

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

April 24, 2019

Yolanda Padilla Moyer, PE
Bohannon Huston, Inc.
7500 Jefferson St NE
Albuquerque, NM 87109

**RE: Catalonia Subdivision
Tr 1 & 2, The Trails Unit 3A
Drainage Report Stamp Date: 3/29/19
Grading Plan Stamp Date: 3/29/19
Hydrology File: C09D013**

Dear Ms. Padilla Moyer,

PO Box 1293

Based on the submittal received on 3/29/19 the above-referenced Drainage Report and Grading Plan cannot be approved until the following are corrected:

Albuquerque

Prior to Preliminary Plat, Grading Permit, and Work Order:

NM 87103

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1. Offsite Pond 1.
 - a. Per The Trails DMP (Thompson, 2015) this pond ultimately needs to be 2.44 Ac-Ft. The proposed size (0.99Ac-Ft) and the ultimate size need to be called-out on the Drainage Report, Grading Plan, Infrastructure List, and Work Order Plans. In the drainage report, add explaining language that when the development to the north comes in, it'll need to divert its offsite flows south into Offsite Pond 1 and upsize it to 2.44Ac-Ft.
 - b. Provide written and signed permission from the owner of *Portion of Tract 5 in the W/2 NE/4 NW/4 SEC 17 T11N R2E* for the grading and swale/pond construction on their property. Then, on the Infrastructure List, include a Drainage Covenant (no public easement) with Offsite Pond 1.
 - c. Call Temporary Pond 1 something else to avoid confusion with Offsite Pond 1.
2. Provide written and signed permission from the owner(s) of *Tract 4, Tract OS-1, and Tract OS-2, Bulk Land Plat of The Trails Unit 3A* for the grading and pond construction on their property. Then, on the Infrastructure List, include a Public Drainage Easements and Agreements & Covenants for these ponds (Offsite Pond 1, Pond B, Pond A-5).
3. Provide Hydraulic calculations for sizing the swale to Offsite Pond 1, the spillway for Offsite Pond 1, and the spillway for Pond B.
4. Inlet/Street Capacity Hydraulics. Appendix B.
 - a. Inlets in a sump need to demonstrate 2x capacity (IN1, IN2, IN3) below top of curb.

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- b. The combination equation you show as eqn 1, should work, but net open area needs to be shown, and h for the orifice equation needs to be defined as height of water above the center of the opening.
 - c. Grate void space (or net open area) needs to be 3.72SF, for the bike-friendly Albuquerque grate, see new Dwg 2220 (attached)
 - d. IN1 is described as one double-A, but 2 separate inlets are shown on the grading plan.
5. Pond Routing. Appendix D.
 - a. The basin areas and land treatments are slightly off from the Hydrology presented in Appendix A; please correct.
 - b. Provide the excel file, or the calculations/formulas used when resubmitting.
 - c. Provide pond routing tables or curves for the ponds, including storage/inflow/discharge.
 - d. What control devices (orifice plates, ported risers?) will be used to maintain allowable discharge and where are their hydraulic calculations and design?
 - e. Temporary Pond 1 (rename) needs to be sized for the 10 day volume from basin A, plus the volume from Offsite Pond 1 (no dead storage in Offsite Pond 1, I assume), plus the surrounding area that will drain to it (to be delineated).
 - f. Woodmont Temp Pond should be sized for DMP Basin A1, plus Basin Offsite 2.
 - g. Will anything outfall into SDP 9, or will it be stubbed and capped?
 - h. Interim Pond A-5 does need to be sized for the 10-day volume for the area draining to it: Basin B (minus any dead storage in Pond B), plus the surrounding area that will drain to it (to be delineated).
 - i. Show and label the 100-yr WSE and SWQV elevation of each pond on the grading plan.
6. Storm Water Quality. Appendix E.
 - a. The storm water quality volume (SWQV) contained in Temporary Pond 1 and Woodmont Temp Pond is not acceptable, as these ponds are presented as temporary facilities that will go away once the downstream pipe is built. Provide a permanent SWQ facility to store the SWQV from Basin A and Offsite Basin 2.
 - b. Use of Retention Pond B and A5 for treating the SWQV from Basin B and Offsite Basin 3 is acceptable provided that the the SWQV and WSE is called out on the plans and in the maintenance covenants.
7. Storm Drain Profiles. Appendix C/F.
 - a. Appendix C and Appendix F look to be the same thing.
 - b. Provide a column(s) on the table showing EGL.
 - c. Use the 10-yr water surface elevation (WSE) in the receiving pond as the beginning WSE for the HGL calculations, or the actual WSE, per the pond routing tables (to be prepared).
 - d. Transition 1 and Transition 2 will not be allowed; provide manholes at these locations.
 - e. Curvilinear pipe and bends are allowed in select cases; please see attached draft guidance for the new DPM.
 - f. HGL profiles are missing for SDP9 and SDP2.

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8. The following drainage infrastructure needs to be added or amended on the infrastructure list (dated 3/29/19):
 - a. *RCP w/ nec. MH's, Laterals, & Inlets, Woodmont, Pond B to Pond A5*. This is called SDP2 on the storm drain network.
 - b. *Offsite Pond 1 and Swale w/ Drainage Covenant (no public easement)*. Add volume.
 - c. *Temporary Pond 1 (rename) w/ Public Drainage Easement and Agreement and Covenant*. Add volume.
 - d. *Pond B w/ Public Drainage Easement and Agreement and Covenant*. Add volume.
 - e. *Pond A5 w/ Public Drainage Easement and Agreement and Covenant*. Add volume.
 - f. Engineer's Certification of Grading and Drainage needs to be its own item, complete with inspector sign-off, not a note.
9. You should request a Wavier to waterblock height when resubmitting at: Matero & Manresa, and Bellaterra & Cambrils. You'll need to quantify the flow and flow depth, to demonstrate that the waterblock height can be reduced at these spots. Otherwise, provide waterblocks, 0.87' high.
10. Grading Plan Remarks.
 - a. Sheet labeling shown on Sheet 1 is incorrect.
 - b. Do not grade on Lot 9-16, Valle Prado Unit 5.
 - c. Add a line type to the legend for *Retaining Wall, Constructed Prior to Grading/Pad Certification*. These are for the side lot retaining walls to be built by the grading contractor.
 - d. Provide grate (or LP) elevation at IN2 and IN3. Ensure that there is an adequate sump between these inlets and the waterblock for Woodmont & Girona, so high flows don't simply spill over to Woodmont. This high point elevation also needs to be called out.
 - e. You're providing emergency spillways for Pond A5 and Temporary Pond 1, but these typically aren't required if retaining the 100-yr, 10-day volume.
11. This project requires an ESC Plan, submitted to the Stormwater Quality Engineer (Curtis Cherne PE, ccherne@cabq.gov or 924-3420).
12. On the Preliminary Plat, provide a Public drainage easement on Tract 1 for the short storm drain pipe between Tarragonia and Pond B on OS-1.

Prior to Release of Financial Guarantee (For Information):

13. Engineer's Certification, per the DPM Chapter 22.7: *Engineer's Certification Checklist For Subdivision* is required.

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Planning Department
David Campbell, Director



Mayor Timothy M. Keller

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

A handwritten signature in dark ink, appearing to read 'D. Peterson', is positioned above the printed name.

Dana M. Peterson
Senior Engineer, Planning Dept.
Development Review Services

PO Box 1293

Albuquerque

NM 87103

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City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2018)

Project Title: Catalonia at the Trails **Building Permit #:** _____ **Hydrology File #:** C09D011
DRB#: _____ **EPC#:** 2018-2018-001198 **Work Order#:** _____
Legal Description: Tract 1-2, The Trails Unit 3A
City Address: _____

Applicant: Bohannon Huston Inc. **Contact:** Yolanda Moyer
Address: 7500 Jefferson St NE CY2 Albuquerque, NM, 87109
Phone#: 505-798-7945 **Fax#:** _____ **E-mail:** ypadilla@bhinc.com
Owner: PV Trails Albuquerque LCC **Contact:** Scott Steffen
Address: 4350 La Jolla Village Dr, Suite 110 San Diego CA 92122
Phone#: 505 243-3949 **Fax#:** _____ **E-mail:** ssteffen@pricedg.com

TYPE OF SUBMITTAL: ☒ PLAT (⁷⁸# OF LOTS) _____ RESIDENCE _____ DRB SITE _____ ADMIN SITE

IS THIS A RESUBMITTAL?: _____ Yes ☒ No

DEPARTMENT: _____ TRAFFIC/ TRANSPORTATION ☒ HYDROLOGY/ DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

☐ ENGINEER/ARCHITECT CERTIFICATION
☐ PAD CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☒ DRAINAGE REPORT
☐ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
☐ ELEVATION CERTIFICATE
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ OTHER (SPECIFY) _____
☐ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
☒ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☒ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☒ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ FLOODPLAIN DEVELOPMENT PERMIT
☐ OTHER (SPECIFY) _____

DATE SUBMITTED: 3-29-19 **By:** Yolanda Padilla Moyer, P.E.

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

DRAINAGE REPORT FOR CATALONIA AT THE TRAILS SUBDIVISION

MARCH 2019

Prepared for:

PV TRAILS ALBUQUERQUE LCC
4350 LA JOLLA VILLAGE DR. SUITE 110
SAN DIEGO CA, 92122

Prepared by:

Bohannon  **Huston**

Engineering

Spatial Data

Advanced Technologies



**DRAINAGE REPORT
FOR
CATALONIA AT THE TRAILS
ALBUQUERQUE, NM**

MARCH 29, 2019

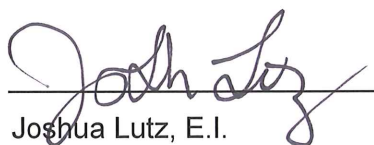
Prepared for:

**PV TRAILS ALBUQUERQUE LCC
4350 LA JOLLA VILLAGE DR. SUITE 110
SAN DIEGO, CA 92122**

Prepared by:

**BOHANNAN HUSTON, INC.
COURTYARD II
7500 JEFFERSON STREET NE
ALBUQUERQUE, NM 87109**

PREPARED BY:


Joshua Lutz, E.I.

Date

UNDER THE SUPERVISION OF:


Yolanda Padilla Moyer, PE

Date

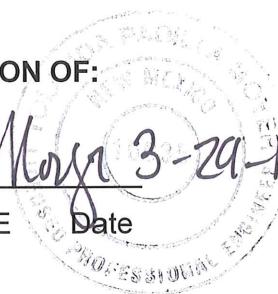


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APPENDIX E: FIRST FLUSH REQUIREMENTS
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EXHIBITS

EXHIBIT A: PRELIMINARY PLAT
EXHIBIT B: ORIGINAL DEVELOPED CONDITIONS BASIN MAP FROM DMP
EXHIBIT C: EXISTING BASIN MAP
EXHIBIT D: PROPOSED BASIN MAP
EXHIBIT E: STORM DRAIN NETWORK
EXHIBIT F: GRADING PLAN

I. INTRODUCTION

This report establishes a drainage management plan for Catalonia at the Trails Unit 3A. The proposed development consists of 78 single family detached residential lots on approximately 20.29 acres. This project is located within the Volcano Trails Sector Plan area, in northwest Albuquerque, west of Rainbow Blvd and south of Woodmont Avenue. Catalonia is in the Trails Units 1-3 Drainage Master Plan (DMP) area and has discharge of developed flows to "Pond B" located to the Southeast of the site, and a temporary Pond located to the east of the site, both of which will be developed with this project. Future Pond A5 is located on the east side of Woodmont Avenue and east of the proposed Catalonia subdivision, both Pond B will be conveyed to this pond through storm drain networks. Future Pond A5 will be fully developed per the Master Drainage Plan with this project, however, the discharge for Future Pond A5 will not be developed. This report is submitted in support of grading approval and preliminary plat approval by the DRB.

II. PURPOSE OF REPORT

The purpose of this report is to provide site-specific drainage analysis for existing and ultimate conditions for the subdivision development referred to as Catalonia at the Trails. This plan is prepared and submitted to support design and grading of the subdivision and internal streets for preliminary and final plat approvals.

III. METHODOLOGY AND REFERENCES

All analysis was completed for the existing and fully developed conditions. The runoff volumes were computed for the 100 yr – 6 hr storm in accordance with the City of Albuquerque Development Manual (DPM), Volume II – Design Criteria, Section 22.2, Hydrology, The City of Albuquerque, January 2002. Since the site is less than 40 acres in size, the Rational Method is used in this report for the hydrology analysis. The storm drain network was analyzed assuming laminar flow and applying classical non-compressible fluid mechanics approach.

This report is consistent with previously approved drainage reports for this development. The following City of Albuquerque approved documents will be referenced throughout this report:

Amendment to Drainage Management Plan for the Trails Units 1, 2, and 3 Plate 2, prepared by Thompson Engineering Consultants, inc., February 2015. This report establishes site specific drainage improvements guidelines for the subdivision Catalonia at the Trails and provides the allowable discharge from the ponds which will be developed with this project.

IV. SITE LOCATION AND CHARACTERISTICS

This project is located within the Volcano Trails Sector Plan area, in northwest Albuquerque, west of Rainbow Blvd and south of Woodmont Avenue. (see 'Exhibit A – Subdivision Location Map and Summary Plat').

The site consists primarily of native grasses and bushes, with few trees within the site. Slopes range from 1% to 25%, with the majority of the project sloping at 3% to 15%.

