41 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC09a	MCJBED	1681	1681	984.1	985.8	2484	0.0007	0.0007	0.0	0	0.0	GR	0.0400	115.0	4.8	6	6	683.9	172.9	0.22	Sub	2.5	1.2	6.0	186.7	250
DRCC09b	MCJBED	1681	1681	985.9	987.7	2533	0.0007	0.0007	0.0	0	0.0	GR	0.0400	115.0	4.8	6	6	683.9	172.9	0.22	Sub	2.5	1.2	6.0	186.7	250

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C11	~CPED1	1681	1681	110	984.1	984.0	0.0010	RCBC	0.012	5	5	ft.	10	RCBC	Wingwall	4.71	5.74	1.15	TW
DRCC-C12	~CPED1	1681	1681	110.4	985.9	985.8	0.0006	RCBC	0.012	5	5	ft.	10	RCBC	Wingwall	4.76	5.84	1.17	TW

Utility Crossings

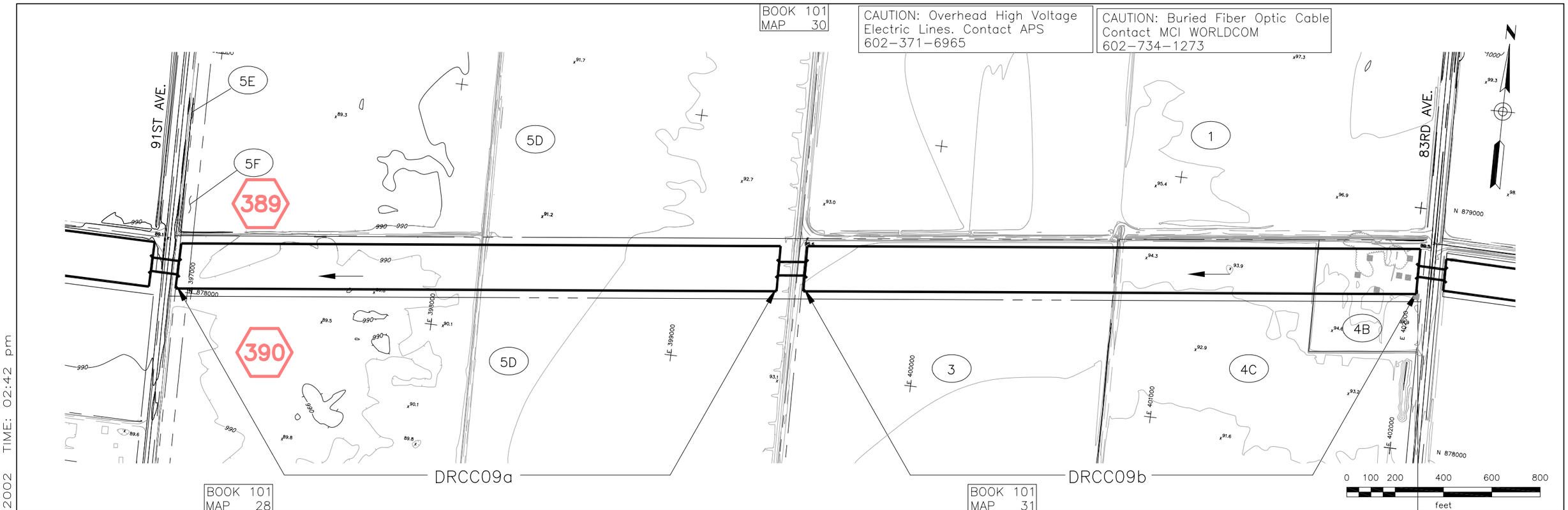
I.D.	Alignment	Type	Size	Location
DRCC09a	DRCC	Telephone	N/A	91st Avenue
DRCC09b	DRCC	Irrigatin	Channel	85th Avenue

Environmental Sites

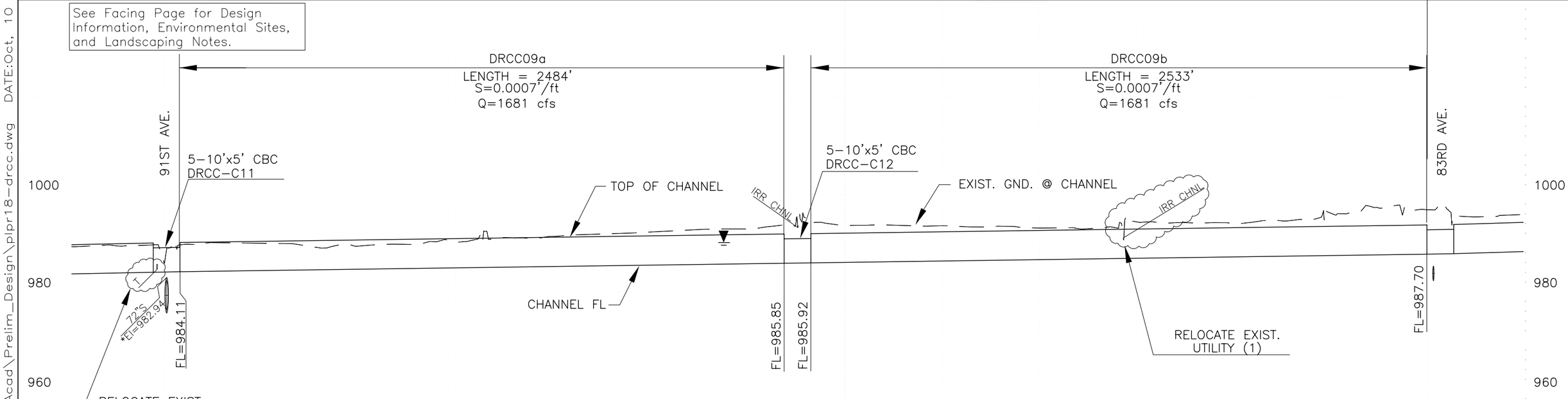
No.	Name	Address	Database
389	Pendergast Elementary District	3802 S 91st Ave	FINDS
390	Union Elementary School	3834 S 91st Ave	FINDS, UST

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes
- Buffer views of transmission line corridor



See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99-41

DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL

PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: –
DES. JLM DATE: –
CKD. BJF DATE: –

SCALE: 1"=400' HORIZONTAL; 1"=20' VERTICAL

SHEETS NO. 18 OF 38

FILE:J:\9935\Acad\Prelim_Design\plpr18-drcc.dwg DATE:Oct, 10 2002 TIME: 02:42 pm

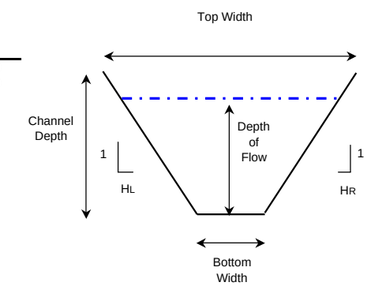
* Indicates Potholed Elevation

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC10a	MCJCJB	1393	1393	987.8	991.7	2565	0.0015	0.0015	0.0	0	0.0	GR	0.0400	60.0	4.7	6	6	416.3	117.4	0.31	Sub	3.3	1.2	5.9	131.2	180
DRCC10b	MCJCJB	1393	1393	992.0	996.8	3174	0.0015	0.0015	0.0	0	0.0	GR	0.0400	60.0	4.7	6	6	416.3	117.4	0.31	Sub	3.3	1.2	5.9	131.2	180

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C13	~CPJB1	1393	1393	110.5	987.8	987.7	0.0011	RCBC	0.012	4	5	ft.	10	RCBC	Wingwall	4.76	5.88	1.18	TW
DRCC-C14	~CPJB1	1393	1393	220	992.0	991.7	0.0015	RCBC	0.012	4	5	ft.	10	RCBC	Wingwall	4.71	5.79	1.16	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
DRCC10b	DRCC	Irrigation	Channel	79th Avenue
DRCC10b	DRCC	Fiber Optic	N/A	Elwood Road

Environmental Sites

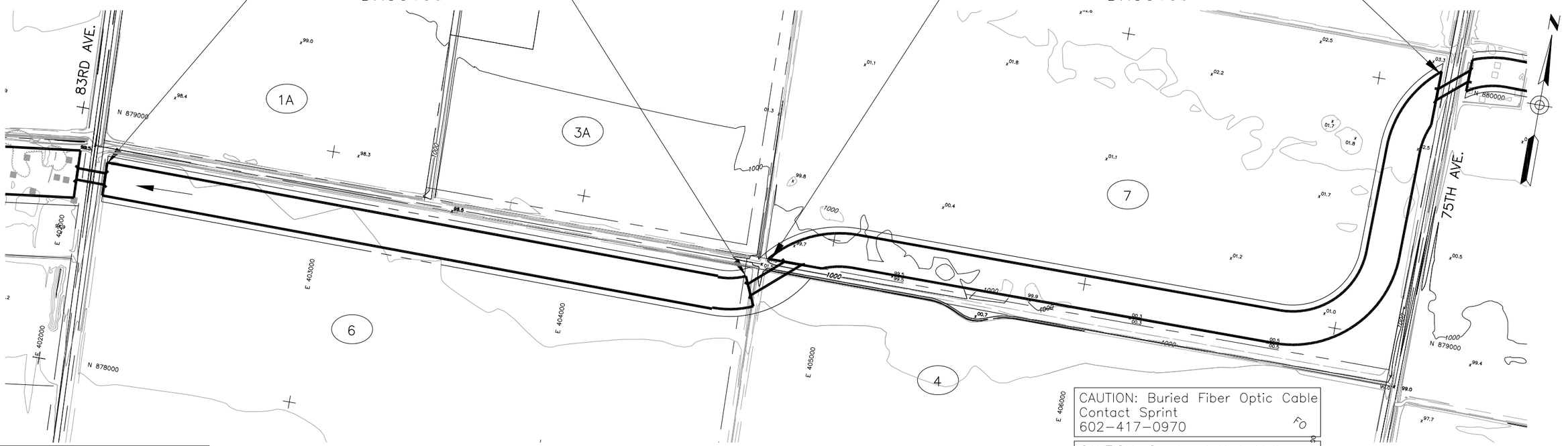
No.	Name	Address	Database

No known environmental sites

Landscape Notes

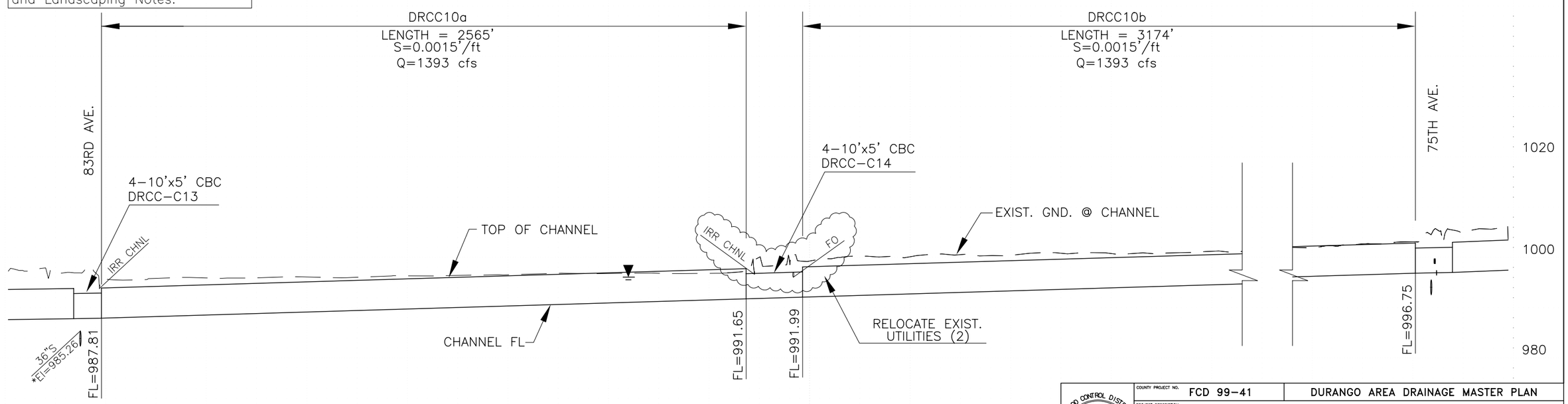
Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes
- Buffer views of transmission line corridor

BOOK 104
MAP 53



CAUTION: Buried Fiber Optic Cable
Contact MCI WORLDCOM
602-734-1273

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 19 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

* Indicates Potholed Elevation

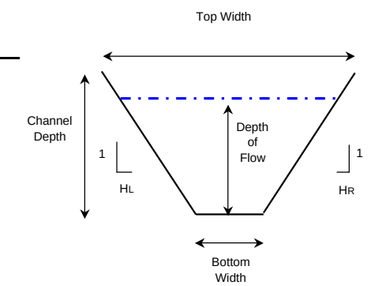
FILE:J:\9935\Acad\Prelim_Design\plpr19-drcc.dwg DATE:Oct, 10 2002 TIME: 02:43 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC11	MCNAJC	1173	1173	996.9	1001.7	2417	0.0020	0.0020	0.0	0	0.0	GR	0.0400	40.0	4.7	6	6	319.2	97.0	0.36	Sub	3.7	1.2	5.9	110.9	160

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C15	~CPJC1	1173	1173	146	996.9	996.8	0.0010	RCBC	0.012	4	5	ft.	10	RCBC	Wingwall	4.71	5.48	1.10	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
DRCC-11	DRCC	Water	12"	75th Avenue
DRCC-11	DRCC	Telephone	N/A	75th Avenue
DRCC-11	DRCC	Telephone	N/A	75th Avenue
DRCC-11	DRCC	Telephone	N/A	75th Avenue

Environmental Sites

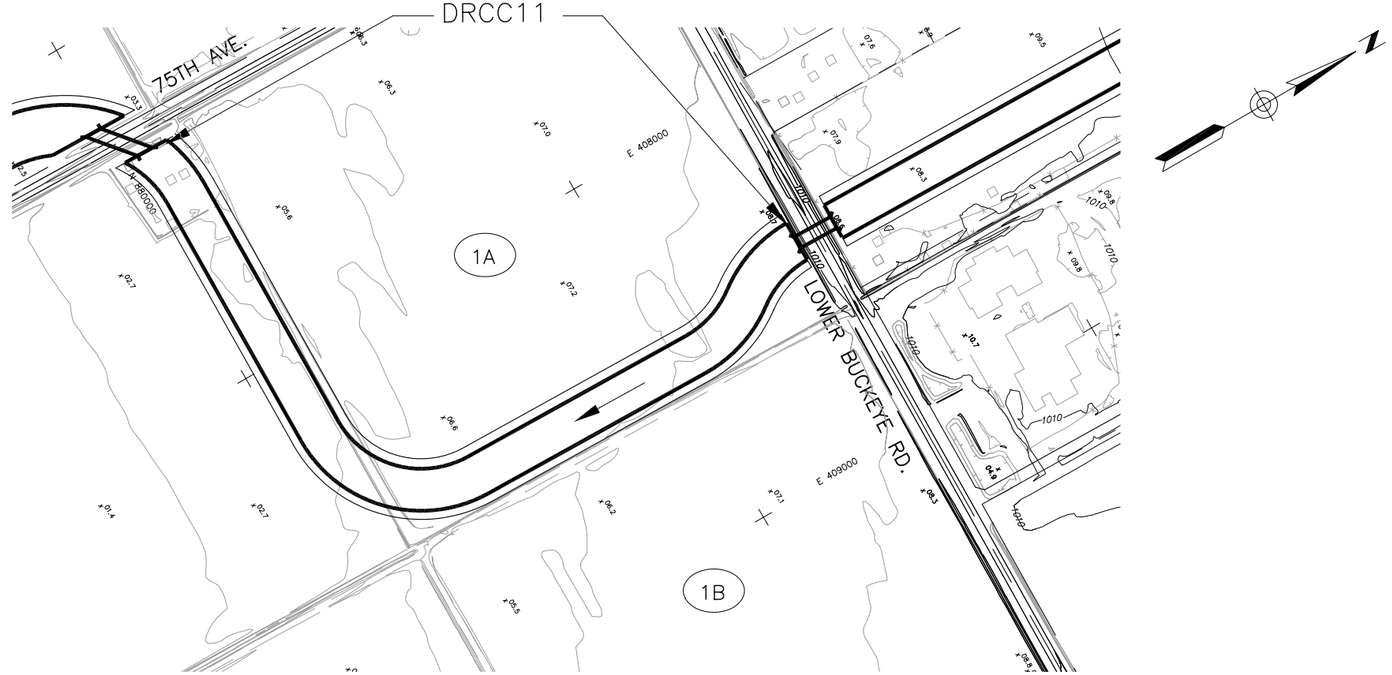
No.	Name	Address	Database

No known environmental sites

Landscape Notes

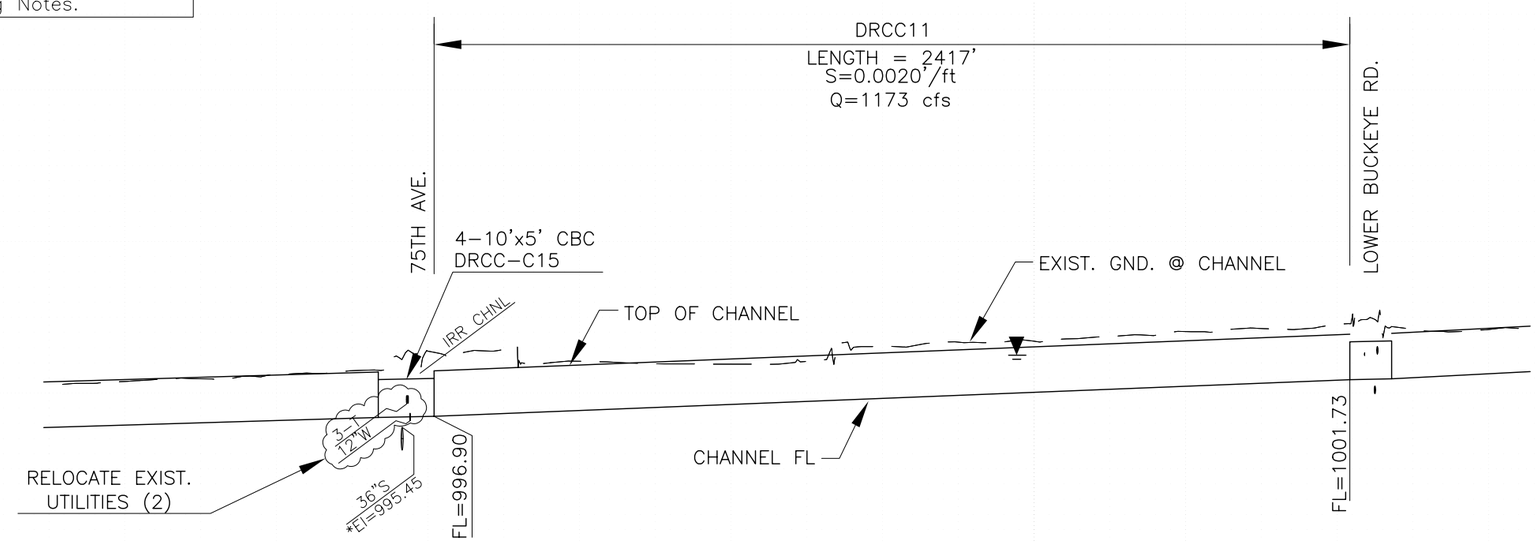
Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes

