CITY OF
Albuquerque

CITY OF ALBUQUERQUE
PARKS AND RECREATION DEPARTMENT
LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES

COA WATER PARK IMPROVEMENTS

VICINITY MAP

N

GRAPHIC SCALE
MAP NO. M-9-Z

INDEX TO DRAWINGS

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6	DRAINAGE CALCULATIONS AND ANALYSIS
7	DRAINAGE CALCULATIONS AND ANALYSIS
8	TRAFFIC CONTROL
9	TRAFFIC CONTROL

UTILITY COMPANY CONTACTS

PNM
Jim Vann
4201 Edith Blvd., NE
Albuquerque, New Mexico 87107
(505) 848-3426

GAS CO.
Debbie O'Callaghan
4625 Edith Blvd., NE
Albuquerque, New Mexico 87107
(505) 761-7705

AT&T
Ishmael Pantoja
111 Third St., NW
Albuquerque, New Mexico 87103
(505) 842-2806

JONES INTERCABLE
Karen Shore
4611 Montbel Pl., NE
P.O. Box 27138
Albuquerque, New Mexico 87125-7138
(505) 761-6220

US WEST COMMUNICATIONS
Norma Carrillo
201 Third Street
P.O. Box 1355, Sta. 952
Albuquerque, New Mexico 87103
(505) 245-8706

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REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE

ENGINEERS STAMP & SIGNATURE

APPROVED	ENGINEER	DATE
DRC Chairman		
Transportation		
Water/Wastewater		
Hydrology		
C I P		
Constr. Mngmt.		

APPROVED FOR CONSTRUCTION

CITY ENGINEER DATE

PROJECT NUMBER

SHEET 1 OF 9

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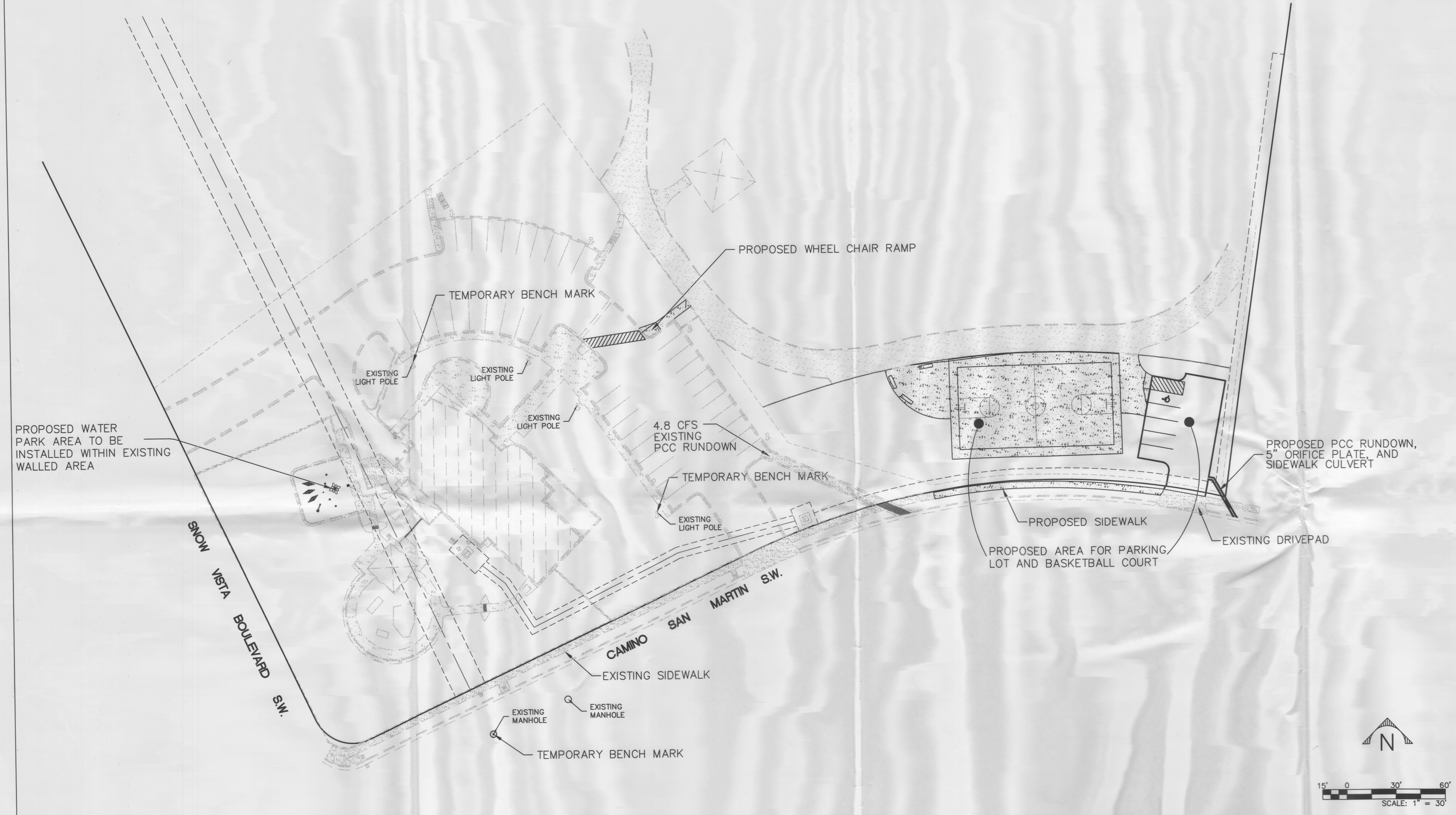

TEMPORARY BENCH MARKS:

MH RIM ON CAMINO SAN MARTIN, 105'± OF THE INTERSECTION WITH SNOW VISTA BLVD. N=1473503.71 E=354320.66 EL=5132.26

LIGHT POLE ON THE SW CORNER OF THE EX PARKING LOT NEAR THE CAMINO SAN MARTIN DRIVEWAY N=1473637.19 E=354422.03 EL=5124.07

LIGHT POLE ON THE SW CORNER OF THE EX PARKING LOT NEAR THE SNOW VISTA BLVD. DRIVEWAY N=1473729.58 E=354274.31 EL=5125.46

AS BUILT INFORMATION

CONTRACTOR	
WORK STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO.	

BENCH MARKS

COA BENCH MARK NUMBER ACS-1-M9, LOCATED IN SW QUADRANT OF THE INTERSECTION, 44' WEST FROM CL OF 98TH AND 27.5' SOUTH FROM CL OF GIBSON. STATION IS A STANDARD COA BRASS CAP SET IN CONCRETE 0.1' ABOVE GROUND AND STAMPED "1-M9". EL = 5147.872

COA BENCH MARK NUMBER ACS-2-M9, FROM THE INT OF SNOW VISTA BLVD AND BENAVIDES RD. TRAVEL SE APPROX. 0.2 MI ALONG TRANSMISSION LINE TO PYLONS NUMBERED 54. STATION IS LOCATED BETWEEN POWER POLES #PW54 & #PM47, 9.0' WEST FROM CL OF TRANSMISSION LINE R/W. STATION IS ON BRASS CAP STAMPED "2-M9"

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEERS SEAL

RICHARD J. DEVINE 13282

NO.	DATE	REMARKS	BY

REVISIONS

DESIGN

DESIGNED BY MM/RJD DATE SEPT., 2000
DRAWN BY SEC DATE SEPT., 2000
CHECKED BY RJD DATE SEPT., 2000

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CITY OF ALBUQUERQUE
PARKS AND RECREATION DEPARTMENT
LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES

