

# DRAINAGE REPORT FOR DIAMOND MESA

MARCH 19, 2007

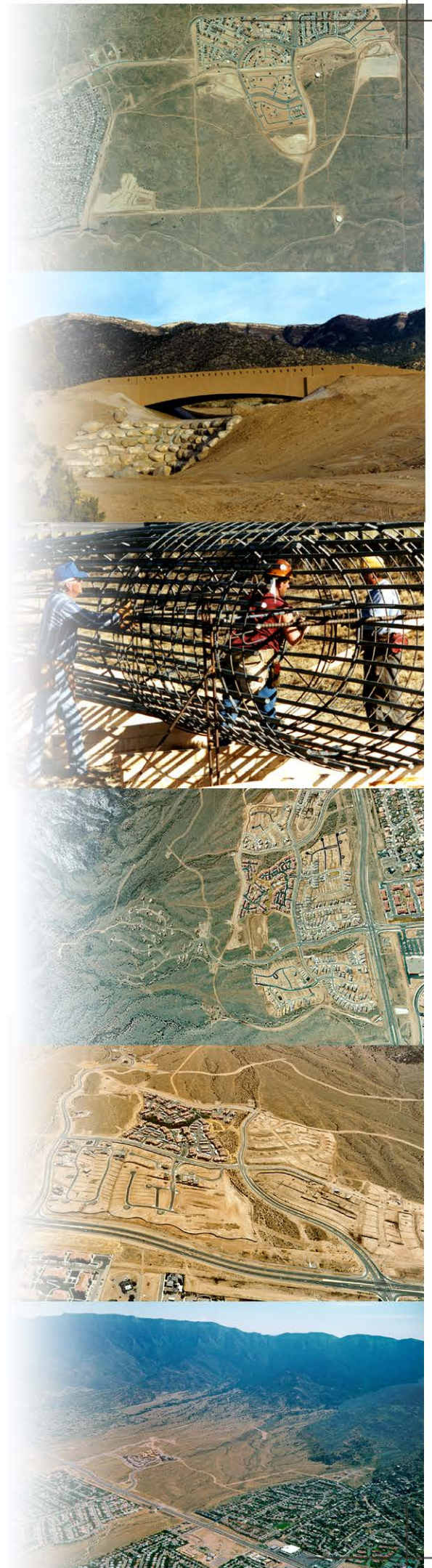
Prepared for:  
Longford Homes  
7007 Jefferson St NE - Suite A  
Albuquerque, NM 87109

**Bohannon ▲ Huston** INC.

ENGINEERING ▲

SPATIAL DATA ▲

ADVANCED TECHNOLOGIES ▲



**DRAINAGE REPORT  
FOR  
DIAMOND MESA**

**MARCH 19, 2007**

Prepared for:

**LONGFORD HOMES  
7007 JEFFERSON STREET NE - SUITE A  
ALBUQUERQUE, NM 87109**

Prepared by:

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**PREPARED BY:**

  
Kristopher Cadena, E.I.      Date

**UNDER THE SUPERVISION OF:**

 3/20/07  
Scott J. Steffen, P.E.      Date

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## **I. INTRODUCTION**

This drainage study establishes a drainage management plan for the proposed Diamond Mesa development on Tract E-6-A-1. The Diamond Mesa development is approximately 26.5 acres. The property is in the Rio Bravo Sector Plan and is located on Albuquerque's southwest mesa, north of Blake Road and east of 98<sup>th</sup> Street. The zoning for this development is SU-1 R-2 and R-T, and allows a density of 20 DUs per acre. The site plan for building permit allows a residential condominium project that includes three building types as follows: a six-plex with 4 two-story units and 2 one-story units, totaling thirty-three buildings; a six-plex with 6 two-story units, totaling 39 buildings; and single family detached, two-story units, totaling 30 buildings. There are a total of 457 proposed dwelling units. As the proposed residence complies with the proposed zoning of the property, no additional entitlement or zoning effort is required prior to building on the property. This site will be accessible from 98<sup>th</sup> Street and Blake Road.

Diamond Mesa is in the Amole Arroyo Watershed and encompassed by the Amole-Hubbell Drainage Management Plan. In addition, a draft Drainage Management Plan (DMP) has been developed by Bohannon Huston Inc. for the Gibson Boulevard corridor between 118<sup>th</sup> Street and the Amole Arroyo. The drainage area covered by the DMP is approximately 300 acres of residential, commercial, and special use zoned property that bound the north and south side of the future Gibson Boulevard between 118<sup>th</sup> Street to the west and the Amole Arroyo to the east. Diamond Mesa is in the Drainage Management Plan (DMP) area.

This report outlines the hydrological methods used, and summarizes the existing and proposed drainage conditions necessary to support the planned 457-unit development. More specifically, this report is submitted in conjunction with the site plan for building permit application. Therefore, grading plan approval is requested. Calculations and supporting data are presented in the appendices. Drainage basin maps, a grading plan, and a copy of the site plan are included at the end of this report.



## **II. METHODOLOGY**

Existing and proposed site hydrological conditions were analyzed for the 100-year, 6-hour storm in accordance with the revised Section 22.2, Hydrology, of the Development Process Manual (DPM) for the City of Albuquerque, dated January 1993. The Arid-lands Hydrologic Model (AHYMO) was utilized to determine peak flow rates for design of the storm drainage improvements within the project. The 100-year, 6-hour storm is used as the design event. The results are included in Appendix A. Street capacities were analyzed using Manning's equation, consistent with the revised DPM Section 22.2. The storm drain system is analyzed using current DPM methods for pressure and gravity flow conditions. All data and calculations supporting this study are located in Appendix B.

This report will reference the following reports:

- 1) The hydrologic analysis is also based on the approved drainage report: Amole-Hubbell Drainage Management Plan, Volume I, Final Facilities Plan Report dated July 22, 1999, prepared by Leedshill-Herkenhoff, Inc.
- 2) Drainage Management Plan for Gibson Boulevard corridor between 118<sup>th</sup> Street and the Amole Arroyo, prepared by BHI, dated May 8, 2003. This report allows for free discharge from Tract 31 into a proposed storm drain system in Amole Mesa Avenue which conveys flows to the Amole Channel.

## **III. EXISTING CONDITIONS**

### **A. Topography**

Diamond Mesa is currently undeveloped land with an average slope of 4%. Review of soils information in the area indicates an SCS soil classification of BCC (Bluepoint loamy fine sand). BCC soils consist of deep, somewhat excessively drained soils formed in sandy alluvial soils, with rapid permeability, slow runoff characteristics, and severe hazard for wind erosion. The Bluepoint Series fits within Hydrologic Group "A", which indicates low runoff potential. Vegetation is light, consisting mostly of native grasses.

## **B. Existing Drainage Patterns**

Diamond Mesa is located in the Amole Arroyo Drainage Basin. The site generally drains from Northwest to Southeast. The existing arroyo which runs through the site is no longer active due to the re-routing of the Amole Arroyo to the Snow Vista Channel. The arroyo will be filled as part of the site grading. All flows will be directed to the Amole Channel.

## **IV. PROPOSED DEVELOPED CONDITIONS**

Diamond Mesa is a proposed high density residential condominium project that includes three building types as follows: a six-plex with 4 two-story units and 2 one-story units; a six-plex with 6 two-story units; and a single family detached, two-story unit. The site consists of approximately 26.5 acres with 457 proposed dwelling units. Proposed street configurations are shown on the *Site Plan, Exhibit 1*. The site was divided into three basins; A, B, and C and are shown on the Developed Conditions Basin Map, **Exhibit 3**.

The percent impervious land treatment for the proposed conditions is determined from Table A-5 of the DPM, Section 22.2. The land treatment values used in the AHYMO analysis are both A and B equal 15 %, and D equals 70%.

### **A. Offsite Flows**

No offsite flows reach the site. Flows from the north are intercepted by Gibson Boulevard, flows from the west are intercepted by 98<sup>th</sup> Street, and the site is higher than Blake Road to the south and the Amole Arroyo to the east. Water blocks will be constructed in the entrance roads from 98<sup>th</sup> Street and Blake Road to prevent water from these streets from entering the site.

### **B. Onsite Flows**

The total flow developed from the site is 103 cfs. Approximately 10 cfs will discharge into Blake Road from the neighboring alleys through sidewalk culverts. This flow will be intercepted by existing inlets along Blake Road. A flow of approximately 93 cfs

will discharge into the AMAFCA water quality pond located at the southeast corner of the site. The pond was designed to receive fully developed flows from the Diamond Mesa site, as well as having an existing discharge into the Amole Arroyo of 96 cfs. Developed runoff from Diamond Mesa will be conveyed by the internal private street system where intermediate inlets will be placed at locations where the flow exceeds the street capacity. The remaining flow in the streets will concentrate to a low point located in the southeast corner of the site. A sump inlet will collect this flow and discharge it into the water quality pond. The flow will exit the pond and will discharge into the Amole Arroyo by means of an existing 48" storm drain pipe. See **Appendix B** for street capacity and inlet capacity calculations.

### **C. FEMA Floodplain**

As designated on Panel 336 of 825 (Map number 35001C0336D) of the National Flood Insurance Program, Flood Insurance Rate Maps published by FEMA for Bernalillo County, New Mexico, effective date September 20, 1996, there is no existing flood hazard zone (zone AO) within the proposed development. See the FEMA Floodplain exhibit provided at the end of the report text.

## **V. CONCLUSION**

This report provides a detailed study of the developed runoff and street capacities for the proposed Diamond Mesa. Included is the site plan, proposed conditions basin map, grading plan, infrastructure list, and all necessary hydrologic and hydraulic analyses. This drainage plan maintains the overall drainage pattern of the area and allows for the safe management of storm runoff in permanent as well as interim conditions, and is in conformance with the Drainage Master Plans for the site.

# APPENDICES

- APPENDIX A - AHYMO INPUT AND SUMMARY FILES FOR  
DEVELOPED CONDITIONS
- APPENDIX B - STREET CAPACITY AND STORM DRAIN  
INLET ANALYSIS



# APPENDIX A

AHYMO INPUT AND SUMMARY FILES  
FOR DEVELOPED CONDITIONS

```

*S*          PROJECT NAME:  DIAMOND MESA
*S*          DATE:   MARCH 7, 2007
*S*          INPUT FILE NAME:  DM.HYM
*S*          OUTUPUT FILE NAME:  DM.OUT
*S*          PROJECT NUMBER:  070332
*S*          COMMENTS:  100 YEAR-6 HOUR STORM
*S*          ///////////////////////////////////////////////////////////////////
START          TIME=0.0 HR PUNCH CODE=0
RAINFALL       TYPE=1      RAIN QUARTER=0.0
               RAIN ONE=1.90 IN      RAIN SIX=2.20 IN
               RAIN DAY=2.60 IN      DT=0.033333

```

```

*****
***

```

```

*****
***
*S*****
***
*S          COMPUTE BASINS IN DIAMOND MESA- DEVELOPED CONDITION
*S*****
***
*****
***

```

```

*S***** BASIN A*****

```

```

COMPUTE NM HYD          ID=1 HYD=BASIN.A  AREA=0.00840  PER A=0.0 PER B=15.0
                        PER C=15.0 PER D=70.0  TP=0.133  RAINFALL=-1
PRINT HYD              ID=1    CODE=1
*S*****
***

```

```

*S***** BASIN B*****

```

```

COMPUTE NM HYD          ID=2 HYD=BASIN.B  AREA=0.02275  PER A=0.0 PER B=15.0
                        PER C=15.0 PER D=70.0  TP=0.133  RAINFALL=-1
PRINT HYD              ID=2    CODE=1
*S*****
***

```

```

*S***** BASIN C *****

```

```

COMPUTE NM HYD          ID=3 HYD=BASIN.C  AREA=0.01038  PER A=0.0 PER B=15.0
                        PER C=15.0 PER D=70.0  TP=0.133  RAINFALL=-1
PRINT HYD              ID=3    CODE=1
*S*****
***

```

```

FINISH

```



# APPENDIX B

STREET CAPACITY AND  
STORM DRAIN INLET ANALYSIS



**DIAMOND MESA**  
**Internal Street Capacity Calculations**  
**MARCH 2007**

**1. Alleys perpendicular to 98<sup>th</sup> Street**

(Street 8, Street 9, Street 10, Street 11, Street 12, Street 13, Street 14, Street 15)

Basin A

Q = 1 cfs each

These alleys have inverted crowns with a 3% cross-slope. There is no curb and gutter associated with these alleys. Each alley has a slope of 5% and runs perpendicular to 98<sup>th</sup> Street. The amount of developed runoff in each alley is approximately 1.3 cfs, which does not exceed the street capacity. Therefore, inlets are not required in these alleys. Flow will continue towards Sierra Mesa Street.

**2. Alleys perpendicular to Blake Road**

(Street 23, Street 24, Street 25, Street 26, Street 27, Street 28)

Basin B

Q = 1 – 2 cfs each

These alleys have inverted crowns with a 3% cross-slope. There is no curb and gutter associated with these alleys. Each alley has a slope of 0.6% and runs perpendicular to Blake Road. The amount of developed runoff in each alley ranges from 0.8 cfs to 1.9 cfs, which does not exceed the street capacity. Therefore, inlets are not required in these alleys. Flow will discharge into Blake Road, where it will be intercepted by existing inlets in the street.

**3. Alleys perpendicular to Amole Arroyo**

Basin C

Q = 1 cfs each

These alleys have inverted crowns with a 3% cross-slope. There is no curb and gutter associated with these alleys. Each alley has a slope of 0.6% and runs perpendicular to the Amole Arroyo. The amount of developed runoff in each alley is approximately 1.3 cfs, which does not exceed the street capacity. Therefore, inlets are not required in these alleys. Flow will discharge into Carmel Mesa Street.

**4. Sierra Mesa Street**

Basin A

Q = 21 cfs

Sierra Mesa Street has an inverted crown with a 3% cross-slope. The amount of developed runoff produced from Sierra Mesa Street and contributing alleys does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street and the flow will discharge into Eagle Mesa Road.

5. **Hidden Mesa Road**  
Basin B  
 $Q = 13 \text{ cfs}$

Hidden Mesa Road has an inverted crown with a 3% cross-slope. The amount of developed runoff produced from Hidden Mesa Road does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street and the flow will discharge into Carmel Mesa Street.

6. **Carmel Mesa Street**  
Basin  
 $Q = 56 \text{ cfs}$

Carmel Mesa Street has an inverted crown with a 3% cross-slope. The amount of developed runoff flowing in Carmel Mesa Street does exceed the street capacity for this street. Therefore, a series of inlets will be placed along the length of this street starting at the location just north of Hidden Mesa Road. The bypass flow will continue south until it is directed to the southeast corner of the site. The inlets are designed to accommodate flows from the 100-year 6-hour design storm. See PC stream output and inlet nomograph.