BOOK 104
MAP 52



0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99-41 | DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL

PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: – | DES. JLM DATE: – | CKD. BJF DATE: –

SCALE: 1"=400' HORIZONTAL | 1"=20' VERTICAL

SHEETS NO. 20 OF 38

* Indicates Potholed Elevation

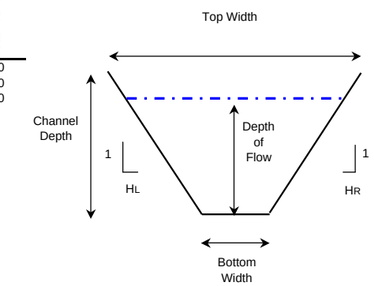
FILE:J:\9935\Acad\Prelim_Design\plpr20-drcc.dwg DATE:Oct, 10 2002 TIME: 02:43 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC12	MC73NA	1053	1053	1001.8	1009.7	3037	0.0026	0.0026	0.0	0	0.0	GR	0.0400	30.0	4.6	6	6	263.1	85.7	0.40	Sub	4.0	1.2	5.8	99.4	150
DRCC13a	MCBBY2	450	450	1009.7	1011.6	815	0.0023	0.0023	0.0	0	0.0	GR	0.0400	4.0	4.5	6	6	141.3	59.1	0.36	Sub	3.2	1.2	5.7	72.4	120
DRCC13b	MCPB73	828	828	1011.6	1017.3	1288	0.0044	0.0044	0.0	0	0.0	GR	0.0400	10.0	4.6	6	6	175.7	66.5	0.51	Sub	4.7	1.2	5.9	80.7	130

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C16	~@CPNA	1053	1053	110.2	1001.8	1001.7	0.0010	RCBC	0.012	4	5	ft.	8	RCBC	Wingwall	4.69	5.69	1.14	TW

Utility Crossings

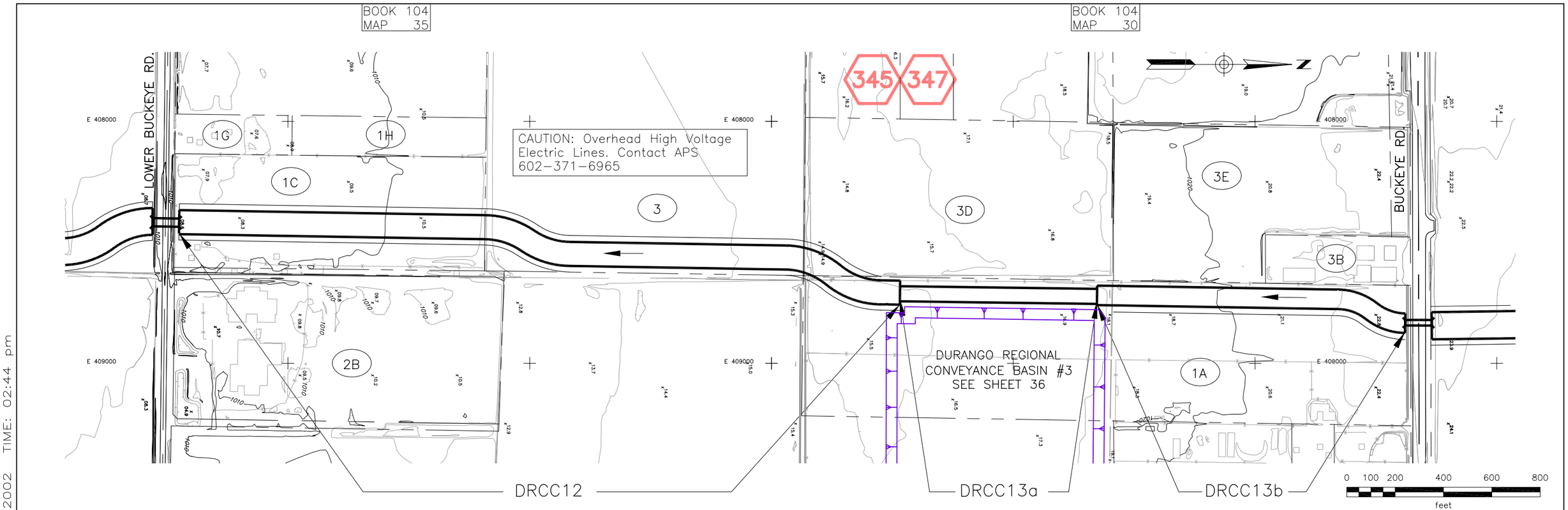
I.D.	Alignment	Type	Size	Location
DRCC-12	DRCC	Fiber Optic	N/A	Lower Buckeye Road

Environmental Sites

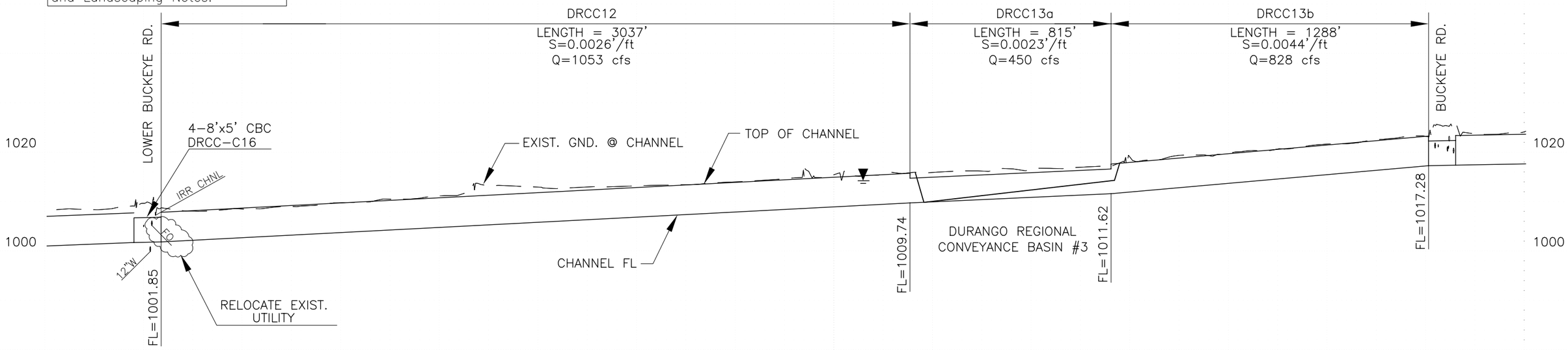
No.	Name	Address	Database
345	Swift Transportation Co	2200 S 75th Ave	AIRS
347	Swift Transportation	2200 S 75th Ave	RCRIS-SQG, FINDS

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in multi-level graded basins and channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes
- Community Park site at basin
- Provide multi-use trail link to Santa Maria Middle School



See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 21 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

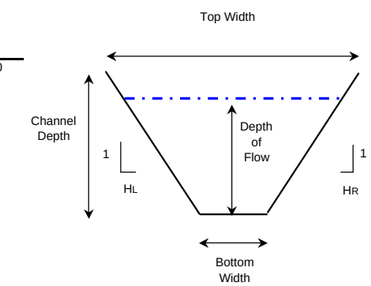
FILE:J:\9935\Acad\Prelim_Design\plpr21-drcc.dwg DATE:Oct, 10 2002 TIME: 02:44 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC14	MC71PB	828	828	1017.4	1019.6	2422	0.0009	0.0009	0.0	0	0.0	GR	0.0400	40.0	4.8	6	6	331.1	98.5	0.24	Sub	2.5	1.2	6.0	112.4	160

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C17	~CPPB2	828	828	110	1017.4	1017.3	0.0009	RCBC	0.012	3	5	ft.	8	RCBC	Wingwall	4.64	5.76	1.15	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
DRCC14	DRCC	Water	12"	Buckeye Road
DRCC14	DRCC	Water	12"	Buckeye Road
DRCC14	DRCC	Telephone	N/A	Buckeye Road
DRCC14	DRCC	Undrgrnd Electric	N/A	Buckeye Road
DRCC14	DRCC	Natural Gas	10"	Buckeye Road
DRCC14	DRCC	Irrigation	24"	Buckeye Road

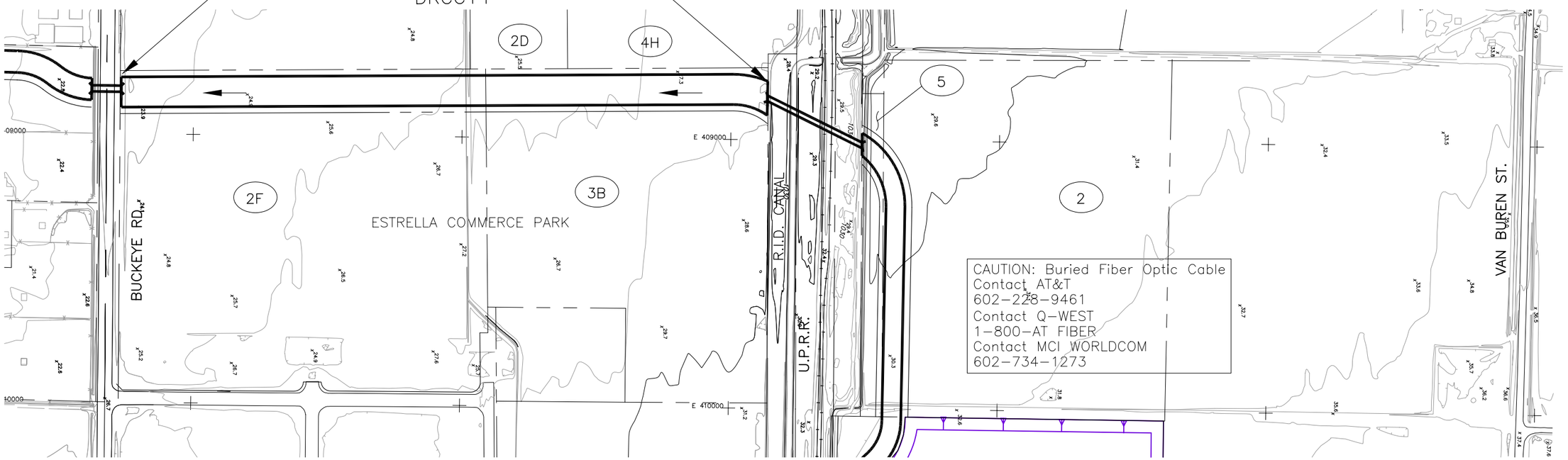
Environmental Sites

No.	Name	Address	Database

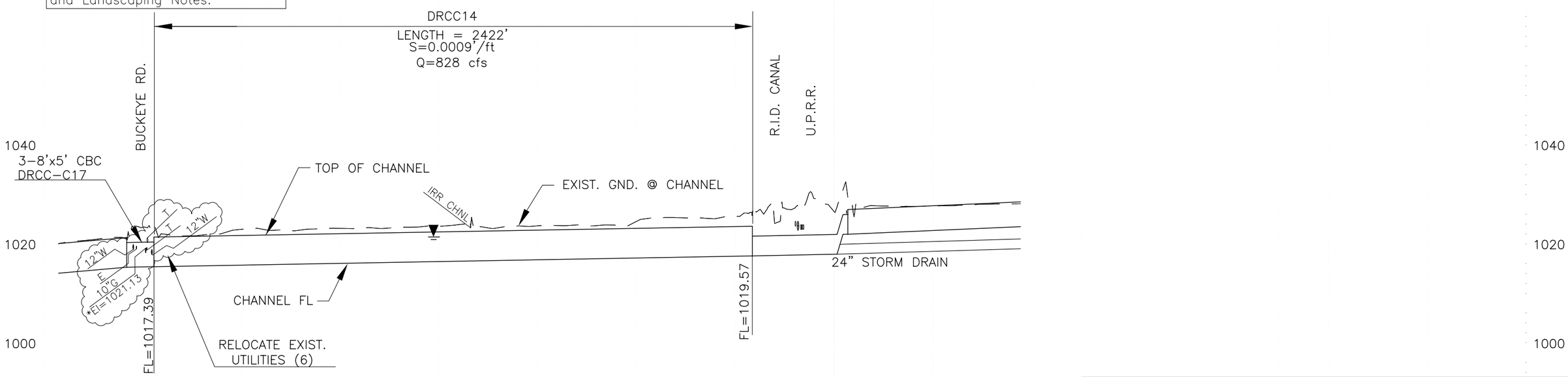
No known environmental sites

Landscape Notes

Modified Sonoran desert landscape theme for industrial areas
- Meandering multi-use pathway
- Vary channel side slopes
- Buffer views of adjacent industrial facilities



See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

* Indicates Potholed Elevation

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 22 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

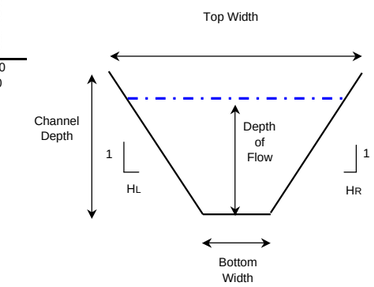
FILE:J:\9935\Acad\Prelim_Design\plpr22-drcc.dwg DATE:Oct, 10 2002 TIME: 02:46 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC15	MC71RR	410	410	1024.0	1029.3	2441	0.0022	0.0022	0.0	0	0.0	GR	0.0400	4.0	4.4	6	6	134.0	57.6	0.35	Sub	3.1	1.1	5.5	70.5	120
DRCC16	MCUCUB	995	995	1029.3	1030.6	1287	0.0010	0.0010	0.0	0	0.0	C	0.0140	35.0	3.9	0	0	136.7	42.8	0.65	Sub	7.3	1.2	5.1	35.0	80

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C18	BSN71	410	410	380.5	1024.0	1019.6	0.0010	RCBC	0.012	3	4	ft.	8	RCBC	Wingwall	4.81	5.13	1.28	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
DRCC15	DRCC	Irrigation	Channel	U.P.R.R.
DRCC15	DRCC	Irrigation	Channel	69th Avenue

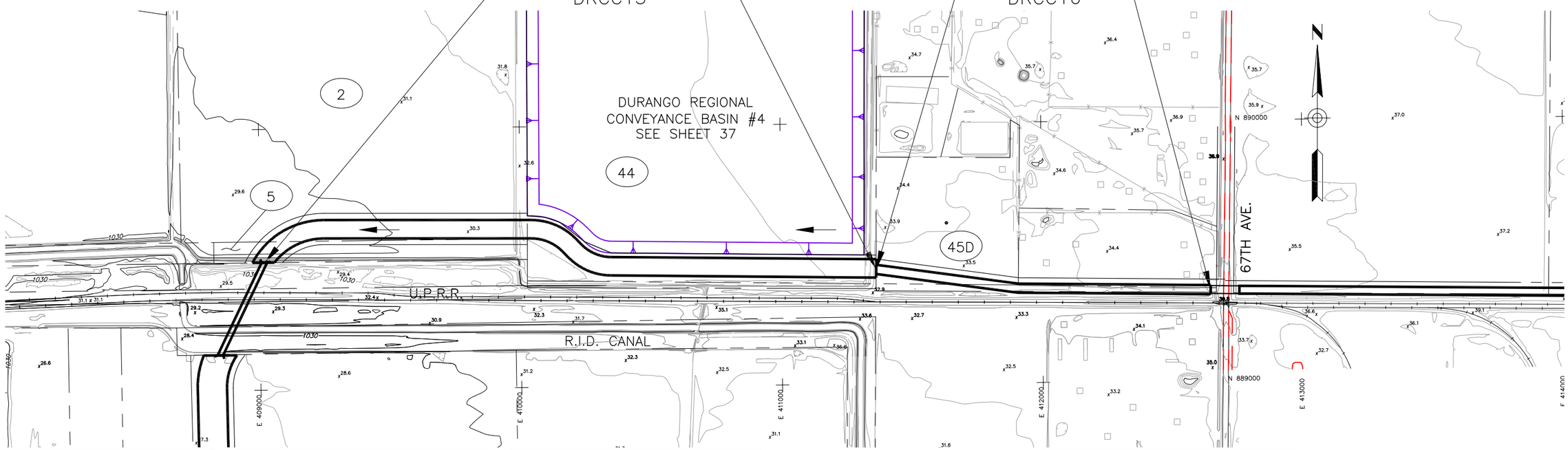
Environmental Sites

No.	Name	Address	Database

No known environmental sites

Landscape Notes

Modified Sonoran desert landscape theme for industrial areas
- Railroad theme along UPRR frontage
- Meandering multi-use pathway
- Active recreation opportunity in multi-level graded basins
- Vary channel side slopes
- Buffer views of adjacent industrial facilities



CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

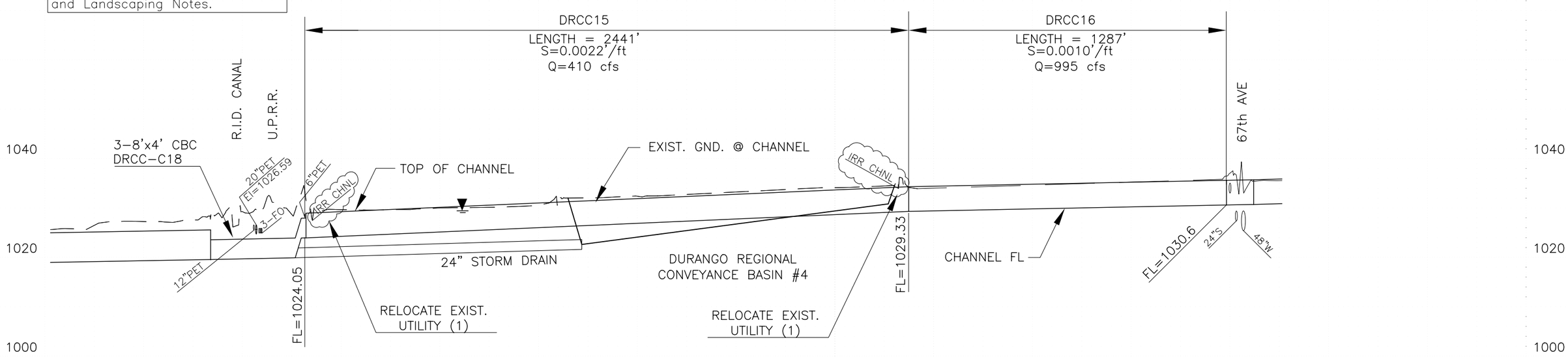
CAUTION: Buried Petroleum Pipe Line. Contact Kinder-Morgan Co. 714-560-4940

CAUTION: Buried Fiber Optic Cable Contact MCI WORLDCOM 602-734-1273

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 23 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

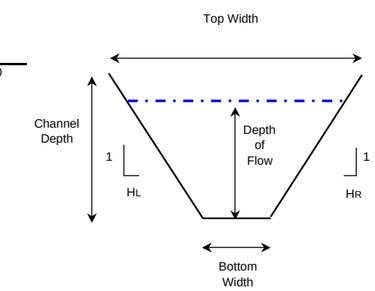
FILE:J:\9935\Acad\Prelim_Design\plpr23-drcc.dwg DATE:Oct, 10 2002 TIME: 02:48 pm

Durango Area Drainage Master Plan
Durango Regional Conveyance Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
DRCC17	MCUCUC	980	980	1030.7	1034.2	2493	0.0014	0.0014	0.0	0	0.0	C	0.0140	30.0	3.9	0	0	116.5	37.8	0.75	Sub	8.4	1.2	5.1	30.0	70

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
DRCC-C19	~CPUC2	980	980	110	1030.7	1030.6	0.0009	RCBC	0.012	4	4	ft.	10	RCBC	Wingwall	3.91	4.78	1.20	TW

Utility Crossings

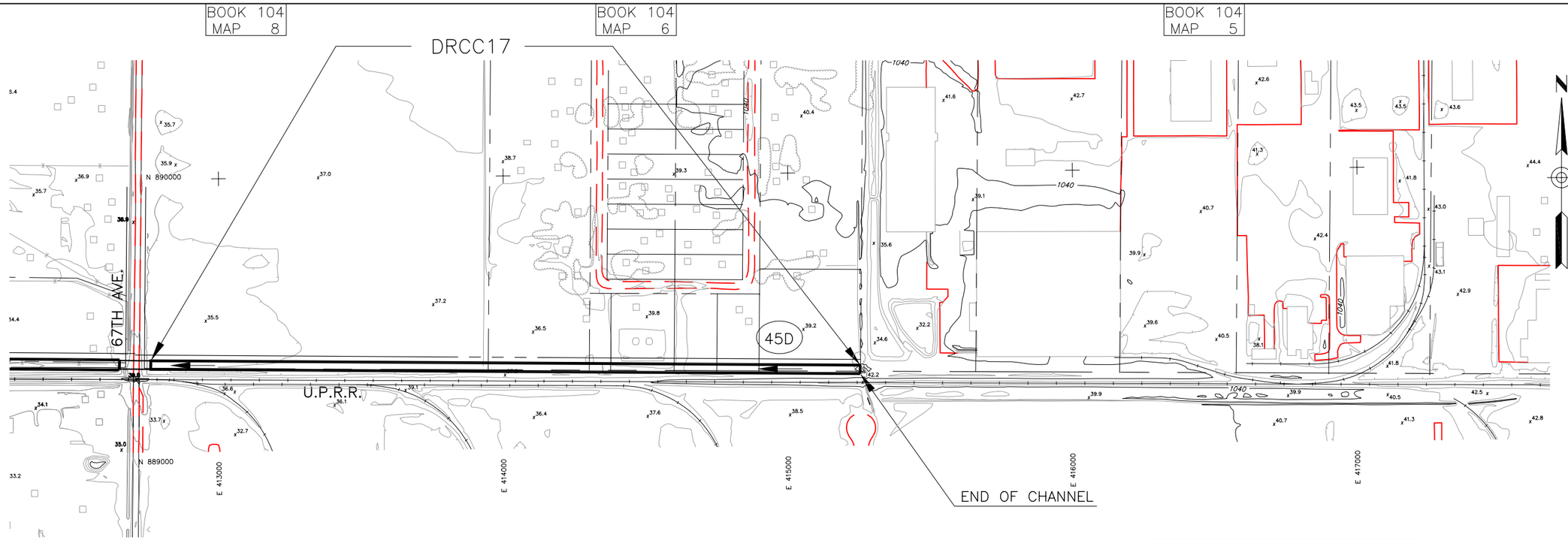
I.D.	Alignment	Type	Size	Location
DRCC-17	DRCC	Irrigation	Unk	67th Avenue

Environmental Sites

No.	Name	Address	Database

No known environmental sites

Landscape Notes



CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

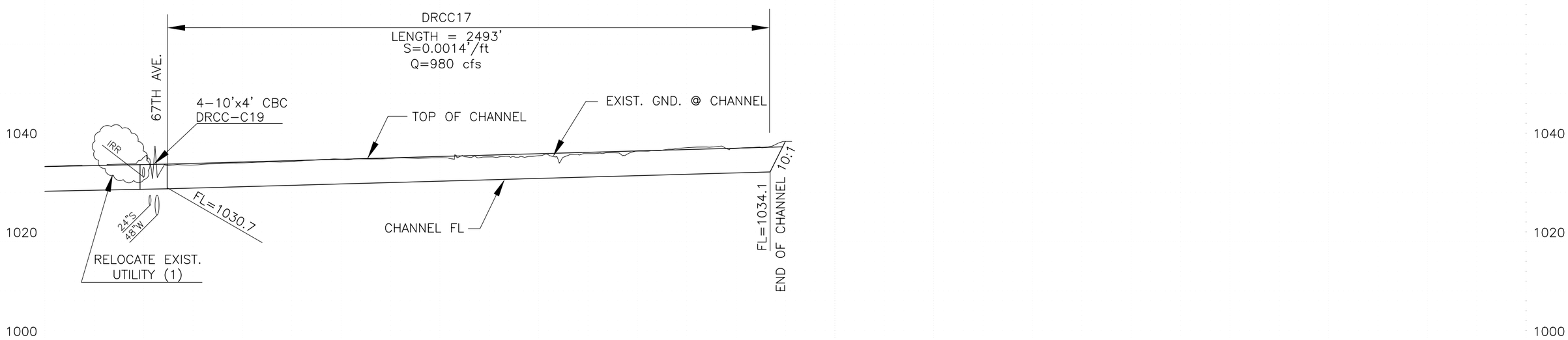
CAUTION: Buried Petroleum Pipe Line. Contact Kinder-Morgan Co. 714-560-4940

CAUTION: Buried Fiber Optic Cable Contact MCI WORLDCOM 602-734-1273

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



DURANGO REGIONAL CONVEYANCE CHANNEL

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99-41

DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE CHANNEL

PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

DRN. JEV DATE: –
DES. JLM DATE: –
CKD. BJF DATE: –

SCALE: 1"=400' HORIZONTAL; 1"=20' VERTICAL

SHEETS NO. 24 OF 38

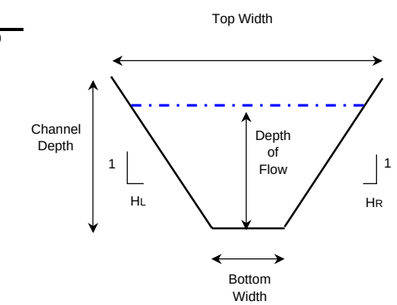
FILE:J:\9935\Acad\Prelim_Design\plpr24-drcc.dwg DATE:Oct, 10 2002 TIME: 02:48 pm

Durango Area Drainage Master Plan
Sunland Avenue Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (HL)	Sideslope (H:1) Right (HR)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
SUN01	MCCCCB	1012	1012	930.8	933.2	3027	0.0008	0.0008	0.0	0	0.0	LE	0.0400	60.0	4.7	6	6	414.7	117.2	0.23	Sub	2.4	1.2	5.9	130.8	180

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Environmental Sites

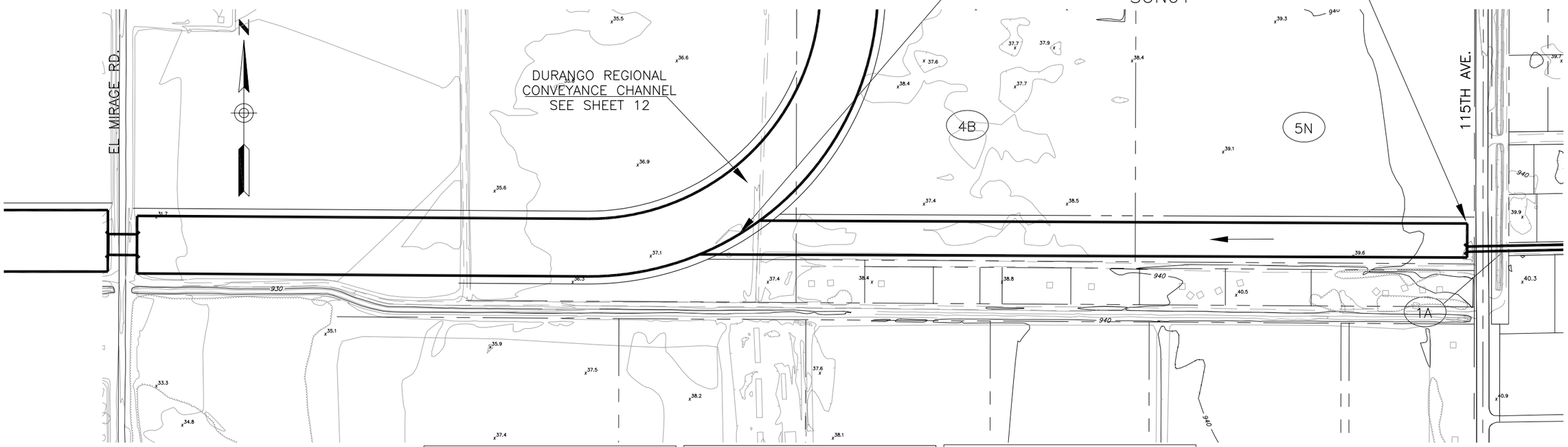
No.	Name	Address	Database

No known environmental sites

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes

BOOK 500
MAP 68



CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

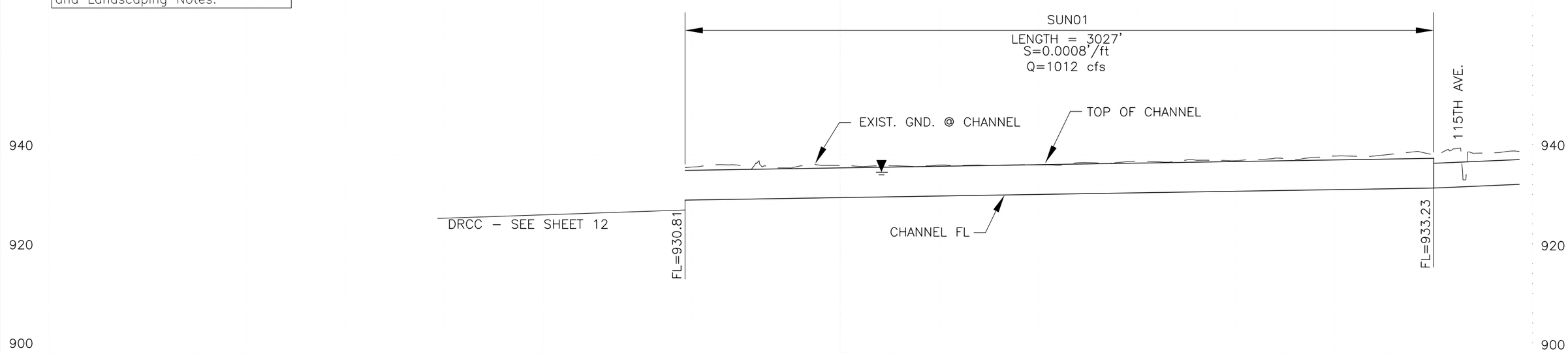
CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

0 100 200 400 600 800
feet

BOOK 500
MAP 67

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



SUNLAND AVENUE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: SUNLAND AVENUE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 25 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

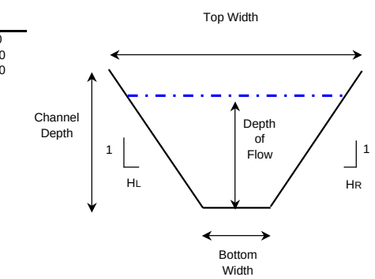
FILE:J:\9935\Acad\Prelim_Design\plpr25-sun.dwg DATE:Oct, 10 2002 TIME: 02:49 pm

Durango Area Drainage Master Plan
Sunland Avenue Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
SUN02a	MCDCCC	1012	1012	933.2	936.3	1389	0.0022	0.0022	0.0	0	0.0	C	0.0140	20.0	4.7	0	0	93.8	29.4	0.88	Trans	10.8	1.6	6.3	20.0	60
SUN02b	MCDCCC	1012	1012	936.3	938.9	1203	0.0022	0.0022	0.0	0	0.0	LE	0.0400	30.0	4.7	6	6	271.7	86.9	0.37	Sub	3.7	1.2	5.9	100.8	150
SUN02c	MCDCCC	1012	1012	939.2	944.7	2511	0.0022	0.0022	0.0	0	0.0	LE	0.0400	30.0	4.7	6	6	271.7	86.9	0.37	Sub	3.7	1.2	5.9	100.8	150

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
SUN-C1	~CPCC	1012	1012	110	939.2	938.9	0.0022	RCBC	0.012	3	5	ft.	10	RCBC	Wingwall	4.68	5.59	1.12	TW

Utility Crossings

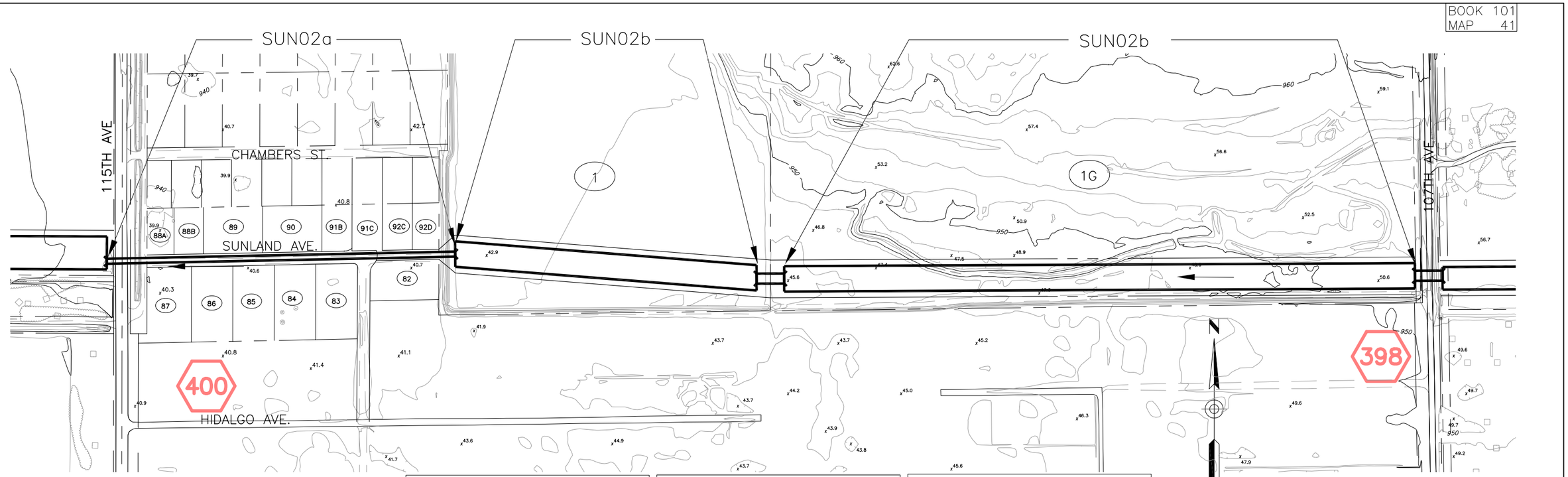
I.D.	Alignment	Type	Size	Location
SUN02b	Sunland	Gas	20"	111th Avenue
SUN02b	Sunland	Irrigation	Channel	115th Avenue
SUN02b	Sunland	Irrigation	Channel	113th Avenue