TITLE: WESTGATE COMMUNITY WATER PARK

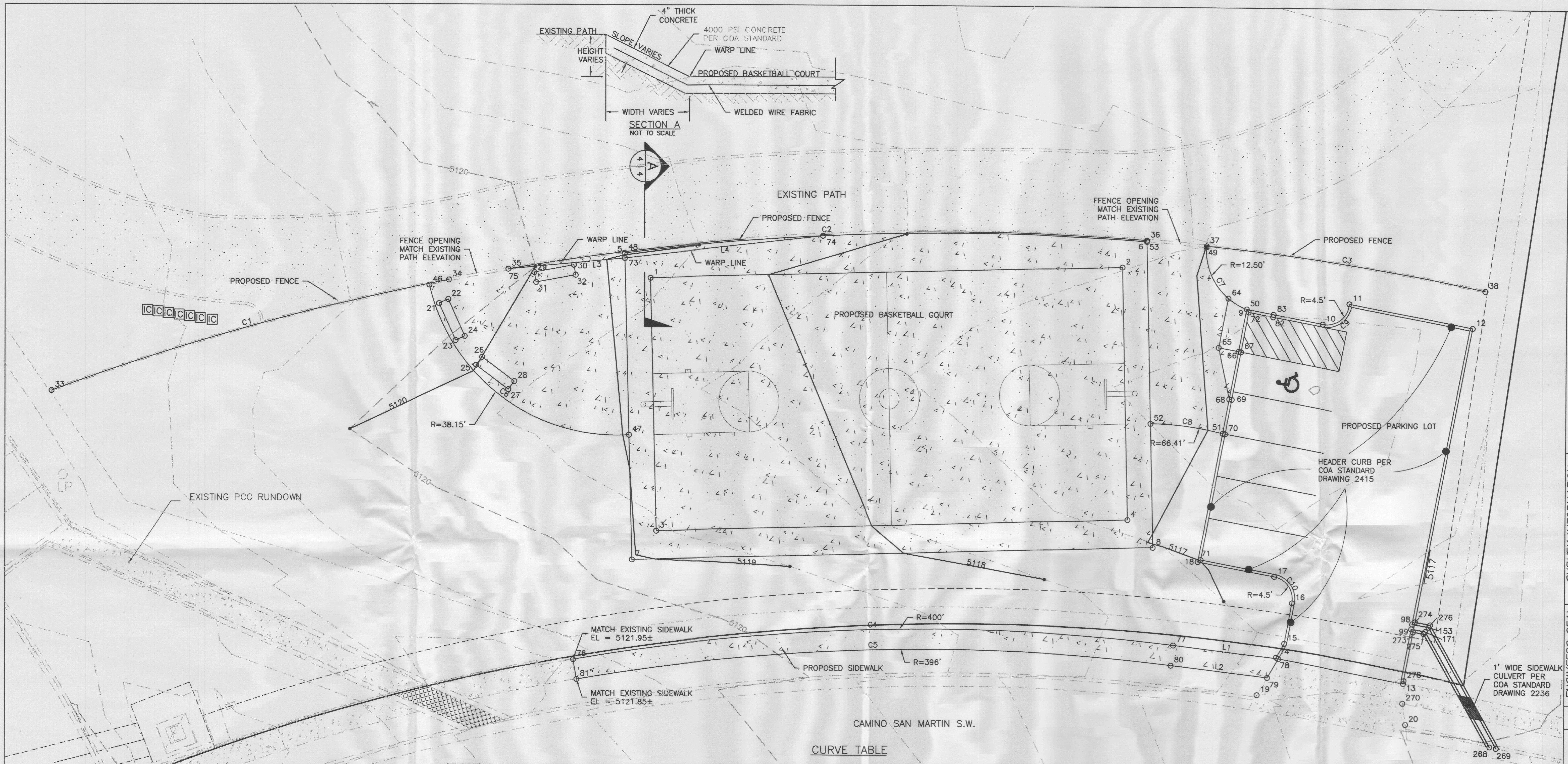
PROJECT LOCATION PLAN

Design Review Committee	City Engineer Approval	Last Design Update	Mo. / Day / Yr.	Mo. / Day / Yr.

City Project No.

Zone Map No. M-9-Z

Sheet 3 Of 9


4" THICK CONCRETE
EXISTING PATH
SLOPE VARIES
HEIGHT VARIES
4000 PSI CONCRETE PER COA STANDARD
WARP LINE
PROPOSED BASKETBALL COURT
WIDTH VARIES
WELDED WIRE FABRIC
SECTION A
NOT TO SCALE
A
4
EXISTING PATH
PROPOSED FENCE
FENCE OPENING MATCH EXISTING PATH ELEVATION
FFENCE OPENING MATCH EXISTING PATH ELEVATION
WARP LINE
PROPOSED BASKETBALL COURT
PROPOSED FENCE
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
L1
L2
L3
L4
R=38.15'
R=12.50'
R=4.5'
R=66.41'
R=400'
R=396'
PROPOSED PARKING LOT
HEADER CURB PER COA STANDARD DRAWING 2415
EXISTING PCC RUNDOWN
LP
5120
5119
5118
5117
MATCH EXISTING SIDEWALK EL = 5121.95±
MATCH EXISTING SIDEWALK EL = 5121.85±
PROPOSED SIDEWALK
1' WIDE SIDEWALK CULVERT PER COA STANDARD DRAWING 2236
CAMINO SAN MARTIN S.W.

F:\civ_cadd\100\500101\OPTION1\Site_Plan.dwg 09/07/00 12:58:48

CURVE TABLE

NUMBER	DEFLECTION ANGLE	DELTA ANGLE	DEGREE OF CURVE – ARC	DEGREE OF CURVE – CHORD	CHORD DIRECTION	TANGENT	RADIUS	ARC LENGTH	CHORD LENGTH	EXTERNAL	MID ORDINATE
C1	09°03'15"	09°03'15"	11°01'11"	11°02'13"	NAZ 254°23'06"	41.1669	519.94	82.1625	82.0770	1.6272	1.6221
C2	14°03'50"	14°03'50"	11°01'17"	11°02'18"	NAZ 87°16'02"	64.1261	519.86	127.6076	127.2875	3.9401	3.9105
C3	06°12'51"	06°12'51"	11°01'11"	11°02'13"	NAZ 98°43'09"	28.2231	519.94	56.3908	56.3631	0.7654	0.7643
C4	17°12'56"	17°12'56"	14°19'26"	14°21'41"	NAZ 268°32'37"	60.5498	400.00	120.1871	119.7355	4.5569	4.5056
C5	17°12'56"	17°12'56"	14°28'07"	14°30'26"	NAZ 268°32'37"	59.9443	396.00	118.9853	118.5382	4.5113	4.4605
C6	80°53'15"	80°53'15"	150°10'29"	UNDEFINED	NAZ 306°34'46"	32.5208	38.15	53.8623	49.4995	11.9795	9.1169
C7	71°55'28"	71°55'28"	458°18'35"	UNDEFINED	NAZ 326°27'54"	9.0703	12.50	15.6934	14.6831	2.9438	2.3827
C8	12°34'35"	12°34'35"	86°16'10"	97°40'29"	NAZ 277°14'49"	7.3185	66.41	14.5782	14.5489	0.4020	0.3996
C9	96°22'18"	96°22'18"	1273°14'22"	UNDEFINED	NAZ 232°31'47"	5.0305	4.50	7.5690	6.7078	2.2495	1.4998
C10	90°00'00"	90°00'00"	1273°14'22"	UNDEFINED	NAZ 325°42'56"	4.5000	4.50	7.0686	6.3640	1.8640	1.3180

LINE TABLE

NUMBER	DIRECTION	DISTANCE
L1	NAZ 97°09'05"	21.1557 FT
L2	NAZ 97°09'05"	19.4143 FT
L3	NAZ 264°35'42"	23.2858 FT
L4	NAZ 83°32'47"	39.6663 FT

NODE TABLE

Node ID	Northing	Easting	Elevation	Description
1	1473723.0505	354605.4988	5118.26	BASKETBALL COURT
2	1473725.4189	354699.4689	5117.32	BASKETBALL COURT
3	1473673.0664	354606.7585	5118.51	BASKETBALL COURT
4	1473675.4347	354700.7287	5117.57	BASKETBALL COURT
5	1473727.9230	354600.3744	5119.46	BASKETBALL COURT
6	1473730.5433	354704.3414	5117.16	BASKETBALL COURT
7	1473667.3503	354601.9010	5119.09	BASKETBALL COURT
8	1473669.9705	354705.8680	5116.94	BASKETBALL COURT
9	1473717.2834	354724.3294	5116.84	TBC PARKING LOT
10	1473714.4015	354739.5591	5117.09	TBC PARKING LOT
11	1473718.4818	354744.8883	5117.13	TBC PARKING LOT
12	1473713.8294	354769.4743	5116.89	TBC PARKING LOT
13	1473643.1779	354756.1049	5116.82	TOP OF CURB
14	1473648.1965	354730.5021	5117.27	TOP OF CURB
15	1473650.9410	354732.1303	5116.99	TBC PARKING LOT
16	1473659.0326	354733.6614	5116.28	TBC PARKING LOT
17	1473664.2908	354730.0766	5116.33	TBC PARKING LOT
18	1473667.1727	354714.8469	5116.91	TBC PARKING LOT
19	1473640.7789	354726.6830	5116.70	EXISTING DRIVEWAY
20	1473635.0284	354756.5888	5115.59	EXISTING DRIVEWAY
21	1473717.8826	354563.4490	*	BENCH
22	1473718.7096	354565.2700	*	BENCH
23	1473710.5985	354566.7569	*	BENCH
24	1473711.4255	354568.5779	*	BENCH
25	1473705.6916	354570.8425	*	BENCH