7. **Street 31**  
Basin B  
 $Q = 12 \text{ cfs}$

Street 31 has an inverted crown with a 5% cross-slope. There is no curb and gutter associated with this alley. The amount of developed runoff flowing in Street 31 does exceed the street capacity for this street. Therefore, a series of inlets will be placed along the length of this street starting at the location just north of Street 30. The bypass flow will continue south towards Hidden Mesa Road. The inlets are designed to accommodate flows from the 100-year 6-hour design storm. See PC stream output and inlet nomograph.

8. **Eagle Mesa Road**  
Basin B  
 $Q = 24 \text{ cfs}$

Eagle Mesa road has an inverted crown with a 3% cross-slope. The amount of developed runoff flowing in Eagle Mesa Road does exceed the street capacity for this street. Therefore, an inlet will be placed at the end of the street, just before the intersection with Carmel Mesa Street. The bypass flow will continue towards Carmel Mesa Street. The inlet is designed to accommodate flow from the 100-year 6-hour design storm. See PC stream output and inlet nomograph.

9. **Street 18**  
Basin B  
 $Q = 2$  cfs

The amount of developed runoff produced from Street 18 does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street. The developed surface flow will continue towards Orchard Mesa Road.

10. **Orchard Mesa Road**  
Basin B  
 $Q = 3$  cfs

The amount of developed runoff produced from Orchard Mesa Road does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street. The developed surface flow will continue towards Carmel Mesa Street.

11. **Street 17**  
Basin B  
 $Q = 2$  cfs

The amount of developed runoff produced from Street 17 does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street. The developed surface flow will continue towards Carmel Mesa Street.

12. **Street 20**  
Basin B  
 $Q = 3$  cfs

The amount of developed runoff produced from Street 20 does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street. The developed surface flow will continue towards Carmel Mesa Street.

13. **Street 19**  
Basin B  
 $Q = 3$  cfs

The amount of developed runoff produced from Street 19 does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street. The developed surface flow will continue towards Carmel Mesa Street.

14. **Street 30**  
Basin B  
 $Q = 4$  cfs

The amount of developed runoff produced from Street 30 does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street. The developed surface flow will continue towards Street 31.

15. **Street 33**  
Basin B  
 $Q = 6 \text{ cfs}$

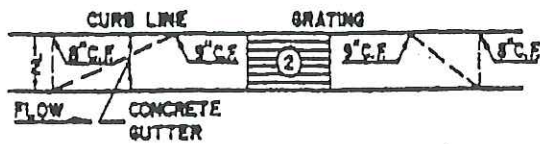
The amount of developed runoff produced from Street 30 does not exceed the street capacity for this street. Therefore, inlets are not necessary for this street. The developed surface flow will continue towards Carmel Mesa Street.

16. **Street 28**  
Basin C  
 $Q = 30 \text{ cfs}$

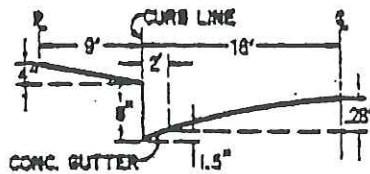
The total amount of developed runoff located in Street 28 does exceed the street capacity for this street. A sump inlet located in the northern portion of Street 28, just north of a high point, will capture all of the developed runoff and will discharge it into the AMAFCA water quality pond. The inlet is designed to accommodate flow from the 100-year 6-hour design storm. See PC stream output and inlet nomograph.



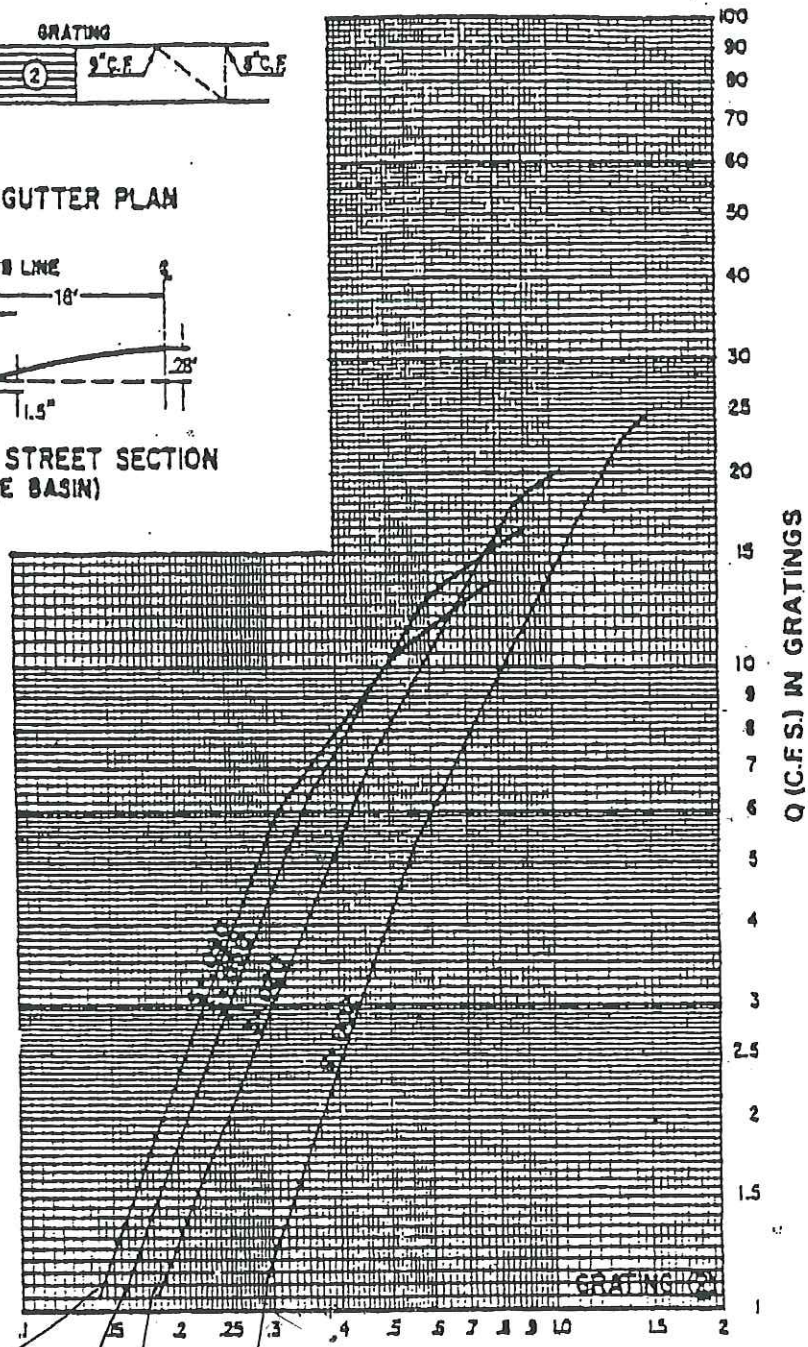
# GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION  
(ABOVE BASIN)



D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

PLATE 22.3 D-5

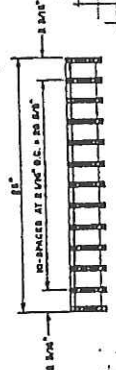
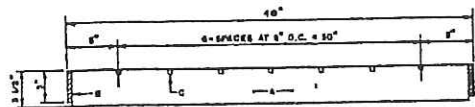
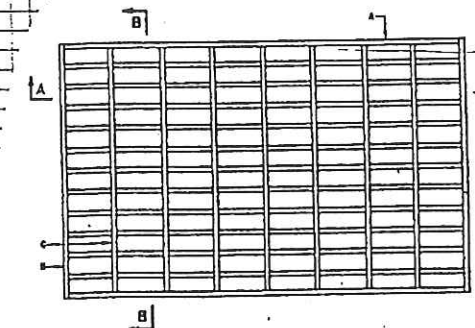


60" WING 40" @ TC  
 18.5" 35.5"  
 18.5" NET OPEN AREA  
 GRATE @ 10" (0.83') BELOW TC

EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0 h^{0.5}$ $+16.5 h^{1.5}$	$43.9 h^{0.5}$ $+16.5 h^{1.5}$	$65.9 h^{0.5}$ $+16.5 h^{1.5}$	$87.8 h^{0.5}$ $+16.5 h^{1.5}$
2) 3-SIDED WEIR ( $h \leq 0.83'$ )	$36.4 h^{1.5}$	$46.2 h^{1.5}$	$56.0 h^{1.5}$	$65.7 h^{1.5}$
3) 4-SIDED WEIR ( $h > 0.83'$ )	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

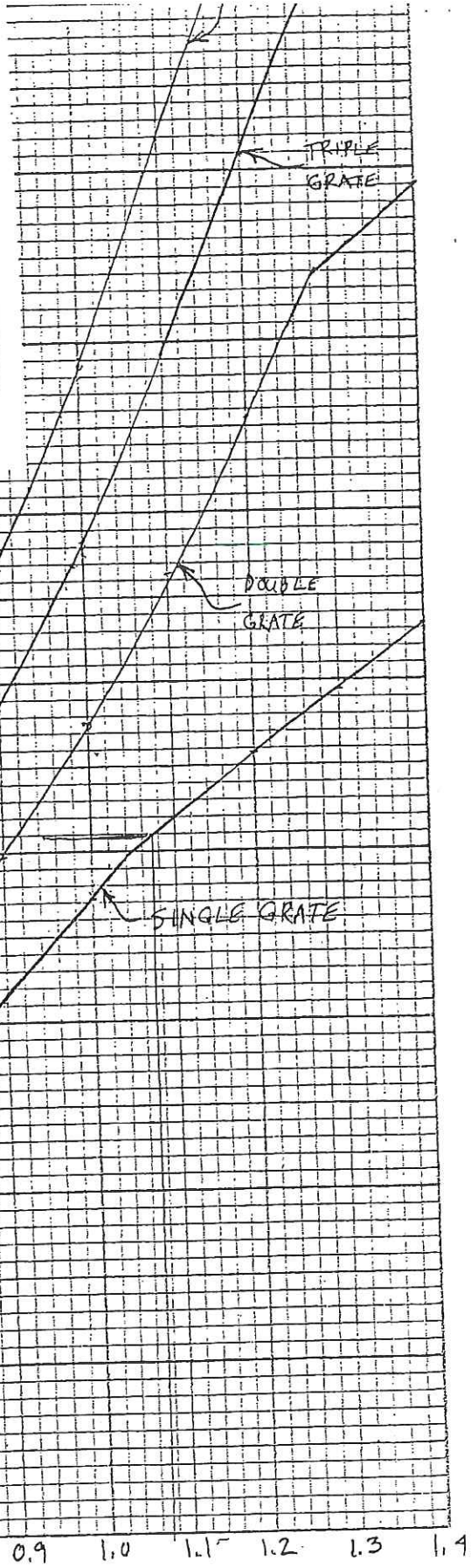
1)  $Q = 0.6 A \sqrt{2gh} + 3.3(5') h^{1.5}$   
 2) & 3)  $Q = 3.3 P h^{1.5}$

GRATE CAPACITY (Q) IN CFS



SECTION B-B

SECTION A-A



HEAD (h) IN FEET



BOHANNAN-HUSTON INC.

PROJECT NAME \_\_\_\_\_ SHEET \_\_\_\_\_ OF \_\_\_\_\_  
 PROJECT NO. SUMP CONDITION BY \_\_\_\_\_ DATE \_\_\_\_\_  
 SUBJECT RATING CURVE FOR TYPE AIRLETS CH'D \_\_\_\_\_ DATE \_\_\_\_\_

B-6



## Sierra Mesa Street (32' F-F).txt

MANNING'S N = 0.017 SLOPE = 0.033

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	1.0	4.0	16.5	0.0	7.0	33.0	1.0
2.0	0.5	0.9	5.0	32.5	0.5			
3.0	0.5	0.5	6.0	32.5	0.9			

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.010	0.010	0.003	0.002	0.667	0.466	0.666	0.013
0.020	0.020	0.013	0.010	1.333	0.740	1.333	0.029
0.030	0.030	0.030	0.029	2.000	0.970	1.999	0.045
0.040	0.040	0.053	0.063	2.666	1.175	2.665	0.061
0.050	0.050	0.083	0.114	3.333	1.363	3.331	0.079
0.060	0.060	0.120	0.185	3.999	1.540	3.998	0.097
0.070	0.070	0.163	0.279	4.666	1.706	4.664	0.115
0.080	0.080	0.213	0.398	5.332	1.865	5.330	0.134
0.090	0.090	0.270	0.544	5.999	2.017	5.996	0.153
0.100	0.100	0.333	0.721	6.666	2.164	6.663	0.173
0.110	0.110	0.403	0.930	7.332	2.306	7.329	0.193
0.120	0.120	0.480	1.172	7.999	2.444	7.995	0.213
0.130	0.130	0.563	1.451	8.665	2.578	8.661	0.233
0.140	0.140	0.653	1.768	9.332	2.708	9.328	0.254
0.150	0.150	0.750	2.126	9.998	2.836	9.994	0.275
0.160	0.160	0.853	2.525	10.665	2.961	10.660	0.296
0.170	0.170	0.963	2.968	11.331	3.083	11.326	0.318
0.180	0.180	1.079	3.457	11.998	3.203	11.993	0.340
0.190	0.190	1.203	3.993	12.664	3.320	12.659	0.361
0.200	0.200	1.333	4.578	13.331	3.436	13.325	0.384
0.210	0.210	1.469	5.214	13.998	3.549	13.991	0.406
0.220	0.220	1.612	5.903	14.664	3.661	14.658	0.428
0.230	0.230	1.762	6.645	15.331	3.771	15.324	0.451
0.240	0.240	1.919	7.444	15.997	3.880	15.990	0.474
0.250	0.250	2.082	8.300	16.664	3.987	16.656	0.497
0.260	0.260	2.252	9.215	17.330	4.092	17.323	0.520
0.270	0.270	2.428	10.191	17.997	4.196	17.989	0.544
0.280	0.280	2.612	11.229	18.663	4.299	18.655	0.568
0.290	0.290	2.802	12.330	19.330	4.401	19.321	0.591
0.300	0.300	2.998	13.497	19.997	4.502	19.988	0.615
0.310	0.310	3.201	14.730	20.663	4.601	20.654	0.639
0.320	0.320	3.411	16.032	21.330	4.700	21.320	0.664
0.330	0.330	3.628	17.403	21.996	4.797	21.986	0.688
0.340	0.340	3.851	18.845	22.663	4.894	22.653	0.712
0.350	0.350	4.081	20.359	23.329	4.989	23.319	0.737
0.360	0.360	4.317	21.948	23.996	5.084	23.985	0.762
0.370	0.370	4.560	23.611	24.662	5.177	24.651	0.787
0.380	0.380	4.810	25.352	25.329	5.270	25.318	0.812
0.390	0.390	5.067	27.170	25.995	5.362	25.984	0.837
0.400	0.400	5.330	29.068	26.662	5.454	26.650	0.863
0.410	0.410	5.600	31.046	27.329	5.544	27.316	0.888
0.420	0.420	5.876	33.107	27.995	5.634	27.983	0.914
0.430	0.430	6.159	35.250	28.662	5.723	28.649	0.939
0.440	0.440	6.449	37.479	29.328	5.811	29.315	0.965
0.450	0.450	6.746	39.794	29.995	5.899	29.981	0.991
0.460	0.460	7.049	42.196	30.661	5.986	30.648	1.017
0.470	0.470	7.359	44.687	31.328	6.073	31.314	1.044
0.480	0.480	7.675	47.267	31.994	6.158	31.980	1.070
0.490	0.490	7.995	50.574	32.014	6.326	31.981	1.112
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.500	0.500	8.315	53.968	32.034	6.491	31.981	1.155
0.510	0.510	8.635	57.448	32.054	6.653	31.982	1.198
0.520	0.520	8.954	61.012	32.074	6.814	31.982	1.242
0.530	0.530	9.274	64.660	32.094	6.972	31.983	1.286
0.540	0.540	9.594	68.391	32.114	7.128	31.983	1.330
0.550	0.550	9.914	72.203	32.134	7.283	31.984	1.375
0.560	0.560	10.234	76.095	32.154	7.436	31.984	1.420
0.570	0.570	10.554	80.067	32.174	7.587	31.985	1.465
0.580	0.580	10.873	84.117	32.194	7.736	31.985	1.511
0.590	0.590	11.193	88.245	32.214	7.884	31.986	1.557
0.600	0.600	11.513	92.449	32.234	8.030	31.986	1.603
0.610	0.610	11.833	96.730	32.255	8.175	31.987	1.649
0.620	0.620	12.153	101.085	32.275	8.318	31.988	1.696