Environmental Sites

No.	Name	Address	Database
400	DEA	11439 W. Hidalgo	ERNS, AZ_SPILL
398	Atlas Construction	NW Cor of 107th Ave / Pecan Rd	ERNS, AZ_SPILL

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes



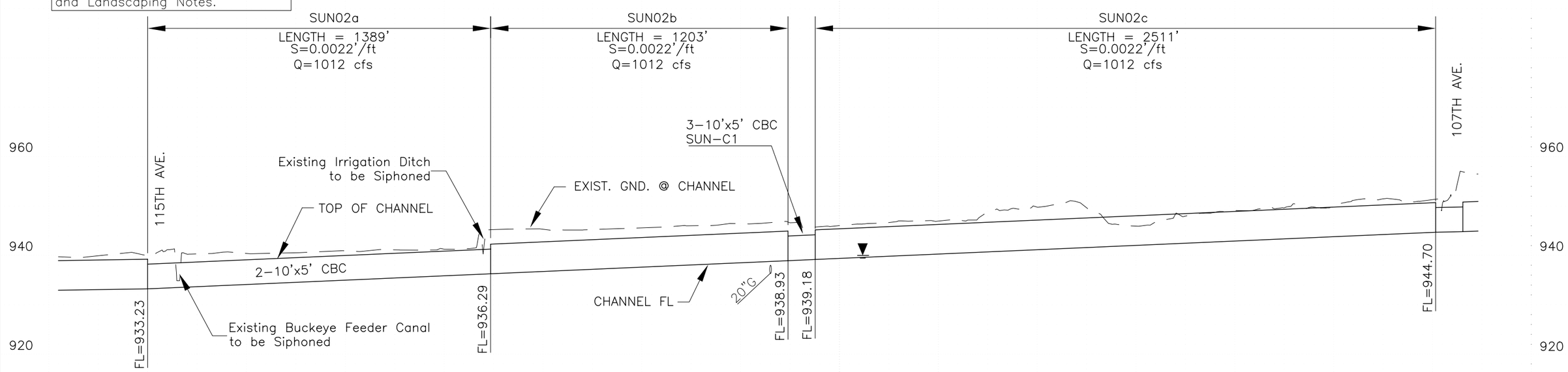
CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

BOOK 101
MAP 43

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



SUNLAND AVENUE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: SUNLAND AVENUE CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 26 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

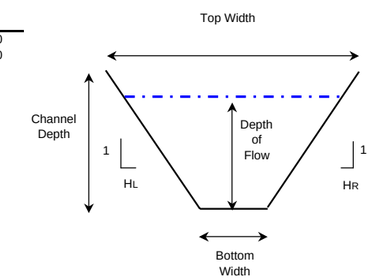
FILE:J:\9935\Acad\Prelim_Design\plpr26-sun.dwg DATE:Oct, 10 2002 TIME: 02:50 pm

Durango Area Drainage Master Plan
Sunland Avenue Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
SUN03a	MCEADC	712	712	944.8	949.3	2470	0.0018	0.0018	0.0	0	0.0	LE	0.0400	20.0	4.6	6	6	222.0	76.4	0.33	Sub	3.2	1.2	5.8	90.1	140
SUN03b	MCEADC	712	712	949.5	953.9	2481	0.0018	0.0018	0.0	0	0.0	LE	0.0400	20.0	4.6	6	6	222.0	76.4	0.33	Sub	3.2	1.2	5.8	90.1	140

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
SUN-C2	~CPDC	712	712	110	944.8	944.7	0.0010	RCBC	0.012	3	5	ft.	8	RCBC	Wingwall	4.68	5.48	1.10	TW
SUN-C3	~CPDC	712	712	110	949.5	949.3	0.0018	RCBC	0.012	2	5	ft.	10	RCBC	Wingwall	4.64	5.73	1.15	TW
SUN-C4	CPEA	499	499	110	954.0	953.9	0.0010	RCBC	0.012	2	5	ft.	8	RCBC	Wingwall	4.64	5.53	1.11	TW

Environmental Sites

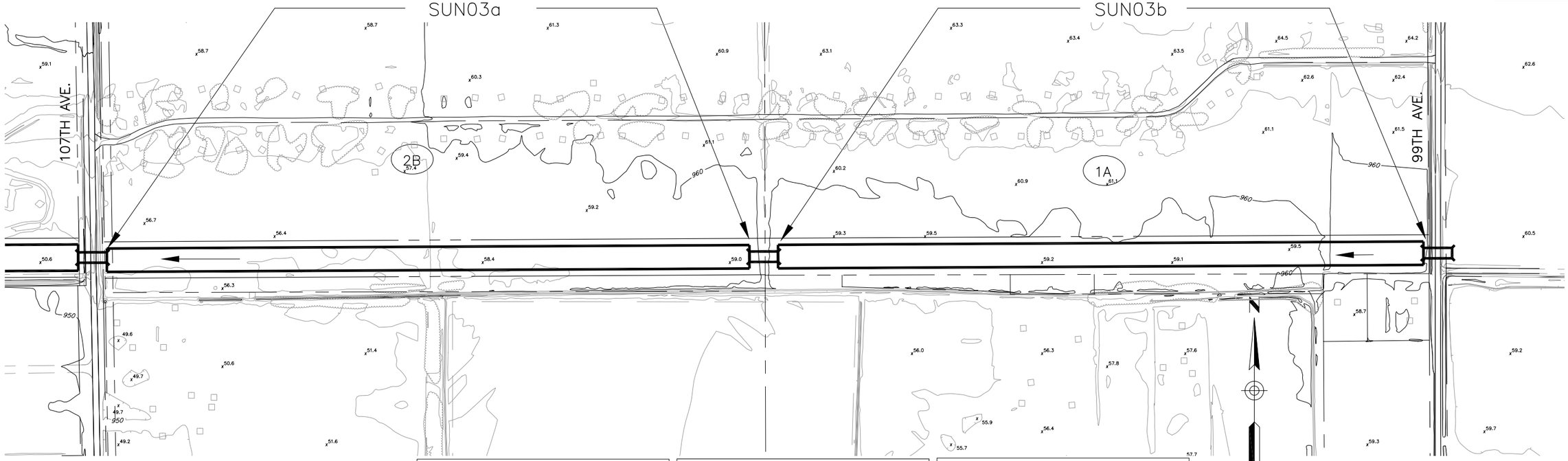
No.	Name	Address	Database

No known environmental sites

Landscape Notes

Park like landscape theme combined with agricultural heritage
- Active recreation uses in channel
- Emphasis on turf and canopy trees
- Maintain "open areas" and views of mountains to the south
- Meandering multi-use pathway
- Existing agricultural areas developing as residential uses
- Vary channel side slopes

BOOK 101
MAP 38



CAUTION: Overhead High Voltage Electric Lines. Contact APS 602-371-6965

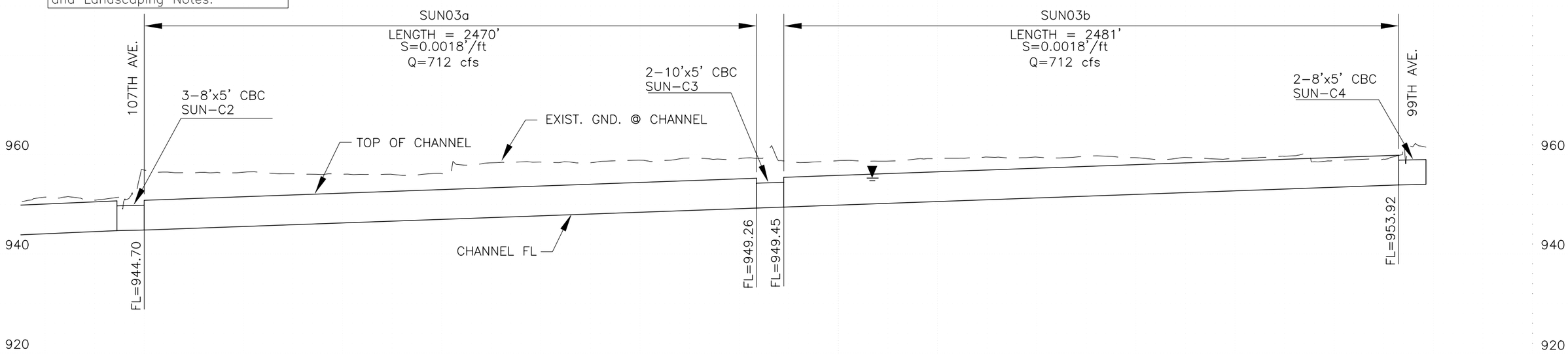
CAUTION: Overhead High Voltage Electric Lines. Contact SRP 602-236-5527

CAUTION: Buried Natural Gas Line Contact El Paso Natural Gas Co. 915-496-5562

0 100 200 400 600 800
feet

BOOK 101
MAP 40

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



SUNLAND AVENUE CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN		
PROJECT DESCRIPTION: SUNLAND AVENUE CHANNEL			
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: –	SCALE 1"=400' HORIZONTAL	SHEETS
	DES. JLM DATE: –	1"=20' VERTICAL	NO. 27 OF 38
	CKD. BJF DATE: –		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

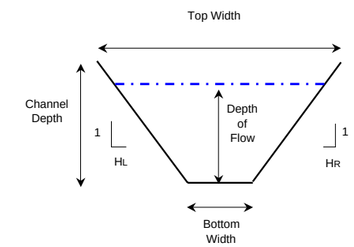
FILE:J:\9935\Acad\Prelim_Design\plpr27-sun.dwg DATE:Oct, 10 2002 TIME: 02:50 pm

Durango Area Drainage Master Plan
47th Ave Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
47CH01a	MCJKJL	2400	2400	1010.5	1012.7	1302	0.0017	0.0017	0.0	0	0.0	LE	0.0400	110.0	4.6	6	6	639.0	166.4	0.34	Sub	3.8	1.2	5.9	180.2	240
47CH01b	MCJKJL	2400	2400	1012.9	1017.2	2528	0.0017	0.0017	0.0	0	0.0	LE	0.0400	110.0	4.6	6	6	639.0	166.4	0.34	Sub	3.8	1.2	5.9	180.2	240

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
47CH-C1	~CPJL1	2400	2400	111	1012.9	1012.7	0.0017	RCBC	0.012	7	5	ft.	10	RCBC	Wingwall	4.64	5.64	1.13	TW

Utility Crossings

I.D.	Alignment	Type	Size	Location
47CH01b	47th Avenue	Fiber Optic	N/A	Elwood Road
47CH01b	47th Avenue	Undrgrnd Electric	N/A	Elwood Road
47CH01b	47th Avenue	Irrigation	Channel	Elwood Road

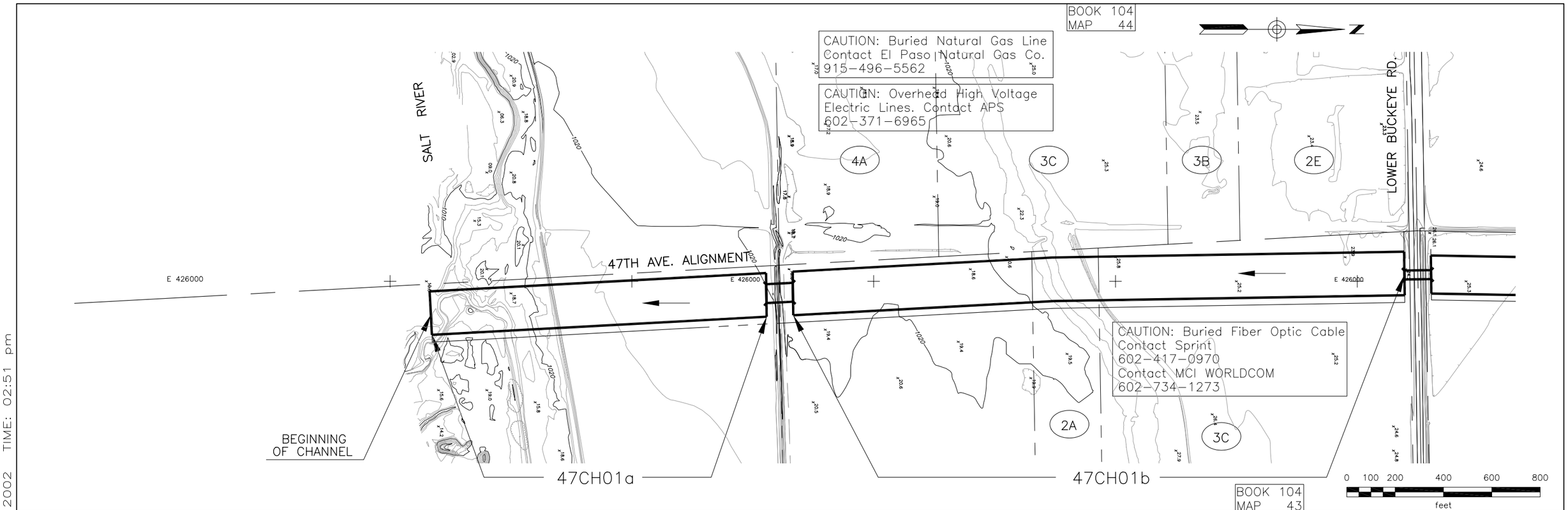
Environmental Sites

No.	Name	Address	Database

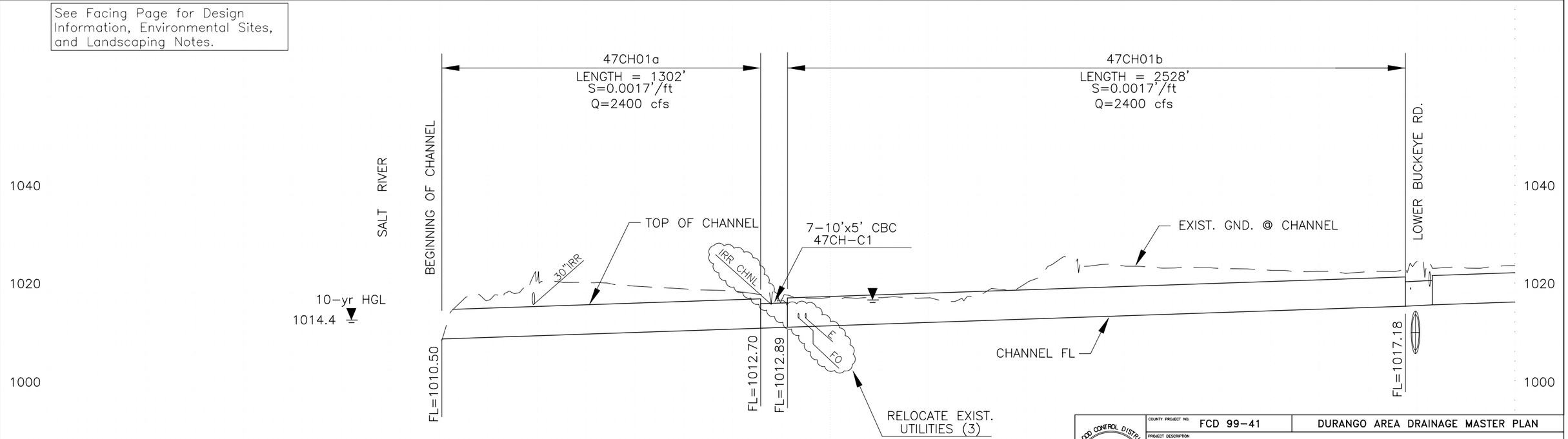
No known environmental sites

Landscape Notes

Modified Sonoran desert landscape theme
- Buffer views of adjacent power line corridor
- Screen / buffer views of outdoor storage areas of adjacent industrial facilities
- Maintain views of mountains to the south
- Meandering multi-use pathway
- Vary channel side slopes
- Enhancement of river area



See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



47TH AVE. CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN		
PROJECT DESCRIPTION 47TH AVE. CHANNEL			
PRIME CONSULTANT DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: –	SCALE 1"=400' HORIZONTAL	SHEETS
	DES. JLM DATE: –	1"=20' VERTICAL	NO. 28 OF 38
	CKD. BJF DATE: –		

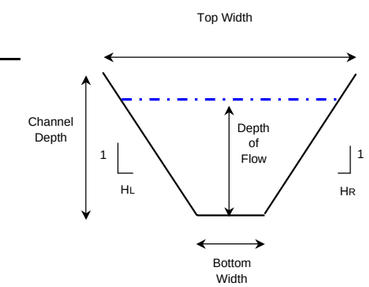
FILE:J:\9935\Acad\Prelim_Design\plpr28-47th.dwg DATE:Oct, 10 2002 TIME: 02:51 pm

Durango Area Drainage Master Plan
47th Avenue Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
47CH02	MCQBJK	2022	2022	1017.5	1021.7	2476	0.0017	0.0017	0.0	0	0.0	LE	0.0400	85.0	4.8	6	6	542.8	143.1	0.34	Sub	3.7	1.2	6.0	157.3	210
47CH03	MC47QB	1502	1502	1021.7	1023.0	2678	0.0005	0.0005	0.0	0	0.0	C	0.0140	55.0	4.6	0	0	253.4	64.2	0.49	Sub	5.9	1.3	5.9	55.0	100

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
47CH-C2	~CPJK	2022	2022	110	1017.5	1017.2	0.0027	RCBC	0.012	5	5	ft.	10	RCBC	Wingwall	4.64	6.02	1.20	IC
47CH-C3	BSN47	993	993	323	1026.0	1023.0	0.0092	RCBC	0.012	3	5	ft.	8	RCBC	Wingwall	4.61	6.10	1.22	IC