Considering that the site will not be phased, the flow paths for the interim and the ultimate conditions will not differ. Hence, the hydrology and hydraulics analysis will be performed for the existing and ultimate conditions.

V. EXISTING CONDITIONS

The existing basin and drainage patterns are shown graphically on the Existing Drainage Conditions Map in 'Exhibit C – Existing Conditions Basin Map'. The site currently has a berm running through the middle it from east to west starting at Woodmont Avenue and ending on the west side of the site. The berm will send the flows to the southeast or northeast depending on which side of the berm the flow is coming from. There are offsite flows draining to the site. For additional information please refer to Drainage Master Plan for the Trails Units 1, 2, and 3 and 'Appendix B – Original Developed Conditions Basin Map from DMP'.

The site runoff naturally flows southeast to Future Pond B, or northeast to the temporary pond that will be put in for this site. In addition, a small portion of the site drains

east to Woodmont Avenue which will be collected by existing storm drain inlets. For details refer to Appendix B.

The site has been divided into 5 basins: Ex Basin-1 ($A = 3.24$ acres, $Q_{100} = 4.1$ cfs), Ex Basin-2 ($A = 3.17$ acres, $Q_{100} = 12.2$ cfs), Ex Basin-3 ($A = 3.35$ acres, $Q_{100} = 10.9$ cfs), Ex Basin-4 ($A = 13.16$ acres, $Q_{100} = 42.8$ cfs), and Offsite Basin-1 ($A = 30.83$ acres, $Q_{100} = 39.1$ cfs).

VI. DEVELOPED CONDITIONS

A. INTERIM CONDITIONS

The development of Catalonia at the Trails Unit 3A must accommodate offsite historic flows. Ex Basin-1 ($A = 3.24$ acres, $Q_{100} = 4.1$ cfs), Ex Basin-2 ($A = 3.17$ acres, $Q_{100} = 12.2$ cfs), Ex Basin-3 ($A = 3.35$ acres, $Q_{100} = 10.9$ cfs), drains Northeast to the Northeastern boundary, while Ex Basin-4 ($A = 13.16$ acres, $Q_{100} = 42.8$ cfs) drains to the Southeastern boundary. Per the drainage master plan, Offsite Basin-1 ($A = 30.83$ acres, $Q_{100} = 39.1$ cfs) is captured on the western boundary by a detention pond formally known as "Future Offsite Pond 1", from this point on "Future Offsite Pond 1" will be known as "Offsite Pond 1". Offsite Pond 1 discharges to a 24" storm drain pipe with an allowable discharge of $Q_{100} = 9.25$ cfs for the DMP from Thompson Engineering.

Ex Basin 1, Ex Basin 2, and a portion of Ex Basin 3 are combined to form Basin A ($A = 9.20$ acres, $Q_{100} = 29.7$ cfs). Within Basin A, $Q_{100} = 0.76$ cfs is conveyed by Mataro Road from lot 30 west to Manresa Drive, $Q_{100} = 14.0$ cfs is conveyed by Manresa Drive from the highpoint located near lot 33 north to the intersection of Manresa Drive and Girona Avenue, $Q_{100} = 7.0$ cfs is conveyed by Tortosa Drive from the highpoint located near lot 50 north to the intersection of Tortosa Drive and Girona Avenue, $Q_{100} = 8.2$ cfs is conveyed by Cambrils Drive from the highpoint located at the intersection of Cambrils Drive and Bellatara Street north to the intersection of Girona Avenue. East of the intersection of Cambrils Drive and Girona Avenue, the flow being conveyed by Girona Avenue is $Q_{100} = 29.7$ cfs, this results in the need for two (2) type A double wing wall inlets, one on each side of Girona Avenue, $Q_{100} = 14.85$ cfs per each inlet. The inlets tie into a 36" storm drain line which discharges to a temporary retention pond, "Temporary Pond 1" ($V = 1.53$ Ac-Ft, $Q_{100} = 29.52$ cfs). Temporary Pond 1 is designed to have two feet of freeboard and an emergency spillway as shown on Exhibit F.

A portion of Ex Basin 4 is to form Basin B ($A=11.10$ acres, $Q_{100} = 35.9$ cfs). Basin B is conveyed by Mataro Road from the highpoint located near lot 28 east to Cambrils Drive with a flowrate of $Q_{100} = 18.4$ cfs. From said intersection, drainage is conveyed by Cambrils Drive south to the low point in Tarragona Road, east of lot 7, at a flowrate of $Q_{100} = 24.8$ cfs. Additionally, $Q_{100} = 11.1$ cfs is conveyed by Tarragona Road from the highpoint located near lot 33 in Manresa Drive east to the low point previously mentioned. At the low point east of Lot 7 will a Type A double wing wall inlet, Inlet 1, to capture the $Q_{100} = 35.9$ cfs that is produced by Basin B. Inlet 1 will be located on the eastern side of the road which will be superelevated to convey the drainage to the inlet. A 12' wide concrete valley gutter will be placed across the road to help convey said drainage. Inlet 1 will discharge to a detention pond, Pond B ($V=1.60$ Ac-Ft, $Q_{100} = 35.65$ cfs). If the inlet were to clog, the drainage would overtop the curb and spill into Pond B. Pond B has an allowable discharge of $Q_{100} = 3.36$ cfs which will discharge to Pond A5, and is designed to have two feet of freeboard and an emergency spillway as shown on Exhibit F.

Basin Offsite 2 is Basin A3 from the master DMP for the Trails Unit 1, 2, and 3 ($A = 3.21$ acres, $Q_{100} = 11.41$ cfs). A portion of Offsite Basin 2 will be developed with this project as Woodmont Avenue. A temporary pond will be placed just north of the developed Woodmont Avenue, called "Woodmont Temporary Pond" ($V=0.11$ Ac-Ft, $Q_{100} = 20$ cfs). Woodmont Temporary Pond will discharge through a 24" pipe which will ultimately be conveyed to Temporary Pond 1 by a 48" pipe. Woodmont Temporary Pond has an allowable discharge of $Q_{100} = 11.41$ cfs per the DMP from Thompson Engineering.

Offsite Basin 3 is a portion of Basin E4 from the master DMP ($A=1.43$ acres, $Q_{100} = 3.9$ cfs). Offsite Basin 3 will be conveyed down Woodmont Avenue where it will be collected by existing inlets. This basin does not exceed the master DMP flows.

Pond A5, formally known as "Future Pond A5", located east of Woodmont Avenue in Tract OS-2, $V=4.61$ acres per the master DMP, will be developed as a retention pond in the interim condition. The pond will store drainage from the area to the north of it as well as the discharge from Pond B.

B. ULTIMATE CONDITIONS

The ultimate conditions are the same as the interim conditions except for what is discussed from this point forward. Temporary Pond 1 will be removed and the 48" storm drain pipe that discharges to Temporary Pond 1 will be extended to the Southeast by a 54"

storm drain to Pond A5. Pond A5 will no longer be a retention pond, instead it will be a detention pond as 24" storm drain pipe will be installed to discharge an allowable flow of $Q_{100} = 15.56$ cfs to "Future Pond A6". As mentioned above Pond A5 will collect discharge from a 54" from DMP Basin A3, Proposed Basin A and Offsite Pond 1. The Woodmont Temporary Pond will also be filled in to allow for Woodmont Avenue to be built. Woodmont Avenue will be designed so that there is a low point located in Basin A3 ($Q_{100} = 11.41$ cfs per the DMP) where inlets can be placed to collect and convey the drainage through the storm drain network which ultimately reaches Pond A5.

C. FIRST FLUSH REQUIREMENTS

This project is required to meet the first flush requirements of the new City Drainage Ordinance. The first flush requirement will be met via detention volume. Two detention ponds will be constructed. Temporary Pond 1 ($V_s = 1.53$ Ac-Ft) will convey develop flows from Basin A, and Detention Pond B ($V_s = 1.04$ Ac-Ft) will convey develop flows from Basin B. The required storage is calculated as 0.42 in. times the subdivision acreage times the percent impervious area and is equal to 12628.7 cf (0.29 Ac-Ft). The provided detention volume is $V_{provided} = 2.57$ Ac-Ft, hence the water quality requirements for this project is fulfilled.

See 'Appendix E – First Flush Requirements' for more information.

VII. GRADING PLAN

The grading plan for Catalonia is included in 'Exhibit G – Grading Plan' of this report.

VIII. CALCULATIONS

All the calculations to support the narrative are included in the appendices and were computed in accordance to the COA DPM, Chapter 22, Section 2. Microsoft Excel spreadsheets, manning equations and stream were used to analyze the site drainage, storm drain and roadway infrastructure. The design storm used in this analysis is the 100 year – 6hr storm event. The land treatment percentage D was computed using equation from COA DPM table A-5, Chapter 22, Section 2, as a function of the area and number of units. The remaining land treatment percentages was evenly divided between categories B and C. The

runoff coefficient, C, was obtain from COA DPM table A-11, chapter 22, section 2. The average rainfall intensity, i, was taken from COA DPM table A-10, chapter 22, section 2. Once these parameters were known the runoff flows for each sub-basin were computed, as shown in APPENDIX A.

IX. CONCLUSION

This drainage report is in compliance with the previously approved drainage master plans and drainage reports, and no adverse effects are anticipated to the existing infrastructure. The proposed storm drain infrastructure and drainage management schemes allow for the safe management of storm runoff and preservation of the natural terrain in permanent conditions. The implementation of these concepts would result in the safe passage of the 100-year-6 hr. storm event. With the information presented in this report we are requesting this drainage report to be approved.

APPENDICES

**APPENDIX A: BASIN ANALYSIS AND SUMMARY
OF LAND TREATMENTS**

APPENDIX B: INLET/STREET HYDRAULICS

APPENDIX C: STORM DRAIN PIPE ANALYSIS

APPENDIX D: DETENTION POND ANALYSIS

APPENDIX E: FIRST FLUSH REQUIREMENTS

APPENDIX F: HGL CALCULATIONS

APPENDIX A:
BASIN ANALYSIS AND SUMMARY OF LAND
TREATMENTS

EXISTING BASIN SUMMARY											
BASIN	AREA	AREA		% LAND TREATMENT				DISCHARGE (CFS)	DISCHARGE (CFS)	VOLUME (AC-FT)	VOLUME (AC-FT)
I.D.	(FT)	(AC)		A	B	C	D	10 yr	100YR	10 yr	100 yr
OFFSITE BASIN 1	1342745	30.83		100.00%	0.00%	0.00%	0.00%	7.7	39.1	0.21	1.13
Ex Basin 1	140918	3.24		100.00%	0.00%	0.00%	0.00%	0.8	4.1	0.02	0.12
Ex Basin 2	138230	3.17		0.00%	0.00%	34.00%	66.00%	7.6	12.2	0.26	0.43
Ex Basin 3	145822	3.35		0.00%	29.00%	29.00%	42.00%	6.2	10.9	0.20	0.37
Ex Basin 4	573090	13.16		0.00%	29.00%	29.00%	42.00%	24.5	42.8	0.78	1.43
TOTAL	2340805	53.7						46.9	109.2	1.5	3.5

DEVELOPED BASIN SUMMARY											
BASIN	AREA	AREA	Lots	% LAND TREATMENT				DISCHARGE (CFS)	DISCHARGE (CFS)	VOLUME (AC-FT)	VOLUME (AC-FT)
I.D.	(ft)	(AC)		A	B	C	D	10 yr	100YR	10 yr	
BASIN A	400914	9.20	39	0.00%	29.6%	29.6%	40.8%	16.9	29.7	0.54	0.99
BASIN B	483543	11.10	39	0.00%	29.6%	29.6%	40.8%	20.4	35.9	0.65	1.20
OFFSITE BASIN 1	1342745	30.83	0	100.00%	0.0%	0.0%	0.0%	7.7	39.1	0.21	1.13
OFFSITE BASIN 2	51247	1.18	0	0.00%	0.0%	10.0%	90.0%	3.2	5.0	0.11	0.18
OFFSITE BASIN 3	62458	1.43	0	0.00%	0.0%	10.0%	90.0%	3.9	6.1	0.14	0.22
TOTAL	2340907.00	53.7	78.00					52.2	115.7	1.6	3.7

APPENDIX B:
INLET/STREET HYDRAULICS

90

GRATE OPEN AREA - 7.06 SF / GRADE

60" WING

40" @ TC

NET OPEN AREA

GRATE @ 10" (0.83') BELOW TC

18.5"

18.5"

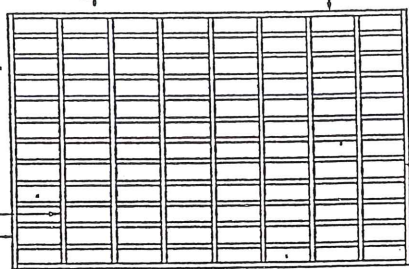
35.5"

EQUATION	SGL A	DBL A	TRPL A	QDBL 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): $11(h-0.83)^{1.5}$	ADD TO 2): $22(h-0.83)^{1.5}$	ADD TO 2): $33(h-0.83)^{1.5}$	ADD TO 2): $44(h-0.83)^{1.5}$

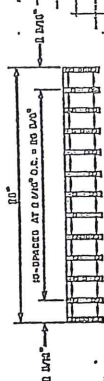
1) $Q = 0.6 A \sqrt{2gh} + 3.3(5') h^{1.5}$

2) & 3) $Q = 3.3 P h^{1.5}$

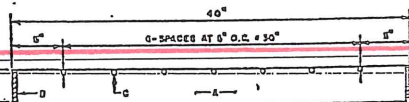
IN 1



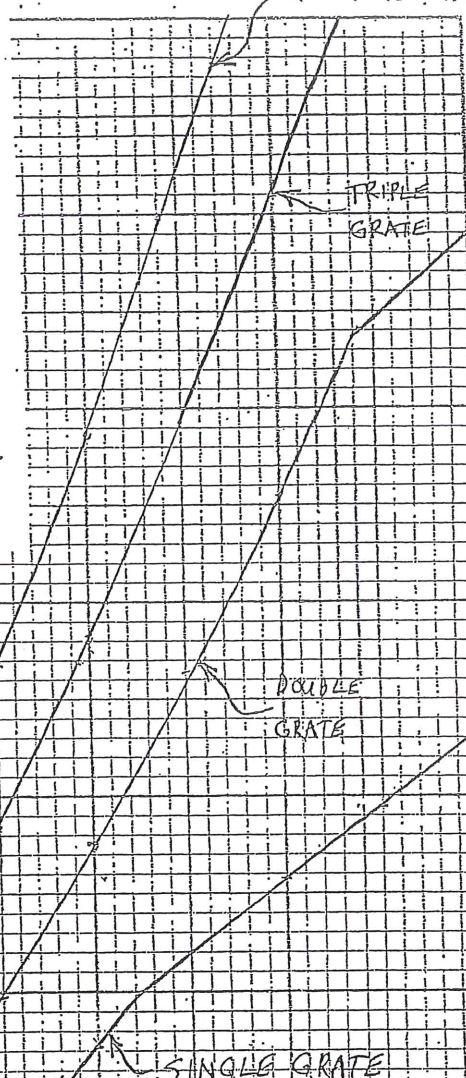
PLAN



SECTION B-B



SECTION A-A



$Q_{100} = 35.9 \text{ cfs}$

HEAD (h) IN FEET

BOHANNAN-HUSTON INC.