Sierra Mesa Street (32' F-F).txt							
0.630	0.630	12.473	105.515	32.295	8.460	31.988	1.743
0.640	0.640	12.793	110.018	32.315	8.600	31.989	1.790
0.650	0.650	13.113	114.594	32.335	8.739	31.989	1.838
0.660	0.660	13.432	119.242	32.355	8.877	31.990	1.886
0.670	0.670	13.752	123.961	32.375	9.014	31.990	1.934
0.680	0.680	14.072	128.751	32.395	9.149	31.991	1.982
0.690	0.690	14.392	133.611	32.415	9.284	31.991	2.031
0.700	0.700	14.712	138.541	32.435	9.417	31.992	2.079
0.710	0.710	15.032	143.539	32.455	9.549	31.992	2.128
0.720	0.720	15.352	148.606	32.475	9.680	31.993	2.177
0.730	0.730	15.672	153.740	32.495	9.810	31.994	2.227
0.740	0.740	15.992	158.941	32.515	9.939	31.994	2.276
0.750	0.750	16.312	164.209	32.535	10.067	31.995	2.326
0.760	0.760	16.632	169.543	32.555	10.194	31.995	2.376
0.770	0.770	16.952	174.942	32.575	10.320	31.996	2.427
0.780	0.780	17.272	180.406	32.595	10.445	31.996	2.477
0.790	0.790	17.592	185.934	32.615	10.569	31.997	2.528
0.800	0.800	17.912	191.526	32.635	10.693	31.997	2.578
0.810	0.810	18.232	197.182	32.655	10.815	31.998	2.629
0.820	0.820	18.552	202.901	32.675	10.937	31.998	2.681
0.830	0.830	18.872	208.682	32.695	11.058	31.999	2.732
0.840	0.840	19.192	214.525	32.715	11.178	31.999	2.783
0.850	0.850	19.512	220.430	32.735	11.297	32.000	2.835
0.860	0.860	19.832	226.130	32.814	11.402	32.077	2.882
0.870	0.870	20.153	231.892	32.894	11.507	32.154	2.929
0.880	0.880	20.475	237.715	32.973	11.610	32.231	2.977
0.890	0.890	20.798	243.601	33.053	11.713	32.308	3.024
0.900	0.900	21.121	249.548	33.132	11.815	32.385	3.071
0.910	0.910	21.445	255.557	33.212	11.917	32.462	3.119
0.920	0.920	21.770	261.627	33.291	12.018	32.538	3.166
0.930	0.930	22.096	267.758	33.371	12.118	32.615	3.214
0.940	0.940	22.423	273.951	33.450	12.218	32.692	3.262
0.950	0.950	22.750	280.205	33.529	12.317	32.769	3.310
0.960	0.960	23.078	286.519	33.609	12.415	32.846	3.357
0.970	0.970	23.407	292.894	33.688	12.513	32.923	3.405



## Eagle Mesa Road (24' F-F).txt

MANNING'S N = 0.017 SLOPE = 0.028

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	4.0	12.5	0.0	7.0	25.0	0.9
2.0	0.5	0.7	5.0	24.5	0.4			
3.0	0.5	0.4	6.0	24.5	0.7			

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ. FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.010	0.010	0.003	0.001	0.666	0.428	0.666	0.013
0.020	0.020	0.013	0.009	1.333	0.680	1.332	0.027
0.030	0.030	0.030	0.027	1.999	0.891	1.998	0.042
0.040	0.040	0.053	0.058	2.666	1.079	2.664	0.058
0.050	0.050	0.083	0.104	3.332	1.252	3.331	0.074
0.060	0.060	0.120	0.170	3.998	1.414	3.997	0.091
0.070	0.070	0.163	0.256	4.665	1.567	4.663	0.108
0.080	0.080	0.213	0.365	5.331	1.713	5.329	0.126
0.090	0.090	0.270	0.500	5.998	1.853	5.995	0.143
0.100	0.100	0.333	0.662	6.664	1.988	6.661	0.161
0.110	0.110	0.403	0.854	7.331	2.119	7.327	0.180
0.120	0.120	0.480	1.077	7.997	2.245	7.993	0.198
0.130	0.130	0.563	1.333	8.663	2.368	8.659	0.217
0.140	0.140	0.653	1.624	9.330	2.488	9.326	0.236
0.150	0.150	0.749	1.952	9.996	2.605	9.992	0.256
0.160	0.160	0.853	2.319	10.663	2.720	10.658	0.275
0.170	0.170	0.963	2.726	11.329	2.832	11.324	0.295
0.180	0.180	1.079	3.175	11.995	2.942	11.990	0.315
0.190	0.190	1.202	3.667	12.662	3.050	12.656	0.335
0.200	0.200	1.332	4.204	13.328	3.156	13.322	0.355
0.210	0.210	1.469	4.789	13.995	3.260	13.988	0.375
0.220	0.220	1.612	5.421	14.661	3.363	14.654	0.396
0.230	0.230	1.762	6.103	15.327	3.464	15.321	0.417
0.240	0.240	1.918	6.837	15.994	3.564	15.987	0.438
0.250	0.250	2.082	7.623	16.660	3.662	16.653	0.459
0.260	0.260	2.251	8.464	17.327	3.759	17.319	0.480
0.270	0.270	2.428	9.360	17.993	3.855	17.985	0.501
0.280	0.280	2.611	10.313	18.660	3.950	18.651	0.523
0.290	0.290	2.801	11.324	19.326	4.043	19.317	0.544
0.300	0.300	2.998	12.396	19.992	4.135	19.983	0.566
0.310	0.310	3.201	13.529	20.659	4.227	20.649	0.588
0.320	0.320	3.410	14.724	21.325	4.317	21.316	0.610
0.330	0.330	3.627	15.983	21.992	4.407	21.982	0.632
0.340	0.340	3.850	17.307	22.658	4.495	22.648	0.654
0.350	0.350	4.080	18.698	23.324	4.583	23.314	0.677
0.360	0.360	4.316	20.157	23.991	4.670	23.980	0.699
0.370	0.370	4.556	22.046	24.011	4.839	23.981	0.734
0.380	0.380	4.796	24.000	24.031	5.004	23.981	0.769
0.390	0.390	5.036	26.019	24.051	5.167	23.982	0.805
0.400	0.400	5.276	28.101	24.071	5.327	23.982	0.841
0.410	0.410	5.515	30.245	24.091	5.484	23.983	0.878
0.420	0.420	5.755	32.451	24.111	5.638	23.983	0.914
0.430	0.430	5.995	34.717	24.131	5.791	23.984	0.952
0.440	0.440	6.235	37.042	24.151	5.941	23.984	0.989
0.450	0.450	6.475	39.425	24.171	6.089	23.985	1.027
0.460	0.460	6.715	41.866	24.191	6.235	23.985	1.065
0.470	0.470	6.955	44.364	24.211	6.379	23.986	1.103
0.480	0.480	7.194	46.917	24.231	6.521	23.986	1.141
0.490	0.490	7.434	49.526	24.251	6.662	23.987	1.180
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ. FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.500	0.500	7.674	52.189	24.271	6.801	23.987	1.219
0.510	0.510	7.914	54.906	24.291	6.938	23.988	1.259
0.520	0.520	8.154	57.676	24.311	7.073	23.988	1.298
0.530	0.530	8.394	60.499	24.331	7.208	23.989	1.338
0.540	0.540	8.634	63.373	24.351	7.340	23.989	1.378
0.550	0.550	8.874	66.299	24.371	7.471	23.990	1.418
0.560	0.560	9.113	69.275	24.391	7.601	23.991	1.459
0.570	0.570	9.353	72.301	24.411	7.730	23.991	1.499
0.580	0.580	9.593	75.377	24.431	7.857	23.992	1.540
0.590	0.590	9.833	78.502	24.451	7.983	23.992	1.581
0.600	0.600	10.073	81.676	24.471	8.108	23.993	1.623
0.610	0.610	10.313	84.898	24.491	8.232	23.993	1.664
0.620	0.620	10.553	88.167	24.511	8.355	23.994	1.706

Eagle Mesa Road (24' F-F).txt							
0.630	0.630	10.793	91.484	24.531	8.476	23.994	1.748
0.640	0.640	11.033	94.847	24.551	8.597	23.995	1.790
0.650	0.650	11.273	98.257	24.571	8.716	23.995	1.832
0.660	0.660	11.513	101.712	24.591	8.835	23.996	1.874
0.670	0.670	11.753	105.213	24.611	8.952	23.996	1.917
0.680	0.680	11.993	108.758	24.631	9.069	23.997	1.959
0.690	0.690	12.233	112.349	24.651	9.184	23.997	2.002
0.700	0.700	12.473	115.983	24.671	9.299	23.998	2.045
0.710	0.710	12.713	119.662	24.691	9.413	23.998	2.088
0.720	0.720	12.953	123.384	24.711	9.526	23.999	2.131
0.730	0.730	13.193	127.149	24.731	9.638	23.999	2.175
0.740	0.740	13.433	130.957	24.751	9.749	24.000	2.218
0.750	0.750	13.673	134.576	24.837	9.842	24.083	2.257
0.760	0.760	13.914	138.239	24.922	9.935	24.167	2.295
0.770	0.770	14.156	141.945	25.008	10.027	24.250	2.334
0.780	0.780	14.399	145.695	25.094	10.118	24.333	2.372
0.790	0.790	14.643	149.489	25.180	10.209	24.417	2.411
0.800	0.800	14.888	153.326	25.265	10.299	24.500	2.450
0.810	0.810	15.133	157.206	25.351	10.388	24.583	2.489
0.820	0.820	15.379	161.130	25.437	10.477	24.667	2.527
0.830	0.830	15.626	165.097	25.522	10.565	24.750	2.566
0.840	0.840	15.874	169.107	25.608	10.653	24.833	2.605
0.850	0.850	16.123	173.160	25.694	10.740	24.917	2.644

## Carmel Mesa Street (32' F-F).txt

MANNING'S N = 0.017 SLOPE = 0.024

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	1.0	4.0	16.5	0.0	7.0	33.0	1.0
2.0	0.5	0.9	5.0	32.5	0.5			
3.0	0.5	0.5	6.0	32.5	0.9			

WSEL FT.	DEPTH INC	FLOW AREA SQ. FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)
0.010	0.010	0.003	0.001	0.667	0.392	0.666	0.012
0.020	0.020	0.013	0.008	1.333	0.622	1.333	0.026
0.030	0.030	0.030	0.024	2.000	0.815	1.999	0.040
0.040	0.040	0.053	0.053	2.666	0.987	2.665	0.055
0.050	0.050	0.083	0.095	3.333	1.145	3.331	0.070
0.060	0.060	0.120	0.155	3.999	1.293	3.998	0.086
0.070	0.070	0.163	0.234	4.666	1.433	4.664	0.102
0.080	0.080	0.213	0.334	5.332	1.567	5.330	0.118
0.090	0.090	0.270	0.457	5.999	1.695	5.996	0.135
0.100	0.100	0.333	0.606	6.666	1.818	6.663	0.151
0.110	0.110	0.403	0.781	7.332	1.937	7.329	0.168
0.120	0.120	0.480	0.985	7.999	2.053	7.995	0.186
0.130	0.130	0.563	1.219	8.665	2.166	8.661	0.203
0.140	0.140	0.653	1.486	9.332	2.275	9.328	0.221
0.150	0.150	0.750	1.786	9.998	2.382	9.994	0.238
0.160	0.160	0.853	2.121	10.665	2.487	10.660	0.256
0.170	0.170	0.963	2.493	11.331	2.590	11.326	0.274
0.180	0.180	1.079	2.904	11.998	2.690	11.993	0.293
0.190	0.190	1.203	3.354	12.664	2.789	12.659	0.311
0.200	0.200	1.333	3.846	13.331	2.886	13.325	0.330
0.210	0.210	1.469	4.380	13.998	2.981	13.991	0.348
0.220	0.220	1.612	4.959	14.664	3.075	14.658	0.367
0.230	0.230	1.762	5.583	15.331	3.168	15.324	0.386
0.240	0.240	1.919	6.254	15.997	3.259	15.990	0.405
0.250	0.250	2.082	6.973	16.664	3.349	16.656	0.424
0.260	0.260	2.252	7.741	17.330	3.438	17.323	0.444
0.270	0.270	2.428	8.561	17.997	3.525	17.989	0.463
0.280	0.280	2.612	9.433	18.663	3.612	18.655	0.483
0.290	0.290	2.802	10.358	19.330	3.697	19.321	0.503
0.300	0.300	2.998	11.338	19.997	3.782	19.988	0.522
0.310	0.310	3.201	12.374	20.663	3.865	20.654	0.542
0.320	0.320	3.411	13.468	21.330	3.948	21.320	0.562
0.330	0.330	3.628	14.619	21.996	4.030	21.986	0.583
0.340	0.340	3.851	15.831	22.663	4.111	22.653	0.603
0.350	0.350	4.081	17.103	23.329	4.191	23.319	0.623
0.360	0.360	4.317	18.437	23.996	4.271	23.985	0.644
0.370	0.370	4.560	19.835	24.662	4.349	24.651	0.664
0.380	0.380	4.810	21.297	25.329	4.427	25.318	0.685
0.390	0.390	5.067	22.824	25.995	4.505	25.984	0.706
0.400	0.400	5.330	24.419	26.662	4.581	26.650	0.726
0.410	0.410	5.600	26.081	27.329	4.657	27.316	0.747
0.420	0.420	5.876	27.812	27.995	4.733	27.983	0.768
0.430	0.430	6.159	29.613	28.662	4.808	28.649	0.790
0.440	0.440	6.449	31.485	29.328	4.882	29.315	0.811
0.450	0.450	6.746	33.429	29.995	4.956	29.981	0.832
0.460	0.460	7.049	35.447	30.661	5.029	30.648	0.853
0.470	0.470	7.359	37.539	31.328	5.101	31.314	0.875
0.480	0.480	7.675	39.707	31.994	5.173	31.980	0.896
0.490	0.490	7.995	42.485	32.014	5.314	31.981	0.929
WSEL FT.	DEPTH INC	FLOW AREA SQ. FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)
0.500	0.500	8.315	45.336	32.034	5.452	31.981	0.962
0.510	0.510	8.635	48.260	32.054	5.589	31.982	0.996
0.520	0.520	8.954	51.254	32.074	5.724	31.982	1.030
0.530	0.530	9.274	54.319	32.094	5.857	31.983	1.064
0.540	0.540	9.594	57.453	32.114	5.988	31.983	1.098
0.550	0.550	9.914	60.655	32.134	6.118	31.984	1.132
0.560	0.560	10.234	63.925	32.154	6.246	31.984	1.167
0.570	0.570	10.554	67.261	32.174	6.373	31.985	1.202
0.580	0.580	10.873	70.664	32.194	6.499	31.985	1.237
0.590	0.590	11.193	74.131	32.214	6.623	31.986	1.272
0.600	0.600	11.513	77.663	32.234	6.746	31.986	1.308
0.610	0.610	11.833	81.259	32.255	6.867	31.987	1.343
0.620	0.620	12.153	84.918	32.275	6.987	31.988	1.379