Utility Crossings

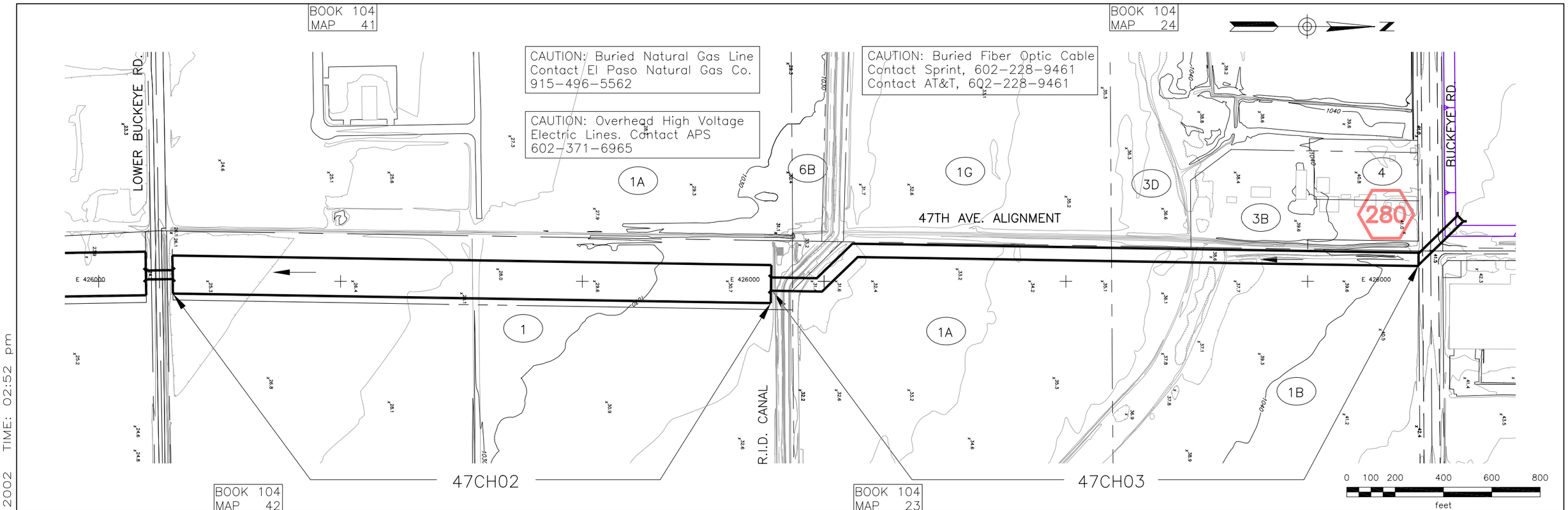
I.D.	Alignment	Type	Size	Location
47CH02	47th Avenue	Fiber Optic	N/A	Lower Buckeye Road
47CH02	47th Avenue	Irrigation	36"	Lower Buckeye Road
47CH02	47th Avenue	Undrgrnd Electric	N/A	1/4 S of RID Canal

Environmental Sites

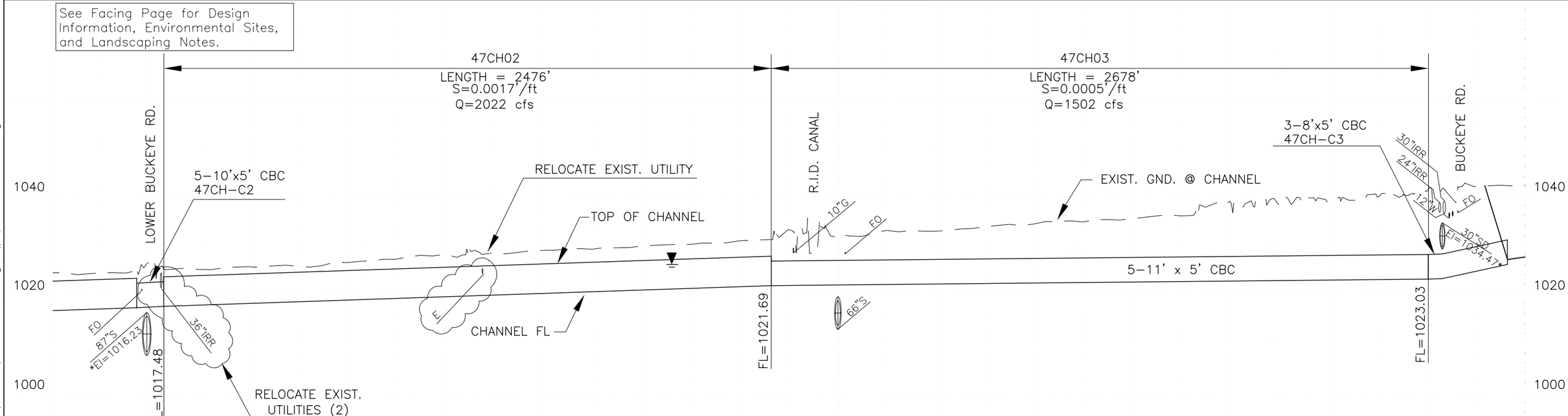
No.	Name	Address	Database
280	AllWaste Transportation and Remediation	4705 W. Buckeye Rd	AZ_SPILL, RCRIS-SQG, FINDS, DRYCLEANERS, HMIRS
280	Great Western Leasing Co.	4705 W. Buckeye Rd	AZ_SPILL
280	Tri Peak Transprotation Co.	4705 W. Buckeye Rd	RCRIS-SQG, FINDS
280	Ruan Transport	4715 W. Buckeye Rd	UST

Landscape Notes

Modified Sonoran desert landscape theme
- Buffer views of adjacent power line corridor
- Screen / buffer views of outdoor storage areas of adjacent industrial facilities
- Maintain views of mountains to the south
- Meandering multi-use pathway
- Vary channel side slopes



See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



47TH AVE. CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: 47TH AVE. CHANNEL		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 29 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

* Indicates Potholed Elevation

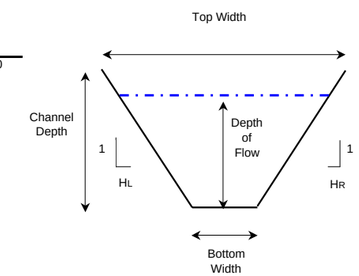
FILE:J:\9935\Acad\Prelim_Design\plpr29-47th.dwg DATE:Oct, 10 2002 TIME: 02:52 pm

Durango Area Drainage Master Plan
47th Avenue Channel

Channel Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft.)	Computed Invert. Slope (ft./ft.)	Design Invert Slope (ft./ft.)	Total Vertical Drop (ft.)	No. of Drops	Vertical Drop (ft.)	Material Type	Manning's "n" Value	Bottom Width, W (ft.)	Depth of Flow(ft.)	Sideslope (H:1) Left (H_L)	Sideslope (H:1) Right (H_R)	Area (sf.)	Wetted Perimeter (ft.)	Froude Number	Type of Flow	Velocity (fps)	Freeboard (ft.)	Design Depth (ft)	Channel Topwidth (ft)	Total ROW Width Required (ft)
47CH04	MCVC47	1368	1368	1038.1	1040.5	1175	0.0020	0.0020	0.0	0	0.0	LE	0.0400	50.0	4.7	6	6	363.7	106.7	0.36	Sub	3.8	1.2	5.9	120.6	170

Channel Material Type: C = Concrete, R = Riprap, GR = Grass, E = Natural or Earth, LE = Landscaped Earth



Typical Channel Section

Culvert Properties

I.D.	HEC-1 I.D.	Design Q100 (cfs)	Comp. Capacity (cfs)	Length (ft.)	Inlet Inv. (ft.)	Outlet Inv. (ft.)	Slope (ft./ft.)	Material/ Barrel Type	Manning's "n" Value	Number of Barrels	Culvert Dia./ Height	Unit	Width (ft)	Barrel/ Material	Entrance (Wingwall, Headwall or Project)	Tailwater Depth (ft.)	Computed Headwater	Computed HW/D	Control
47CH-C4	~CPVC2	1368	1368	427	1038.1	1037.1	0.0024	RCBC	0.012	4	5	ft.	10	RCBC	Wingwall	4.95	5.58	1.12	TW
47CH-C5	~CPVC2	1368	1368	288.4	1042.8	1040.5	0.0079	RCBC	0.012	5	4	ft.	10	RCBC	Wingwall	4.66	4.62	1.16	IC

Utility Crossings

I.D.	Alignment	Type	Size	Location
47CH-04	47th Avenue	Fiber Optic	N/A	U.P.R.R.
47CH-04	47th Avenue	Fiber Optic	N/A	U.P.R.R.
47CH-04	47th Avenue	Fiber Optic	N/A	U.P.R.R.
47CH-04	47th Avenue	Fiber Optic	N/A	U.P.R.R.
47CH-04	47th Avenue	Petroleum	10"	U.P.R.R.
47CH-04	47th Avenue	Petroleum	10"	U.P.R.R.

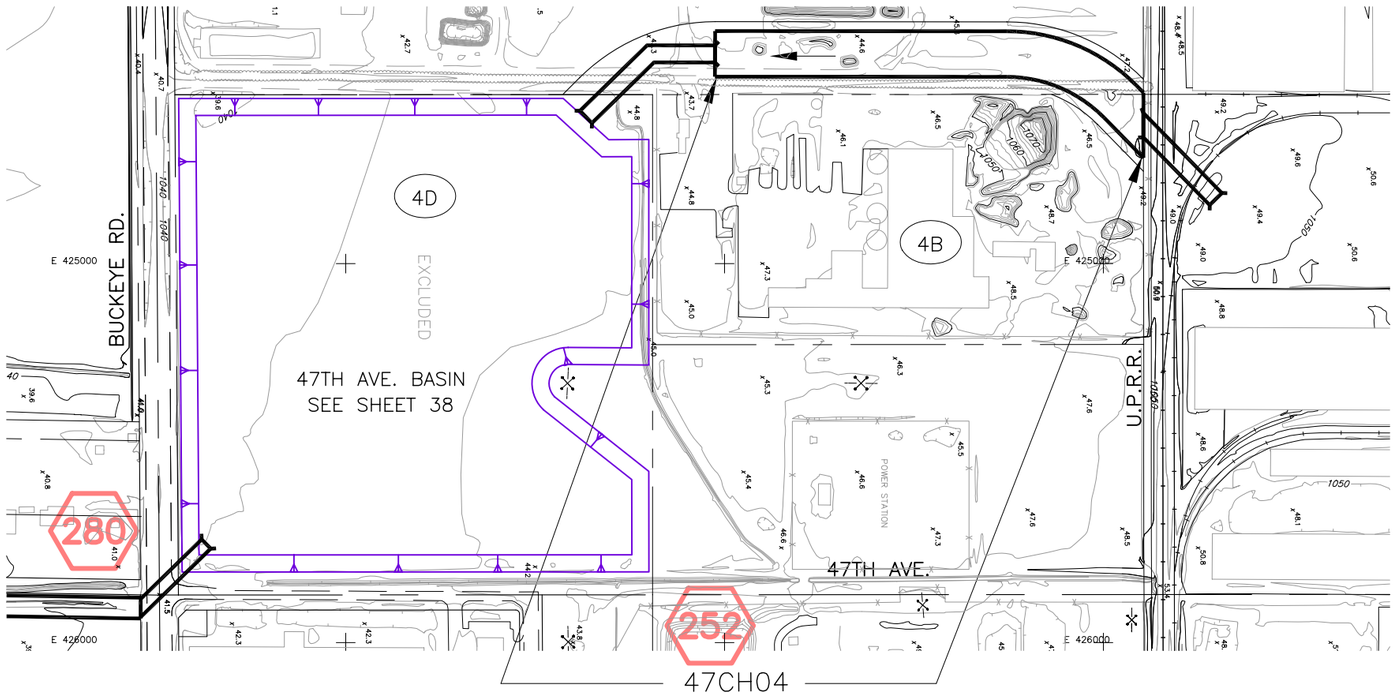
Environmental Sites

No.	Name	Address	Database
252	Arizona Public Service	4606 W Hadley St	AZ_SPILL, HWS

Landscape Notes

Modified Sonoran desert landscape theme
- Buffer views of adjacent power line corridor
- Screen / buffer views of outdoor storage areas of adjacent industrial facilities
- Maintain views of mountains to the south
- Meandering multi-use pathway
- Vary channel side slopes
- Architectural interest: Maintain view of historic mill / gin to the east

BOOK 104
MAP 21



CAUTION: Buried Natural Gas Line
Contact El Paso Natural Gas Co.
915-496-5562

CAUTION: Buried Fiber Optic Cable
Contact MCI WORLDCOM
602-734-1273

CAUTION: Overhead High Voltage
Electric Lines. Contact APS
602-371-6965

CAUTION: Buried Fiber Optic Cable
Contact Qwest Communication

CAUTION: Buried Petroleum Lines
Contact APS

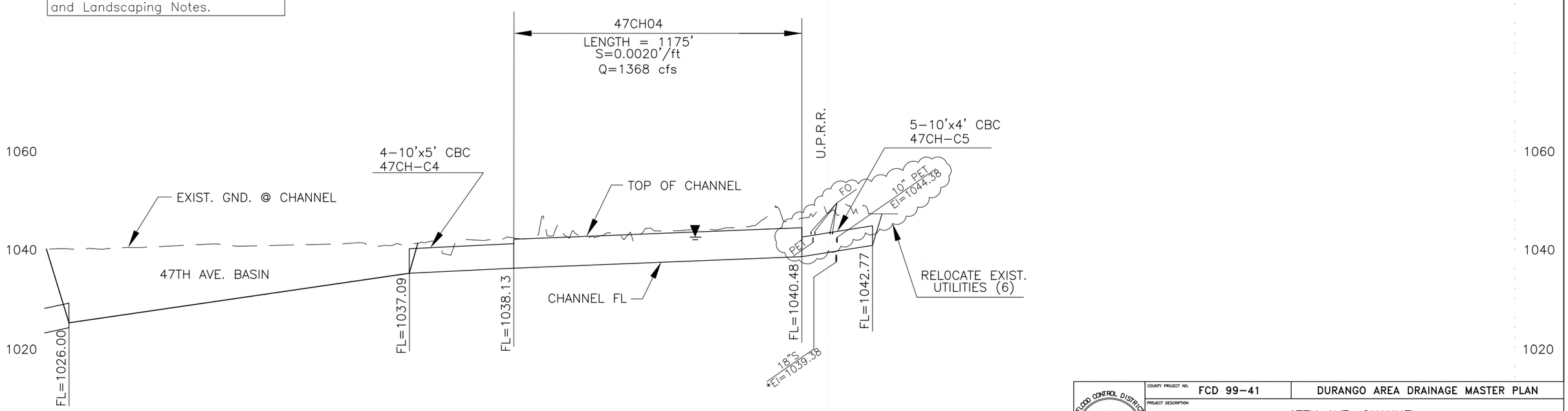
CAUTION: Buried Fiber Optic Cable
Contact Williams Communication

CAUTION: Buried Petroleum Lines
Contact Dyn-Air

CAUTION: Buried Fiber Optic Cable
Contact Level 3 Communication

0 100 200 400 600 800
feet

See Facing Page for Design Information, Environmental Sites, and Landscaping Notes.



47TH AVE. CHANNEL

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN		
PROJECT DESCRIPTION: 47TH AVE. CHANNEL			
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: –	SCALE 1"=400' HORIZONTAL	SHEETS
	DES. JLM DATE: –	1"=20' VERTICAL	NO. 30 OF 38
	CKD. BJF DATE: –		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

* Indicates Potholed Elevation

FILE:J:\9935\Acad\Prelim_Design\plpr30-47th.dwg DATE:Oct, 10 2002 TIME: 02:53 pm

Durango Area Drainage Master Plan
DRO Basin #1 - 111th Ave

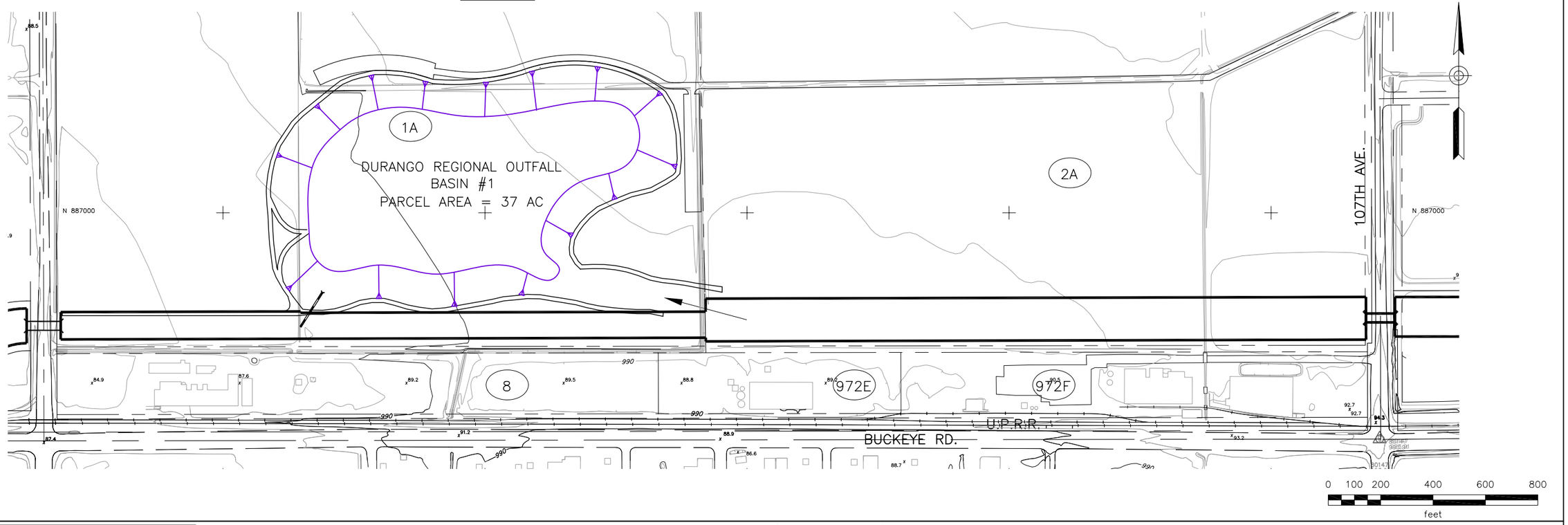
Detention Basin Properties

DRO Basin #1 - 111th Ave

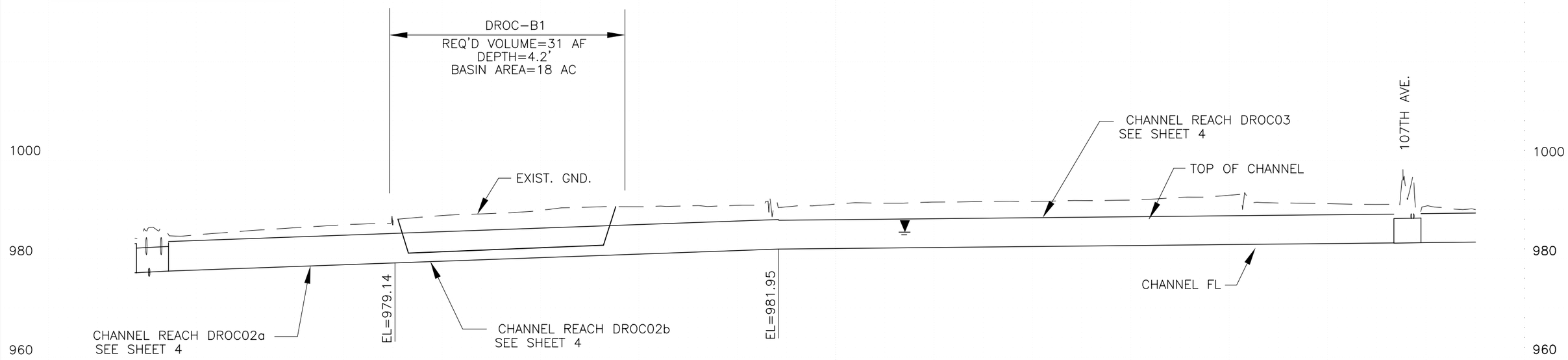
Basin Land Area	18	Acres	Length of Fencing =		0 ft
Basin Excavation Volume	279,897	C.Y.			
Q100 Inflow =	458	cfs	Outflow Pipe (no. & Dia.) =	1	24 in.
Q100 Outflow =	0	cfs	Pipe Invert at Inlet=		980.33 ft
Highwater Elev. (Q100) =	985.5	ft	Pipe Invert at Outlet=		980.17 ft
Maximum Ponding Depth	4.2	ft	Pipe Length =		156 ft
Total Basin Storage Volume	31	AF	Pipe Slope =		0.0010 ft/ft
			Inflow Spillway Width (2) =		136 ft
			Inflow Spillway Length (2) =		25 ft
			Spillway Elevation =		986.4 ft