D = 0.82' (IN 1)

PROJECT NAME

SHEET

OF

PROJECT NO.

BY JPK

DATE 4/9/92

CLIENT BOHANNAN-HUSTON INC. 2000 E. 10TH AVE. SUITE 100

CLIENT

DATE

53' ROW - 32' F-F

MANNING'S N = 0.017 SLOPE = 0.020

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	4.0	12.6	0.1	7.0	42.4	0.0
2.0	10.5	0.7	5.0	26.5	0.3	8.0	42.5	0.7
3.0	10.6	0.0	6.0	40.4	0.1	9.0	53.0	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	0.002	0.001	0.341	0.349	0.323	0.012
0.020	0.020	0.006	0.004	0.682	0.554	0.646	0.025
0.030	0.030	0.015	0.011	1.023	0.725	0.969	0.038
0.040	0.040	0.026	0.023	1.363	0.879	1.292	0.052
0.050	0.050	0.040	0.041	1.704	1.020	1.615	0.066
0.060	0.060	0.058	0.067	2.045	1.152	1.938	0.081
0.070	0.070	0.079	0.101	2.386	1.276	2.261	0.095
0.080	0.080	0.103	0.144	2.727	1.395	2.584	0.110
0.090	0.090	0.131	0.197	3.068	1.509	2.907	0.125
0.100	0.100	0.162	0.261	3.409	1.619	3.230	0.141
0.110	0.110	0.195	0.337	3.749	1.725	3.553	0.156
0.120	0.120	0.233	0.425	4.090	1.828	3.876	0.172
0.130	0.130	0.274	0.491	4.984	1.789	4.752	0.180
0.140	0.140	0.329	0.561	6.430	1.704	6.181	0.185
0.150	0.150	0.398	0.672	7.876	1.690	7.610	0.194
0.160	0.160	0.481	0.825	9.322	1.714	9.038	0.206
0.170	0.170	0.579	1.019	10.768	1.761	10.467	0.218
0.180	0.180	0.691	1.257	12.214	1.821	11.896	0.232
0.190	0.190	0.817	1.543	13.660	1.890	13.324	0.246
0.200	0.200	0.957	1.880	15.106	1.965	14.753	0.260
0.210	0.210	1.112	2.271	16.552	2.043	16.182	0.275
0.220	0.220	1.281	2.718	17.998	2.123	17.610	0.290
0.230	0.230	1.464	3.227	19.444	2.204	19.039	0.306
0.240	0.240	1.661	3.798	20.890	2.286	20.468	0.321
0.250	0.250	1.873	4.437	22.336	2.369	21.896	0.337
0.260	0.260	2.099	5.145	23.782	2.451	23.325	0.353
0.270	0.270	2.340	5.926	25.228	2.533	24.754	0.370
0.280	0.280	2.594	6.783	26.674	2.615	26.182	0.386
0.290	0.290	2.863	7.719	28.120	2.696	27.611	0.403
0.300	0.300	3.147	8.736	29.566	2.776	29.040	0.420
0.310	0.310	3.444	9.837	31.012	2.856	30.468	0.437
0.320	0.320	3.756	11.026	32.458	2.936	31.897	0.454
0.330	0.330	4.075	12.625	32.478	3.098	31.900	0.479
0.340	0.340	4.394	14.309	32.498	3.257	31.903	0.505
0.350	0.350	4.713	16.076	32.519	3.411	31.906	0.531
0.360	0.360	5.032	17.923	32.539	3.562	31.909	0.557
0.370	0.370	5.351	19.849	32.559	3.709	31.912	0.584
0.380	0.380	5.670	21.851	32.579	3.854	31.915	0.611
0.390	0.390	5.990	23.930	32.599	3.995	31.918	0.638
0.400	0.400	6.309	26.082	32.620	4.134	31.921	0.666

Intersection Girona Ave
Manresa Drive (West) -
Q=14.0 cfs
E=0.50'<0.87'
D=0.34'

0.410	0.410	6.628	28.307	32.640	4.271	31.924	0.694
0.420	0.420	6.947	30.603	32.660	4.405	31.927	0.722
0.430	0.430	7.267	32.969	32.680	4.537	31.930	0.750
0.440	0.440	7.586	35.404	32.701	4.667	31.933	0.779
0.450	0.450	7.905	37.907	32.721	4.795	31.936	0.808
0.460	0.460	8.225	40.477	32.741	4.922	31.939	0.837
0.470	0.470	8.544	43.113	32.761	5.046	31.942	0.866
0.480	0.480	8.863	45.814	32.781	5.169	31.945	0.896
0.490	0.490	9.183	48.579	32.802	5.290	31.948	0.925
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL
INC	AREA	RATE	PER	VEL	PLUS	ENERGY	
FT.	SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)	
0.500	0.500	9.502	51.408	32.822	5.410	31.952	0.955
0.510	0.510	9.822	54.299	32.842	5.528	31.955	0.985
0.520	0.520	10.141	57.251	32.862	5.645	31.958	1.016
0.530	0.530	10.461	60.265	32.883	5.761	31.961	1.046
0.540	0.540	10.781	63.339	32.903	5.875	31.964	1.077
0.550	0.550	11.100	66.473	32.923	5.988	31.967	1.108
0.560	0.560	11.420	69.665	32.943	6.100	31.970	1.139
0.570	0.570	11.740	72.916	32.964	6.211	31.973	1.170
0.580	0.580	12.059	76.225	32.984	6.321	31.976	1.201
0.590	0.590	12.379	79.591	33.004	6.429	31.979	1.233
0.600	0.600	12.699	83.013	33.024	6.537	31.982	1.265
0.610	0.610	13.019	86.492	33.044	6.644	31.985	1.297
0.620	0.620	13.339	90.026	33.065	6.749	31.988	1.329
0.630	0.630	13.659	93.615	33.085	6.854	31.991	1.361
0.640	0.640	13.979	97.258	33.105	6.958	31.994	1.393
0.650	0.650	14.299	100.955	33.125	7.061	31.997	1.425
0.660	0.660	14.619	104.706	33.146	7.163	32.000	1.458
0.670	0.670	14.944	106.483	34.146	7.126	33.000	1.460
0.680	0.680	15.279	108.385	35.146	7.094	34.000	1.463
0.690	0.690	15.624	110.410	36.146	7.067	35.000	1.467
0.700	0.700	15.979	112.556	37.146	7.044	36.000	1.472
0.710	0.710	16.344	114.821	38.147	7.026	37.000	1.478
0.720	0.720	16.719	117.206	39.147	7.011	38.000	1.484
0.730	0.730	17.104	119.708	40.147	6.999	39.000	1.492
0.740	0.740	17.499	122.328	41.147	6.991	40.000	1.500
0.750	0.750	17.904	125.065	42.147	6.985	41.000	1.509
0.760	0.760	18.319	127.918	43.148	6.983	42.000	1.518
0.770	0.770	18.744	130.887	44.148	6.983	43.000	1.528
0.780	0.780	19.179	133.973	45.148	6.986	44.000	1.539
0.790	0.790	19.624	137.175	46.148	6.990	45.000	1.550
0.800	0.800	20.079	140.494	47.148	6.997	46.000	1.562
0.810	0.810	20.544	143.931	48.149	7.006	47.000	1.573
0.820	0.820	21.019	147.484	49.149	7.017	48.000	1.586
0.830	0.830	21.504	151.156	50.149	7.029	49.000	1.599
0.840	0.840	21.999	154.946	51.149	7.043	50.000	1.612
0.850	0.850	22.504	158.855	52.149	7.059	51.000	1.625
0.860	0.860	23.019	162.885	53.150	7.076	52.000	1.639

53' ROW 32' F-F

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	12.6	0.1	7.0	42.4	0.0
2.0	10.5	0.7	5.0	26.5	0.3	8.0	42.5	0.7
3.0	10.6	0.0	6.0	40.4	0.1	9.0	53.0	0.9

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOPWID	TOTAL	FROUDE
FT.	INC	AREA	RATE	PER	VEL	PLUS	WATER	ENERGY	NO.
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS		(FT)	

0.010	0.010	0.002	0.001	0.329	0.427	0.311	0.311	0.013	1.063
0.020	0.020	0.006	0.004	0.657	0.677	0.621	0.621	0.027	1.194
0.030	0.030	0.014	0.012	0.986	0.887	0.932	0.932	0.042	1.277
0.040	0.040	0.025	0.027	1.314	1.075	1.243	1.243	0.058	1.340
0.050	0.050	0.039	0.048	1.643	1.247	1.554	1.554	0.074	1.391
0.060	0.060	0.056	0.079	1.971	1.408	1.864	1.864	0.091	1.433
0.070	0.070	0.076	0.119	2.300	1.561	2.175	2.175	0.108	1.471
0.080	0.080	0.099	0.170	2.629	1.706	2.486	2.486	0.125	1.504
0.090	0.090	0.126	0.232	2.957	1.845	2.797	2.797	0.143	1.534
0.100	0.100	0.155	0.308	3.286	1.980	3.107	3.107	0.161	1.561
0.110	0.110	0.188	0.397	3.614	2.110	3.418	3.418	0.179	1.586
0.120	0.120	0.224	0.500	3.943	2.236	3.729	3.729	0.198	1.609
0.130	0.130	0.263	0.619	4.271	2.358	4.039	4.039	0.216	1.631
0.140	0.140	0.310	0.670	5.755	2.161	5.506	5.506	0.213	1.605
0.150	0.150	0.373	0.781	7.238	2.095	6.972	6.972	0.218	1.598
0.160	0.160	0.450	0.943	8.722	2.097	8.438	8.438	0.228	1.602
0.170	0.170	0.541	1.157	10.205	2.138	9.904	9.904	0.241	1.612
0.180	0.180	0.648	1.426	11.689	2.201	11.370	11.370	0.255	1.625
0.190	0.190	0.769	1.751	13.173	2.278	12.837	12.837	0.271	1.641
0.200	0.200	0.905	2.139	14.656	2.364	14.303	14.303	0.287	1.658
0.210	0.210	1.055	2.591	16.140	2.457	15.769	15.769	0.304	1.674
0.220	0.220	1.220	3.114	17.623	2.552	17.235	17.235	0.321	1.691
0.230	0.230	1.400	3.710	19.107	2.651	18.701	18.701	0.339	1.708
0.240	0.240	1.594	4.383	20.590	2.750	20.167	20.167	0.358	1.725
0.250	0.250	1.803	5.139	22.074	2.850	21.634	21.634	0.376	1.741
0.260	0.260	2.027	5.980	23.557	2.950	23.100	23.100	0.395	1.756
0.270	0.270	2.265	6.910	25.041	3.051	24.566	24.566	0.415	1.771
0.280	0.280	2.518	7.933	26.524	3.151	26.032	26.032	0.434	1.786
0.290	0.290	2.786	9.053	28.008	3.250	27.498	27.498	0.454	1.800
0.300	0.300	3.068	10.274	29.491	3.349	28.965	28.965	0.474	1.814
0.310	0.310	3.365	11.599	30.975	3.447	30.431	30.431	0.495	1.827
0.320	0.320	3.677	13.031	32.458	3.544	31.897	31.897	0.515	1.841
0.330	0.330	3.996	14.963	32.479	3.745	31.900	31.900	0.548	1.866
0.340	0.340	4.315	17.000	32.499	3.940	31.903	31.903	0.581	1.889
0.350	0.350	4.634	19.138	32.519	4.130	31.906	31.906	0.615	1.911
0.360	0.360	4.953	21.376	32.539	4.316	31.909	31.909	0.650	1.931
0.370	0.370	5.272	23.710	32.559	4.498	31.912	31.912	0.685	1.951
0.380	0.380	5.591	26.140	32.580	4.675	31.915	31.915	0.720	1.969
0.390	0.390	5.910	28.662	32.600	4.850	31.918	31.918	0.756	1.987