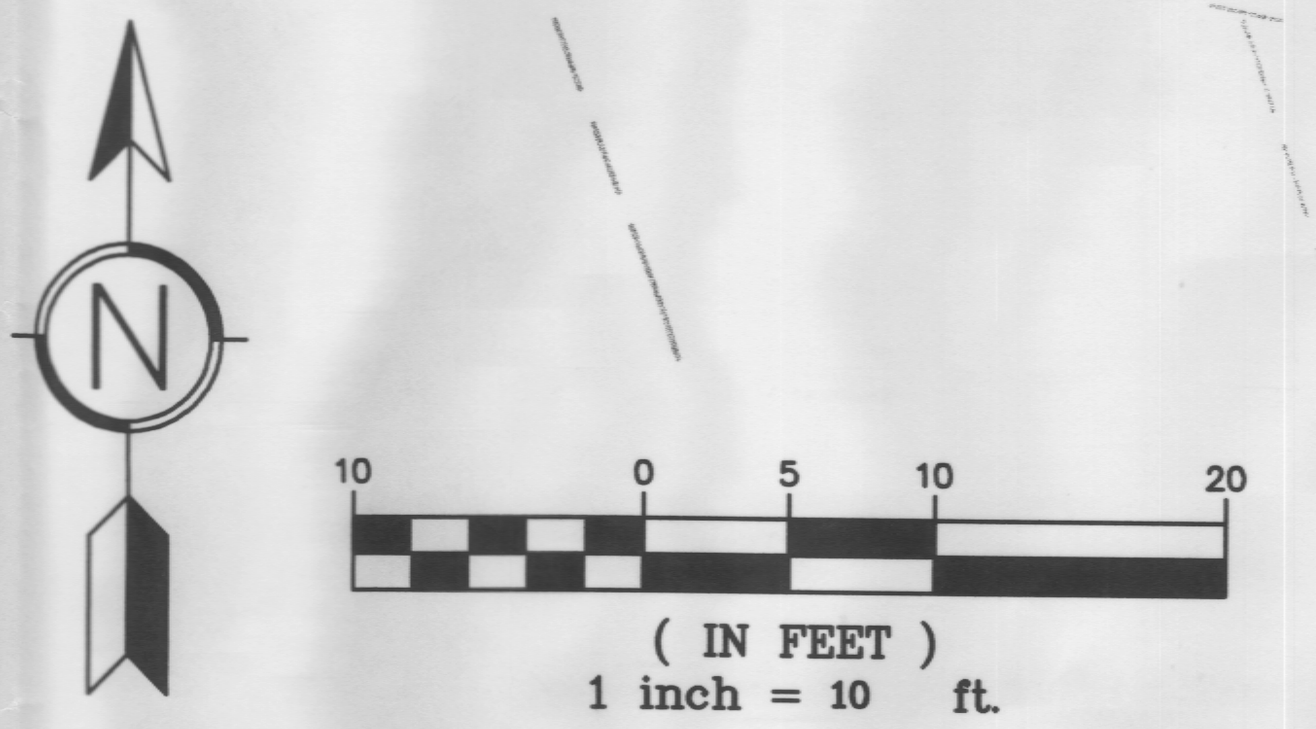
NODE TABLE

Node ID	Northing	Easting	Elevation	Description
26	1473707.2956	354572.0372	*	BENCH
27	1473700.9127	354577.2583	*	BENCH
28	1473702.5166	354578.4530	*	BENCH
29	1473724.0959	354582.3831	*	BENCH
30	1473725.5380	354590.2520	*	BENCH
31	1473722.1286	354582.7436	*	BENCH
32	1473723.5708	354590.6126	*	BENCH
33	1473700.4582	354486.3566	5122.98	PROPOSED FENCE
34	1473722.5511	354565.4043	5120.47	PROPOSED FENCE
35	1473724.7248	354577.2175	5120.14	PROPOSED FENCE
36	1473730.7936	354704.3602	5117.16	PROPOSED FENCE
37	1473729.7646	354716.2419	5117.00	PROPOSED FENCE
38	1473721.2204	354771.9537	5116.64	PROPOSED FENCE
46	1473721.5213	354561.5296	5120.58	CONCRETE PAD
47	1473692.0227	354601.2792	5118.96	CONCRETE PAD
48	1473727.9230	354600.3744	5119.46	CONCRETE PAD
49	1473729.5225	354716.2178	5117.00	CONCRETE PAD
50	1473717.2834	354724.3294	5116.84	CONCRETE PAD
51	1473692.7194	354719.6811	5117.17	CONCRETE PAD
52	1473694.5547	354705.2484	5117.34	CONCRETE PAD
53	1473730.5433	354704.3414	5117.16	CONCRETE PAD
64	1473719.4238	354720.6634	5116.88	PROPOSED HC RAMP
65	1473709.6754	354718.8187	5116.73	PROPOSED HC RAMP
66	1473708.9317	354722.7489	5116.68	PROPOSED HC RAMP
67	1473708.8387	354723.2402	5116.68	PROPOSED HC RAMP

* MATCH PROPOSED CONCRETE SURFACE

NODE TABLE

Node ID	Northing	Easting	Elevation	Description
68	1473699.4991	354720.9640	5117.39	PROPOSED HC RAMP
69	1473699.4061	354721.4553	5116.56	PROPOSED HC RAMP
70	1473692.6264	354720.1724	5116.34	FL PARKING LOT
71	1473667.5711	354715.4311	5116.08	FL PARKING LOT
72	1473716.6992	354724.7277	5116.84	PROPOSED HC RAMP
73	1473726.9182	354600.3997	5118.79	TOP OF STEP
74	1473731.3767	354639.8147	5118.36	TOP OF STEP
75	1473724.7248	354577.2175	5120.14	TOP OF STEP
76	1473647.5321	354590.2441	5121.95	PROPOSED SIDEWALK
77	1473650.5751	354709.9410	5117.51	PROPOSED SIDEWALK
78	1473647.9414	354730.9321	5116.94	FL AT PARKING LOT
79	1473644.1893	354728.7062	5116.80	PROPOSED SIDEWALK
80	1473646.6062	354709.4430	5117.46	PROPOSED SIDEWALK
81	1473643.5937	354590.9431	5121.85	PROPOSED SIDEWALK
82	1473715.7695	354729.6405	5116.81	PARKING LOT
83	1473716.2608	354729.7335	5117.64	PARKING LOT
98	1473654.9686	354757.8272	5115.21	FL CHANNEL
99	1473653.9860	354757.6413	5115.21	FL CHANNEL
153	1473654.3468	354761.1127	5115.09	FL CHANNEL
171	1473653.4503	354760.4723	5115.09	FL CHANNEL
268	1473630.7580	354773.3843	5114.46	FL CHANNEL
269	1473630.4912	354774.6867	5114.42	FL CHANNEL
270	1473639.2523	354755.9926	5115.81	EXISTING DRIVEWAY
273	1473653.4017	354758.0396	5116.04	TOP OF RUNDOWN
274	1473655.3669	354758.4114	5116.04	TOP OF RUNDOWN
275	1473653.0020	354760.1521	5115.92	TOP OF RUNDOWN
276	1473654.7951	354761.4329	5115.92	TOP OF RUNDOWN
278	1473643.7674	354756.2165	5116.04	TOP OF CURB



(IN FEET)
1 inch = 10 ft.

AS BUILT INFORMATION

CONTRACTOR	
WORK STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO–FILM INFORMATION

RECORDED BY	DATE
NO.	

BENCH MARKS

COA BENCH MARK NUMBER ACS–1–M9, LOCATED IN SW QUADRANT OF THE INTERSECTION, 44' WEST FROM CL OF 98TH AND 27.5' SOUTH FROM CL OF GIBSON. STATION IS A STANDARD COA BRASS CAP SET IN CONCRETE 0.1' ABOVE GROUND AND STAMPED "1–M9". EL = 5147.872

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SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEERS SEAL

RICHARD J. DEVINE 13282

REVISIONS

NO.	DATE	REMARKS	BY

DESIGN

DESIGNED BY	MM/RJD	DATE	SEPT., 2000
DRAWN BY	SEC	DATE	SEPT., 2000
CHECKED BY	RJD	DATE	SEPT., 2000

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CITY OF ALBUQUERQUE
PARKS AND RECREATION DEPARTMENT
LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES

TITLE: WESTGATE COMMUNITY WATER PARK

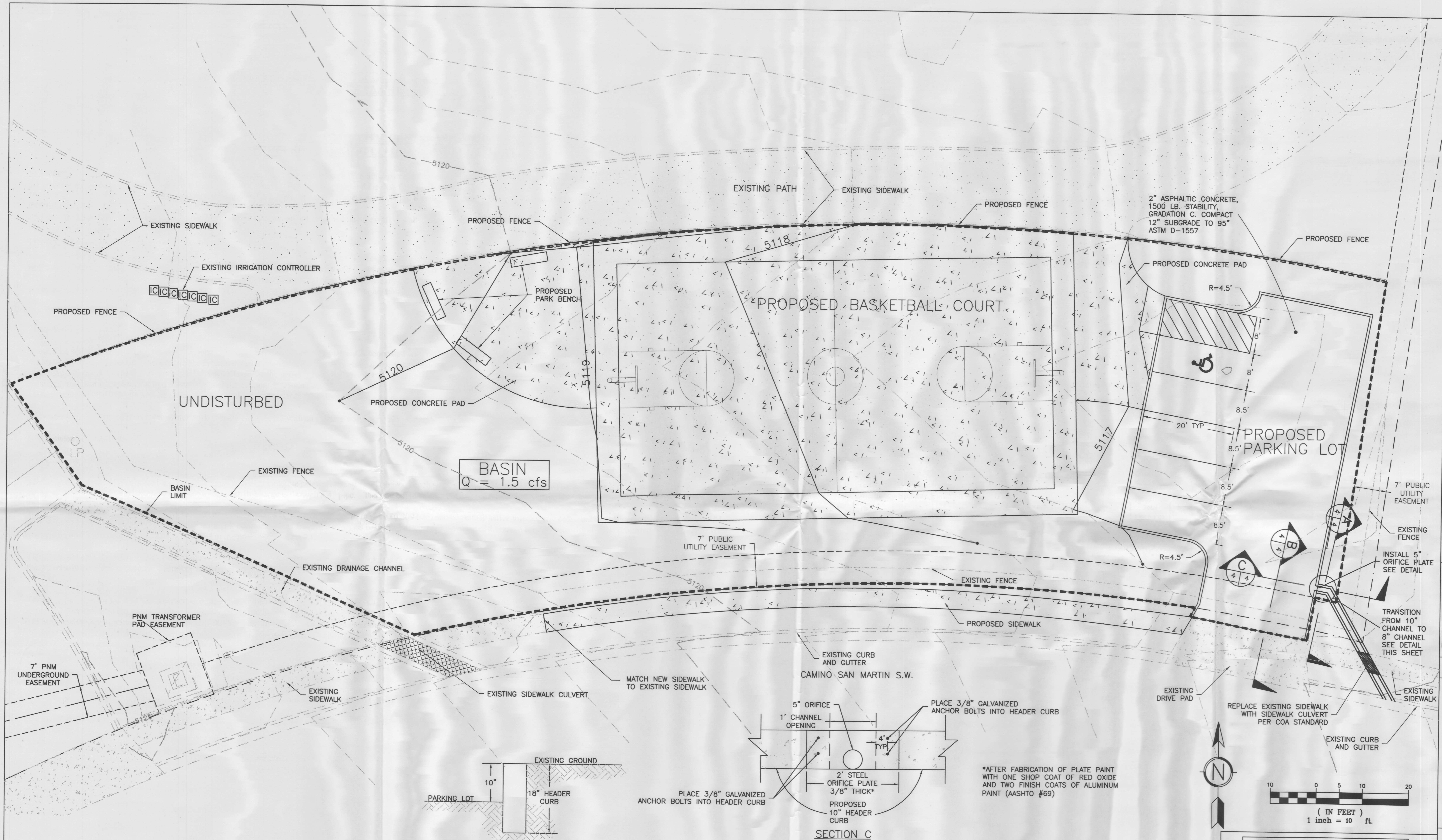
COORDINATE GEOMETRY PLAN

Design Review Committee	City Engineer Approval	Last Design Update	Mo. / Day / Yr.	Mo. / Day / Yr.

City Project No.