Note: (1) Volume computations based upon results obtained from surface modeling software.
(2) Width is perpendicular to flow. Length is measured down the slope.

BOOK 101
MAP 1



See Facing Page for Design Information



DURANGO REGIONAL OUTFALL BASIN #1

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL OUTFALL BASIN #1		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
		SHEETS NO. 31 OF 38

FILE:J:\9935\Acad\Prelim_Design\plprbasn31-droc.dwg DATE:Oct, 10 2002 TIME: 02:54 pm

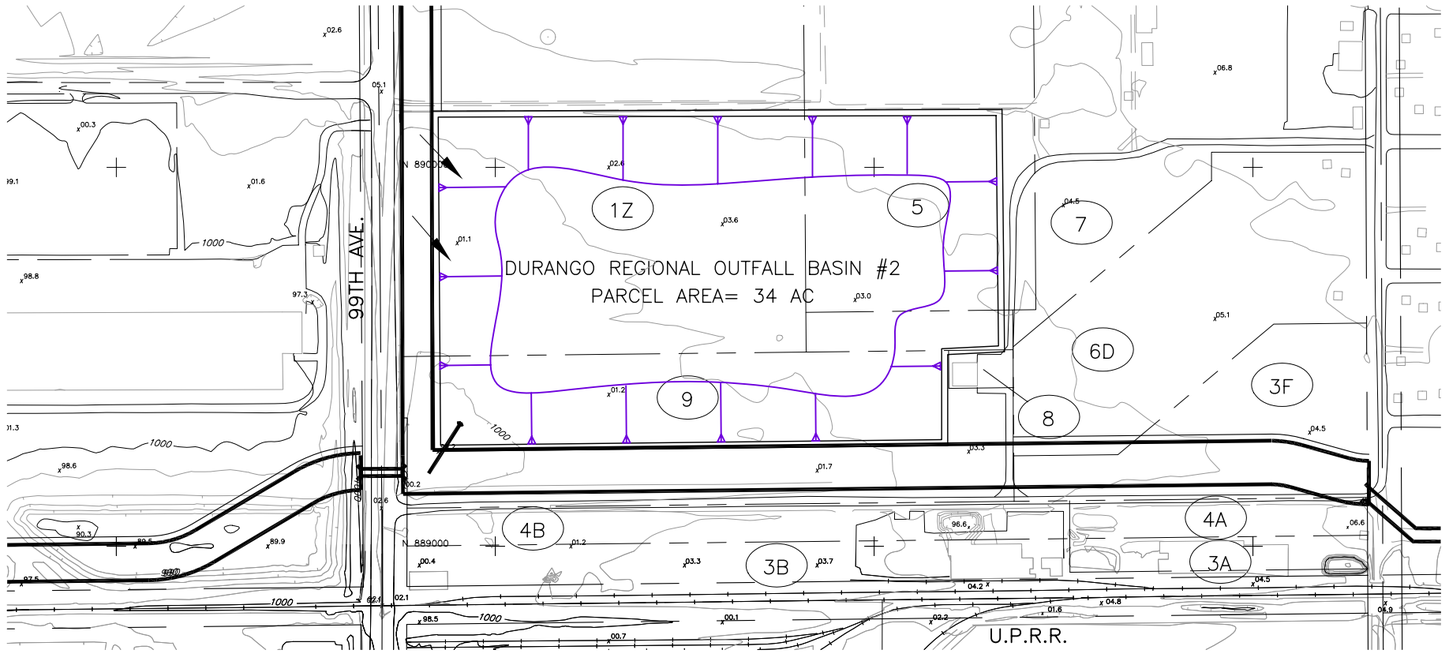
Detention Basin Properties

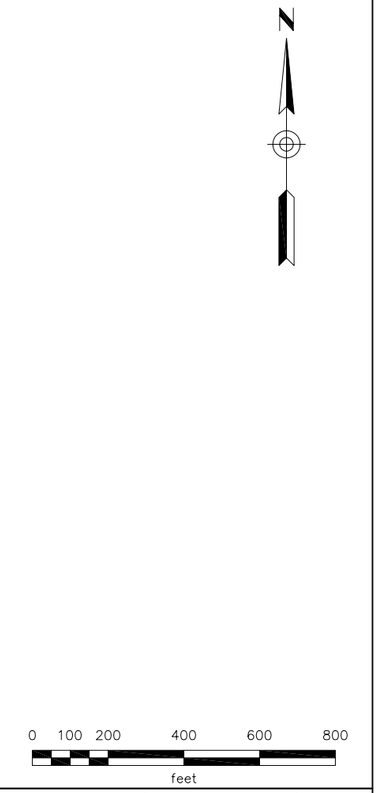
DRO Basin #2 - 99th Ave

Basin Land Area	28	Acres	Length of Fencing =		4,790	ft
Basin Excavation Volume	231,400	C.Y.				
Q100 Inflow =	808	cfs	Outflow Pipe (no. & Dia.) =	1	24	in.
Q100 Outflow =	0	cfs	Pipe Invert at Inlet=		992.88	ft
Highwater Elev. (Q100) =	1000	ft	Pipe Invert at Outlet=		992.73	ft
Maximum Ponding Depth	6.1	ft	Pipe Length =		155	ft
Total Basin Storage Volume	75	AF	Pipe Slope =		0.0010	ft/ft
			Inflow Spillway Width (2) =		240	ft
			Inflow Spillway Length (2) =		37	ft
			Spillway Elevation =		1000	ft

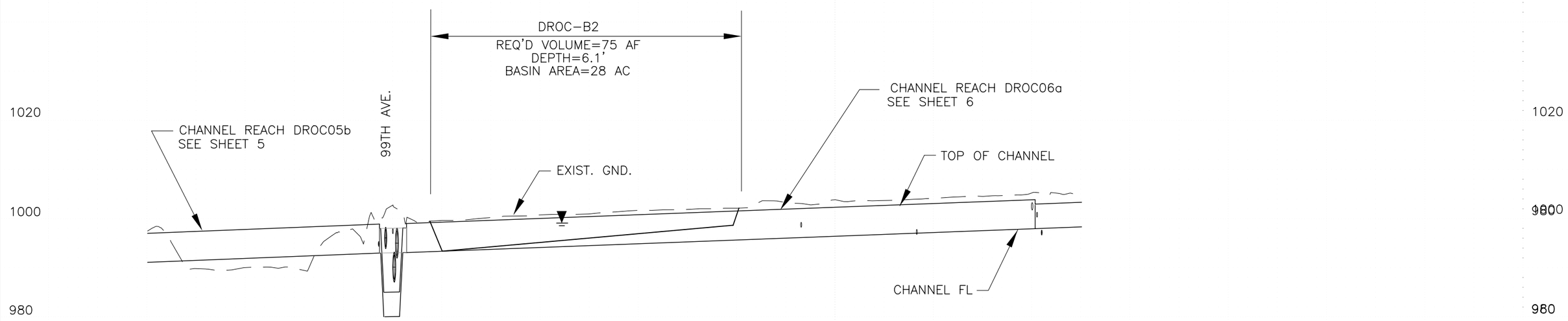
Note: (1) Volume computations based upon results obtained from surface modeling software.
(2) Width is perpendicular to flow. Length is measured down the slope.

BOOK 101
MAP 4





See Facing Page for Design Information.



DURANGO REGIONAL OUTFALL BASIN #2

COUNTY PROJECT NO. FCD 99–41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL OUTFALL BASIN #2		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 32 OF 38		

FILE:J:\9935\Acad\Prelim_Design\plprbasn32–droc.dwg DATE:Oct, 10 2002 TIME: 02:55 pm

Durango Area Drainage Master Plan
DRO Basin # 3a/3b - 91st Avenue

Detention Basin Properties

DRO Basin #3a - 91st Avenue

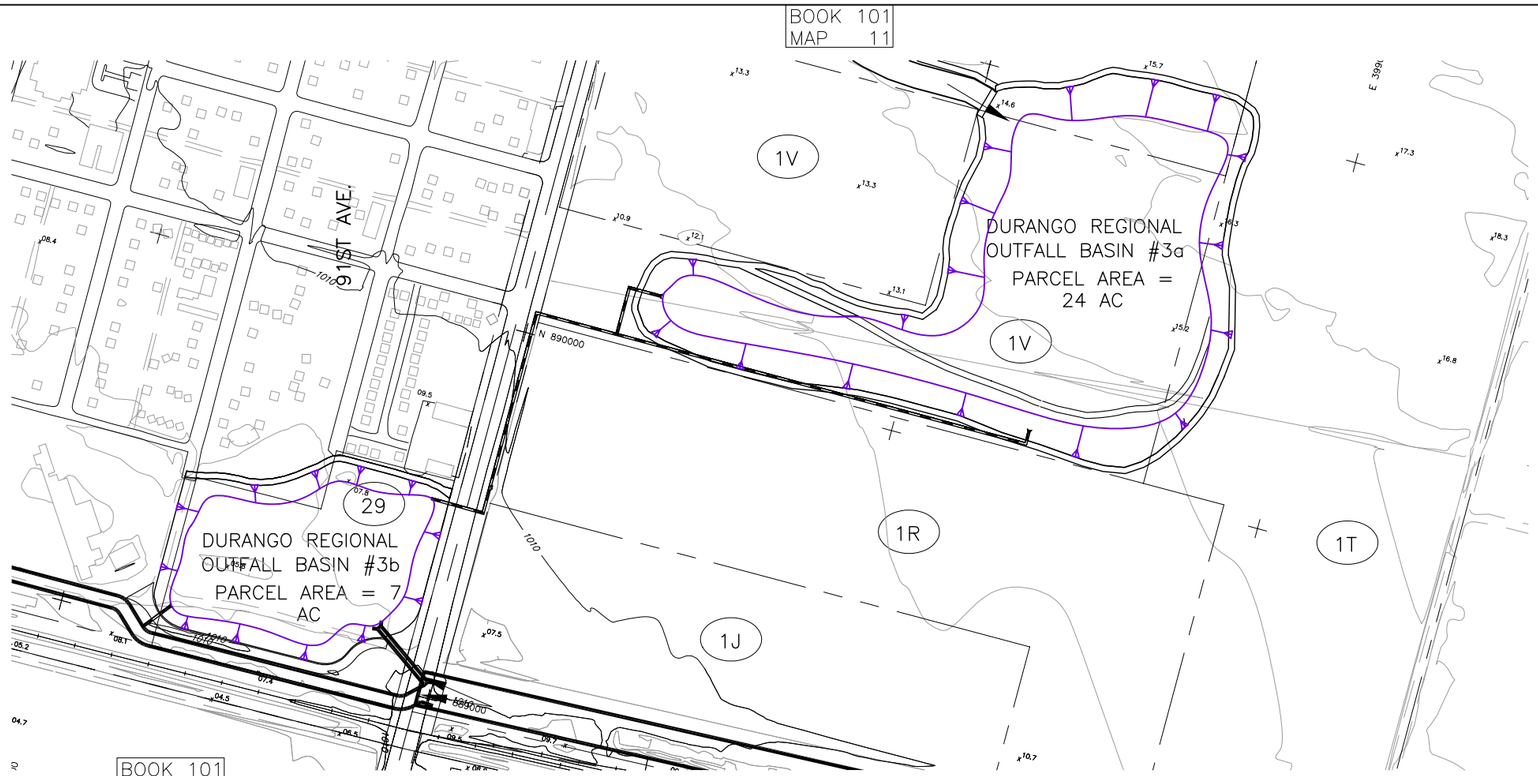
Basin Land Area	21	Acres	Length of Fencing =		0	ft
Basin Excavation Volume	184,000	C.Y.				
Q100 Inflow =	574	cfs	Outflow Pipe (no. & Dia.) =	1	24	in.
Q100 Outflow =	0	cfs				
Highwater Elev. (Q100) =	1011.6	ft	Pipe 1 Invert at Inlet=		1005.55	ft
Maximum Ponding Depth	5.1	ft	Pipe 1 Invert at Outlet=		1004.86	ft
Total Basin Storage Volume	61	AF	Pipe 1 Length =		215	ft
			Pipe 1 Slope =		0.0032	ft/ft
			Pipe 2 Invert at Inlet=		1006.02	ft
			Pipe 2 Invert at Outlet=		1003.96	ft
			Pipe 2 Length =		2065	ft
			Pipe 2 Slope =		0.0010	ft/ft
			Inflow Spillway Width (2) =		0	ft
			Inflow Spillway Length (2) =		0	ft
			Spillway Elevation =		N/A	ft

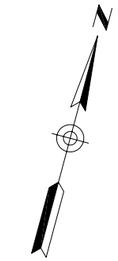
Detention Basin Properties

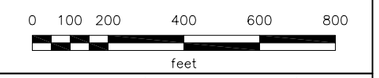
DRO Basin #3b - 91st Avenue

Basin Land Area	7	Acres	Length of Fencing =		0	ft
Basin Excavation Volume	39,800	C.Y.				
Q100 Inflow =	652	cfs	Outflow Pipe (no. & Dia.) =	1	24	in.
Q100 Outflow =	0	cfs	Pipe Invert at Inlet=		1001.00	ft
Highwater Elev. (Q100) =	1007	ft	Pipe Invert at Outlet=		1000.90	ft
Maximum Ponding Depth	5.0	ft	Pipe Length =		91	ft
Total Basin Storage Volume	18	AF	Pipe Slope =		0.0011	ft/ft
			Inflow Spillway Width (2) =		194	ft
			Inflow Spillway Length (2) =		30	ft
			Spillway Elevation =		1007	ft

Note: (1) Volume computations based upon results obtained from surface modeling software.
(2) Width is perpendicular to flow. Length is measured down the slope.