Intersection Girona Ave
Tortosa St - Q=21.6 cfs
E=0.37'<0.87'
D=0.25'

0.400	0.400	6.229	31.275	32.620	5.021	31.921	31.921	0.792	2.004		
0.410	0.410	6.548	33.978	32.640	5.189	31.924	31.924	0.829	2.020		
0.420	0.420	6.868	36.768	32.661	5.354	31.927	31.927	0.866	2.035		
0.430	0.430	7.187	39.644	32.681	5.516	31.930	31.930	0.903	2.050		
0.440	0.440	7.506	42.606	32.701	5.676	31.933	31.933	0.941	2.064		
0.450	0.450	7.826	45.651	32.721	5.833	31.936	31.936	0.979	2.078		
0.460	0.460	8.145	48.778	32.742	5.989	31.939	31.939	1.018	2.091		
0.470	0.470	8.464	51.986	32.762	6.142	31.942	31.942	1.057	2.103		
0.480	0.480	8.784	55.274	32.782	6.293	31.945	31.945	1.096	2.116		
0.490	0.490	9.103	58.641	32.802	6.442	31.948	31.948	1.135	2.127		
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOPWID	TOTAL	FROUDE		
INC	AREA	RATE	PER	VEL	PLUS	WATER	ENERGY	NO.			
FT.	SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS		(FT)				
0.500	0.500	9.423	62.085	32.822	6.589	31.952	31.952	1.175	2.139		
0.510	0.510	9.742	65.607	32.843	6.734	31.955	31.955	1.215	2.150		
0.520	0.520	10.062	69.204	32.863	6.878	31.958	31.958	1.256	2.161		
0.530	0.530	10.382	72.876	32.883	7.020	31.961	31.961	1.296	2.171		
0.540	0.540	10.701	76.623	32.903	7.160	31.964	31.964	1.337	2.182		
0.550	0.550	11.021	80.442	32.924	7.299	31.967	31.967	1.379	2.192		
0.560	0.560	11.341	84.334	32.944	7.437	31.970	31.970	1.420	2.201		
0.570	0.570	11.660	88.298	32.964	7.573	31.973	31.973	1.462	2.211		
0.580	0.580	11.980	92.332	32.984	7.707	31.976	31.976	1.504	2.220		
0.590	0.590	12.300	96.437	33.005	7.841	31.979	31.979	1.546	2.229		
0.600	0.600	12.620	100.611	33.025	7.973	31.982	31.982	1.589	2.238		
0.610	0.610	12.939	104.853	33.045	8.103	31.985	31.985	1.631	2.246		
0.620	0.620	13.259	109.164	33.065	8.233	31.988	31.988	1.674	2.254		
0.630	0.630	13.579	113.543	33.085	8.362	31.991	31.991	1.717	2.263		
0.640	0.640	13.899	117.988	33.106	8.489	31.994	31.994	1.761	2.271		
0.650	0.650	14.219	122.500	33.126	8.615	31.997	31.997	1.804	2.278		
0.660	0.660	14.539	127.077	33.146	8.740	32.000	32.000	1.848	2.286		
0.670	0.670	14.864	129.259	34.146	8.696	33.000	33.000	1.846	2.284		
0.680	0.680	15.199	131.593	35.147	8.658	34.000	34.000	1.846	2.283		
0.690	0.690	15.544	134.078	36.147	8.626	35.000	35.000	1.847	2.282		
0.700	0.700	15.899	136.709	37.147	8.599	36.000	36.000	1.850	2.281		
0.710	0.710	16.264	139.487	38.147	8.576	37.000	37.000	1.854	2.281		
0.720	0.720	16.639	142.410	39.147	8.559	38.000	38.000	1.859	2.280		
0.730	0.730	17.024	145.477	40.148	8.545	39.000	39.000	1.866	2.280		
0.740	0.740	17.419	148.687	41.148	8.536	40.000	40.000	1.873	2.280		
0.750	0.750	17.824	152.039	42.148	8.530	41.000	41.000	1.882	2.281		
0.760	0.760	18.239	155.534	43.148	8.528	42.000	42.000	1.891	2.281		
0.770	0.770	18.664	159.170	44.148	8.528	43.000	43.000	1.901	2.282		
0.780	0.780	19.099	162.949	45.149	8.532	44.000	44.000	1.912	2.283		
0.790	0.790	19.544	166.871	46.149	8.538	45.000	45.000	1.924	2.284		
0.800	0.800	19.999	170.935	47.149	8.547	46.000	46.000	1.936	2.285		
0.810	0.810	20.464	175.142	48.149	8.559	47.000	47.000	1.949	2.287		
0.820	0.820	20.939	179.492	49.149	8.572	48.000	48.000	1.963	2.288		
0.830	0.830	21.424	183.987	50.150	8.588	49.000	49.000	1.977	2.290		
0.840	0.840	21.919	188.627	51.150	8.606	50.000	50.000	1.992	2.291		
0.850	0.850	22.424	193.412	52.150	8.625	51.000	51.000	2.007	2.293		
0.860	0.860	22.939	198.344	53.150	8.647	52.000	52.000	2.023	2.295		

53' ROW 32' F-F

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	12.6	0.1	7.0	42.4	0.0
2.0	10.5	0.7	5.0	26.5	0.3	8.0	42.5	0.7
3.0	10.6	0.0	6.0	40.4	0.1	9.0	53.0	0.9

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOPWID	TOTAL	FROUDE
FT.	INC	AREA	RATE	PER	VEL	PLUS	WATER	ENERGY	NO.
		SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS		(FT)	

0.010	0.010	0.002	0.001	0.329	0.427	0.311	0.311	0.013	1.063
0.020	0.020	0.006	0.004	0.657	0.677	0.621	0.621	0.027	1.194
0.030	0.030	0.014	0.012	0.986	0.887	0.932	0.932	0.042	1.277
0.040	0.040	0.025	0.027	1.314	1.075	1.243	1.243	0.058	1.340
0.050	0.050	0.039	0.048	1.643	1.247	1.554	1.554	0.074	1.391
0.060	0.060	0.056	0.079	1.971	1.408	1.864	1.864	0.091	1.433
0.070	0.070	0.076	0.119	2.300	1.561	2.175	2.175	0.108	1.471
0.080	0.080	0.099	0.170	2.629	1.706	2.486	2.486	0.125	1.504
0.090	0.090	0.126	0.232	2.957	1.845	2.797	2.797	0.143	1.534
0.100	0.100	0.155	0.308	3.286	1.980	3.107	3.107	0.161	1.561
0.110	0.110	0.188	0.397	3.614	2.110	3.418	3.418	0.179	1.586
0.120	0.120	0.224	0.500	3.943	2.236	3.729	3.729	0.198	1.609
0.130	0.130	0.263	0.619	4.271	2.358	4.039	4.039	0.216	1.631
0.140	0.140	0.310	0.670	5.755	2.161	5.506	5.506	0.213	1.605
0.150	0.150	0.373	0.781	7.238	2.095	6.972	6.972	0.218	1.598
0.160	0.160	0.450	0.943	8.722	2.097	8.438	8.438	0.228	1.602
0.170	0.170	0.541	1.157	10.205	2.138	9.904	9.904	0.241	1.612
0.180	0.180	0.648	1.426	11.689	2.201	11.370	11.370	0.255	1.625
0.190	0.190	0.769	1.751	13.173	2.278	12.837	12.837	0.271	1.641
0.200	0.200	0.905	2.139	14.656	2.364	14.303	14.303	0.287	1.658
0.210	0.210	1.055	2.591	16.140	2.457	15.769	15.769	0.304	1.674
0.220	0.220	1.220	3.114	17.623	2.552	17.235	17.235	0.321	1.691
0.230	0.230	1.400	3.710	19.107	2.651	18.701	18.701	0.339	1.708
0.240	0.240	1.594	4.383	20.590	2.750	20.167	20.167	0.358	1.725
0.250	0.250	1.803	5.139	22.074	2.850	21.634	21.634	0.376	1.741
0.260	0.260	2.027	5.980	23.557	2.950	23.100	23.100	0.395	1.756
0.270	0.270	2.265	6.910	25.041	3.051	24.566	24.566	0.415	1.771
0.280	0.280	2.518	7.933	26.524	3.151	26.032	26.032	0.434	1.786
0.290	0.290	2.786	9.053	28.008	3.250	27.498	27.498	0.454	1.800
0.300	0.300	3.068	10.274	29.491	3.349	28.965	28.965	0.474	1.814
0.310	0.310	3.365	11.599	30.975	3.447	30.431	30.431	0.495	1.827
0.320	0.320	3.677	13.031	32.458	3.544	31.897	31.897	0.515	1.841
0.330	0.330	3.996	14.963	32.479	3.745	31.900	31.900	0.548	1.866
0.340	0.340	4.315	17.000	32.499	3.940	31.903	31.903	0.581	1.889
0.350	0.350	4.634	19.138	32.519	4.130	31.906	31.906	0.615	1.911
0.360	0.360	4.953	21.376	32.539	4.316	31.909	31.909	0.650	1.931
0.370	0.370	5.272	23.710	32.559	4.498	31.912	31.912	0.685	1.951
0.380	0.380	5.591	26.140	32.580	4.675	31.915	31.915	0.720	1.969
0.390	0.390	5.910	28.662	32.600	4.850	31.918	31.918	0.756	1.987

Intersection Girona Ave
Cambrils Drive - Q=29.7
cfs
E=0.48'<0.87'
D=0.31'

0.400	0.400	6.229	31.275	32.620	5.021	31.921	31.921	0.792	2.004		
0.410	0.410	6.548	33.978	32.640	5.189	31.924	31.924	0.829	2.020		
0.420	0.420	6.868	36.768	32.661	5.354	31.927	31.927	0.866	2.035		
0.430	0.430	7.187	39.644	32.681	5.516	31.930	31.930	0.903	2.050		
0.440	0.440	7.506	42.606	32.701	5.676	31.933	31.933	0.941	2.064		
0.450	0.450	7.826	45.651	32.721	5.833	31.936	31.936	0.979	2.078		
0.460	0.460	8.145	48.778	32.742	5.989	31.939	31.939	1.018	2.091		
0.470	0.470	8.464	51.986	32.762	6.142	31.942	31.942	1.057	2.103		
0.480	0.480	8.784	55.274	32.782	6.293	31.945	31.945	1.096	2.116		
0.490	0.490	9.103	58.641	32.802	6.442	31.948	31.948	1.135	2.127		
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOPWID	TOTAL	FROUDE		
INC	AREA	RATE	PER	VEL	PLUS	WATER	ENERGY	NO.			
FT.	SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS		(FT)				
0.500	0.500	9.423	62.085	32.822	6.589	31.952	31.952	1.175	2.139		
0.510	0.510	9.742	65.607	32.843	6.734	31.955	31.955	1.215	2.150		
0.520	0.520	10.062	69.204	32.863	6.878	31.958	31.958	1.256	2.161		
0.530	0.530	10.382	72.876	32.883	7.020	31.961	31.961	1.296	2.171		
0.540	0.540	10.701	76.623	32.903	7.160	31.964	31.964	1.337	2.182		
0.550	0.550	11.021	80.442	32.924	7.299	31.967	31.967	1.379	2.192		
0.560	0.560	11.341	84.334	32.944	7.437	31.970	31.970	1.420	2.201		
0.570	0.570	11.660	88.298	32.964	7.573	31.973	31.973	1.462	2.211		
0.580	0.580	11.980	92.332	32.984	7.707	31.976	31.976	1.504	2.220		
0.590	0.590	12.300	96.437	33.005	7.841	31.979	31.979	1.546	2.229		
0.600	0.600	12.620	100.611	33.025	7.973	31.982	31.982	1.589	2.238		
0.610	0.610	12.939	104.853	33.045	8.103	31.985	31.985	1.631	2.246		
0.620	0.620	13.259	109.164	33.065	8.233	31.988	31.988	1.674	2.254		
0.630	0.630	13.579	113.543	33.085	8.362	31.991	31.991	1.717	2.263		
0.640	0.640	13.899	117.988	33.106	8.489	31.994	31.994	1.761	2.271		
0.650	0.650	14.219	122.500	33.126	8.615	31.997	31.997	1.804	2.278		
0.660	0.660	14.539	127.077	33.146	8.740	32.000	32.000	1.848	2.286		
0.670	0.670	14.864	129.259	34.146	8.696	33.000	33.000	1.846	2.284		
0.680	0.680	15.199	131.593	35.147	8.658	34.000	34.000	1.846	2.283		
0.690	0.690	15.544	134.078	36.147	8.626	35.000	35.000	1.847	2.282		
0.700	0.700	15.899	136.709	37.147	8.599	36.000	36.000	1.850	2.281		
0.710	0.710	16.264	139.487	38.147	8.576	37.000	37.000	1.854	2.281		
0.720	0.720	16.639	142.410	39.147	8.559	38.000	38.000	1.859	2.280		
0.730	0.730	17.024	145.477	40.148	8.545	39.000	39.000	1.866	2.280		
0.740	0.740	17.419	148.687	41.148	8.536	40.000	40.000	1.873	2.280		
0.750	0.750	17.824	152.039	42.148	8.530	41.000	41.000	1.882	2.281		
0.760	0.760	18.239	155.534	43.148	8.528	42.000	42.000	1.891	2.281		
0.770	0.770	18.664	159.170	44.148	8.528	43.000	43.000	1.901	2.282		
0.780	0.780	19.099	162.949	45.149	8.532	44.000	44.000	1.912	2.283		
0.790	0.790	19.544	166.871	46.149	8.538	45.000	45.000	1.924	2.284		
0.800	0.800	19.999	170.935	47.149	8.547	46.000	46.000	1.936	2.285		
0.810	0.810	20.464	175.142	48.149	8.559	47.000	47.000	1.949	2.287		
0.820	0.820	20.939	179.492	49.149	8.572	48.000	48.000	1.963	2.288		
0.830	0.830	21.424	183.987	50.150	8.588	49.000	49.000	1.977	2.290		
0.840	0.840	21.919	188.627	51.150	8.606	50.000	50.000	1.992	2.291		
0.850	0.850	22.424	193.412	52.150	8.625	51.000	51.000	2.007	2.293		
0.860	0.860	22.939	198.344	53.150	8.647	52.000	52.000	2.023	2.295		