Carmel Mesa Street (32' F-F).txt							
0.630	0.630	12.473	88.639	32.295	7.107	31.988	1.416
0.640	0.640	12.793	92.422	32.315	7.225	31.989	1.452
0.650	0.650	13.113	96.266	32.335	7.342	31.989	1.488
0.660	0.660	13.432	100.171	32.355	7.457	31.990	1.525
0.670	0.670	13.752	104.135	32.375	7.572	31.990	1.562
0.680	0.680	14.072	108.159	32.395	7.686	31.991	1.599
0.690	0.690	14.392	112.242	32.415	7.799	31.991	1.636
0.700	0.700	14.712	116.383	32.435	7.911	31.992	1.673
0.710	0.710	15.032	120.582	32.455	8.022	31.992	1.711
0.720	0.720	15.352	124.838	32.475	8.132	31.993	1.749
0.730	0.730	15.672	129.151	32.495	8.241	31.994	1.786
0.740	0.740	15.992	133.521	32.515	8.349	31.994	1.824
0.750	0.750	16.312	137.946	32.535	8.457	31.995	1.862
0.760	0.760	16.632	142.426	32.555	8.564	31.995	1.901
0.770	0.770	16.952	146.962	32.575	8.669	31.996	1.939
0.780	0.780	17.272	151.552	32.595	8.775	31.996	1.978
0.790	0.790	17.592	156.196	32.615	8.879	31.997	2.016
0.800	0.800	17.912	160.894	32.635	8.983	31.997	2.055
0.810	0.810	18.232	165.645	32.655	9.086	31.998	2.094
0.820	0.820	18.552	170.450	32.675	9.188	31.998	2.133
0.830	0.830	18.872	175.306	32.695	9.289	31.999	2.172
0.840	0.840	19.192	180.215	32.715	9.390	31.999	2.212
0.850	0.850	19.512	185.175	32.735	9.491	32.000	2.251
0.860	0.860	19.832	189.963	32.814	9.579	32.077	2.287
0.870	0.870	20.153	194.804	32.894	9.666	32.154	2.323
0.880	0.880	20.475	199.696	32.973	9.753	32.231	2.360
0.890	0.890	20.798	204.640	33.053	9.840	32.308	2.396
0.900	0.900	21.121	209.636	33.132	9.925	32.385	2.432
0.910	0.910	21.445	214.684	33.212	10.011	32.462	2.469
0.920	0.920	21.770	219.783	33.291	10.096	32.538	2.505
0.930	0.930	22.096	224.934	33.371	10.180	32.615	2.542
0.940	0.940	22.423	230.136	33.450	10.264	32.692	2.578
0.950	0.950	22.750	235.389	33.529	10.347	32.769	2.615
0.960	0.960	23.078	240.694	33.609	10.430	32.846	2.652
0.970	0.970	23.407	246.050	33.688	10.512	32.923	2.689

Alley perpendicular to 98th.txt

MANNING'S N = 0.017 SLOPE = 0.050

POINT 1.0	DIST 0.0	ELEV 0.3	POINT 2.0	DIST 10.0	ELEV 0.0	POINT 3.0	DIST 20.0	ELEV 0.3
WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)	
0.010	0.010	0.003	0.002	0.667	0.571	0.667	0.015	
0.020	0.020	0.013	0.012	1.334	0.907	1.333	0.033	
0.030	0.030	0.030	0.036	2.001	1.188	2.000	0.052	
0.040	0.040	0.053	0.077	2.668	1.440	2.667	0.072	
0.050	0.050	0.083	0.139	3.335	1.671	3.333	0.093	
0.060	0.060	0.120	0.226	4.002	1.887	4.000	0.115	
0.070	0.070	0.163	0.341	4.669	2.091	4.667	0.138	
0.080	0.080	0.213	0.488	5.336	2.285	5.333	0.161	
0.090	0.090	0.270	0.667	6.003	2.472	6.000	0.185	
0.100	0.100	0.333	0.884	6.670	2.652	6.667	0.209	
0.110	0.110	0.403	1.140	7.337	2.826	7.333	0.234	
0.120	0.120	0.480	1.437	8.004	2.995	8.000	0.259	
0.130	0.130	0.563	1.780	8.671	3.159	8.667	0.285	
0.140	0.140	0.653	2.168	9.338	3.319	9.333	0.311	
0.150	0.150	0.750	2.606	10.004	3.475	10.000	0.338	
0.160	0.160	0.853	3.096	10.671	3.628	10.667	0.365	
0.170	0.170	0.963	3.639	11.338	3.777	11.333	0.392	
0.180	0.180	1.080	4.238	12.005	3.924	12.000	0.420	
0.190	0.190	1.203	4.895	12.672	4.068	12.667	0.447	
0.200	0.200	1.333	5.613	13.339	4.210	13.333	0.476	
0.210	0.210	1.470	6.393	14.006	4.349	14.000	0.504	
0.220	0.220	1.613	7.237	14.673	4.486	14.667	0.533	
0.230	0.230	1.763	8.148	15.340	4.621	15.333	0.562	
0.240	0.240	1.920	9.127	16.007	4.754	16.000	0.592	
0.250	0.250	2.083	10.177	16.674	4.885	16.667	0.621	
0.260	0.260	2.253	11.299	17.341	5.014	17.333	0.651	
0.270	0.270	2.430	12.495	18.008	5.142	18.000	0.681	
0.280	0.280	2.613	13.768	18.675	5.268	18.667	0.712	
0.290	0.290	2.803	15.119	19.342	5.393	19.333	0.742	

Hidden Mesa Road (24' F-F).txt

MANNING'S N = 0.017 SLOPE = 0.030

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	4.0	12.5	0.0	7.0	25.0	0.9
2.0	0.5	0.7	5.0	24.5	0.4			
3.0	0.5	0.4	6.0	24.5	0.7			

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.010	0.010	0.003	0.001	0.666	0.440	0.666	0.013
0.020	0.020	0.013	0.009	1.333	0.698	1.332	0.028
0.030	0.030	0.030	0.027	1.999	0.914	1.998	0.043
0.040	0.040	0.053	0.059	2.666	1.108	2.664	0.059
0.050	0.050	0.083	0.107	3.332	1.285	3.331	0.076
0.060	0.060	0.120	0.174	3.998	1.452	3.997	0.093
0.070	0.070	0.163	0.263	4.665	1.609	4.663	0.110
0.080	0.080	0.213	0.375	5.331	1.758	5.329	0.128
0.090	0.090	0.270	0.513	5.998	1.902	5.995	0.146
0.100	0.100	0.333	0.680	6.664	2.040	6.661	0.165
0.110	0.110	0.403	0.876	7.331	2.174	7.327	0.184
0.120	0.120	0.480	1.105	7.997	2.304	7.993	0.203
0.130	0.130	0.563	1.368	8.663	2.430	8.659	0.222
0.140	0.140	0.653	1.667	9.330	2.554	9.326	0.241
0.150	0.150	0.749	2.004	9.996	2.674	9.992	0.261
0.160	0.160	0.853	2.380	10.663	2.791	10.658	0.281
0.170	0.170	0.963	2.798	11.329	2.906	11.324	0.301
0.180	0.180	1.079	3.258	11.995	3.019	11.990	0.322
0.190	0.190	1.202	3.763	12.662	3.130	12.656	0.342
0.200	0.200	1.332	4.315	13.328	3.239	13.322	0.363
0.210	0.210	1.469	4.915	13.995	3.346	13.988	0.384
0.220	0.220	1.612	5.564	14.661	3.452	14.654	0.405
0.230	0.230	1.762	6.264	15.327	3.555	15.321	0.427
0.240	0.240	1.918	7.017	15.994	3.658	15.987	0.448
0.250	0.250	2.082	7.824	16.660	3.759	16.653	0.470
0.260	0.260	2.251	8.686	17.327	3.858	17.319	0.492
0.270	0.270	2.428	9.606	17.993	3.956	17.985	0.513
0.280	0.280	2.611	10.584	18.660	4.054	18.651	0.536
0.290	0.290	2.801	11.623	19.326	4.150	19.317	0.558
0.300	0.300	2.998	12.722	19.992	4.244	19.983	0.580
0.310	0.310	3.201	13.885	20.659	4.338	20.649	0.603
0.320	0.320	3.410	15.112	21.325	4.431	21.316	0.625
0.330	0.330	3.627	16.404	21.992	4.523	21.982	0.648
0.340	0.340	3.850	17.763	22.658	4.614	22.648	0.671
0.350	0.350	4.080	19.191	23.324	4.704	23.314	0.694
0.360	0.360	4.316	20.688	23.991	4.793	23.980	0.717
0.370	0.370	4.556	22.266	24.011	4.966	23.981	0.754
0.380	0.380	4.796	24.632	24.031	5.136	23.981	0.790
0.390	0.390	5.036	26.704	24.051	5.303	23.982	0.827
0.400	0.400	5.276	28.841	24.071	5.467	23.982	0.865
0.410	0.410	5.515	31.042	24.091	5.628	23.983	0.903
0.420	0.420	5.755	33.306	24.111	5.787	23.983	0.941
0.430	0.430	5.995	35.631	24.131	5.943	23.984	0.979
0.440	0.440	6.235	38.018	24.151	6.097	23.984	1.018
0.450	0.450	6.475	40.464	24.171	6.249	23.985	1.057
0.460	0.460	6.715	42.969	24.191	6.399	23.985	1.097
0.470	0.470	6.955	45.532	24.211	6.547	23.986	1.137
0.480	0.480	7.194	48.153	24.231	6.693	23.986	1.177
0.490	0.490	7.434	50.831	24.251	6.837	23.987	1.217
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.500	0.500	7.674	53.564	24.271	6.980	23.987	1.258
0.510	0.510	7.914	56.352	24.291	7.121	23.988	1.299
0.520	0.520	8.154	59.195	24.311	7.260	23.988	1.340
0.530	0.530	8.394	62.092	24.331	7.397	23.989	1.381
0.540	0.540	8.634	65.042	24.351	7.534	23.989	1.423
0.550	0.550	8.874	68.045	24.371	7.668	23.990	1.465
0.560	0.560	9.113	71.100	24.391	7.802	23.991	1.507
0.570	0.570	9.353	74.206	24.411	7.934	23.991	1.549
0.580	0.580	9.593	77.363	24.431	8.064	23.992	1.592
0.590	0.590	9.833	80.570	24.451	8.194	23.992	1.634
0.600	0.600	10.073	83.828	24.471	8.322	23.993	1.677
0.610	0.610	10.313	87.134	24.491	8.449	23.993	1.720
0.620	0.620	10.553	90.490	24.511	8.575	23.994	1.764

Hidden Mesa Road (24' F-F).txt

0.630	0.630	10.793	93.894	24.531	8.700	23.994	1.807
0.640	0.640	11.033	97.346	24.551	8.823	23.995	1.851
0.650	0.650	11.273	100.845	24.571	8.946	23.995	1.895
0.660	0.660	11.513	104.391	24.591	9.067	23.996	1.939
0.670	0.670	11.753	107.984	24.611	9.188	23.996	1.983
0.680	0.680	11.993	111.623	24.631	9.308	23.997	2.027
0.690	0.690	12.233	115.308	24.651	9.426	23.997	2.072
0.700	0.700	12.473	119.039	24.671	9.544	23.998	2.117
0.710	0.710	12.713	122.814	24.691	9.661	23.998	2.162
0.720	0.720	12.953	126.634	24.711	9.777	23.999	2.207
0.730	0.730	13.193	130.498	24.731	9.892	23.999	2.252
0.740	0.740	13.433	134.406	24.751	10.006	24.000	2.297
0.750	0.750	13.673	138.121	24.837	10.102	24.083	2.337
0.760	0.760	13.914	141.880	24.922	10.197	24.167	2.377
0.770	0.770	14.156	145.684	25.008	10.291	24.250	2.417
0.780	0.780	14.399	149.533	25.094	10.385	24.333	2.457
0.790	0.790	14.643	153.427	25.180	10.478	24.417	2.498
0.800	0.800	14.888	157.365	25.265	10.570	24.500	2.538
0.810	0.810	15.133	161.347	25.351	10.662	24.583	2.578
0.820	0.820	15.379	165.374	25.437	10.753	24.667	2.618
0.830	0.830	15.626	169.446	25.522	10.844	24.750	2.659
0.840	0.840	15.874	173.562	25.608	10.934	24.833	2.699
0.850	0.850	16.123	177.722	25.694	11.023	24.917	2.740