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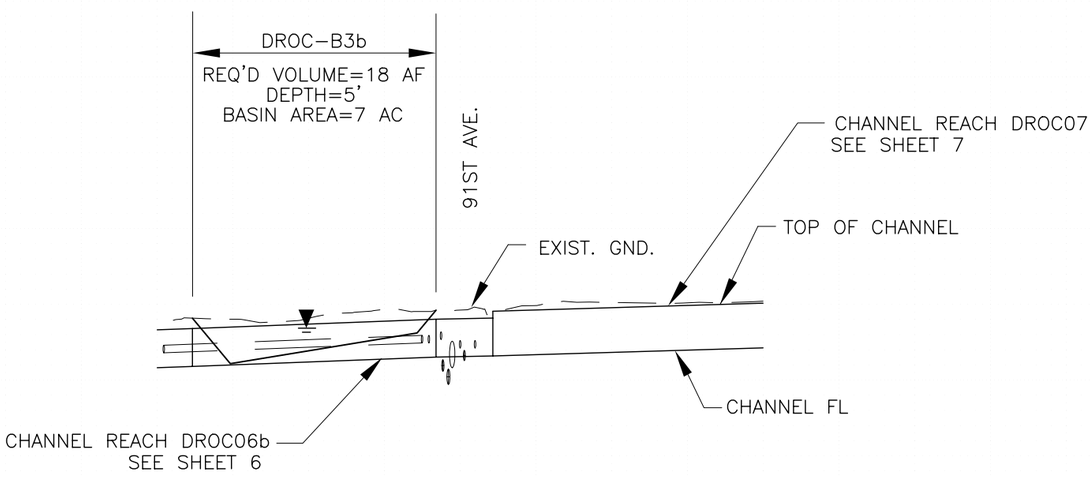
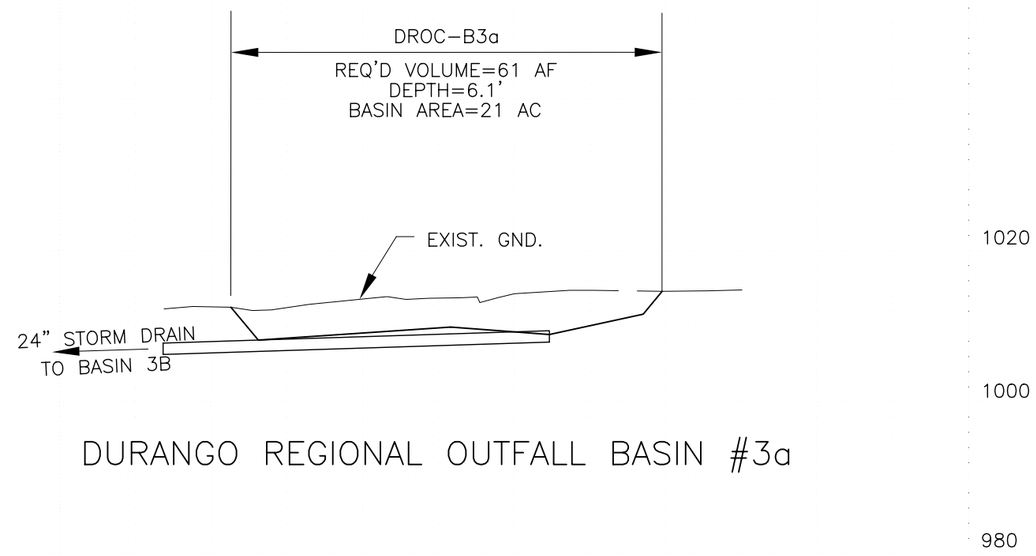


DURANGO REGIONAL OUTFALL BASIN #3b



DURANGO REGIONAL OUTFALL BASIN #3a

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	COUNTY PROJECT NO. FCD 99–41	DURANGO AREA DRAINAGE MASTER PLAN	
	PROJECT DESCRIPTION DURANGO REGIONAL OUTFALL BASIN #3a/3b		
PRIME CONSULTANT DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL	SHEETS NO. 33 OF 38

FILE:J:\9935\Acad\Prelim_Design\plprbasn33–droc.dwg DATE:Oct, 10 2002 TIME: 02:55 pm

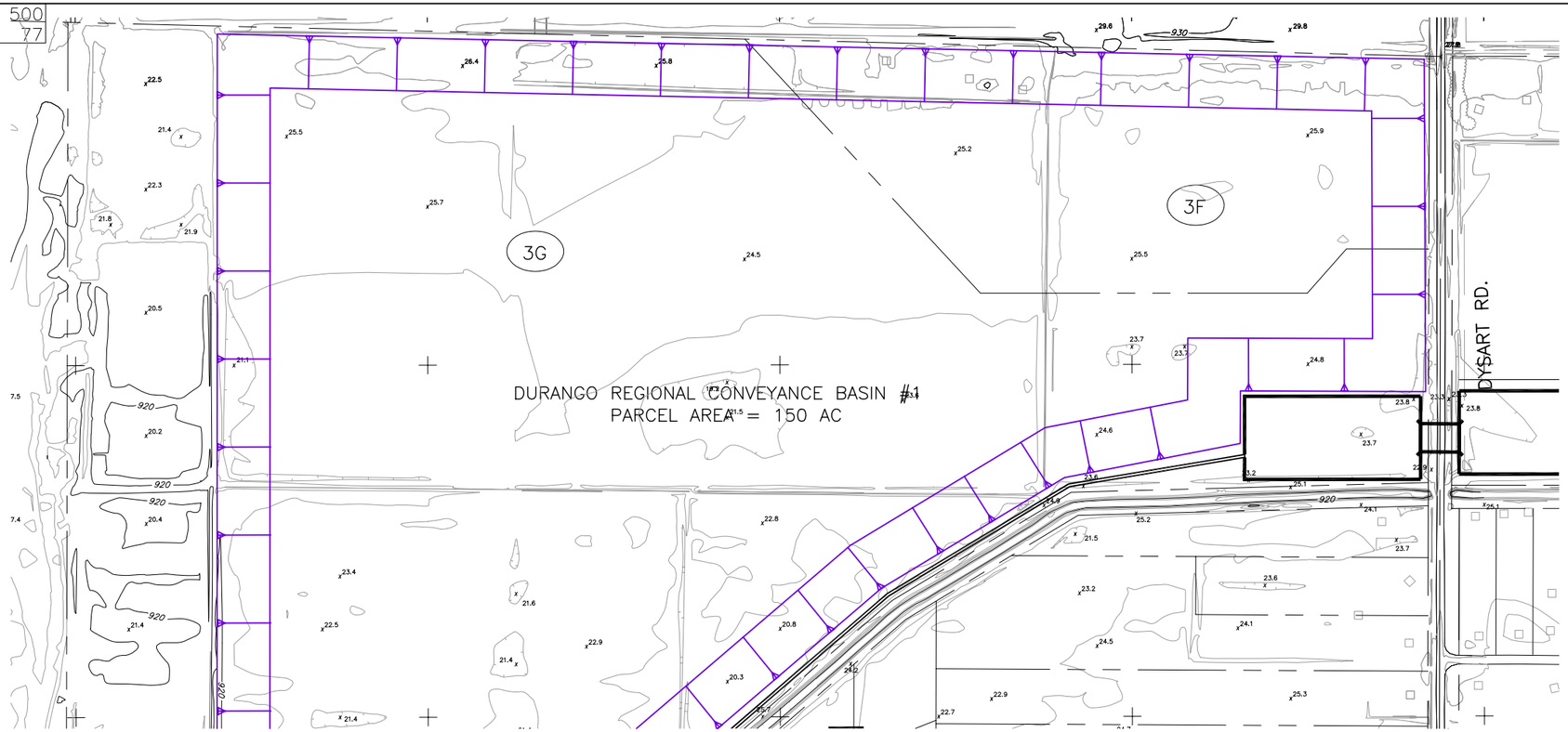
Detention Basin Properties

DRC Basin #1 - Dysart Rd

Basin Land Area	137	Acres	Length of Fencing =		0	ft
Basin Excavation Volume	0	C.Y.				
Q100 Inflow =	3,190	cfs	Outflow Pipe (no. & Dia.) =	1	24	in.
Q100 Outflow =	0	cfs	Pipe Invert at Inlet=		875.0	ft
Highwater Elev. (Q100) =	920	ft	Pipe Invert at Outlet=		874.5	ft
Maximum Ponding Depth	44.0	ft	Pipe Length =		500	ft
Total Basin Storage Volume	1584	AF	Pipe Slope =		0.0010	ft/ft
			Inflow Spillway Width (2) =		947	ft
			Inflow Spillway Length (2) =		268	ft
			Spillway Elevation =		923	ft

Note: (1) Volume computations based upon results obtained from surface modeling software.
(2) Width is perpendicular to flow. Length is measured down the slope.

BOOK 500
MAP 77



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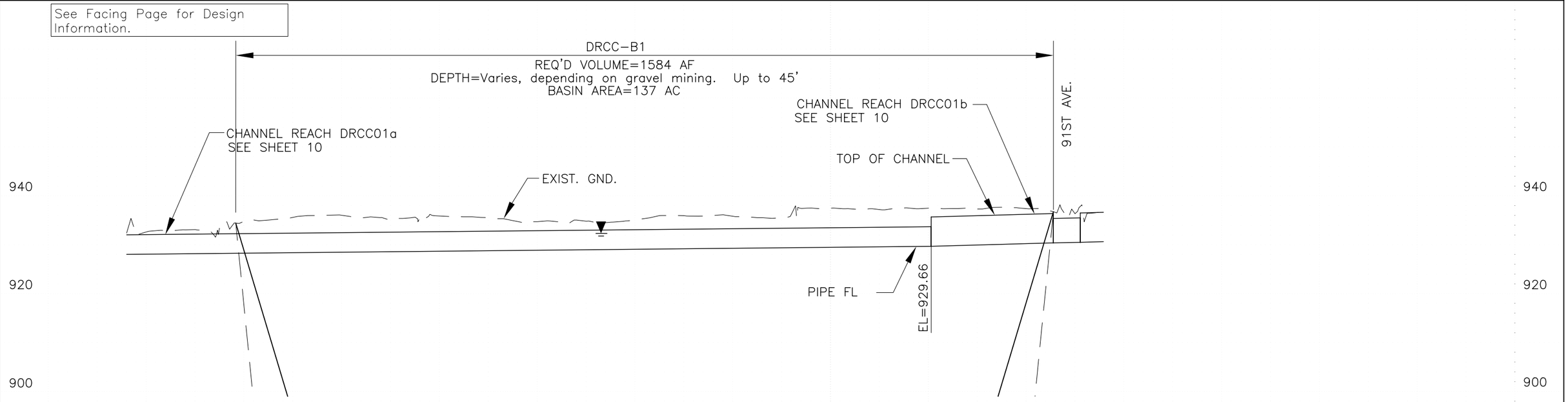
0 100 200 400 600 800
feet

See Facing Page for Design Information.



DURANGO REGIONAL CONVEYANCE BASIN #1

FILE:J:\9935\Acad\Prelim_Design\plprbasn34–drcc.dwg DATE:Oct, 10 2002 TIME: 02:56 pm

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

COUNTY PROJECT NO. FCD 99–41 | DURANGO AREA DRAINAGE MASTER PLAN

PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE BASIN #1

PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962

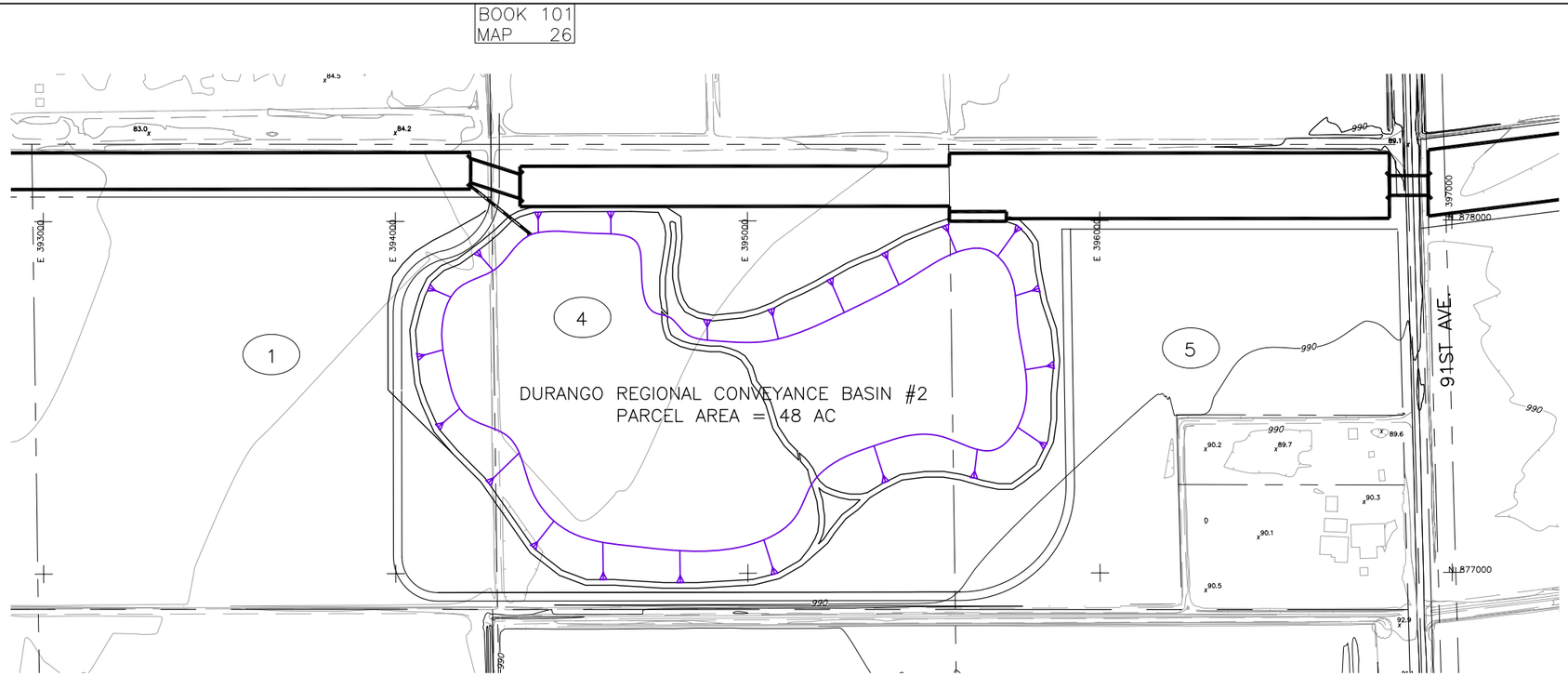
DRN. JEV DATE: –	SCALE		SHEETS
DES. JLM DATE: –	1"=400'	HORIZONTAL	NO. 34 OF 38
CKD. BJF DATE: –	1"=20'	VERTICAL	

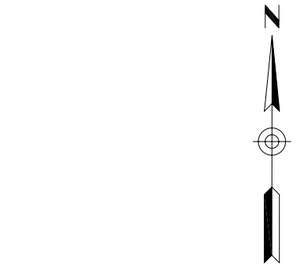
Detention Basin Properties

DRC Basin #2 - 95th Ave

Basin Land Area	30	Acres	Length of Fencing =		0	ft
Basin Excavation Volume	202,900	C.Y.				
Q100 Inflow =	535	cfs	Outflow Pipe (no. & Dia.) =	1	24	in.
Q100 Outflow =	0	cfs	Pipe Invert at Inlet=		980.04	ft
Highwater Elev. (Q100) =	985.6	ft	Pipe Invert at Outlet=		979.82	ft
Maximum Ponding Depth	4.6	ft	Pipe Length =		221	ft
Total Basin Storage Volume	61	AF	Pipe Slope =		0.0010	ft/ft
			Inflow Spillway Width (2) =		159	ft
			Inflow Spillway Length (2) =		28	ft
			Spillway Elevation =		985.6	ft

Note: (1) Volume computations based upon results obtained from surface modeling software.
(2) Width is perpendicular to flow. Length is measured down the slope.





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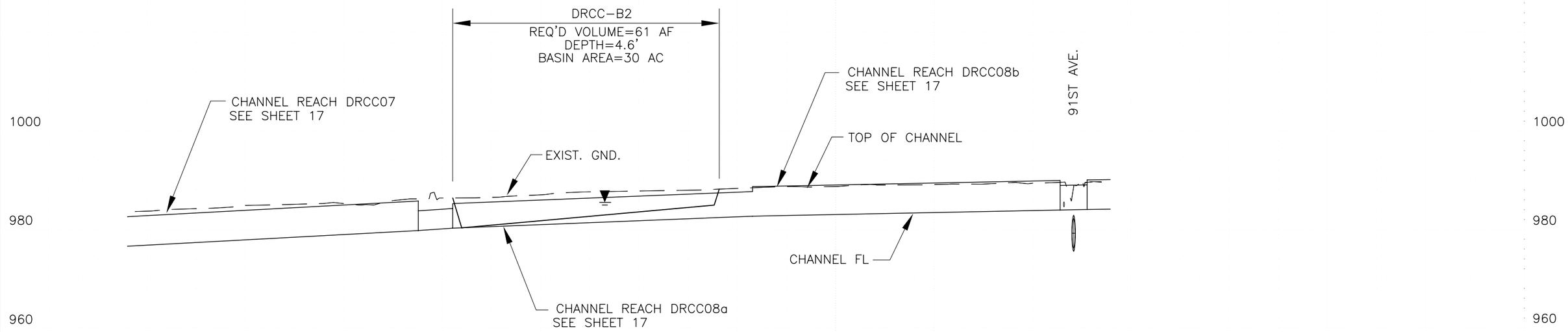
feet

See Facing Page for Design Information.