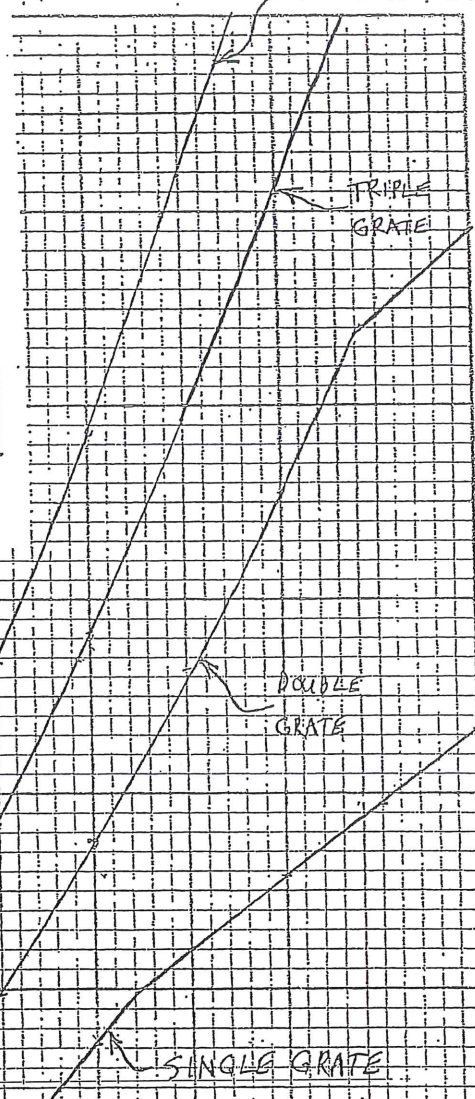
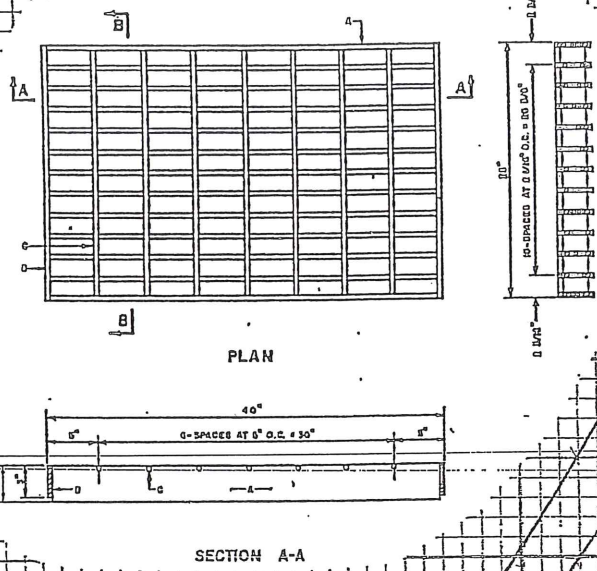
90
85
80
75
70
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45
40
35
30
25
20
15
10
5
0

60" WING 40" @ TC
18.5" 18.5" 35.5"
GRATE OPEN AREA - 7.06 SF / GRATE
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): $11(h-0.83)^{1.5}$	ADD TO 2): $22(h-0.83)^{1.5}$	ADD TO 2): $33(h-0.83)^{1.5}$	ADD TO 2): $44(h-0.83)^{1.5}$

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

IN2-IN3



$Q_{100} = 14.85 \text{ cfs}$

$D = 0.55'$
 HEAD (h) IN FEET
 (IN 2, IN 3)

TC 0.83'

BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET _____ OF _____
 PROJECT NO. _____ BY JPK DATE 4/9/92
 SUBJECT DRAIN CURVE FOR TRIPLE GRATE _____

47' ROW - 28' F-F

MANNING'S N = 0.017 SLOPE = 0.045

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	0.9	4.0	11.6	0.1	7.0	37.5	0.0
2.0	9.5	0.7	5.0	23.5	0.3	8.0	37.6	0.7
3.0	9.6	0.0	6.0	35.5	0.1	9.0	47.0	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	0.002	0.001	0.341	0.523	0.323	0.014
0.020	0.020	0.006	0.005	0.682	0.830	0.646	0.031
0.030	0.030	0.015	0.016	1.023	1.088	0.969	0.048
0.040	0.040	0.026	0.034	1.363	1.318	1.292	0.067
0.050	0.050	0.040	0.062	1.704	1.530	1.615	0.086
0.060	0.060	0.058	0.100	2.045	1.727	1.938	0.106
0.070	0.070	0.079	0.152	2.386	1.914	2.261	0.127
0.080	0.080	0.103	0.216	2.727	2.093	2.584	0.148
0.090	0.090	0.131	0.296	3.068	2.263	2.907	0.170
0.100	0.100	0.162	0.392	3.409	2.428	3.230	0.192
0.110	0.110	0.195	0.506	3.749	2.587	3.553	0.214
0.120	0.120	0.233	0.638	4.090	2.742	3.876	0.237
0.130	0.130	0.274	0.731	5.042	2.664	4.810	0.240
0.140	0.140	0.330	0.831	6.604	2.517	6.355	0.239
0.150	0.150	0.402	1.000	8.166	2.489	7.900	0.246
0.160	0.160	0.488	1.232	9.729	2.523	9.445	0.259
0.170	0.170	0.590	1.531	11.291	2.593	10.990	0.275
0.180	0.180	0.708	1.901	12.853	2.685	12.535	0.292
0.190	0.190	0.841	2.347	14.416	2.790	14.080	0.311
0.200	0.200	0.990	2.873	15.978	2.903	15.625	0.331
0.210	0.210	1.154	3.486	17.540	3.021	17.170	0.352
0.220	0.220	1.333	4.190	19.102	3.143	18.715	0.374
0.230	0.230	1.528	4.992	20.665	3.267	20.260	0.396
0.240	0.240	1.738	5.895	22.227	3.391	21.805	0.419
0.250	0.250	1.964	6.906	23.789	3.516	23.350	0.442
0.260	0.260	2.205	8.028	25.352	3.640	24.895	0.466
0.270	0.270	2.462	9.268	26.914	3.765	26.440	0.490
0.280	0.280	2.734	10.630	28.476	3.888	27.985	0.515
0.290	0.290	3.014	12.499	28.496	4.147	27.988	0.558
0.300	0.300	3.294	14.486	28.517	4.398	27.991	0.601
0.310	0.310	3.574	16.588	28.537	4.642	27.994	0.645
0.320	0.320	3.854	18.801	28.557	4.879	27.997	0.690
0.330	0.330	4.134	21.122	28.577	5.110	28.000	0.736
0.340	0.340	4.414	23.549	28.598	5.335	28.003	0.783
0.350	0.350	4.694	26.079	28.618	5.556	28.006	0.830
0.360	0.360	4.974	28.710	28.638	5.772	28.009	0.878
0.370	0.370	5.254	31.441	28.658	5.984	28.012	0.927
0.380	0.380	5.534	34.268	28.678	6.192	28.015	0.976
0.390	0.390	5.814	37.190	28.699	6.396	28.018	1.026
0.400	0.400	6.094	40.206	28.719	6.597	28.021	1.077

IN 1 Upstream (South)
on Tarragona St
Q=11.04 cfs
E=0.26'<0.87'
D=0.16'

Intersection Mataro Rd
Cambrils Drive -
Q=22.08 cfs
E=0.40'<0.87'
D=0.23'

IN 1 Upstream (North)
on Tarragona St
Q=24.86 cfs
E=0.45'<0.87'
D=0.26'

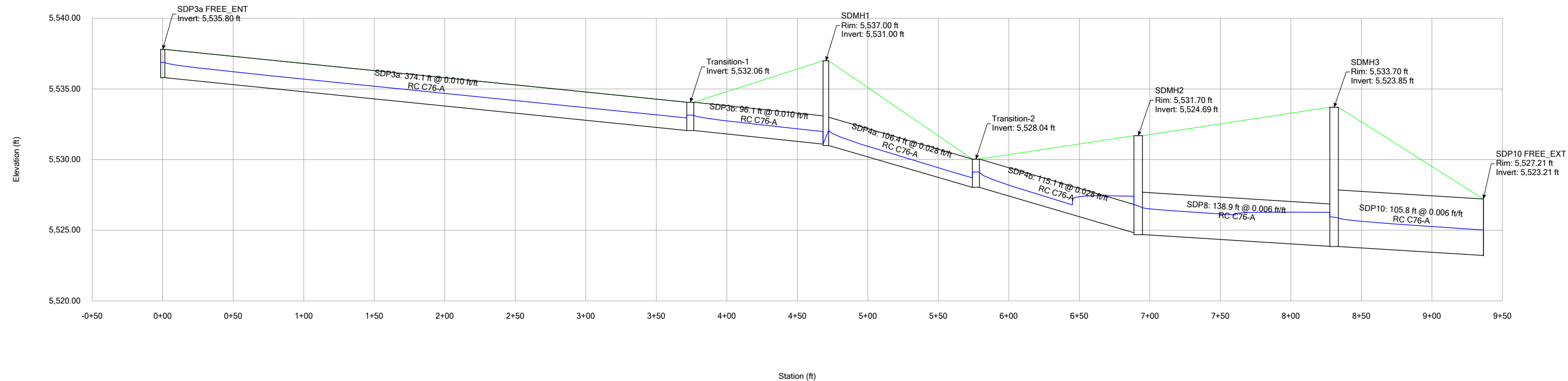
0.410	0.410	6.375	43.314	28.739	6.795	28.024	1.128	
0.420	0.420	6.655	46.512	28.759	6.989	28.027	1.180	
0.430	0.430	6.935	49.799	28.780	7.181	28.030	1.232	
0.440	0.440	7.216	53.174	28.800	7.369	28.033	1.285	
0.450	0.450	7.496	56.635	28.820	7.555	28.036	1.338	
0.460	0.460	7.776	60.182	28.840	7.739	28.039	1.392	
0.470	0.470	8.057	63.812	28.861	7.920	28.042	1.446	
0.480	0.480	8.337	67.525	28.881	8.099	28.045	1.500	
0.490	0.490	8.618	71.320	28.901	8.276	28.048	1.555	
WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	TOTAL	
INC	AREA	RATE	PER	VEL	PLUS	ENERGY		
FT.	SQ.FT.	(CFS)	(FT)	(FPS)	OBSTRUCTIONS	(FT)		
0.500	0.500	8.898	75.196	28.921	8.451	28.052	1.611	
0.510	0.510	9.179	79.152	28.941	8.623	28.055	1.667	
0.520	0.520	9.459	83.186	28.962	8.794	28.058	1.723	
0.530	0.530	9.740	87.299	28.982	8.963	28.061	1.780	
0.540	0.540	10.020	91.489	29.002	9.130	28.064	1.837	
0.550	0.550	10.301	95.754	29.022	9.296	28.067	1.894	
0.560	0.560	10.582	100.096	29.043	9.459	28.070	1.952	
0.570	0.570	10.862	104.512	29.063	9.621	28.073	2.010	
0.580	0.580	11.143	109.002	29.083	9.782	28.076	2.068	
0.590	0.590	11.424	113.565	29.103	9.941	28.079	2.127	
0.600	0.600	11.705	118.201	29.124	10.098	28.082	2.186	
0.610	0.610	11.986	122.908	29.144	10.255	28.085	2.246	
0.620	0.620	12.266	127.687	29.164	10.409	28.088	2.305	
0.630	0.630	12.547	132.536	29.184	10.563	28.091	2.365	
0.640	0.640	12.828	137.455	29.204	10.715	28.094	2.426	
0.650	0.650	13.109	142.443	29.225	10.866	28.097	2.486	
0.660	0.660	13.390	147.500	29.245	11.015	28.100	2.547	
0.670	0.670	13.676	149.417	30.240	10.925	29.095	2.527	
0.680	0.680	13.972	151.538	31.235	10.846	30.089	2.510	
0.690	0.690	14.278	153.857	32.230	10.776	31.084	2.496	
0.700	0.700	14.594	156.369	33.225	10.715	32.079	2.486	
0.710	0.710	14.920	159.070	34.220	10.662	33.074	2.478	
0.720	0.720	15.255	161.956	35.215	10.616	34.068	2.473	
0.730	0.730	15.601	165.024	36.209	10.578	35.063	2.470	
0.740	0.740	15.957	168.272	37.204	10.546	36.058	2.470	
0.750	0.750	16.322	171.699	38.199	10.519	37.053	2.471	
0.760	0.760	16.698	175.301	39.194	10.499	38.047	2.474	
0.770	0.770	17.083	179.080	40.189	10.483	39.042	2.479	
0.780	0.780	17.478	183.032	41.184	10.472	40.037	2.486	
0.790	0.790	17.884	187.159	42.179	10.465	41.032	2.494	
0.800	0.800	18.299	191.460	43.174	10.463	42.026	2.503	
0.810	0.810	18.724	195.933	44.169	10.464	43.021	2.513	
0.820	0.820	19.160	200.581	45.164	10.469	44.016	2.525	
0.830	0.830	19.605	205.402	46.159	10.477	45.011	2.537	
0.840	0.840	20.060	210.397	47.154	10.489	46.005	2.551	