## Carmel Mesa Street (24' F-F).txt

MANNING'S N = 0.017 SLOPE = 0.024

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	4.0	12.5	0.0	7.0	25.0	0.9
2.0	0.5	0.7	5.0	24.5	0.4			
3.0	0.5	0.4	6.0	24.5	0.7			

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.010	0.010	0.003	0.001	0.666	0.392	0.666	0.012
0.020	0.020	0.013	0.008	1.333	0.622	1.332	0.026
0.030	0.030	0.030	0.024	1.999	0.815	1.998	0.040
0.040	0.040	0.053	0.053	2.666	0.987	2.664	0.055
0.050	0.050	0.083	0.095	3.332	1.145	3.331	0.070
0.060	0.060	0.120	0.155	3.998	1.293	3.997	0.086
0.070	0.070	0.163	0.234	4.665	1.433	4.663	0.102
0.080	0.080	0.213	0.334	5.331	1.567	5.329	0.118
0.090	0.090	0.270	0.457	5.998	1.695	5.995	0.135
0.100	0.100	0.333	0.606	6.664	1.818	6.661	0.151
0.110	0.110	0.403	0.781	7.331	1.937	7.327	0.168
0.120	0.120	0.480	0.985	7.997	2.053	7.993	0.186
0.130	0.130	0.563	1.219	8.663	2.166	8.659	0.203
0.140	0.140	0.653	1.485	9.330	2.275	9.326	0.221
0.150	0.150	0.749	1.785	9.996	2.382	9.992	0.238
0.160	0.160	0.853	2.121	10.663	2.487	10.658	0.256
0.170	0.170	0.963	2.493	11.329	2.590	11.324	0.274
0.180	0.180	1.079	2.903	11.995	2.690	11.990	0.293
0.190	0.190	1.202	3.353	12.662	2.789	12.656	0.311
0.200	0.200	1.332	3.845	13.328	2.886	13.322	0.330
0.210	0.210	1.469	4.379	13.995	2.981	13.988	0.348
0.220	0.220	1.612	4.958	14.661	3.075	14.654	0.367
0.230	0.230	1.762	5.581	15.327	3.168	15.321	0.386
0.240	0.240	1.918	6.252	15.994	3.259	15.987	0.405
0.250	0.250	2.082	6.971	16.660	3.349	16.653	0.424
0.260	0.260	2.251	7.740	17.327	3.438	17.319	0.444
0.270	0.270	2.428	8.559	17.993	3.525	17.985	0.463
0.280	0.280	2.611	9.431	18.660	3.612	18.651	0.483
0.290	0.290	2.801	10.356	19.326	3.697	19.317	0.503
0.300	0.300	2.998	11.336	19.992	3.782	19.983	0.522
0.310	0.310	3.201	12.372	20.659	3.865	20.649	0.542
0.320	0.320	3.410	13.465	21.325	3.948	21.316	0.562
0.330	0.330	3.627	14.616	21.992	4.030	21.982	0.583
0.340	0.340	3.850	15.828	22.658	4.111	22.648	0.603
0.350	0.350	4.080	17.100	23.324	4.191	23.314	0.623
0.360	0.360	4.316	18.434	23.991	4.271	23.980	0.644
0.370	0.370	4.556	20.161	24.011	4.425	23.981	0.675
0.380	0.380	4.796	21.948	24.031	4.576	23.981	0.706
0.390	0.390	5.036	23.794	24.051	4.725	23.982	0.737
0.400	0.400	5.276	25.698	24.071	4.871	23.982	0.769
0.410	0.410	5.515	27.659	24.091	5.015	23.983	0.801
0.420	0.420	5.755	29.676	24.111	5.156	23.983	0.834
0.430	0.430	5.995	31.748	24.131	5.296	23.984	0.866
0.440	0.440	6.235	33.874	24.151	5.433	23.984	0.899
0.450	0.450	6.475	36.054	24.171	5.568	23.985	0.932
0.460	0.460	6.715	38.286	24.191	5.702	23.985	0.966
0.470	0.470	6.955	40.570	24.211	5.834	23.986	0.999
0.480	0.480	7.194	42.906	24.231	5.964	23.986	1.033
0.490	0.490	7.434	45.291	24.251	6.092	23.987	1.067
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.500	0.500	7.674	47.727	24.271	6.219	23.987	1.102
0.510	0.510	7.914	50.211	24.291	6.345	23.988	1.136
0.520	0.520	8.154	52.744	24.311	6.469	23.988	1.171
0.530	0.530	8.394	55.326	24.331	6.591	23.989	1.206
0.540	0.540	8.634	57.954	24.351	6.713	23.989	1.241
0.550	0.550	8.874	60.630	24.371	6.833	23.990	1.276
0.560	0.560	9.113	63.351	24.391	6.951	23.991	1.312
0.570	0.570	9.353	66.119	24.411	7.069	23.991	1.347
0.580	0.580	9.593	68.932	24.431	7.185	23.992	1.383
0.590	0.590	9.833	71.790	24.451	7.301	23.992	1.419
0.600	0.600	10.073	74.692	24.471	7.415	23.993	1.455
0.610	0.610	10.313	77.639	24.491	7.528	23.993	1.492
0.620	0.620	10.553	80.628	24.511	7.640	23.994	1.528



Carmel Mesa Street (24' F-F).txt							
0.630	0.630	10.793	83.661	24.531	7.752	23.994	1.565
0.640	0.640	11.033	86.737	24.551	7.862	23.995	1.601
0.650	0.650	11.273	89.855	24.571	7.971	23.995	1.638
0.660	0.660	11.513	93.015	24.591	8.079	23.996	1.675
0.670	0.670	11.753	96.216	24.611	8.187	23.996	1.712
0.680	0.680	11.993	99.459	24.631	8.293	23.997	1.750
0.690	0.690	12.233	102.742	24.651	8.399	23.997	1.787
0.700	0.700	12.473	106.066	24.671	8.504	23.998	1.825
0.710	0.710	12.713	109.430	24.691	8.608	23.998	1.863
0.720	0.720	12.953	112.834	24.711	8.711	23.999	1.900
0.730	0.730	13.193	116.277	24.731	8.814	23.999	1.938
0.740	0.740	13.433	119.759	24.751	8.916	24.000	1.976
0.750	0.750	13.673	123.069	24.837	9.001	24.083	2.010
0.760	0.760	13.914	126.418	24.922	9.086	24.167	2.044
0.770	0.770	14.156	129.808	25.008	9.170	24.250	2.078
0.780	0.780	14.399	133.237	25.094	9.253	24.333	2.112
0.790	0.790	14.643	136.707	25.180	9.336	24.417	2.146
0.800	0.800	14.888	140.215	25.265	9.418	24.500	2.180
0.810	0.810	15.133	143.764	25.351	9.500	24.583	2.214
0.820	0.820	15.379	147.352	25.437	9.581	24.667	2.248
0.830	0.830	15.626	150.980	25.522	9.662	24.750	2.282
0.840	0.840	15.874	154.647	25.608	9.742	24.833	2.316
0.850	0.850	16.123	158.354	25.694	9.822	24.917	2.350

Street 31 (5% X-slope).txt

MANNING'S N = 0.017 SLOPE = 0.006

POINT 1.0	DIST 0.0	ELEV 0.5	POINT 2.0	DIST 10.0	ELEV 0.0	POINT 3.0	DIST 20.0	ELEV 0.5
WSEL FT.	DEPTH INC	FLOW AREA SQ. FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)	
0.010	0.010	0.002	0.000	0.400	0.201	0.400	0.011	
0.020	0.020	0.008	0.003	0.801	0.319	0.800	0.022	
0.030	0.030	0.018	0.008	1.201	0.418	1.200	0.033	
0.040	0.040	0.032	0.016	1.602	0.507	1.600	0.044	
0.050	0.050	0.050	0.029	2.002	0.588	2.000	0.055	
0.060	0.060	0.072	0.048	2.403	0.664	2.400	0.067	
0.070	0.070	0.098	0.072	2.803	0.736	2.800	0.078	
0.080	0.080	0.128	0.103	3.204	0.804	3.200	0.090	
0.090	0.090	0.162	0.141	3.604	0.870	3.600	0.102	
0.100	0.100	0.200	0.187	4.005	0.933	4.000	0.114	
0.110	0.110	0.242	0.241	4.405	0.995	4.400	0.125	
0.120	0.120	0.288	0.304	4.806	1.054	4.800	0.137	
0.130	0.130	0.338	0.376	5.206	1.112	5.200	0.149	
0.140	0.140	0.392	0.458	5.607	1.168	5.600	0.161	
0.150	0.150	0.450	0.550	6.007	1.223	6.000	0.173	
0.160	0.160	0.512	0.654	6.408	1.277	6.400	0.185	
0.170	0.170	0.578	0.768	6.808	1.329	6.800	0.197	
0.180	0.180	0.648	0.895	7.209	1.381	7.200	0.210	
0.190	0.190	0.722	1.034	7.609	1.432	7.600	0.222	
0.200	0.200	0.800	1.185	8.010	1.482	8.000	0.234	
0.210	0.210	0.882	1.350	8.410	1.531	8.400	0.246	
0.220	0.220	0.968	1.528	8.811	1.579	8.800	0.259	
0.230	0.230	1.058	1.721	9.211	1.626	9.200	0.271	
0.240	0.240	1.152	1.927	9.612	1.673	9.600	0.284	
0.250	0.250	1.250	2.149	10.012	1.719	10.000	0.296	
0.260	0.260	1.352	2.386	10.413	1.765	10.400	0.308	
0.270	0.270	1.458	2.639	10.813	1.810	10.800	0.321	
0.280	0.280	1.568	2.907	11.214	1.854	11.200	0.333	
0.290	0.290	1.682	3.193	11.614	1.898	11.600	0.346	
0.300	0.300	1.800	3.495	12.015	1.941	12.000	0.359	
0.310	0.310	1.922	3.814	12.415	1.984	12.400	0.371	
0.320	0.320	2.048	4.151	12.816	2.027	12.800	0.384	
0.330	0.330	2.178	4.506	13.216	2.069	13.200	0.397	
0.340	0.340	2.312	4.879	13.617	2.110	13.600	0.409	
0.350	0.350	2.450	5.271	14.017	2.152	14.000	0.422	
0.360	0.360	2.592	5.683	14.418	2.192	14.400	0.435	
0.370	0.370	2.738	6.113	14.818	2.233	14.800	0.448	
0.380	0.380	2.888	6.564	15.219	2.273	15.200	0.460	
0.390	0.390	3.042	7.035	15.619	2.313	15.600	0.473	
0.400	0.400	3.200	7.526	16.020	2.352	16.000	0.486	
0.410	0.410	3.362	8.038	16.420	2.391	16.400	0.499	
0.420	0.420	3.528	8.572	16.821	2.430	16.800	0.512	
0.430	0.430	3.698	9.127	17.221	2.468	17.200	0.525	
0.440	0.440	3.872	9.704	17.622	2.506	17.600	0.538	
0.450	0.450	4.050	10.303	18.022	2.544	18.000	0.551	
0.460	0.460	4.232	10.925	18.423	2.582	18.400	0.564	
0.470	0.470	4.418	11.570	18.823	2.619	18.800	0.577	
0.480	0.480	4.608	12.238	19.224	2.656	19.200	0.590	
0.490	0.490	4.802	12.930	19.624	2.693	19.600	0.603	

Alley perpendicular to Blake & Amole Arroyo.txt

MANNING'S N = 0.017 SLOPE = 0.006

POINT 1.0	DIST 0.0	ELEV 0.3	POINT 2.0	DIST 10.0	ELEV 0.0	POINT 3.0	DIST 20.0	ELEV 0.3
WSEL FT.	DEPTH INC	FLOW AREA SQ. FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)	
0.010	0.010	0.003	0.001	0.667	0.198	0.667	0.011	
0.020	0.020	0.013	0.004	1.334	0.314	1.333	0.022	
0.030	0.030	0.030	0.012	2.001	0.412	2.000	0.033	
0.040	0.040	0.053	0.027	2.668	0.499	2.667	0.044	
0.050	0.050	0.083	0.048	3.335	0.579	3.333	0.055	
0.060	0.060	0.120	0.078	4.002	0.654	4.000	0.067	
0.070	0.070	0.163	0.118	4.669	0.724	4.667	0.078	
0.080	0.080	0.213	0.169	5.336	0.792	5.333	0.090	
0.090	0.090	0.270	0.231	6.003	0.856	6.000	0.101	
0.100	0.100	0.333	0.306	6.670	0.919	6.667	0.113	
0.110	0.110	0.403	0.395	7.337	0.979	7.333	0.125	
0.120	0.120	0.480	0.498	8.004	1.037	8.000	0.137	
0.130	0.130	0.563	0.616	8.671	1.094	8.667	0.149	
0.140	0.140	0.653	0.751	9.338	1.150	9.333	0.161	
0.150	0.150	0.750	0.903	10.004	1.204	10.000	0.173	
0.160	0.160	0.853	1.072	10.671	1.257	10.667	0.185	
0.170	0.170	0.963	1.261	11.338	1.309	11.333	0.197	
0.180	0.180	1.080	1.468	12.005	1.359	12.000	0.209	
0.190	0.190	1.203	1.696	12.672	1.409	12.667	0.221	
0.200	0.200	1.333	1.944	13.339	1.458	13.333	0.233	
0.210	0.210	1.470	2.215	14.006	1.507	14.000	0.245	
0.220	0.220	1.613	2.507	14.673	1.554	14.667	0.258	
0.230	0.230	1.763	2.823	15.340	1.601	15.333	0.270	
0.240	0.240	1.920	3.162	16.007	1.647	16.000	0.282	
0.250	0.250	2.083	3.525	16.674	1.692	16.667	0.295	
0.260	0.260	2.253	3.914	17.341	1.737	17.333	0.307	
0.270	0.270	2.430	4.329	18.008	1.781	18.000	0.319	
0.280	0.280	2.613	4.769	18.675	1.825	18.667	0.332	
0.290	0.290	2.803	5.237	19.342	1.868	19.333	0.344	



## Carmel Mesa Street (28' F-F).txt

MANNING'S N = 0.017 SLOPE = 0.024

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	4.0	14.5	0.0	7.0	29.0	0.9
2.0	0.5	0.8	5.0	28.5	0.4			
3.0	0.5	0.4	6.0	28.5	0.8			