DURANGO REGIONAL CONVEYANCE BASIN #2

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE BASIN #2		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 35 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

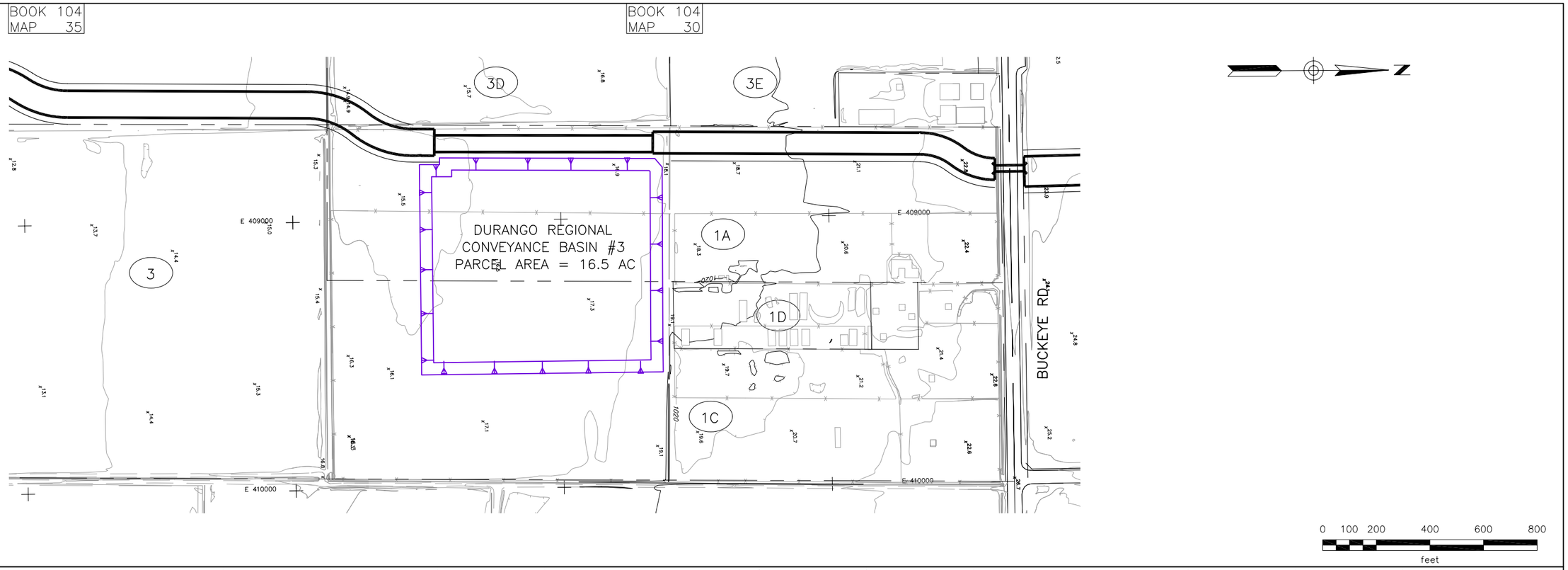
FILE:J:\9935\Acad\Prelim_Design\plprbasn35-drcc.dwg DATE:Oct, 10 2002 TIME: 02:57 pm

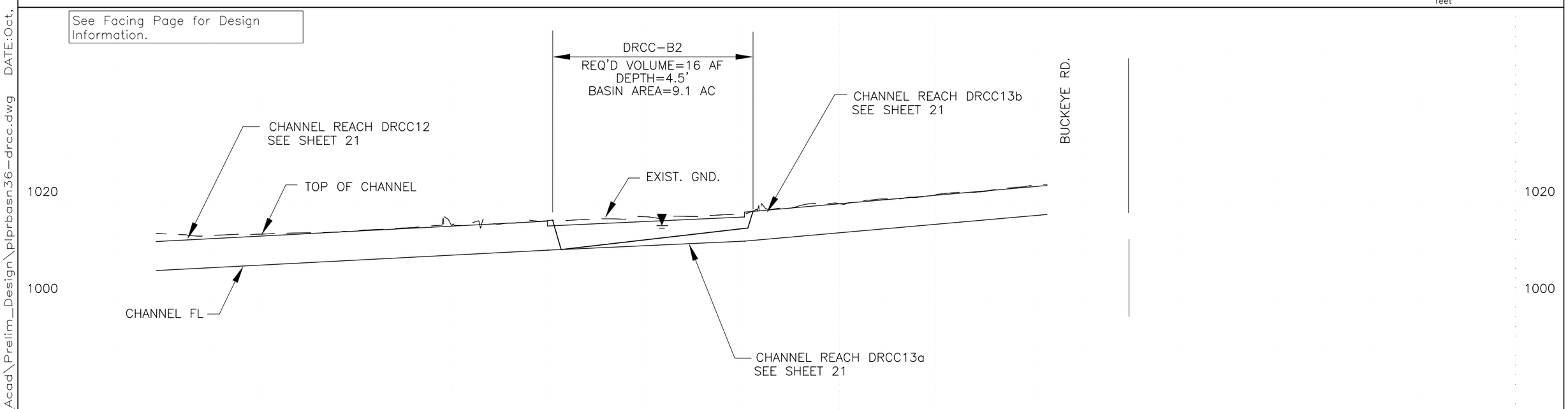
Detention Basin Properties

DRC Basin #3 - 73rd Ave

Basin Land Area	9	Acres	Length of Fencing =		3,394	ft
Basin Excavation Volume	79,000	C.Y.				
Q100 Inflow =	262	cfs	Outflow Pipe (no. & Dia.) =	1	24	in.
Q100 Outflow =	0	cfs	Pipe Invert at Inlet=		1008.0	ft
Highwater Elev. (Q100) =	1013.5	ft	Pipe Invert at Outlet=		1007.8	ft
Maximum Ponding Depth	4.5	ft	Pipe Length =		200	ft
Total Basin Storage Volume	16	AF	Pipe Slope =		0.0010	ft/ft
			Inflow Spillway Width (2) =		78	ft
			Inflow Spillway Length (2) =		27	ft
			Spillway Elevation =		1013.5	ft

Note: (1) Volume computations based upon results obtained from surface modeling software.
(2) Width is perpendicular to flow. Length is measured down the slope.





DURANGO REGIONAL CONVEYANCE BASIN #3

COUNTY PROJECT NO. FCD 99–41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE BASIN #3		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 36 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

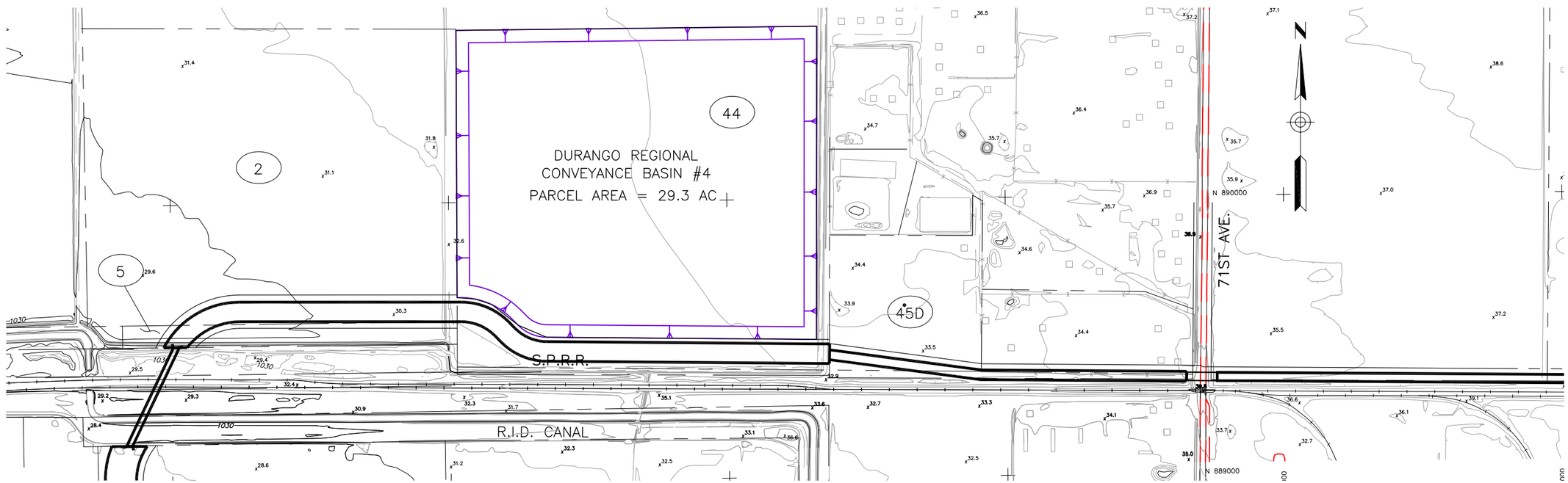
FILE:J:\9935\Acad\Prelim_Design\plprbasn36–drcc.dwg DATE:Oct, 10 2002 TIME: 02:57 pm

Detention Basin Properties

DRC Basin #4 - 71st Ave

Basin Land Area	16	Acres	Length of Fencing =		4,563	ft
Basin Excavation Volume	180,000	C.Y.				
Q100 Inflow =	487	cfs	Outflow Pipe (no. & Dia.) =	1	24	in.
Q100 Outflow =	0	cfs	Pipe Invert at Inlet=		1021.63	ft
Highwater Elev. (Q100) =	1030.3	ft	Pipe Invert at Outlet=		1019.91	ft
Maximum Ponding Depth	8	ft	Pipe Length =		1161	ft
Total Basin Storage Volume	58	AF	Pipe Slope =		0.0015	ft/ft
			Inflow Spillway Width (2) =		145	ft
			Inflow Spillway Length (2) =		47	ft
			Spillway Elevation =		1030.3	ft

Note: (1) Volume computations based upon results obtained from surface modeling software.
(2) Width is perpendicular to flow. Length is measured down the slope.



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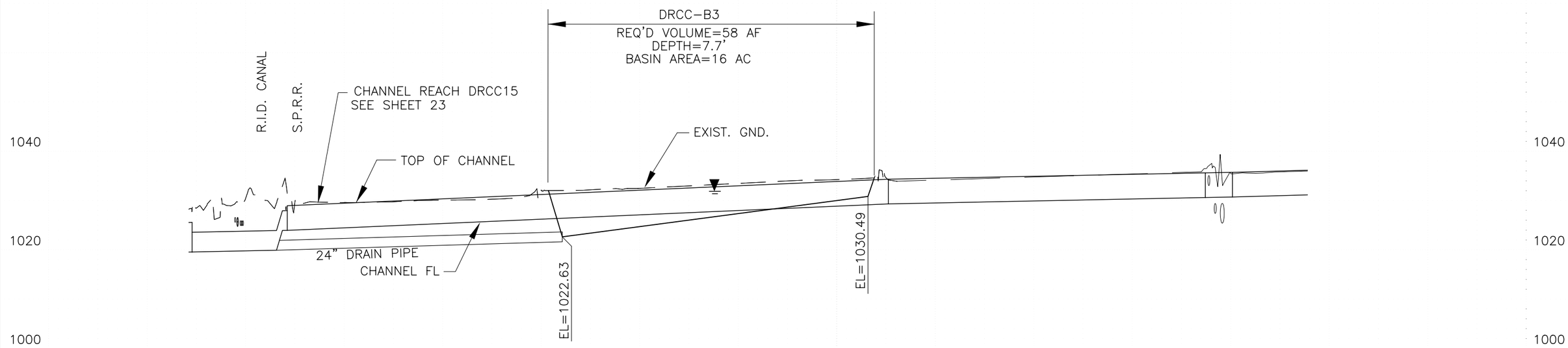
See Facing Page for Design Information.



DURANGO REGIONAL CONVEYANCE BASIN #4

COUNTY PROJECT NO. FCD 99-41	DURANGO AREA DRAINAGE MASTER PLAN	
PROJECT DESCRIPTION: DURANGO REGIONAL CONVEYANCE BASIN #4		
PRIME CONSULTANT: DIBBLE & ASSOCIATES CONSULTING ENGINEERS	DRN. JEV DATE: – / DES. JLM DATE: – / CKD. BJF DATE: –	SCALE 1"=400' HORIZONTAL / 1"=20' VERTICAL
SHEETS NO. 37 OF 38		

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FILE:J:\9935\Acad\Prelim_Design\plprbasn37-drcc.dwg DATE:Oct, 10 2002 TIME: 02:59 pm

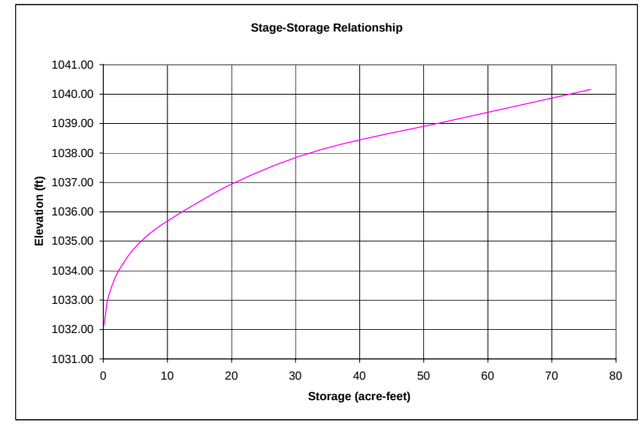
Detention Basin Properties

47th Ave Basin

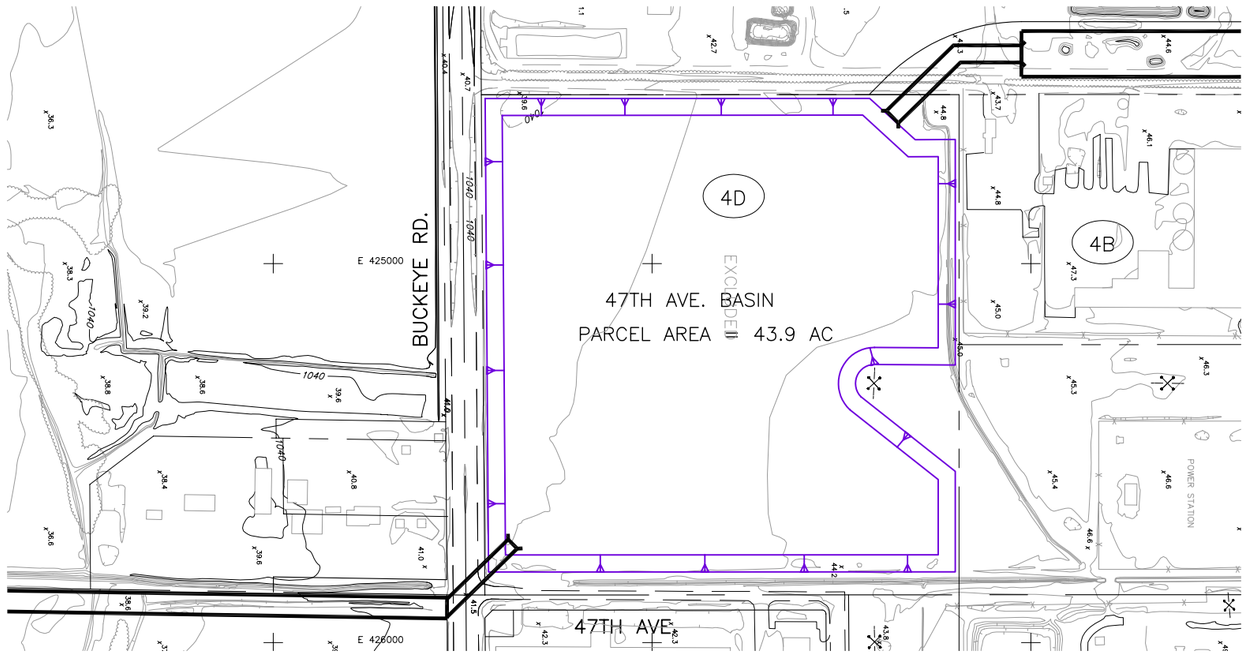
Basin Land Area	35	Acres	Length of Fencing =	4,887	ft
Basin Excavation Volume	260,633	C.Y.			
Q100 Inflow =	1,368	cfs	Outflow Pipe (no. & Dia.) =	1 24	in.
Q100 Outflow =	993	cfs	Pipe Invert at Inlet=	1026.0	ft
Highwater Elev. (Q100) =	1034.75	ft	Pipe Invert at Outlet=	1023.0	ft
Maximum Ponding Depth	7.8	ft	Pipe Length =	0	ft
Total Basin Storage Volume	22.3	AF	Pipe Slope =	0.0092	ft/ft
			Inflow Spillway Width (2) =	406	ft
			Inflow Spillway Length (2) =	47	ft
			Spillway Elevation =	1034.75	ft

Elev.	Cum. Volume (acre-ft.)
1032.16	0.12
1033.16	0.86
1034.16	2.83
1035.16	6.69
1036.16	13.56
1037.16	22.24
1038.16	34.77
1039.16	55.53
1040.16	76.08

Note: (1) Volume computations based upon results obtained from surface modeling software.
(2) Width is perpendicular to flow. Length is measured down the slope.



BOOK 104
MAP 21



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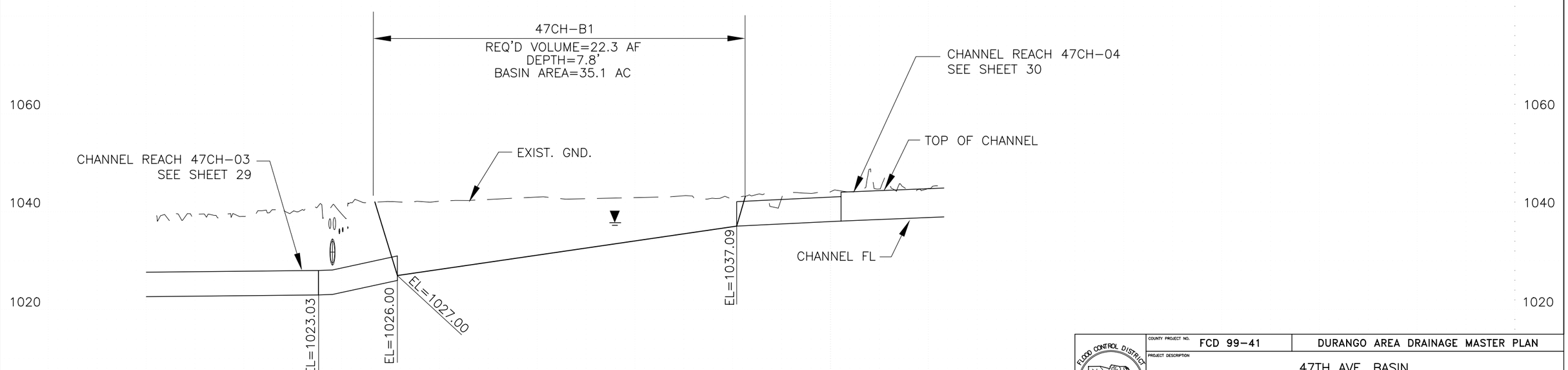

47TH AVE. BASIN

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY	COUNTY PROJECT NO. FCD 99–41	DURANGO AREA DRAINAGE MASTER PLAN	
	PROJECT DESCRIPTION 47TH AVE. BASIN		
PRIME CONSULTANT DIBBLE & ASSOCIATES CONSULTING ENGINEERS Since 1962	DRN. JEV DATE: –	SCALE	SHEETS
	DES. JLM DATE: –	1"=400' HORIZONTAL	NO. 38 OF 38
	CKD. BJF DATE: –	1"=20' VERTICAL	

FILE:J:\9935\Acad\Prelim_Design\plprbasn38–47th.dwg DATE:Oct, 10 2002 TIME: 02:59 pm