Zone Map No. M-9-Z

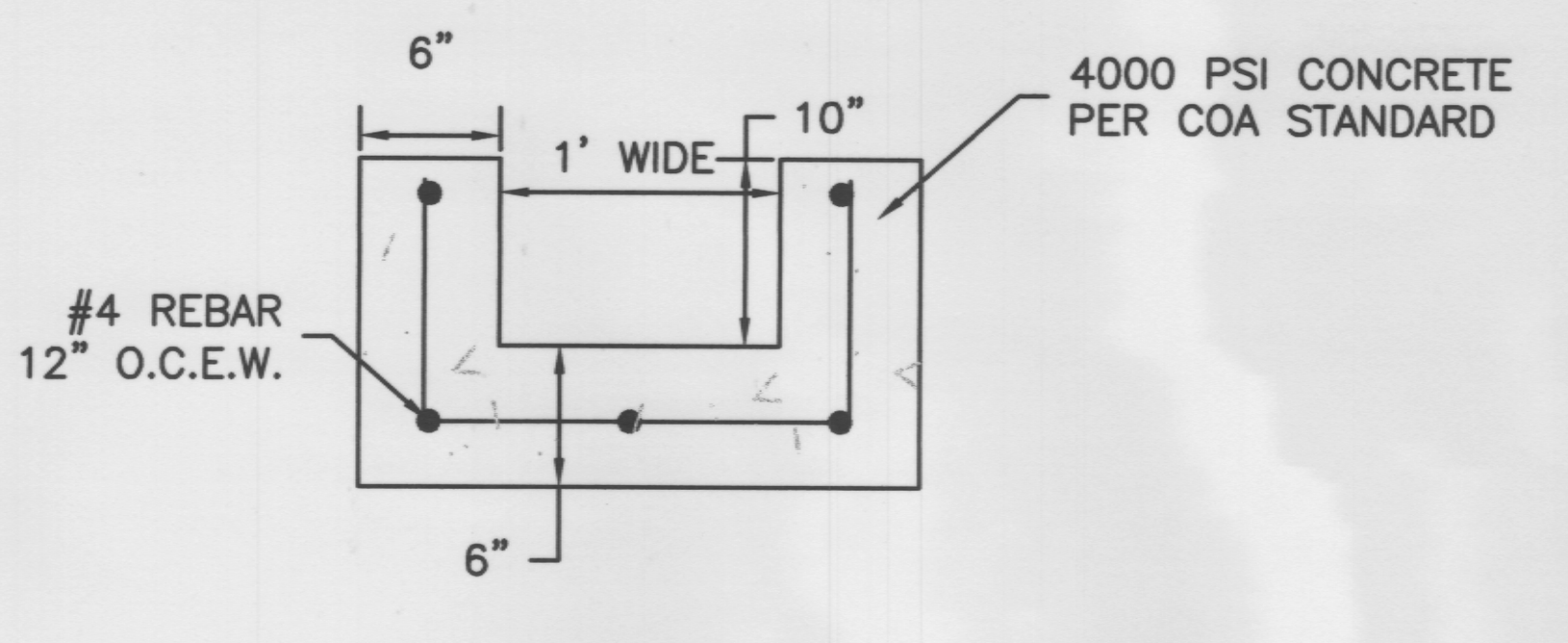
Sheet 4 Of 9



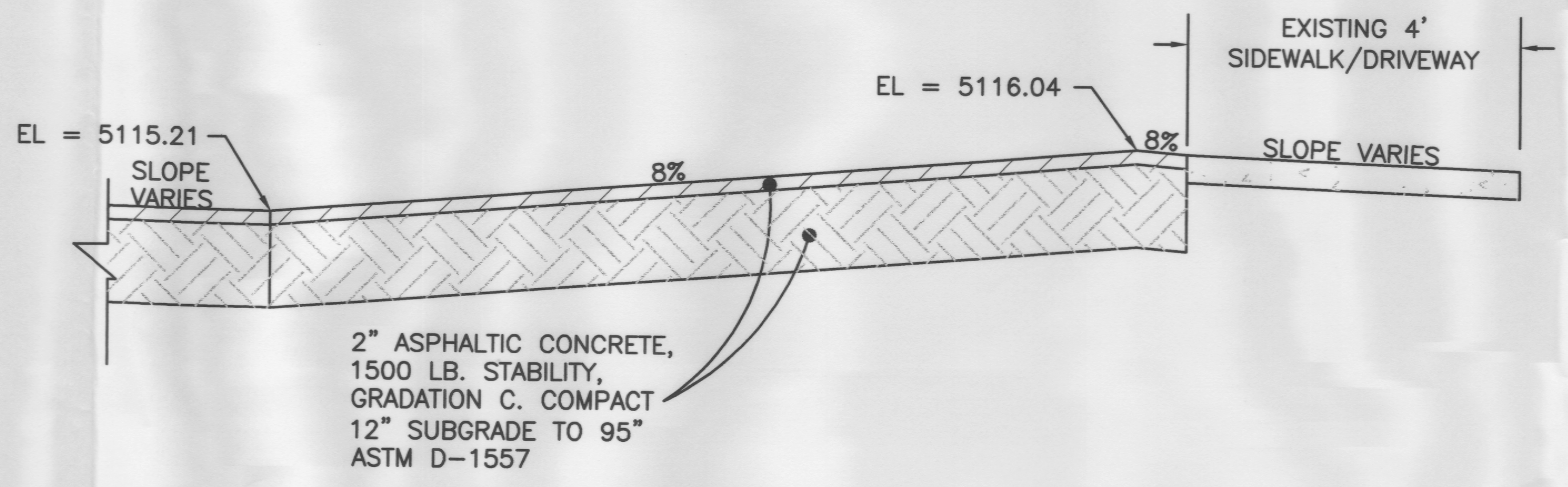
EXISTING PATH
EXISTING SIDEWALK
PROPOSED FENCE
EXISTING SIDEWALK
EXISTING IRRIGATION CONTROLLER
PROPOSED FENCE
PROPOSED PARK BENCH
5120
5118
5119
5117
PROPOSED BASKETBALL COURT
UNDISTURBED
PROPOSED CONCRETE PAD
BASIN
Q = 1.5 cfs
EXISTING FENCE
BASIN LIMIT
7' PUBLIC UTILITY EASEMENT
EXISTING DRAINAGE CHANNEL
EXISTING FENCE
PROPOSED SIDEWALK
PNM TRANSFORMER PAD EASEMENT
7' PNM UNDERGROUND EASEMENT
EXISTING SIDEWALK
EXISTING SIDEWALK CULVERT
MATCH NEW SIDEWALK TO EXISTING SIDEWALK
EXISTING CURB AND GUTTER
CAMINO SAN MARTIN S.W.
2" ASPHALTIC CONCRETE, 1500 LB. STABILITY, GRADATION C. COMPACT 12" SUBGRADE TO 95" ASTM D-1557
PROPOSED FENCE
PROPOSED CONCRETE PAD
R=4.5'
8'
8'
8.5'
20' TYP
8.5'
8.5'
8.5'
PROPOSED PARKING LOT
R=4.5'
7' PUBLIC UTILITY EASEMENT
EXISTING FENCE
INSTALL 5" ORIFICE PLATE SEE DETAIL
TRANSITION FROM 10" CHANNEL TO 8" CHANNEL SEE DETAIL THIS SHEET
A
B
C
4
EXISTING SIDEWALK
EXISTING DRIVE PAD
REPLACE EXISTING SIDEWALK WITH SIDEWALK CULVERT PER COA STANDARD
EXISTING CURB AND GUTTER
N
10 0 5 10 20
(IN FEET)
1 inch = 10 ft.
EXISTING GROUND
10"
PARKING LOT
18" HEADER CURB
5" ORIFICE
1' CHANNEL OPENING
PLACE 3/8" GALVANIZED ANCHOR BOLTS INTO HEADER CURB
4' TYP
PLACE 3/8" GALVANIZED ANCHOR BOLTS INTO HEADER CURB
2' STEEL ORIFICE PLATE 3/8" THICK*
PROPOSED 10" HEADER CURB

SECTION C
SCALE 1"=1'

*AFTER FABRICATION OF PLATE PAINT WITH ONE SHOP COAT OF RED OXIDE AND TWO FINISH COATS OF ALUMINUM PAINT (AASHTO #69)

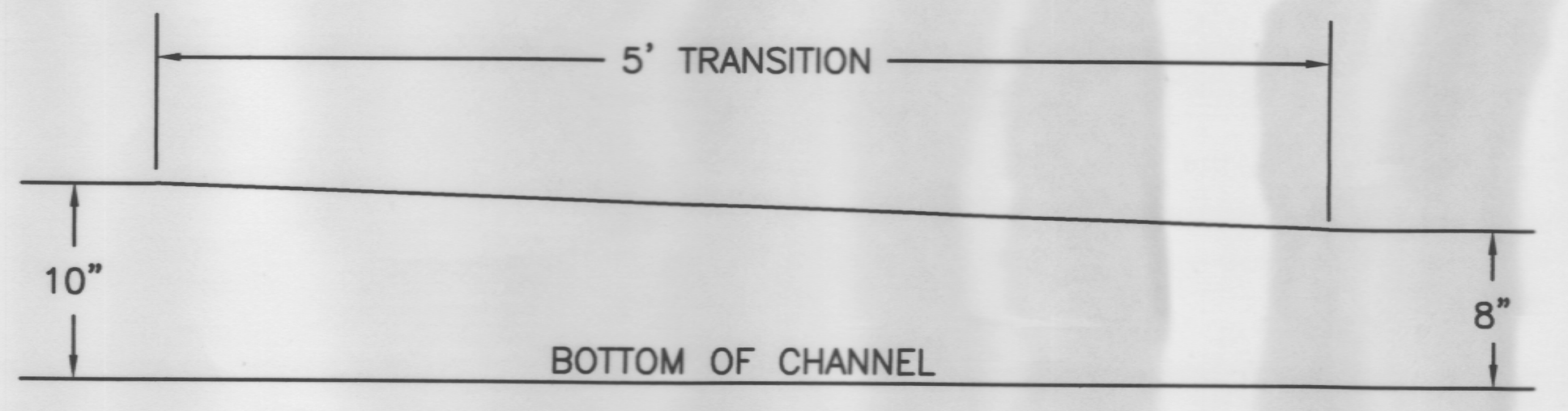


SECTION A
SCALE 1"=1'



EL = 5115.21
SLOPE VARIES
8%
EL = 5116.04
8%
EXISTING 4' SIDEWALK/DRIVEWAY
SLOPE VARIES
2" ASPHALTIC CONCRETE, 1500 LB. STABILITY, GRADATION C. COMPACT 12" SUBGRADE TO 95" ASTM D-1557

SECTION B
SCALE 1"=2'



TRANSITION FROM 10" CHANNEL TO 8" HIGH CURB
SCALE 1"=1'

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AS BUILT INFORMATION

CONTRACTOR	
WORK STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

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NO.	

BENCH MARKS

COA BENCH MARK NUMBER ACS-1-M9, LOCATED IN SW QUADRANT OF THE INTERSECTION, 44' WEST FROM CL OF 98TH AND 27.5' SOUTH FROM CL OF GIBSON. STATION IS A STANDARD COA BRASS CAP SET IN CONCRETE 0.1' ABOVE GROUND AND STAMPED "1-M9". EL = 5147.872

COA BENCH MARK NUMBER ACS-2-M9, FROM THE INT OF SNOW VISTA BLVD AND BENAVIDES RD. TRAVEL SE APPROX. 0.2 MI ALONG TRANSMISSION LINE TO PYLONS NUMBERED 54. STATION IS LOCATED BETWEEN POWER POLES #PW54 & #PM47, 9.0' WEST FROM CL OF TRANSMISSION LINE R/W. STATION IS ON BRASS CAP STAMPED "2-M9"

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEERS SEAL

RICHARD J. DEVINE
13282

REVISIONS

NO.	DATE	REMARKS	BY

DESIGN

DESIGNED BY	MM/RJD	DATE	SEPT., 2000
DRAWN BY	SEC	DATE	SEPT., 2000
CHECKED BY	RJD	DATE	SEPT., 2000

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CITY OF ALBUQUERQUE
PARKS AND RECREATION DEPARTMENT
LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES

TITLE: WESTGATE COMMUNITY WATER PARK

GRADING, DRAINAGE, AND BASIN DEFINITION PLAN

Design Review Committee	City Engineer Approval	Last Design Update	Mo. / Day / Yr.	Mo. / Day / Yr.

City Project No.
Zone Map No. M-9-Z
Sheet 5 Of 9

WESTGATE COMMUNITY CENTER PROPOSED PARKING LOT/ BASKETBALL COURT DRAINAGE ANALYSIS

WESTGATE COMMUNITY CENTER WATER PARK & PROPOSED PARKING LOT/BASKETBALL COURT

The Westgate Community Center proposed parking lot/basketball court is located on a 0.46 acre parcel of undeveloped land located in the southwest quadrant of Albuquerque. The site borders the existing Westgate Community Center on the west, Camino San Martin on the south, and a grass field on the north. See sheet 3 of 8 of the plans for the location. The site slopes vary from 2% to 3%. The climate in this area is considered semi-arid and is hot and dry with an average rainfall of 8 inches. The project is classified as zone x on the flood insurance rate map firm #35001c0336d.
The proposed Water Park shall be located behind the Westgate Community Center within an existing walled area. See sheet 3 of 8 for water park location.

HYDROLOGIC ANALYSIS

The City of Albuquerque's Development Process Manual (DPM) Section 22.2 was used to compute the 100-yr 6-hr peak flows and runoff volumes for the onsite basin. Precipitation is in zone 1. Tables A-8 and A-9 were used for these calculations. The site was analyzed as one basin based on developed runoff patterns. The existing condition flows were computed for comparison purposes only. There are no off-site flows entering the site for either existing or developed conditions.