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.010	0.010	0.003	0.001	0.666	0.392	0.666	0.012
0.020	0.020	0.013	0.008	1.333	0.622	1.332	0.026
0.030	0.030	0.030	0.024	1.999	0.815	1.999	0.040
0.040	0.040	0.053	0.053	2.666	0.987	2.665	0.055
0.050	0.050	0.083	0.095	3.332	1.145	3.331	0.070
0.060	0.060	0.120	0.155	3.999	1.293	3.997	0.086
0.070	0.070	0.163	0.234	4.665	1.433	4.663	0.102
0.080	0.080	0.213	0.334	5.332	1.567	5.330	0.118
0.090	0.090	0.270	0.457	5.998	1.695	5.996	0.135
0.100	0.100	0.333	0.606	6.665	1.818	6.662	0.151
0.110	0.110	0.403	0.781	7.331	1.937	7.328	0.168
0.120	0.120	0.480	0.985	7.998	2.053	7.994	0.186
0.130	0.130	0.563	1.219	8.664	2.166	8.660	0.203
0.140	0.140	0.653	1.485	9.331	2.275	9.327	0.221
0.150	0.150	0.749	1.786	9.997	2.382	9.993	0.238
0.160	0.160	0.853	2.121	10.664	2.487	10.659	0.256
0.170	0.170	0.963	2.493	11.330	2.590	11.325	0.274
0.180	0.180	1.079	2.903	11.997	2.690	11.991	0.293
0.190	0.190	1.202	3.354	12.663	2.789	12.658	0.311
0.200	0.200	1.332	3.845	13.330	2.886	13.324	0.330
0.210	0.210	1.469	4.380	13.996	2.981	13.990	0.348
0.220	0.220	1.612	4.958	14.663	3.075	14.656	0.367
0.230	0.230	1.762	5.582	15.329	3.168	15.322	0.386
0.240	0.240	1.919	6.253	15.996	3.259	15.989	0.405
0.250	0.250	2.082	6.972	16.662	3.349	16.655	0.424
0.260	0.260	2.252	7.741	17.329	3.438	17.321	0.444
0.270	0.270	2.428	8.560	17.995	3.525	17.987	0.463
0.280	0.280	2.611	9.432	18.662	3.612	18.653	0.483
0.290	0.290	2.801	10.357	19.328	3.697	19.320	0.503
0.300	0.300	2.998	11.337	19.995	3.782	19.986	0.522
0.310	0.310	3.201	12.373	20.661	3.865	20.652	0.542
0.320	0.320	3.411	13.467	21.328	3.948	21.318	0.562
0.330	0.330	3.627	14.618	21.994	4.030	21.984	0.583
0.340	0.340	3.851	15.829	22.661	4.111	22.650	0.603
0.350	0.350	4.080	17.102	23.327	4.191	23.317	0.623
0.360	0.360	4.317	18.436	23.994	4.271	23.983	0.644
0.370	0.370	4.560	19.833	24.660	4.349	24.649	0.664
0.380	0.380	4.810	21.295	25.327	4.427	25.315	0.685
0.390	0.390	5.066	22.822	25.993	4.505	25.981	0.706
0.400	0.400	5.330	24.416	26.660	4.581	26.648	0.726
0.410	0.410	5.599	26.078	27.326	4.657	27.314	0.747
0.420	0.420	5.876	27.809	27.993	4.733	27.980	0.768
0.430	0.430	6.156	30.037	28.013	4.880	27.981	0.800
0.440	0.440	6.435	32.331	28.033	5.024	27.981	0.833
0.450	0.450	6.715	34.691	28.053	5.166	27.982	0.865
0.460	0.460	6.995	37.116	28.073	5.306	27.982	0.898
0.470	0.470	7.275	39.605	28.093	5.444	27.983	0.931
0.480	0.480	7.555	42.156	28.113	5.580	27.983	0.964
0.490	0.490	7.835	44.770	28.133	5.714	27.984	0.998
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
FT.	INC	AREA	RATE	PER	VEL	PLUS	ENERGY
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)
0.500	0.500	8.114	47.444	28.153	5.847	27.984	1.032
0.510	0.510	8.394	50.179	28.173	5.978	27.985	1.066
0.520	0.520	8.674	52.973	28.193	6.107	27.985	1.100
0.530	0.530	8.954	55.825	28.213	6.235	27.986	1.135
0.540	0.540	9.234	58.736	28.233	6.361	27.986	1.169
0.550	0.550	9.514	61.703	28.253	6.486	27.987	1.204
0.560	0.560	9.794	64.728	28.273	6.609	27.987	1.239
0.570	0.570	10.073	67.808	28.293	6.731	27.988	1.275
0.580	0.580	10.353	70.943	28.313	6.852	27.988	1.310
0.590	0.590	10.633	74.134	28.333	6.972	27.989	1.346
0.600	0.600	10.913	77.378	28.353	7.090	27.989	1.382
0.610	0.610	11.193	80.676	28.373	7.208	27.990	1.418
0.620	0.620	11.473	84.027	28.393	7.324	27.991	1.454

Carmel Mesa Street (28' F-F).txt							
0.630	0.630	11.753	87.430	28.413	7.439	27.991	1.491
0.640	0.640	12.033	90.886	28.433	7.553	27.992	1.527
0.650	0.650	12.313	94.392	28.453	7.666	27.992	1.564
0.660	0.660	12.593	97.950	28.473	7.778	27.993	1.601
0.670	0.670	12.872	101.558	28.493	7.890	27.993	1.638
0.680	0.680	13.152	105.217	28.513	8.000	27.994	1.675
0.690	0.690	13.432	108.925	28.533	8.109	27.994	1.713
0.700	0.700	13.712	112.682	28.553	8.218	27.995	1.750
0.710	0.710	13.992	116.487	28.573	8.325	27.995	1.788
0.720	0.720	14.272	120.342	28.593	8.432	27.996	1.826
0.730	0.730	14.552	124.244	28.613	8.538	27.996	1.864
0.740	0.740	14.832	128.193	28.633	8.643	27.997	1.902
0.750	0.750	15.112	132.190	28.653	8.747	27.997	1.940
0.760	0.760	15.392	136.233	28.673	8.851	27.998	1.978
0.770	0.770	15.672	140.323	28.693	8.954	27.998	2.017
0.780	0.780	15.952	144.459	28.713	9.056	27.999	2.056
0.790	0.790	16.232	148.641	28.733	9.157	27.999	2.094
0.800	0.800	16.512	152.868	28.753	9.258	28.000	2.133
0.810	0.810	16.792	156.907	28.839	9.344	28.083	2.168
0.820	0.820	17.074	160.993	28.924	9.429	28.167	2.203
0.830	0.830	17.356	165.124	29.010	9.514	28.250	2.238
0.840	0.840	17.639	169.302	29.096	9.598	28.333	2.273
0.850	0.850	17.922	173.525	29.181	9.682	28.417	2.308
0.860	0.860	18.207	177.793	29.267	9.765	28.500	2.343
0.870	0.870	18.492	182.107	29.353	9.848	28.583	2.378
0.880	0.880	18.779	186.467	29.438	9.930	28.667	2.414
0.890	0.890	19.066	190.872	29.524	10.011	28.750	2.449
0.900	0.900	19.354	195.322	29.610	10.092	28.833	2.484
0.910	0.910	19.642	199.818	29.696	10.173	28.917	2.520

# EXHIBITS

EXHIBIT 1 - SITE PLAN

EXHIBIT 2 - GRADING PLAN

EXHIBIT 3 - DEVELOPED CONDITIONS BASIN MAP

# EXHIBIT 1

SITE PLAN



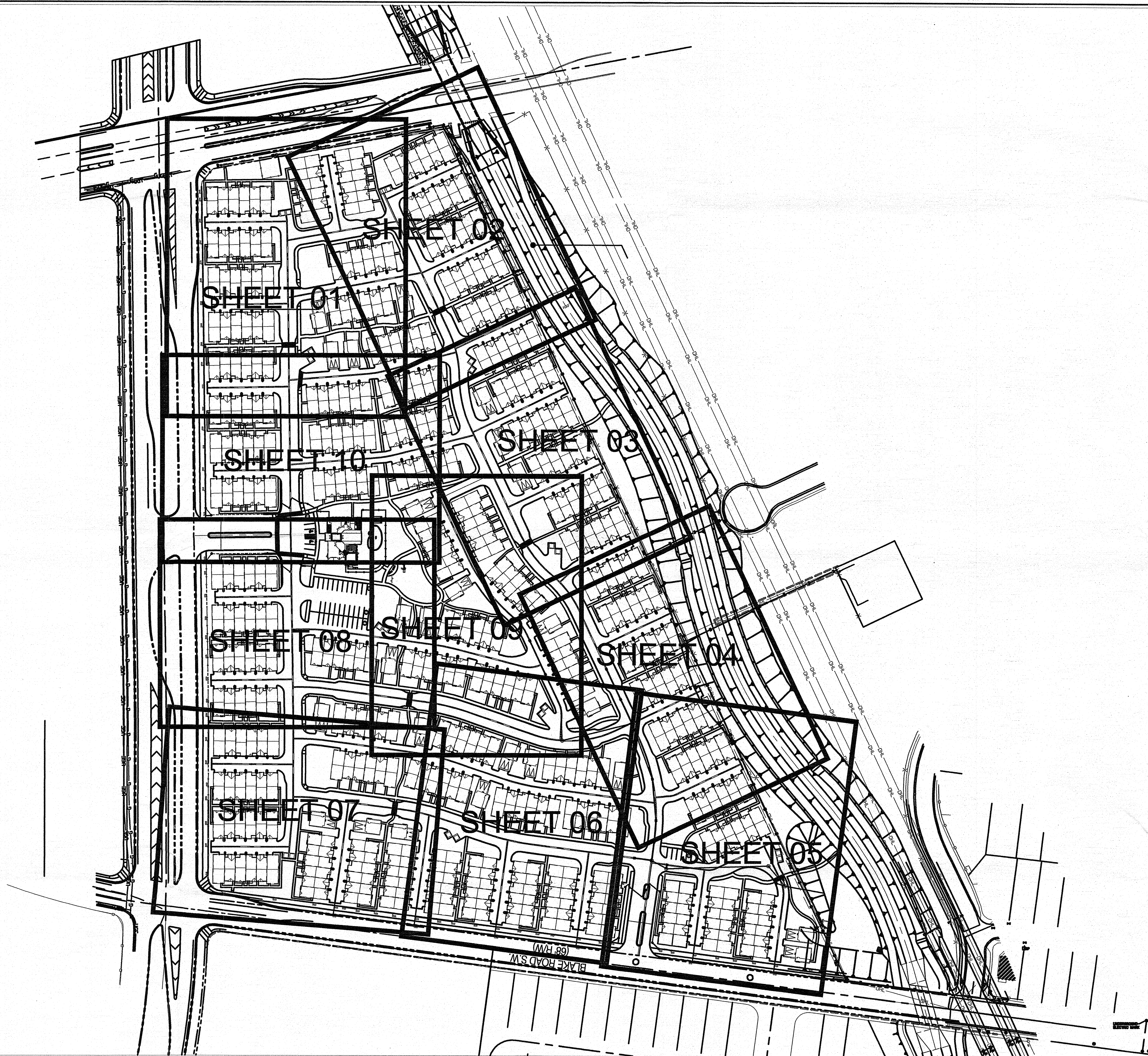




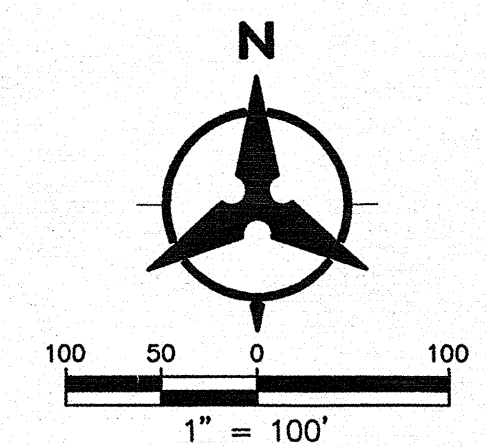
# EXHIBIT 2

## GRADING PLAN





- GENERAL NOTES**
1. CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION.
  2. THE CONTRACTOR IS TO REFER TO EARTHWORK SPECIFICATION AS NOTED IN THE GEO-TECH REPORT FOR \_\_\_\_\_
  3. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE, AND FEDERAL DUST CONTROL MEASURES & REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.
  4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY.
  5. ALL SPOT ELEVATIONS ARE TO FLOWLINE UNLESS OTHERWISE NOTED.
  6. BOULDERS GREATER THAN 3 FEET IN DIAMETER EXCAVATED DURING GRADING ACTIVITIES SHALL BE STOCKPILED AND DISPOSED OF AT THE DISCRETION OF THE OWNER.
  7. ALL WALLS SHOWN ARE TO BE PLACED ALONG PROPERTY LINE. WALLS ARE SHOWN OFFSET FOR VISUAL PURPOSE ONLY.



- LEGEND**
- 91.62 PROPOSED SPOT ELEVATION
  - × 92.46 EXISTING SPOT ELEVATION (GRND & TC)
  - ===== EXISTING CURB & GUTTER
  - 5470 — EXISTING CONTOUR W/ INDEX ELEVATION
  - FLOW ARROW
  - PROPOSED RETAINING WALL
  - PROPOSED STORM DRAIN
  - PROPOSED STORM DRAIN MANHOLE
  - PROPOSED STORM DRAIN INLET
  - F.F. = 5154.1 FINISHED FLOOR ELEVATION

**Bohannon & Huston**  
Court yard | 7500 Jefferson St. NE Albuquerque, NM 87109-4335  
ENGINEERING & SPATIAL DATA & ADVANCED TECHNOLOGIES

**CITY OF ALBUQUERQUE**  
**PUBLIC WORKS DEPARTMENT**

**DIAMOND MESA**  
**OVERALL GRADING PLAN**










Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	1	Of 11

AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		REMARKS		DESIGN	
CONTRACTOR	DATE	ACS BRASS TABLET STAMPED "TRANS"	DATE	NO.	BY	DATE	By	No.	Date	DESIGNED BY: SJS	DATE: XX
STAMPED BY	DATE	Geographic Position (NAD 1927)	DATE							DRAWN BY: KC	DATE: XX
REVISION BY	DATE	N.M. State Plane Coordinates (Central Zone)	DATE							CHECKED BY: SJS	DATE: XX
REVISION BY	DATE	X= 354,899.45 Y= 1,471,822.67	DATE								
REVISION BY	DATE	Ground-to-Grid Factor=0.99967921 (As Published)	DATE								
REVISION BY	DATE	ΔG = -00'16"42"	DATE								
REVISION BY	DATE	SLD 1929 Elevation = 5118.370	DATE								

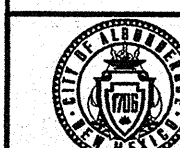


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4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY.
5. ALL SPOT ELEVATIONS ARE TO FLOWLINE UNLESS OTHERWISE NOTED.
6. Boulders greater than 3 feet in diameter excavated during grading activities shall be stockpiled and disposed of at the discretion of the owner.
7. ALL WALLS SHOWN ARE TO BE PLACED ALONG PROPERTY LINE. WALLS ARE SHOWN OFFSET FOR VISUAL PURPOSE ONLY.