APPENDIX C: STORM DRAIN PIPE ANALYSIS

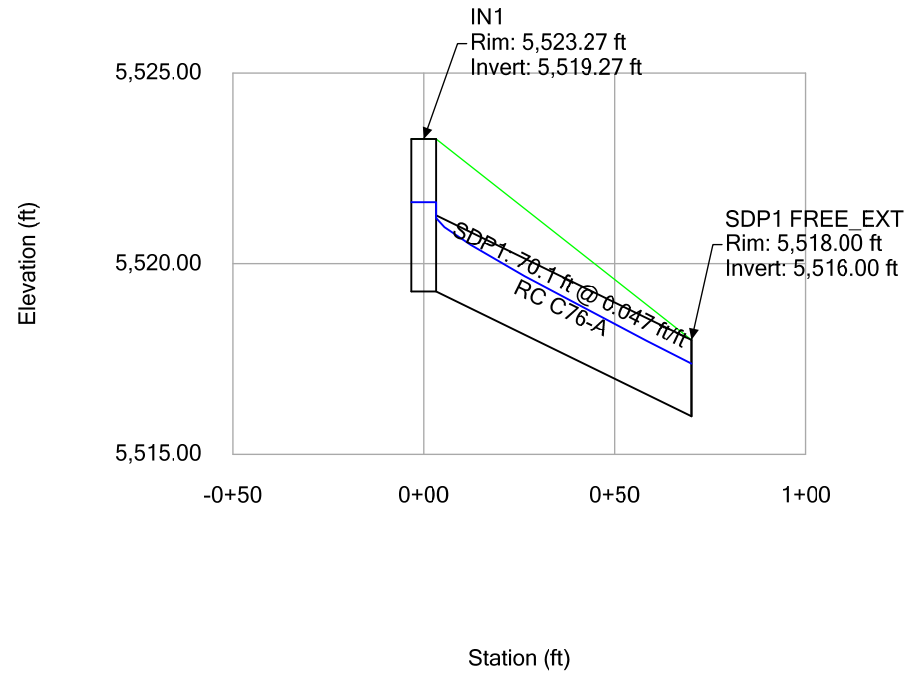
Label	Flow	Velocity	Hydraulic Grade Line (In)
SDP1	35.90	17.00	5,521.20
SDP2	3.36	5.98	5,518.93
SDP3a	9.25	6.84	5,536.89
SDP3b	9.25	6.84	5,533.15
SDP4a	9.25	9.94	5,532.09
SDP4b	9.25	9.94	5,529.12
SDP6	14.85	16.23	5,527.47
SDP7	10.58	14.57	5,527.46
SDP8	34.68	7.84	5,526.61
SDP9	11.41	3.63	5,526.91
SDP10	46.09	8.44	5,525.88

Hydraulic Grade Line	Depth (In)	Depth (Out)
5,517.38	1.93	1.38
5,515.47	0.64	0.47
5,532.95	1.09	0.89
5,531.99	1.09	0.89
5,529.12	1.09	1.09
5,527.41	1.09	2.58
5,526.82	1.40	1.55
5,527.37	1.43	2.10
5,526.27	1.91	2.41
5,526.55	2.21	2.69
5,525.02	2.03	1.80

Profile Report
Engineering Profile - Profile - 1 (20190248.stsw)



Profile Report Engineering Profile - Profile - 2 (20190248.stsw)



APPENDIX D:
DETENTION POND ANALYSIS

Detention Pond Volume Calculations

NOTE: Blue shaded cells require user input, all other cells should not be edited.

ASSUMPTIONS:

1. Area less than 40 acres (simplified hydrograph method).
2. 100-year, 6-hour storm event

Catalonia at the Trails

Offsite Pond 1

Peak Flow per Acre - DPM Section 22.2 Table A-9

Zone	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.7
3	1.87	2.6	3.45	5.02
4	2.2	2.92	3.73	5.25

Basin Name : Offsite Basin 1

Choose Zone (1 - 4) 1

Basin Area = (acres) 30.74

Exist Conditions				Proposed Conditions			
Treatment	Percentage	Area	Q (cfs)	Treatment	Percentage	Area	Q (cfs)
A	100.0%	30.74	39.65	A	100.0%	30.74	39.65
B	0.0%	0.00	0.00	B	0.0%	0.00	0.00
C	0.0%	0.00	0.00	C	0.0%	0.00	0.00
D	0.0%	0.00	0.00	D	0.0%	0.00	0.00
Q Peak - exist. =			39.65	Peak Q Developed =			39.65

Use my calculated exist cond. flow as the peak controlled discharge (1 = yes, or N) ??

n

If No, what is the maximum allowable discharge ?

9.25

Excess Precipitation - DPM Section 22.2 Table A-8

Zone	A	B	C	D
1	0.44	0.67	0.99	1.97
2	0.53	0.78	1.13	2.12
3	0.66	0.92	1.29	2.36
4	0.8	1.08	1.46	2.64

Determine Developed E (avg excess precipitation for the developed basin)

$$\begin{aligned}\%A \times E &= 0.44 \\ \%B \times E &= 0.00 \\ \%C \times E &= 0.00 \\ \%D \times E &= 0.00 \\ \text{Avg E(in)} &= 0.44\end{aligned}$$

Determine Tb (hours)

$$T_b = 0.719$$

Determine Tc (Note: Tc is assumed to be 0.2 hours, this should be checked using DPM 22.2.B.2)

$$T_c = 0.2$$

Determine Tp and Duration of Peak (hours)

$$T_p = 0.273333$$

$$\text{Peak Duration} = 0$$

Compute the required retention volume using the simple hydrograph, Figure A-3 in DPM Section 22.2

Time to Control Q (hrs) = 0.064
Time to end of Control Q (hrs)= 0.614786
Duration of Control Q (hrs)= 0.551

Required Detention Volume (CF) = 30156.78376

0.6923045 AC-ft

Required Volume (10-day)= 30156.78376

0.6923045

Temporary Pond 1

Peak Flow per Acre - DPM Section 22.2 Table A-9

Zone	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.7
3	1.87	2.6	3.45	5.02
4	2.2	2.92	3.73	5.25

Basin Name : Temporary Pond 1

Choose Zone (1 - 4) 1

Basin Area = (acres) 9.14

Exist Conditions				Proposed Conditions			
Treatment	Percentage	Area	Q (cfs)	Treatment	Percentage	Area	Q (cfs)
A	100.0%	9.14	11.79	A	0.0%	0.00	0.00
B	0.0%	0.00	0.00	B	29.7%	2.71	5.51
C	0.0%	0.00	0.00	C	29.7%	2.71	7.79
D	0.0%	0.00	0.00	D	40.6%	3.71	16.22
Q Peak - exist.=			11.79	Peak Q Developed=			29.52

Use my calculated exist cond. flow as the peak controlled discharge (1 = yes, or N) ?? n

If No, what is the maximum allowable discharge ? 0

Excess Precipitation - DPM Section 22.2 Table A-8

Zone	A	B	C	D
1	0.44	0.67	0.99	1.97
2	0.53	0.78	1.13	2.12
3	0.66	0.92	1.29	2.36
4	0.8	1.08	1.46	2.64

Determine Developed E (avg excess precipitation for the developed basin)

%A x E = 0.00
%B x E = 0.20
%C x E = 0.29
%D x E = 0.80
Avg E(in) = 1.29

Determine Tb (hours)

Tb = 0.742

Determine Tc (Note: Tc is assumed to be 0.2 hours, this should be checked using DPM 22.2.B.2)

Tc = 0.2

Determine Tp and Duration of Peak (hours)

Tp = 0.2395

Peak Duration = 0.1015

Compute the required retention volume using the simple hydrograph, Figure A-3 in DPM Section 22.2

Time to Control Q (hrs) = 0.000

Time to end of Control Q (hrs)= 0.741973

Duration of Control Q (hrs)= 0.742

Required Detention Volume (CF) = 44815.47635

1.0288218 AC-ft

Required Volume (10-day)= 64616.88968

1.4833997

Pond B

Peak Flow per Acre - DPM Section 22.2 Table A-9

Zone	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.7
3	1.87	2.6	3.45	5.02
4	2.2	2.92	3.73	5.25

Basin Name : Pond B

Choose Zone (1 - 4) 1

Basin Area = (acres) 11.04

Exist Conditions				Proposed Conditions			
Treatment	Percentage	Area	Q (cfs)	Treatment	Percentage	Area	Q (cfs)
A	100.0%	11.04	14.24	A	0.0%	0.00	0.00
B	0.0%	0.00	0.00	B	29.7%	3.28	6.66
C	0.0%	0.00	0.00	C	29.7%	3.28	9.41
D	0.0%	0.00	0.00	D	40.6%	4.48	19.59
Q Peak - exist.=			14.24	Peak Q Developed=			35.65

Use my calculated exist cond. flow as the peak controlled discharge (1 = yes, or N) ??

N

If No, what is the maximum allowable discharge ?

3.36

Excess Precipitation - DPM Section 22.2 Table A-8

Zone	A	B	C	D
1	0.44	0.67	0.99	1.97
2	0.53	0.78	1.13	2.12
3	0.66	0.92	1.29	2.36
4	0.8	1.08	1.46	2.64

Determine Developed E (avg excess precipitation for the developed basin)

%A x E = 0.00

%B x E = 0.20

%C x E = 0.29

%D x E = 0.80

Avg E(in) = 1.29

Determine Tb (hours)

$$T_b = 0.742$$

Determine Tc (Note: Tc is assumed to be 0.2 hours, this should be checked using DPM 22.2.B.2)

$$T_c = 0.2$$

Determine Tp and Duration of Peak (hours)

$$T_p = 0.2395$$

$$\text{Peak Duration} = 0.1015$$

Compute the required retention volume using the simple hydrograph, Figure A-3 in DPM Section 22.2

$$\text{Time to Control Q (hrs)} = 0.023$$

$$\text{Time to end of Control Q (hrs)} = 0.704186$$

$$\text{Duration of Control Q (hrs)} = 0.682$$

Required Detention Volume (CF) = 45521.73868

1.0450353 AC-ft

Required Volume (10-day)= 69439.41954

1.5941097

Woodmont Temp Pond

Peak Flow per Acre - DPM Section 22.2 Table A-9

Zone	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.7
3	1.87	2.6	3.45	5.02
4	2.2	2.92	3.73	5.25

Basin Name : Basin A1 from DMP

Choose Zone (1 - 4)

1

Basin Area = (acres)

15.5

Exist Conditions				Proposed Conditions			
Treatment	Percentage	Area	Q (cfs)	Treatment	Percentage	Area	Q (cfs)
A	100.0%	15.50	20.00	A	100.0%	15.50	20.00
B	0.0%	0.00	0.00	B	0.0%	0.00	0.00
C	0.0%	0.00	0.00	C	0.0%	0.00	0.00
D	0.0%	0.00	0.00	D	0.0%	0.00	0.00
Q Peak - exist.=			20.00	Peak Q Developed=			20.00

Use my calculated exist cond. flow as the peak controlled discharge (1 = yes, or N) ??

N

If No, what is the maximum allowable discharge ?