A. **Existing Conditions - onsite**

1. Basketball/parking lot

There is no off-site drainage entering the site. The existing site is mostly undeveloped and is vegetated with native grasses and sagebrush. The water naturally drains to the southeast corner of the lot where it ponds approximately where the proposed parking lot is located. The average slope is between 3% and 4%. The existing conditions were calculated using the entire site as one basin. An estimated 0.9 cubic feet per second was calculated for the existing 100 year event. Land treatment "B" was used for undeveloped site. The existing Westgate Community Center (including the existing parking lot and the area behind the community center) was previously analyzed (see Westgate Community Center Drainage Plan, Hydrology File No. M9/D11, and the Master Drainage Plan Truman Middle School studied by Jeff Mortensen & Associates, Inc.

2. Water park. As stated above, the Water Park is being constructed with an existing wall area. No grading will be necessary.

B. **Developed Conditions**

1. Basketball/parking lot

The developed park will have paved impermeable areas including concrete sidewalks, basketball courts, bench sites, and an asphalt parking lot. The following is a summary of the site. As the above mentioned drainage study stated, the allowable peak discharge is through a 4" pipe. The site could release 0.4 cfs to Camino San Martin.

The site with the proposed parking lot/basketball court encompasses 0.46 acres. 45.5% of the site (0.2094 ac) and has either native grasses or weeds, and is considered land treatment B. 54.5% of the site (0.2504 ac) is either concrete or asphalt and is considered land treatment D. This basin will discharge an estimated 1.5 cfs in the 100 year storm. The proposed 5" orifice plate will restrict the flow to 0.6 cfs, with ponding contained in the proposed parking lot.

The site containing the existing Westgate Community Center and the proposed water park (includes the parking lot and area behind the community center) discharges an estimated 4.8cfs (per the previously mentioned reports). Therefore the total proposed discharge to Camino San Martin is 0.6 cfs + 4.8 cfs = 5.4 cfs. The allowable discharge to Camino San Martin is 0.4 cfs + 4.8 cfs = 5.2 cfs.

The proposed parking lot shall be constructed to intercept all the runoff from the site. A concrete rectangular weir, with a 5" orifice plate section shall be constructed to release no more 0.6 cfs in the 100 year storm. This is 0.2 cfs more that the maximum allowable peak discharge from this site but we do not believe this minor amount will adversely effect downstream infrastructure. See pond and outlet structure details on sheet 4 of the plans set for details. An AHYMO run was routed through the pond to evaluate the orifice section. The summary of this run is shown on this page. As you can see the peak entering the pond from the site is 1.5 cfs. The pond volume is 0.012 ac-ft with a discharge through the orifice of 0.6 cfs. Note that we have raised the curb height in the parking lot to 10" around the ponding area.

2. As stated previously, the Water Park will be located on the western side of the Westgate Community Center within an enclosed area. No grading will be necessary to place the water park equipment. The water play units will drain to a proposed 10 x 10 mechanical room for filtering, and re-circulation back out to the play units. The filters will be flushed to the sanitary sewer system. The only impermeable surface that will contribute runoff to the existing rundown onto Camino San Martin will be the new 10 x 10 mechanical room roof. The increased discharge -less than 0.01 cfs for the 100-year event- is negligible and should not significantly impact down stream infrastructure.

In summary, the allowable flow from both of the above areas is 5.2 cfs. We are discharging 5.4 cfs. We believe that the 0.2 cfs is a negligible amount and will not adversely effect downstream capacities.

EXISTING HYDROLOGIC ANALYSIS

From Jeff Mortensen & Associates July 7, 1994 submittal of The Master Drainage Plan for Truman Middle School, sheet 2 of 2, Drainage Plan and Calculations; Vicinity & FEMA Maps
Basin "C" the developed conditions - Calculations for additional basin area designated as "Future Parking Lot" the following were their results:

A_{TOTAL}=20,100 sf = 0.46 Ac
Roof Area = 0 sf (0)
Pave Area=15,600 sf (0.22)
Landscaped Area=0 sf (0)
Undeveloped Area=4,500 sf (0.22)
C=0.83 (weighted average per Emergency Rule, 1/14/86)
Q_{100}=CiA=0.83(4.56)(0.46)=1.8 cfs
A_{imp}=15,600sf; % impervious = 78%
Composite CN = 93 (DMP Plate 22.2 C-2)
DRO=1.5 in (DPM Plate 22.2 C-4)
V_{100}=3630 (DRO) A=2,505 cf

A_{total}=2.03 + 0.46 = 2.49 Ac

ΣQ_{100}=6.60 - 4.8 = 1.8 cfs (increase)
ΣV_{100}=4,275 - 1,770 = 2,505 cf (increase)

EXISTING 4' RUNDOWN

POND VOLUME and DISCHARGE CALCULATIONS

For the existing school site, existing 4' rundown

Emergency Spillway Elevation = 0.00

Elevation	Incremental Volume	Cumulative volume	Emergency Equals	Spillway Primary	Discharge		Total Discharge
			Discharge Coefficient "C"	Length "L"	Head (h)	Q= CL(h)^1.5	
(ft)	(ac-ft)	(ac-ft)		(ft)	(ft)	(cfs)	(cfs)
(a)	(b)		(e)				
0.10	0.00140	0.00140	1.50	4.00	0.10	0.19	0.190
0.20	0.00260	0.00400	1.50	4.00	0.20	0.54	0.537
0.30	0.00380	0.00780	1.50	4.00	0.30	0.99	0.986
0.40	0.00500	0.01280	1.50	4.00	0.40	1.52	1.518
0.50	0.00620	0.01900	1.50	4.00	0.50	2.12	2.121
0.60	0.00740	0.02640	1.50	4.00	0.60	2.79	2.789
0.70	0.00860	0.03500	1.50	4.00	0.70	3.51	3.514
0.80	0.00860	0.04360	1.50	4.00	0.80	4.29	4.293
0.90	0.00860	0.05220	1.50	4.00	0.90	5.12	5.123
1.00	0.00860	0.06080	1.50	4.00	1.00	6.00	6.000

(a) Elevations and areas measured on .25"= survey shots
(b) Obtained from Autocad basemap drawing
(c) From "Handbook of Hydraulics" Brater, King, Lindell, Wei. 7th ed. page 4.7
(e) From "Handbook of Hydraulics" Brater, King, Lindell, Wei. 7th ed. page 5.25

AS BUILT INFORMATION

CONTRACTOR	
WORK STAKED BY	DATE
INSPECTOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO.	

BENCH MARKS

COA BENCH MARK NUMBER ACS-1-M9, LOCATED IN SW QUADRANT OF THE INTERSECTION, 44' WEST FROM CL OF 98TH AND 27.5' SOUTH FROM CL OF GIBSON. STATION IS A STANDARD COA BRASS CAP SET IN CONCRETE 0.1' ABOVE GROUND AND STAMPED "1-M9". EL = 5147.872
COA BENCH MARK NUMBER ACS-2-M9, FROM THE INT OF SNOW VISTA BLVD AND BENAVIDES RD. TRAVEL SE APPROX. 0.2 MI ALONG TRANSMISSION LINE TO PYLONS NUMBERED 54. STATION IS LOCATED BETWEEN POWER POLES #PW54 & #PM47, 9.0' WEST FROM CL OF TRANSMISSION LINE R/W. STATION IS ON BRASS CAP STAMPED "2-M9"

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEERS SEAL

RICHARD J. DEVINE 13282

NO.	DATE	REMARKS	BY

REVISIONS

DESIGN

DESIGNED BY	MM/RJD	DATE	SEPT., 2000
DRAWN BY	SEC	DATE	SEPT., 2000
CHECKED BY	RJD	DATE	SEPT., 2000

100316
Smith Engineering Company
A Full Service Engineering Company
Rio Rancho, NM Albuquerque, NM Santa Fe, NM Roswell, NM

CITY OF ALBUQUERQUE
PARKS AND RECREATION DEPARTMENT
LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES

TITLE: WESTGATE COMMUNITY WATER PARK
DRAINAGE CALCULATIONS AND ANALYSIS

Design Review Committee	City Engineer Approval	Last Design Update	Mo. / Day / Yr.	Mo. / Day / Yr.