- |   |       |                                     |
|---|-------|-------------------------------------|
|  | 91.62 | PROPOSED SPOT ELEVATION             |
|  | 92.46 | EXISTING SPOT ELEVATION (GRND & TC) |
|  |       | EXISTING CURB & GUTTER              |
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|  |       | FLOW ARROW                          |
|  |       | PROPOSED RETAINING WALL             |
|  |       | PROPOSED STORM DRAIN                |
|  |       | PROPOSED STORM DRAIN MANHOLE        |
|  |       | PROPOSED STORM DRAIN INLET          |
| <i>F.F. = 5154.1</i>  |       | FINISHED FLOOR ELEVATION            |

**Bohannon ▲ Huston inc.**  
 Courtyard | 7500 Jefferson St. NE Albuquerque, NM 87109  
 ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGY



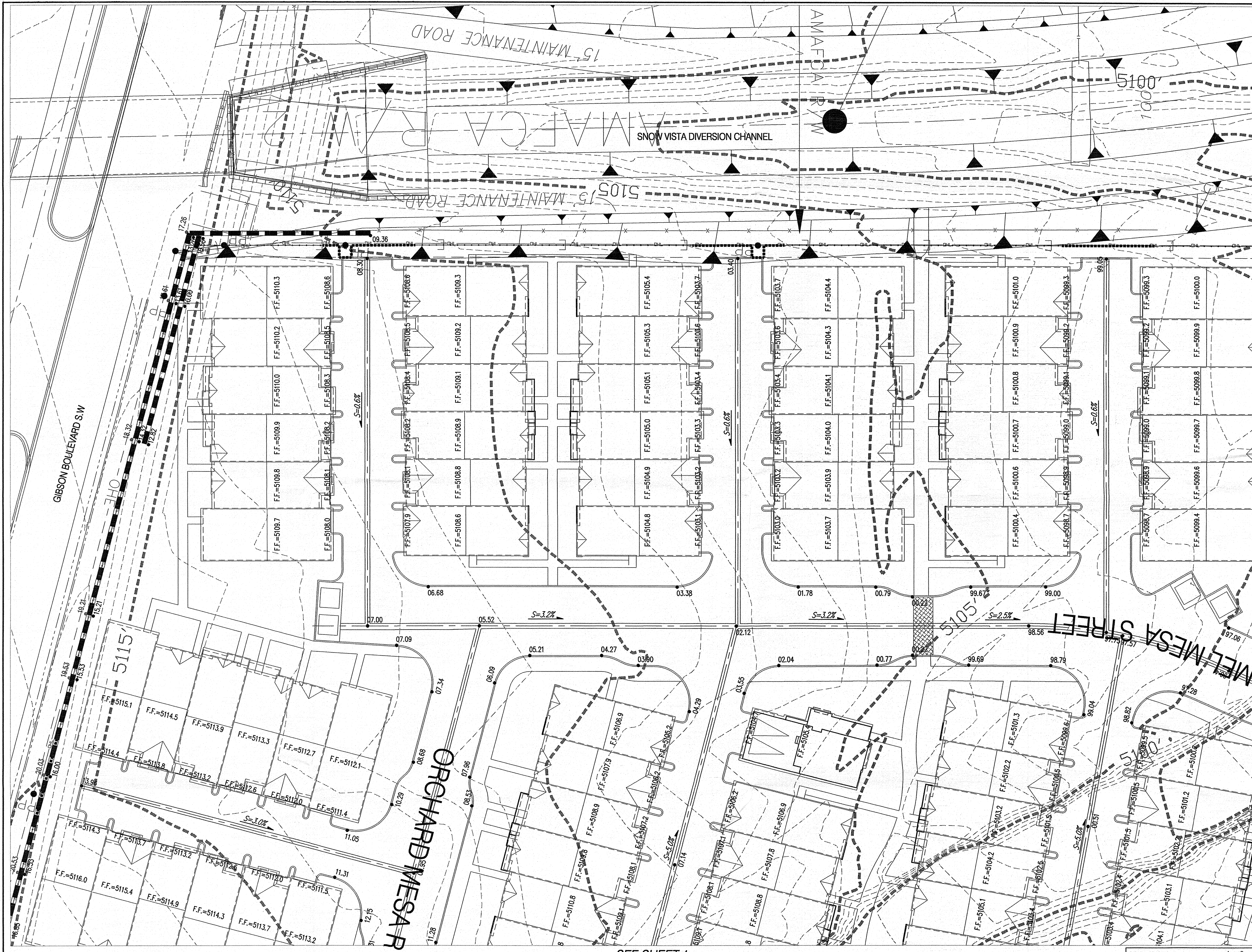
**CITY OF ALBUQUERQUE**  
**PUBLIC WORKS DEPARTMENT**

**DIAMOND MESA  
GRADING PLAN AND DRAINAGE PLAN**

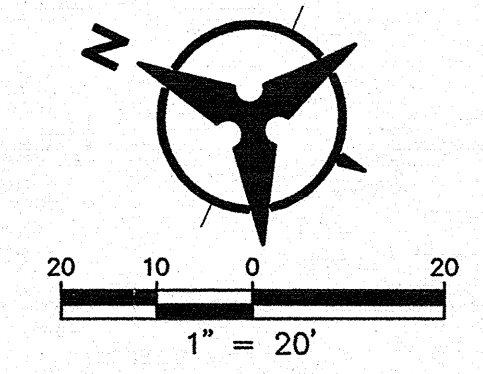
Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of	
		2	11	

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- GENERAL NOTES**
1. CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION.
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  - EXISTING CURB & GUTTER
  - 5470 EXISTING CONTOUR W/ INDEX ELEVATION
  - FLOW ARROW
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  - PROPOSED STORM DRAIN
  - PROPOSED STORM DRAIN MANHOLE
  - PROPOSED STORM DRAIN INLET
  - F.F.=5154.1 FINISHED FLOOR ELEVATION

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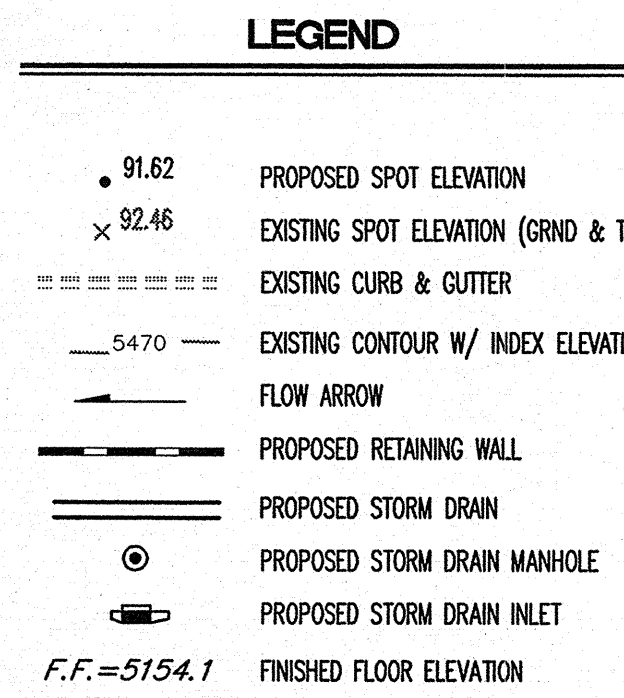
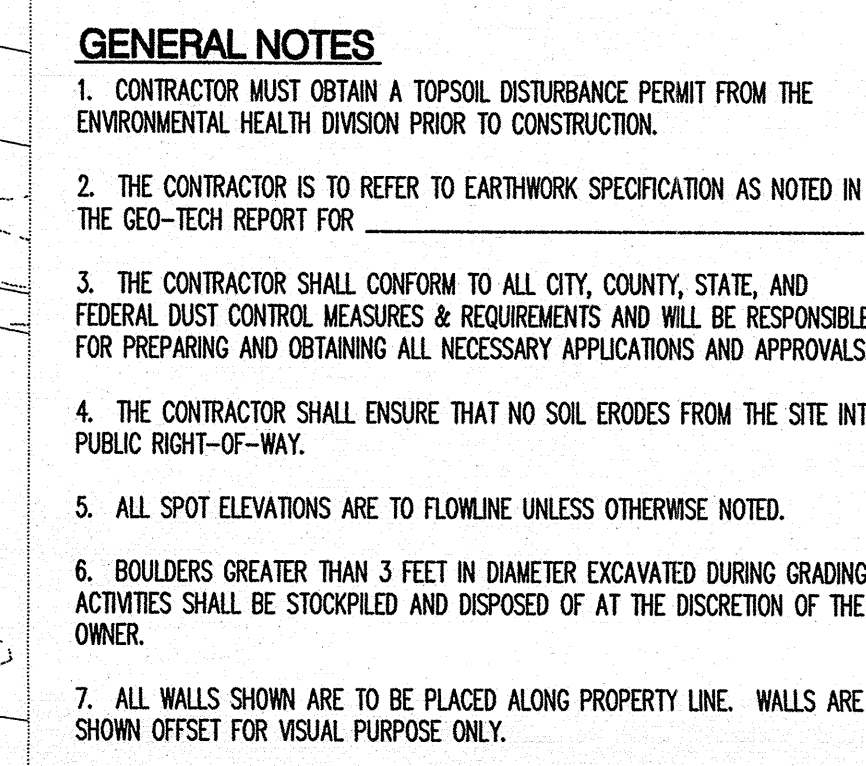
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**PUBLIC WORKS DEPARTMENT**


**DIAMOND MESA**  
**GRADING PLAN AND DRAINAGE PLAN**

Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of

AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL	
CONTRACTOR	DATE	ACCS BRASS TABLET STAMPED "TRANS"	DATE	FIELD NOTES	NO.	REMARKS	By
INSPECTOR	DATE	Geographic Position (NAD 1927)	DATE			DESIGN	
ACCEPTANCE BY	DATE	N.M. State Plane Coordinates (Central Zone)	DATE			REVISIONS	
REVISION BY	DATE	X= 354,899.45 Y= 1,471,822.67	DATE			DATE: XX	
REVISION BY	DATE	Ground-to-Grid Factor=0.9997921 (as Published)	DATE			Drawn By: XX	
REVISION BY	DATE	ΔG = -0.01842'	DATE			Checked By: SS	
REVISION BY	DATE	SLD 1929 Elevation = 5118.370	DATE				





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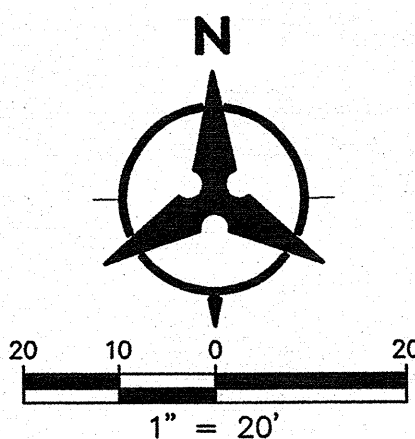
Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of	
		4	11	



SEE SHEET 3

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**Bohannon & Huston**

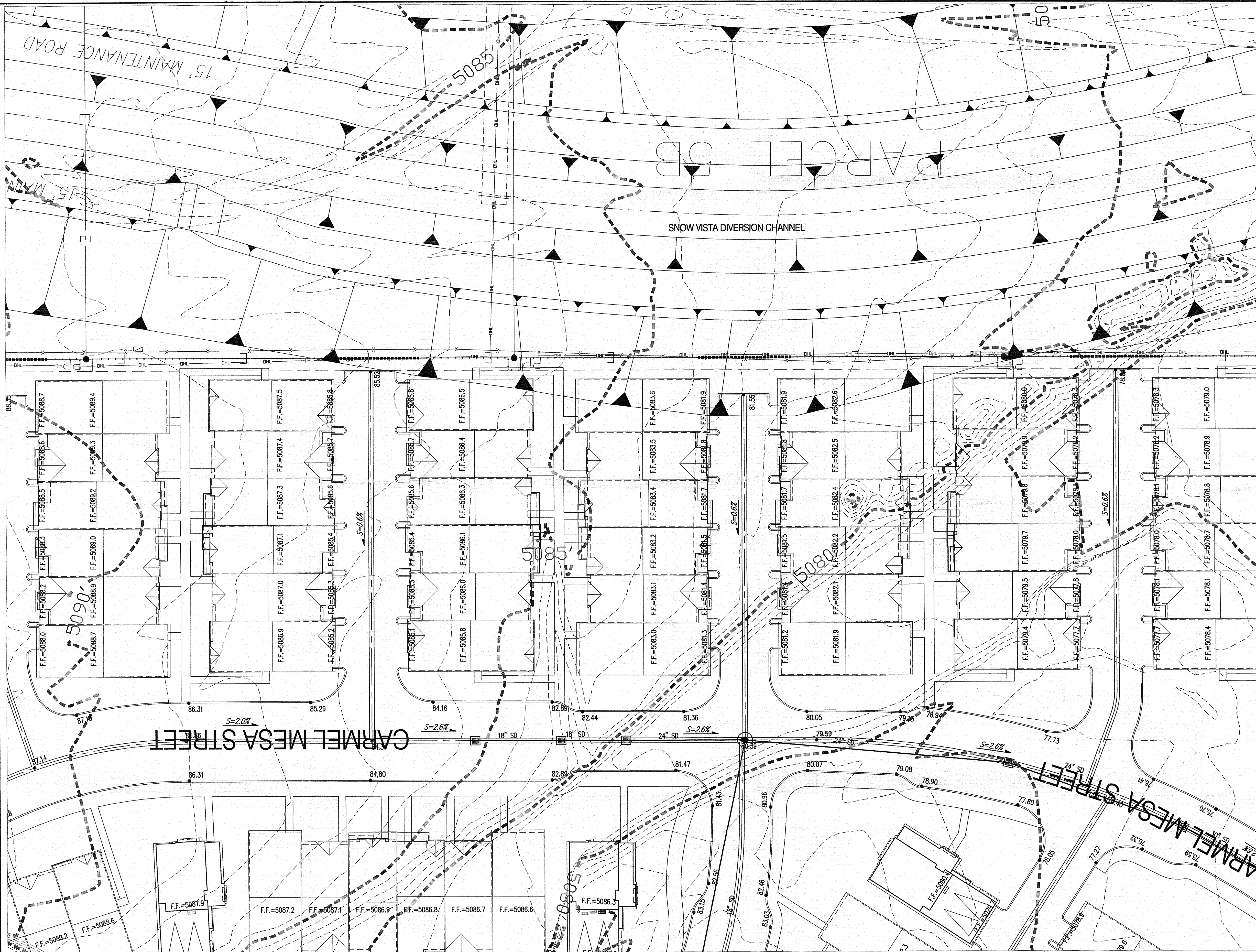
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ENGINEERING & SPATIAL DATA & ADVANCED TECHNOLOGIES