11.41

Excess Precipitation - DPM Section 22.2 Table A-8

Zone	A	B	C	D
1	0.44	0.67	0.99	1.97
2	0.53	0.78	1.13	2.12
3	0.66	0.92	1.29	2.36

4	0.8	1.08	1.46	2.64
---	-----	------	------	------

Determine Developed E (avg excess precipitation for the developed basin)

$$\begin{aligned}\%A \times E &= 0.44 \\ \%B \times E &= 0.00 \\ \%C \times E &= 0.00 \\ \%D \times E &= 0.00 \\ \text{Avg } E(\text{in}) &= 0.44\end{aligned}$$

Determine Tb (hours)

$$T_b = 0.719$$

Determine Tc (Note: Tc is assumed to be 0.2 hours, this should be checked using DPM 22.2.B.2)

$$T_c = 0.2$$

Determine Tp and Duration of Peak (hours)

$$\begin{aligned}T_p &= 0.273333 \\ \text{Peak Duration} &= 0\end{aligned}$$

Compute the required retention volume using the simple hydrograph, Figure A-3 in DPM Section 22.2

$$\begin{aligned}\text{Time to Control Q (hrs)} &= 0.156 \\ \text{Time to end of Control Q (hrs)} &= 0.46454 \\ \text{Duration of Control Q (hrs)} &= 0.309\end{aligned}$$

Required Detention Volume (CF) = 4768.251976

0.109464 AC-ft

Required Volume (10-day)= 4768.251976

0.109464

User Input is in Red

Pond Volume Calculation - Average End Area Method

SUBJECT: Valle Prado
DATE: 3/8/2019
BY: JJL

Offsite Pond 1								
			AVG.			TOTAL		TOTAL
ELEV.	AREA	AREA	AREA	HEIGHT	VOLUME	VOLUME		VOLUME
(FT)	SF	(AC)	(AC)	(FT)	(AC-FT)	(AC-FT)		CFS
40	446.9	0.010				0.000		
			0.092	0	0.000			
40	7564	0.174				0.000		
			0.198	1	0.198			
41	9681	0.222				0.198		
			0.248	1	0.248			
42	11897	0.273				0.446		
			0.3	1	0.300			
43	14214	0.326				0.745		32467
Temporary Pond 1								
			AVG.			TOTAL		
ELEV.	AREA	AREA	AREA	HEIGHT	VOLUME	VOLUME		
(FT)	SF	(AC)	(AC)	(FT)	(AC-FT)	(AC-FT)		
23	17511	0.402				0.00		
			0.439	1	0.4390			
24	20733	0.476				0.44		
			0.511	1	0.511			
25	23751	0.545				0.95		
			0.581	1	0.581			
26	26880	0.617				1.53		66679.5
Pond B								
			AVG.			TOTAL		
ELEV.	AREA	AREA	AREA	HEIGHT	VOLUME	VOLUME		
(FT)	SF	(AC)	(AC)	(FT)	(AC-FT)	(AC-FT)		
16	11835	0.272				0.00		
			0.301	1	0.301			
17	14375	0.330				0.30		

which is greater than the required volume of 30157 CF

which is greater than the required volume of 64617 CF

			0.36	1	0.360			
18	17015	0.391				0.66		
			0.423	1	0.423			
19	19834	0.455				1.08	47224.5	which is greater than the required volume of 45521.7 CF

Pond A5								
			AVG.			TOTAL		
ELEV.	AREA	AREA	AREA	HEIGHT	VOLUME	VOLUME		
(FT)	SF	(AC)	(AC)	(FT)	(AC-FT)	(AC-FT)		
		0.000				0.0000		
			0.334	10	3.3425			
9	29120	0.669				0.00		
			0.717	1	0.7174			
10	33379	0.766				0.72		
			0.816	1	0.8162			
11	37727	0.866				1.53		
			0.918	1	0.9181			
12	42254	0.970				2.45		
			1.023	1	1.0235			
13	46911	1.077				3.48	151375.5	
			1.131	1	1.131			
14	51609	1.185				4.61	200635.5	which is greater than the required volume of 4.61 Ac-ft per DMP

197320 4.52984

Woodmont Temp Pond								
			AVG.			TOTAL		
ELEV.	AREA	AREA	AREA	HEIGHT	VOLUME	VOLUME		
(FT)	SF	(AC)	(AC)	(FT)	(AC-FT)	(AC-FT)		
27	1893	0.043				0.00		
			0.158	1	0.1576			
28	11835	0.272				0.16	6864	which is greater than the required volume of 4768 CF

Conic Method for Reservoir Volumes

$$V = \frac{h}{3} \left(A_1 + A_2 + \sqrt{A_1 A_2} \right)$$

2 times th = 22025.6 cf

15 CONTOUR IF NEEDED = 11630.7 SF

APPENDIX E:
FIRST FLUSH REQUIREMENTS

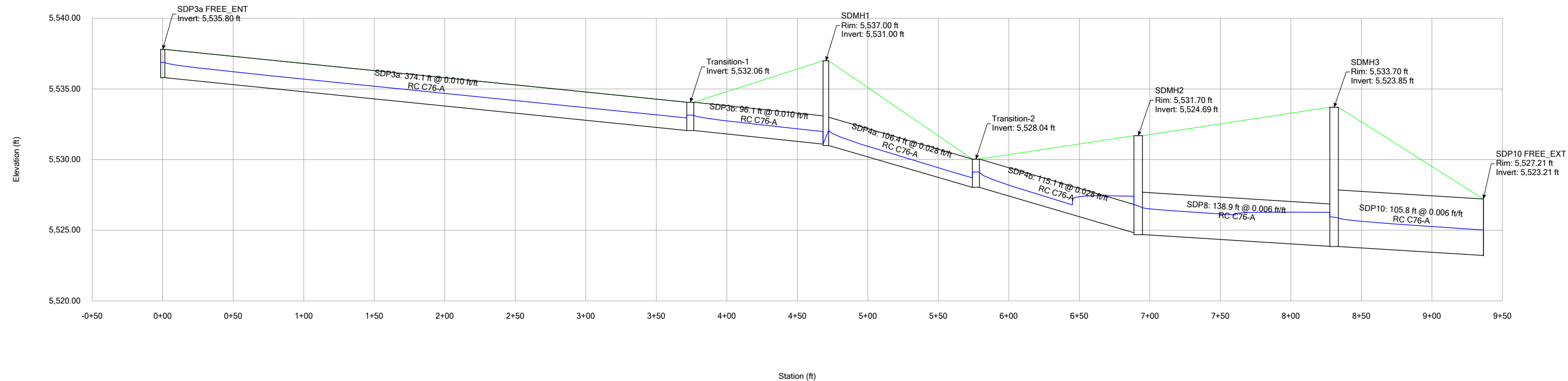
First Flush Calculations

	Area (Sq Ft)	%D	Required Volume	
Basin A	400914	40.8%	5724.456 CF	0.131 Ac-Ft
Basin B	483543	40.8%	6904.275 CF	0.159 Ac-Ft
		Total	12628.7	0.290 Ac-Ft

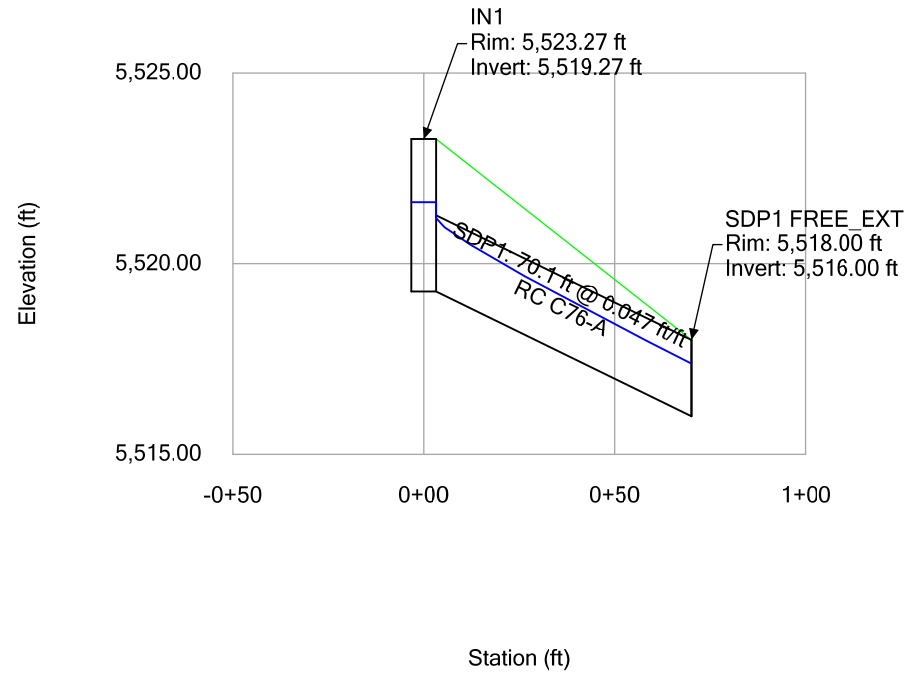
APPENDIX F: HGL CALCULATIONS

Label	Flow	Velocity	Hydraulic Grade Line (In)	Hydraulic Grade Line	Depth (In)	Depth (Out)
SDP1	35.90	17.00	5,521.20	5,517.38	1.93	1.38
SDP2	3.36	5.98	5,518.93	5,515.47	0.64	0.47
SDP3a	9.25	6.84	5,536.89	5,532.95	1.09	0.89
SDP3b	9.25	6.84	5,533.15	5,531.99	1.09	0.89
SDP4a	9.25	9.94	5,532.09	5,529.12	1.09	1.09
SDP4b	9.25	9.94	5,529.12	5,527.41	1.09	2.58
SDP6	14.85	16.23	5,527.47	5,526.82	1.40	1.55
SDP7	10.58	14.57	5,527.46	5,527.37	1.43	2.10
SDP8	34.68	7.84	5,526.61	5,526.27	1.91	2.41
SDP9	11.41	3.63	5,526.91	5,526.55	2.21	2.69
SDP10	46.09	8.44	5,525.88	5,525.02	2.03	1.80

Profile Report
Engineering Profile - Profile - 1 (20190248.stsw)



Profile Report Engineering Profile - Profile - 2 (20190248.stsw)



EXHIBITS

EXHIBIT A: PRELIMINARY PLAT

**EXHIBIT B: DEVELOPED CONDITIONS BASIN
MAP FROM DMP**

EXHIBIT C: EXISTING CONDITIONS BASIN MAP

**EXHIBIT D: PROPOSED CONDITIONS BASIN
MAP**

EXHIBIT E: STORM DRAIN NETWORK

EXHIBIT F: GRADING PLAN

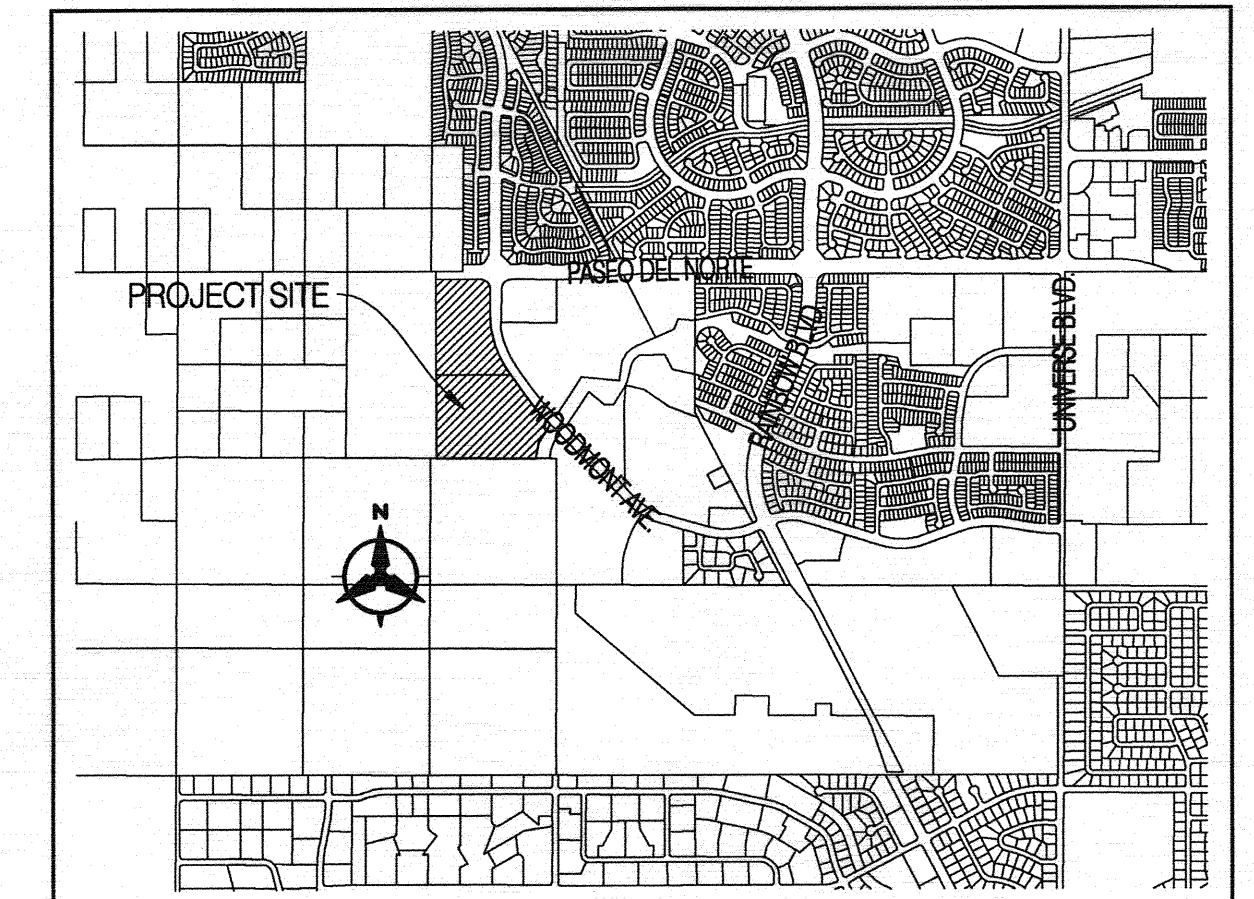
EXHIBIT A:
PRELIMINARY PLAT

PRELIMINARY PLAT CATALONIA

REPLAT OF TRACT 1 AND TRACT 2 THE TRAILS UNIT 3A

ALBUQUERQUE, NEW MEXICO

MARCH, 2019



LOCATION MAP
SCALE: 1"=2000'

Zone Atlas Index Number: C-08

PLAT IS LOCATED WITHIN TOWN OF ALAMEDA GRANT, PROJECTED SECTIONS 16 & 17, TOWNSHIP 11 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO.