City Project No.
Zone Map No. M-9-Z
Sheet 6 Of 9

F:\civ_cadd\100\500101\OPTION1\SRDRNCALC1.dwg 09/07/00 15:13:14

DEVELOPED HYDROLOGIC ANALYSIS

ALL TC'S ARE ASSUMED TO BE 12 MINUTES

PROJECT NAME =	West Gate Water Park															
	DEVELOPLED HYDROLOGIC CALCULATIONS															
	(for small w atersheds < 40 acres (per DPM Section 22)															
Precipitation Zone =		1														
Table A-9 (DPM)		**Peak Discharge (cfs/acre)**														
FORMULA :		Total Qp (cfs) = QpA*Aa+QpB*Ba+QpC*Ca+QpD*Da							-- Note - "a" = area in acres							
Basin &	Return	Qp per Land Treatment Type (cfs/acre) and Land Treatment Type (acres)														
Condition or	Period	QpA	A	A	QpB	B	B	QpC	C	C	QpD	D	D	Total	**Total Qp**	
Analysis Point	6-hr.		(ac)	(%)		(ac)	(%)		(ac)	(%)		(ac)	(%)	Area (ac.)	**(cfs)**	
A	100	1.29	0.0000	0.0	2.03	0.2094	45.5	2.87	0.0000	0.0	4.37	0.2504	54.5	0.4598	1.5193	
A	10	0.24	0.0000	0.0	0.76	0.2094	45.5	1.49	0.0000	0.0	2.89	0.2504	54.5	0.4598	0.8828	
TOTALS	100		**0.0000**			**0.2094**			**0.0000**			**0.2504**		**0.4598**	**1.5193**	
	10		**0.0000**			**0.2094**			**0.0000**			**0.2504**		**0.4598**	**0.8828**	
Precipitation Zone =		1														
Table A-8 (DPM)		**Excess Precipitation - E - (in.)**														
FORMULAS:		Weighted E (in.) = EaA*Aa+EaB*Ba+EaC*Ca+EaD*Da / (total area "a")										-- Note - "a" = area in acres				
		Total Runoff Volume (ac-ft) = Weighted E (in.) * (total area "a") / (12 in./ft)														
Basin &	Return	Rainfall Excess -E per Land Treatment Type (inches) and Land Treatment Type (acres)														
Condition or	Period	EaA	A	A	EaB	B	B	EaC	C	C	EaD	D	D	Total	Weighted	**Runoff**
Analysis Point	6-hr.													Area	E	**Volume**
			(ac)	(%)		(ac)	(%)		(ac)	(%)		(ac)	(%)	(ac)	(inches)	**(ac-ft)**
A	100	0.44	0.0000	0.0	0.67	0.2094	45.5	0.99	0.0000	0.0	1.97	0.2504	54.5	0.4598	1.38	0.0528
A	10	0.08	0.0000	0.0	0.22	0.2094	45.5	0.44	0.0000	0.0	1.24	0.2504	54.5	0.4598	0.78	0.0297
TOTALS	100		**0.0000**			**0.2094**			**0.0000**			**0.2504**		**0.4598**		**0.0528**
	10		**0.0000**			**0.2094**			**0.0000**			**0.2504**		**0.4598**		**0.0297**

DEVELOPED HYDROLOGIC ANALYSIS

ALL TC'S ARE ASSUMED TO BE 12 MINUTES

PROJECT NAME =	West Gate Water Park															
	EXISTING HYDROLOGIC CALCULATIONS															
	(for small w atersheds < 40 acres (per DPM Section 22)															
Precipitation Zone =		1														
Table A-9 (DPM)		**Peak Discharge (cfs/acre)**														
FORMULA :		Total Qp (cfs) = QpA*Aa+QpB*Ba+QpC*Ca+QpD*Da							-- Note - "a" = area in acres							
Basin &	Return	Qp per Land Treatment Type (cfs/acre) and Land Treatment Type (acres)														
Condition or	Period	QpA	A	A	QpB	B	B	QpC	C	C	QpD	D	D	Total	Total Qp	
Analysis Point	6-hr.		(ac)	(%)		(ac)	(%)		(ac)	(%)		(ac)	(%)	Area (ac.)	(cfs)	
ENTIRE SITE	100	1.29	0.0000	0.0	2.03	0.4600	100.0	2.87	0.0000	0.0	4.37	0.0000	0.0	0.4600	0.9	
ENTIRE SITE	10	0.24	0.0000	0.0	0.76	0.4600	100.0	1.49	0.0000	0.0	2.89	0.0000	0.0	0.4600	0.3	
TOTAL	**100**		**0.0000**			**0.4600**			**0.0000**			**0.0000**		**0.4600**	**0.9338**	
	10		**0.0000**			**0.4600**			**0.0000**			**0.0000**		**0.4600**	**0.3496**	
Precipitation Zone =		1														
Table A-8 (DPM)		**Excess Precipitation - E - (in.)**														
FORMULAS:		Weighted E (in.) = EaA*Aa+EaB*Ba+EaC*Ca+EaD*Da / (total area "a")										-- Note - "a" = area in acres				
		Total Runoff Volume (ac-ft) = Weighted E (in.) * (total area "a") / (12 in./ft)														
Basin &	Return	Rainfall Excess -E per Land Treatment Type (inches) and Land Treatment Type (acres)														
Condition or	Period	EaA	A	A	EaB	B	B	EaC	C	C	EaD	D	D	Total	Weighted	**Runoff**
Analysis Point	6-hr.													Area	E	**Volume**
			(ac)	(%)		(ac)	(%)		(ac)	(%)		(ac)	(%)	(ac)	(inches)	**(ac-ft)**
ENTIRE SITE	100	0.44	0.0000	0.0	0.67	0.4039	100.0	0.99	0.0000	0.0	1.97	0.0000	0.0	0.4039	0.67	0.0226
ENTIRE SITE	10	0.08	0.0000	0.0	0.22	0.4039	100.0	0.44	0.0000	0.0	1.24	0.0000	0.0	0.4039	0.22	0.0074
TOTAL	**100**		**0.0000**			**0.4039**			**0.0000**			**0.0000**		**0.4039**		**0.0226**
	10		**0.0000**			**0.4039**			**0.0000**			**0.0000**		**0.4039**		**0.0074**

PROPOSED 4" ORIFICE DISCHARGE CALCULATIONS

POND VOLUME and DISCHARGE CALCULATIONS								
For the 4" orifice exiting the proposed parking lot								
Emergency Spillway Elevation =			0.00					
Elevation	Incremental Volume	Cumulative volume	Principal		Spillw ay	Discharge		Total Discharge
			Discharge Coefficient "C"	Pipe Diameter	Area (A)	Head (h)	Q= CA(2gh)^0.5	
(ft)	(ac-ft)	(ac-ft)		(ft)	(sq. ft)	(ft)	(cfs)	(cfs)
(a)	(b)		(c)		(d)			
0.10	0.00007	0.00007	0.59	0.33	0.087	0.0	0.0000	0.000
0.20	0.00030	0.00037	0.59	0.33	0.087	0.1	0.1307	0.131
0.30	0.00085	0.00122	0.59	0.33	0.087	0.2	0.1848	0.185
0.40	0.00160	0.00282	0.59	0.33	0.087	0.3	0.2263	0.226
0.50	0.00235	0.00517	0.59	0.33	0.087	0.4	0.2613	0.261
0.60	0.00310	0.00827	0.59	0.33	0.087	0.5	0.2922	0.292
0.70	0.00385	0.01212	0.59	0.33	0.087	0.6	0.3200	0.320
0.80	0.00460	0.01672	0.59	0.33	0.087	0.7	0.3457	0.346
0.90	0.00531	0.02203	0.59	0.33	0.087	0.8	0.3696	0.370
1.00	0.00531	0.02734	0.59	0.33	0.087	0.9	0.3920	0.392
1.10	0.00531	0.03265	0.59	0.33	0.087	1.0	0.4132	0.413
1.20	0.00531	0.03796	0.59	0.33	0.087	1.1	0.4333	0.433
1.30	0.00531	0.04327	0.59	0.33	0.087	1.2	0.4526	0.453