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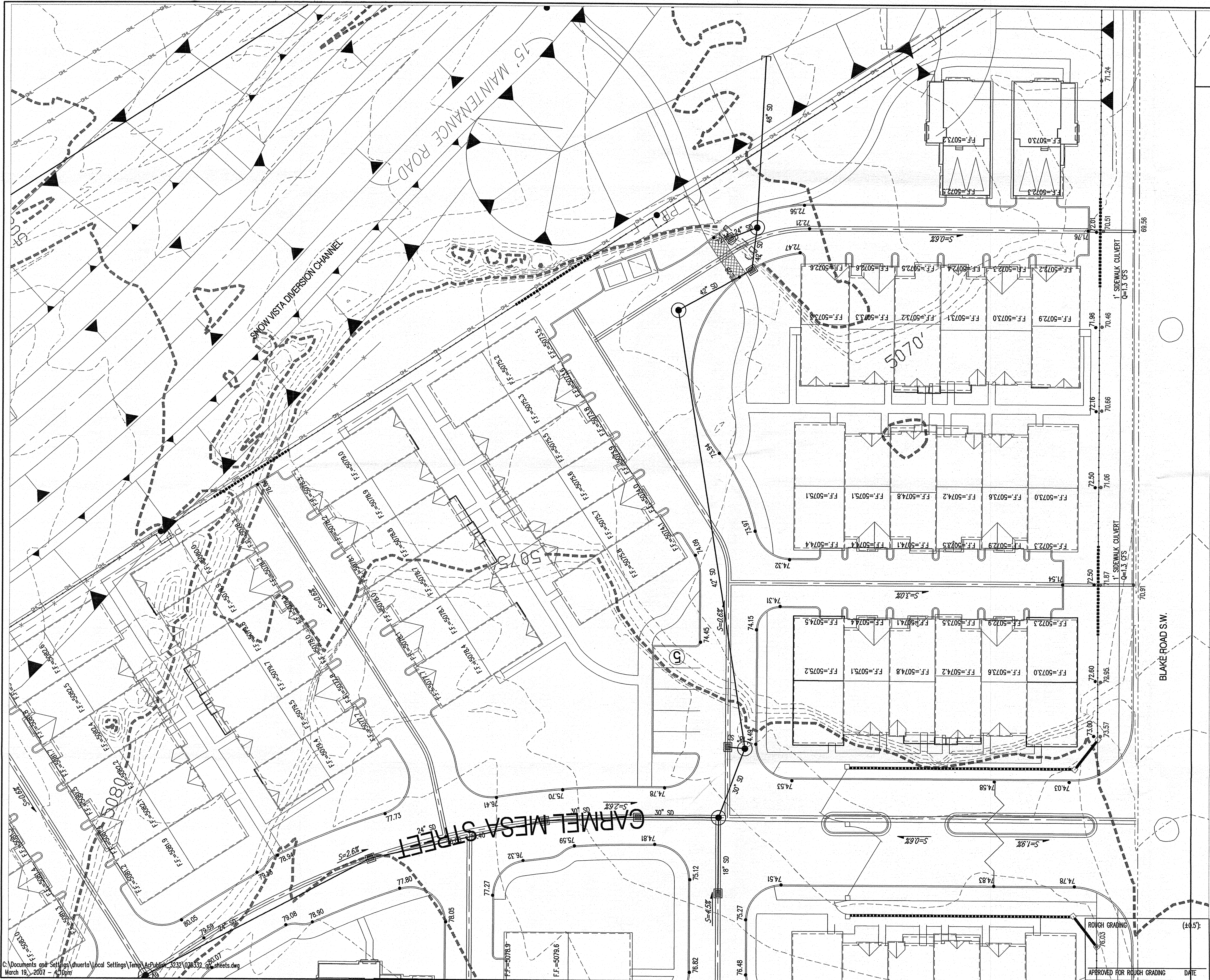
**DIAMOND MESA**  
**GRADING PLAN AND DRAINAGE PLAN**

Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of
		5	11





SEE SHEET 4



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20 10 0 20  
1" = 20'

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

City Project No. Zone Map No. Sheet 6 Of 11

ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS		AS-BUILT INFORMATION	
REMARKS		FIELD NOTES		DATE		DATE	
No.	Date	BY	DATE	CONTRACTOR	DATE	CONTRACTOR	DATE
REVISIONS		DATE		ACS BRASS TABLET STAMPED "TRANS"		DATE	
DESIGN		DATE		Geographic Position (NAD 1927)		DATE	
Designed By: SUS		DATE: XX		N.M. State Plane Coordinates (Central Zone)		DATE	
Drawn By: XX		DATE: XX		X= 354,899.45 Y= 1,471,822.67		DATE	
Checked By: SUS		DATE: XX		Ground-to-Grid Factor=0.99967921(As Published)		DATE	
				AOK = -00'16"42"		DATE	
				SLD 1929 Elevation = 5118.370		DATE	



SEE SHEET 5

SEE SHEET 4

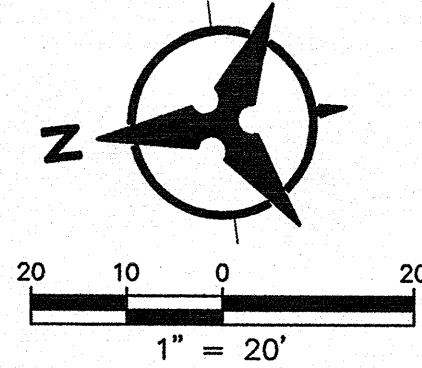
SEE SHEET 9

SEE SHEET 7



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**DIAMOND MESA**  
**GRADING PLAN AND DRAINAGE PLAN**

Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of
		7	11

ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS		AS-BUILT INFORMATION	
		FIELD NOTES					
		NO.	BY	DATE	ACS BRASS TABLET STAMPED "TRANS"		
					Geographic Position (NAD 1927)		DATE
					N.M. State Plane Coordinates (Central Zone)		DATE
					X= 354,899.45 Y= 1,471,822.67	DATE	
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					Δα = -00°16'42"	DATE	
					SLD 1929 Elevation = 5118.370	NO.	

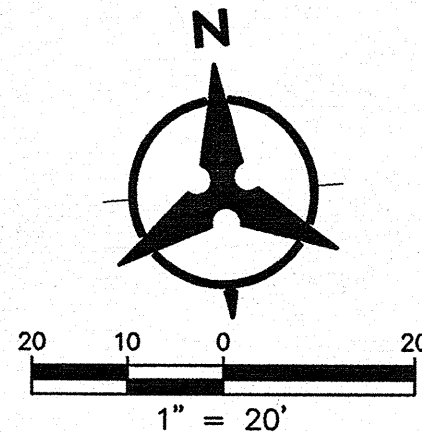



SEE SHEET 8













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 PROPOSED RETAINING WALL  
 PROPOSED STORM DRAIN  
 PROPOSED STORM DRAIN MANHOLE  
 PROPOSED STORM DRAIN INLET  
 FINISH FLOOR ELEVATION  
**FF=5154.1**

# Bohannon ▲ Huston

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**DIAMOND MESA  
GRADING PLAN AND DRAINAGE PLAN**

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of	
		8	11	



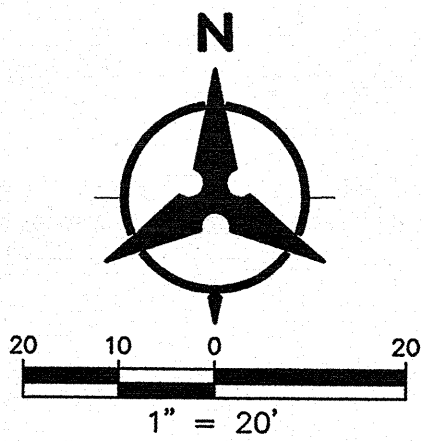
SEE SHEET 10



SEE SHEET 7

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**Bohannon & Huston**

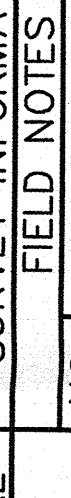
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Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of
		9	11

ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS		AS-BUILT INFORMATION		
			FIELD NOTES					
			NO.		BY		DATE	
							ACS BRASS TABLET STAMPED "TRANS"	
							Geographic Position (NAD 1927)	
							N.M. State Plane Coordinates (Central Zone)	
							X= 354,889.45 Y= 1,471,822.67	
							Ground-to-Grid Factor=0.99967921(As Published)	
							$\Delta\alpha = -00^{\circ}16'42''$	
							S.I.D. 1929 Elevation = 5118.370	



SEE SHEET 3

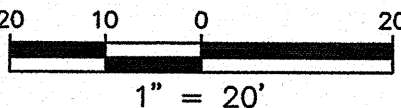
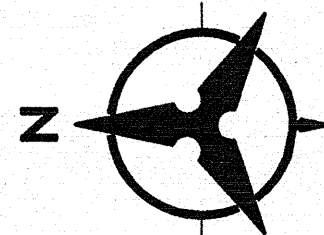
SEE SHEET 4

SEE SHEET 3

SEE SHEET 10

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SEE SHEET 6

SEE SHEET 7

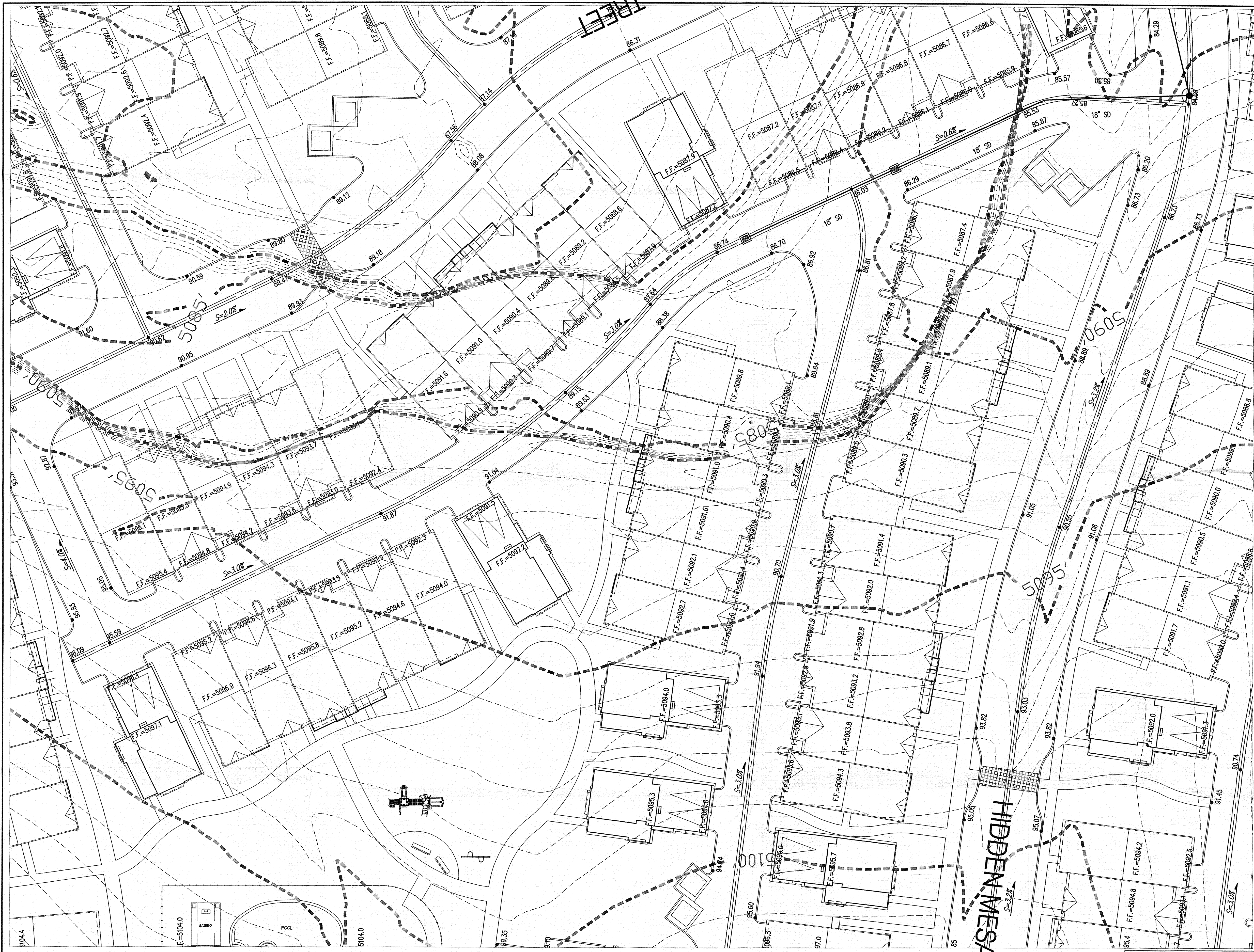
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Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of
		10	11

ROUGH GRADING (±0.5')  
APPROVED FOR ROUGH GRADING DATE



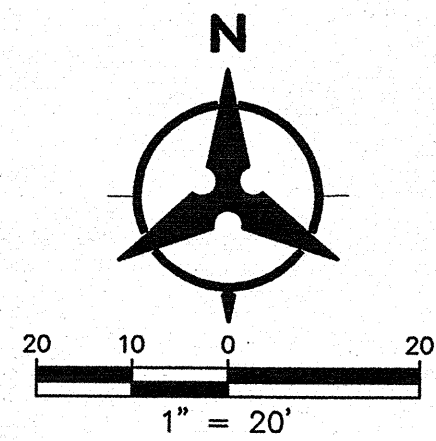


SEE SHEET 1



GENERAL NOTES

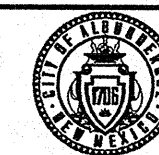
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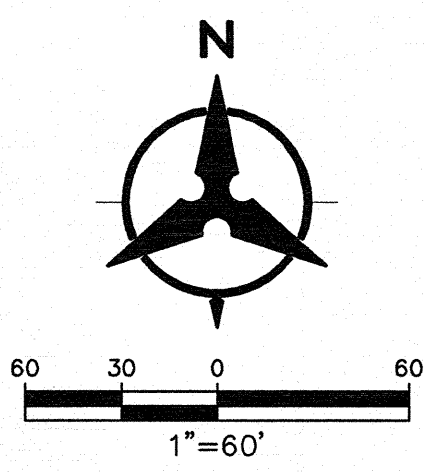
Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of
		11	11



# EXHIBIT 3

DEVELOPED CONDITIONS BASIN MAP

BASIN B  
AREA=14.56 AC  
Q<sub>100</sub>=56 CFS



BASIN A  
AREA=5.38 AC  
Q<sub>100</sub>=21 CFS

BASIN C  
AREA=6.64 AC  
Q<sub>100</sub>=26 CFS

DIAMOND MESA  
DEVELOPED CONDITIONS  
BASIN MAP