(a) Elevations and areas measured on .25"= survey shots

(b) Obtained from Autocad basemap draw ing

(c) From "Handbook of Hydraulics" Brater, King, Lindell, Wei. 7th ed. page 4.7

(e) From "Handbook of Hydraulics" Brater, King, Lindell, Wei. 7th ed. page 5.25

PROPOSED 5" ORIFICE DISCHARGE CALCULATIONS

POND VOLUME and DISCHARGE CALCULATIONS								
For the 5" orifice exiting the proposed parking lot								
Emergency Spillway Elev =			0.00					
Elevation	Incremental Volume	Cumulative volume	Principal		Spillw ay	Discharge		Total Discharge
			Discharge Coefficient "C"	Pipe Diameter	Area (A)	Head (h)	Q= CA(2gh)^0.5	
(ft)	(ac-ft)	(ac-ft)		(ft)	(sq. ft)	(ft)	(cfs)	(cfs)
(a)	(b)		(c)		(d)			
0.10	0.00007	0.00007	0.59	0.42	0.136	0.0	0.0000	0.000
0.20	0.00030	0.00037	0.59	0.42	0.136	0.1	0.2042	0.204
0.30	0.00085	0.00122	0.59	0.42	0.136	0.2	0.2887	0.289
0.40	0.00160	0.00282	0.59	0.42	0.136	0.3	0.3536	0.354
0.50	0.00235	0.00517	0.59	0.42	0.136	0.4	0.4083	0.408
0.60	0.00310	0.00827	0.59	0.42	0.136	0.5	0.4565	0.457
0.70	0.00385	0.01212	0.59	0.42	0.136	0.6	0.5001	0.500
0.80	0.00460	0.01672	0.59	0.42	0.136	0.7	0.5401	0.540
0.90	0.00531	0.02203	0.59	0.42	0.136	0.8	0.5774	0.577
1.00	0.00531	0.02734	0.59	0.42	0.136	0.9	0.6125	0.612
1.10	0.00531	0.03265	0.59	0.42	0.136	1.0	0.6456	0.646
1.20	0.00531	0.03796	0.59	0.42	0.136	1.1	0.6771	0.677
1.30	0.00531	0.04327	0.59	0.42	0.136	1.2	0.7072	0.707

(a) Elevations and areas measured on .25"= survey shots

(b) Obtained from Autocad basemap draw ing

(c) From "Handbook of Hydraulics" Brater, King, Lindell, Wei. 7th ed. page 4.7

(e) From "Handbook of Hydraulics" Brater, King, Lindell, Wei. 7th ed. page 5.25

4" ORIFICE AHYMO SUMMARY FILE

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                    - VERSION:  1997.02c     RUN DATE (MON/DAY/YR) =09/07/2000
INPUT FILE = F:\CIV_CADD\100\500101\OPTION1\WESTGA~1.TXT                              USER NO.= AHYMO-S-9702c01SEC01A-AH

                                FROM  TO                    PEAK        RUNOFF                 TIME TO   CFS      PAGE =   1
                    HYDROGRAPH   ID   ID        AREA      DISCHARGE     VOLUME      RUNOFF      PEAK     PER
COMMAND           IDENTIFICATION NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)   (HOURS)   ACRE     NOTATION

*S     THIS IS AN AHYMO HYDROLOGIC MODEL FOR:
*S     Project Name -West Gate Water Park
*S        MODEL DESCRIPTION - MODLING 0.46 ACRE SITE FOR CONTROLED RELEASE
*S        100-yr. 24-hr. storm
*S        Development Condition - Can discharge thru a 4" pipe to Camino San Mar
*S             FILE NAME: Westgate.DAT
*S             USE PROCEDURES FROM COA DPM 22.2
*S             PREPARED BY SMITH ENGINEERING (Rick Devine)
*S             Rainfall Zone 1
*S
START                                                                                       TIME=       .00
LOCATION                          BERNALILLO COUNTY
RAINFALL  TYPE= 2                                                                           RAIN24=   2.660
*S
*S        The following uses entire site as one basin
*S
COMPUTE NM HYD           1.00   -     1        .00072        1.51        .062      1.62604    1.500    3.288 PER IMP=  54.50
*S  Pond for basin, parking lot thru a 4" orfice
ROUTE RESERVOIR          1.00   1     2        .00072         .38        .063      1.64011    1.900     .830 AC-FT=    .025
*S
*S
*S
*S  This is for the portion of basin c west of the proposed basketball court
COMPUTE NM HYD           1.00   -     1        .00320        6.01        .234      1.37071    1.500    2.934 PER IMP=  40.00
*S  Pond for basin , parking lot
ROUTE RESERVOIR          1.00   1     2        .00320        4.27        .234      1.37372    1.600    2.084 AC-FT=    .044
*S
FINISH
```

THE 100 YEAR Q=0.38 cfs FOR THE 4" ORIFICE
FROM THE AHYMO OUTPUT FILE, THE MAXIMUM WATER SURFACE ELEVATION IS 0.96 FT
AND THE MAXIMUM STORAGE IS 0.0252 AC–FT

5" ORIFICE AHYMO SUMMARY FILE

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                    - VERSION:  1997.02c     RUN DATE (MON/DAY/YR) =09/07/2000
INPUT FILE = F:\CIV_CADD\100\500101\OPTION1\WESTGATE.DAT                              USER NO.= AHYMO-S-9702c01SEC01A-AH

                                FROM  TO                    PEAK        RUNOFF                 TIME TO   CFS      PAGE =   1
                    HYDROGRAPH   ID   ID        AREA      DISCHARGE     VOLUME      RUNOFF      PEAK     PER
COMMAND           IDENTIFICATION NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)   (HOURS)   ACRE     NOTATION

*S     THIS IS AN AHYMO HYDROLOGIC MODEL FOR:
*S     Project Name -West Gate Water Park
*S        MODEL DESCRIPTION - MODLING 0.46 ACRE SITE FOR CONTROLED RELEASE
*S        100-yr. 24-hr. storm
*S        Development Condition - Can discharge thru a 4" pipe to Camino San Mar
*S             FILE NAME: Westgate.DAT
*S             USE PROCEDURES FROM COA DPM 22.2
*S             PREPARED BY SMITH ENGINEERING (Rick Devine)
*S             Rainfall Zone 1
*S
START                                                                                       TIME=       .00
LOCATION                          BERNALILLO COUNTY
RAINFALL  TYPE= 2                                                                           RAIN24=   2.660
*S
*S        The following uses entire site as one basin
*S
COMPUTE NM HYD           1.00   -     1        .00072        1.51        .062      1.62604    1.500    3.288 PER IMP=  54.50
*S  Pond for basin , parking lot , 5" orifice plate
ROUTE RESERVOIR          1.00   1     2        .00072         .56        .063      1.64011    1.750    1.208 AC-FT=    .019
*S
*S
*S
*S  This is for the portion of basin c west of the proposed basketball court (ex
COMPUTE NM HYD           1.00   -     1        .00320        6.01        .234      1.37071    1.500    2.934 PER IMP=  40.00
*S
ROUTE RESERVOIR          1.00   1     2        .00320        4.27        .234      1.37372    1.600    2.084 AC-FT=    .044
*S
FINISH
```

THE 100 YEAR Q=0.56 cfs FOR THE 5" ORIFICE
FROM THE AHYMO OUTPUT FILE, THE MAXIMUM WATER SURFACE ELEVATION IS 0.84 FT
AND THE MAXIMUM STORAGE IS 0.0188 AC–FT

WIER EQUATION

$Q = CLH^{1.5}$

WHERE C = DISCHARGE COEFICIENT
L = LENTH OF WIER IN FT.
H = DEPTH OF FLOW IN FT.

AS BUILT INFORMATION

CONTRACTOR
WORK STAKED BY — DATE
INSPECTOR'S ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION

RECORDED BY — DATE
NO.

BENCH MARKS

COA BENCH MARK NUMBER ACS–1–M9, LOCATED IN SW QUADRANT OF THE INTERSECTION, 44' WEST FROM CL OF 98TH AND 27.5' SOUTH FROM CL OF GIBSON. STATION IS A STANDARD COA BRASS CAP SET IN CONCRETE 0.1' ABOVE GROUND AND STAMPED "1–M9". EL = 5147.872

COA BENCH MARK NUMBER ACS–2–M9, FROM THE INT OF SNOW VISTA BLVD AND BENAVIDES RD. TRAVEL SE APPROX. 0.2 MI ALONG TRANSMISSION LINE TO PYLONS NUMBERED 54. STATION IS LOCATED BETWEEN POWER POLES #PW54 & #PM47, 9.0' WEST FROM CL OF TRANSMISSION LINE R/W. STATION IS ON BRASS CAP STAMPED "2–M9"

SURVEY INFORMATION

FIELD NOTES

NO.	DATE	BY

ENGINEERS SEAL

RICHARD J. DEVINE
13282

NO.	DATE	REMARKS

REVISIONS

DESIGN

DESIGNED BY MM/RJD DATE SEPT., 2000
DRAWN BY SEC DATE SEPT., 2000
CHECKED BY RJD DATE SEPT., 2000

100316
Smith Engineering Company
A Full Service Engineering Company
Rio Rancho, NM Albuquerque, NM Santa Fe, NM Roswell, NM

CITY OF ALBUQUERQUE
PARKS AND RECREATION DEPARTMENT
LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES

TITLE: WESTGATE COMMUNITY WATER PARK

DRAINAGE CALCULATIONS AND ANALYSIS

Design Review Committee	City Engineer Approval	Last Design Update	Mo. / Day / Yr.	Mo. / Day / Yr.

City Project No.

Zone Map No. M-9-Z

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