SURVEY NOTES:

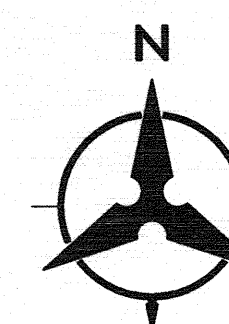
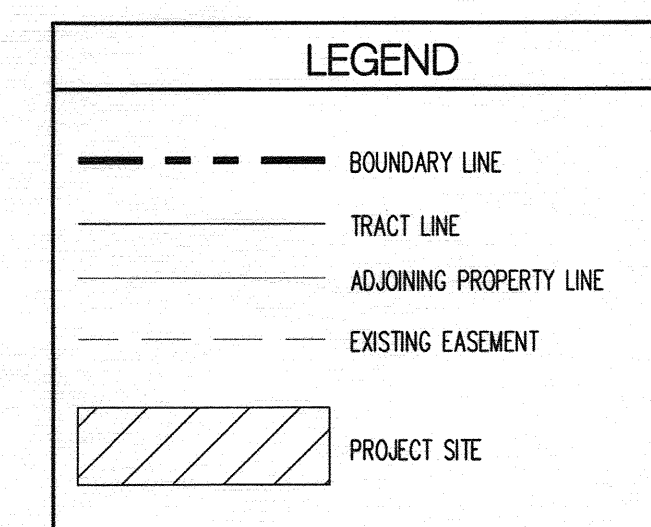
1. UNLESS OTHERWISE NOTED, ALL BOUNDARY CORNERS SHOWN THUS (●) SHALL BE MARKED BY A #5 REBAR STAMPED "HUGG, PS 9750".
2. ALL STREET CENTERLINE MONUMENTATION SHALL BE INSTALLED AT ALL CENTERLINE PC'S, PT'S, ANGLE POINTS AND STREET INTERSECTIONS AND SHOWN THUS (▲) WILL BE MARKED BY A FOUR (4") ALUMINUM CAP STAMPED "CITY OF ALBUQUERQUE CENTERLINE MONUMENTATION MARKED. DO NOT DISTURB, P.L.S. 9750".
3. THE SUBDIVISION BOUNDARY WILL BE TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM AS SHOWN.
4. BASIS OF BEARINGS WILL BE NEW MEXICO STATE PLANE GRID BEARINGS.
5. DISTANCES SHALL BE GROUND DISTANCES.
6. MANHOLES WILL BE OFFSET AT ALL POINTS OF CURVATURE POINTS OF TANGENCY, STREET INTERSECTIONS AND ALL OTHER ANGLE POINTS TO ALLOW THE USE OF CENTERLINE MONUMENTATION.

APPROVED FOR MONUMENTATION AND STREET NAMES

Scott N. Rimbauer P.S. 3/28/19
CITY SURVEYOR DATE

Andrew M. Kaplan 3/28/19
DATE

PV TRAILS ALBUQUERQUE, LLC
ITS MANAGER
PV GENERAL PARTNER, LLC
ANDREW M. KAPLAN, MANAGER



100 50 0 100
SCALE: 1"=100'

SHEET 1 of 3

Bohannon & Huston
www.bhinc.com 800.877.5332

MARCH, 2019

BOUNDARY CURVE TABLE						
ID	ARC	RADIUS	DELTA	TANGENT	CHORD LENGTH	CHORD DIRECTION
C1	157.10'	100.00'	90°00'43.31"	100.02'	141.436	S44° 48' 26.34"E
C2	649.92'	1049.00'	35°29'52.79"	335.77'	639.570	S17° 33' 01.08"E
C3	317.65'	2049.00'	8°52'57.01"	159.15'	317.336	S39° 44' 25.98"E

EXISTING 98' PUBLIC R/W
DEDICATED TO THE CITY OF
ALBUQUERQUE BY PLAT FILED
MARCH 16, 2006 IN PLAT
BOOK 2006C, PAGE 85

TRACT OS-2
THE TRAILS UNIT 3A
FILED: DEC. 21, 2007
(2007C-0352)

TRACT OS-1
THE TRAILS UNIT 3A
FILED: DEC. 21, 2007
(2007C-0352)

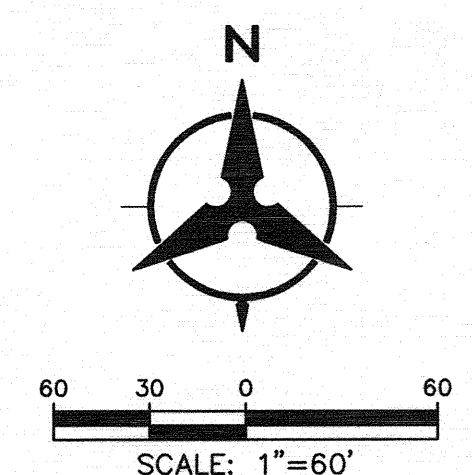
25' SANITARY SEWER
EASEMENT GRANTED TO THE
CITY OF ALBUQUERQUE WITH
THE FINAL PLAT

CATALONIA

R-1-B	ZONING
R-1-D	ZONING

TRACT 5
BLACK RANCH
UNPLATTED

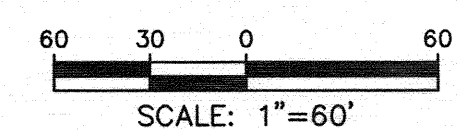
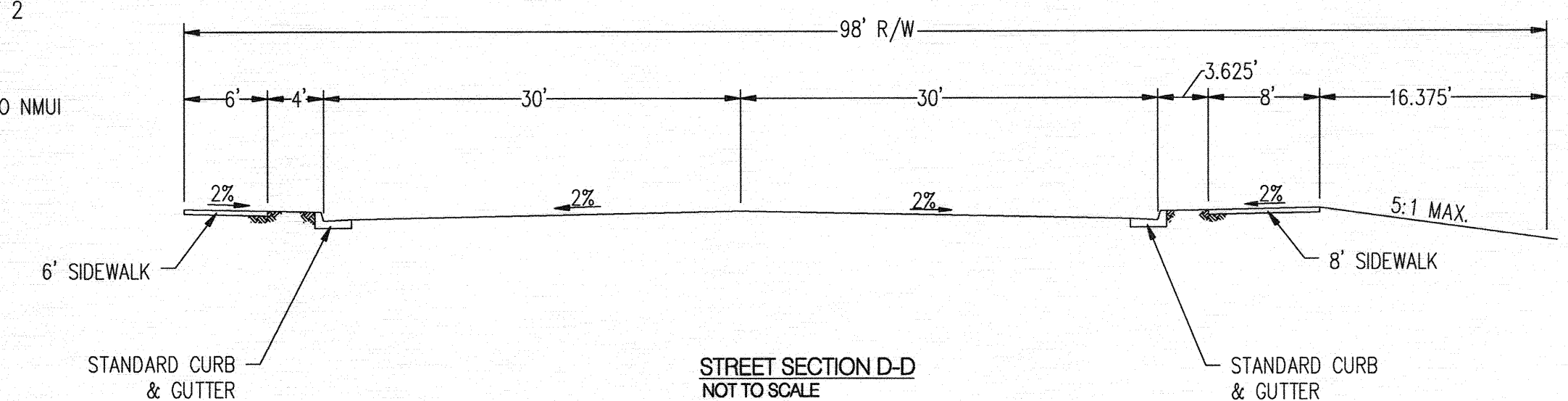
— — — — — BOUNDARY LINE
 ————— TRACT LINE
 ————— ADJOINING PROPERTY LINE
 - - - - - EXISTING EASEMENT
 - - - - - PROPOSED EASEMENT



SHEET 2 of 3

Bohannon  **Huston**
www.bhinc.com 800.877.5332

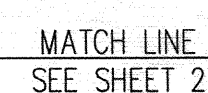
MARCH, 2019



LEGEND

	BOUNDARY LINE
	TRACT LINE
	ADJOINING PROPERTY LINE
	EXISTING EASEMENT
	PROPOSED EASEMENT

Bohannon  **Huston**
www.bhinc.com 800.877.5332



TRACT 5
BLACK RANCH
UNPLATTED

TRACT '1'
THE TRAILS UNIT 3A
FILED: DEC. 21, 2007
(2007C-0352)

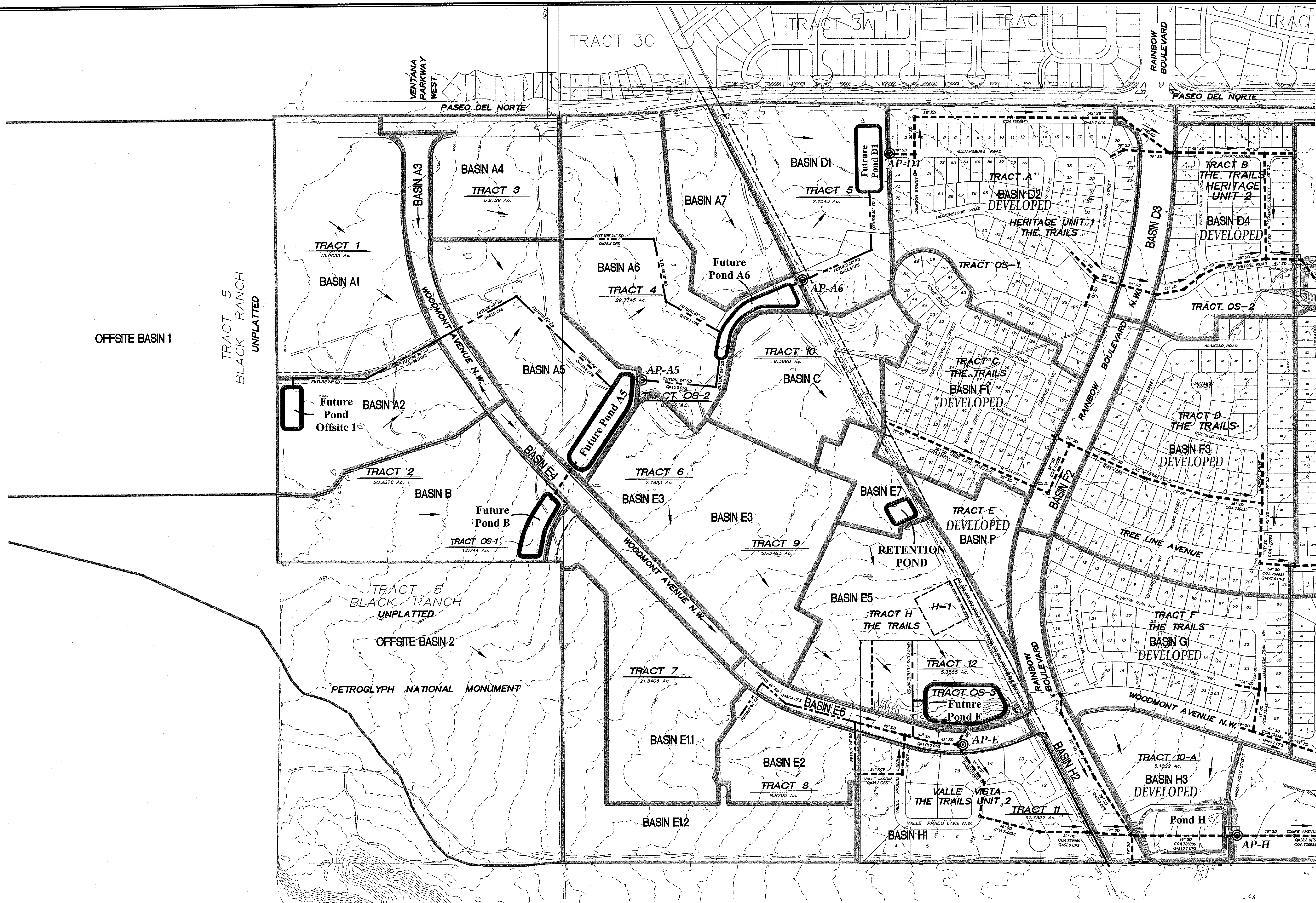
TRACT 3
THE TRAILS UNIT 3A
FILED: DEC. 21, 2007
(2007C-0352)

TRACT 4
THE TRAILS UNIT 3A
FILED: DEC. 21, 2007
(2007C-0352)

EXISTING 50' PUBLIC ROADWAY AND DRAINAGE EASEMENT
GRANTED TO THE CITY OF ALBUQUERQUE AND
EXISTING 50' PUBLIC WATER AND SANITARY SEWER EASEMENT GRANTED TO NMU
BY PLAT FILED MARCH 16, 2006 IN BOOK 2006G, PAGE 85
TO BE VACATED WITH THE FINAL PLAT (HATCHED AREA)

EXISTING 98' PUBLIC R/W
DEDICATED TO THE CITY OF
ALBUQUERQUE BY PLAT FILED
MARCH 16, 2006 IN PLAT
BOOK 2006C, PAGE 85

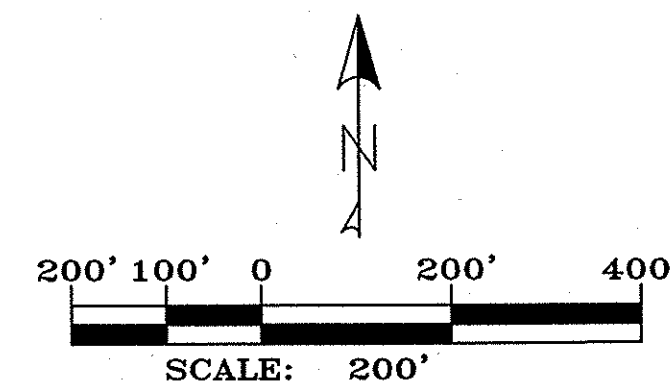
EXHIBIT B:
ORIGINAL DEVELOPED CONDITIONS BASIN MAP
FROM DMP



- NOTES:
1. STORM DRAIN SIZES BASED ON 100-YR. 24-HR. STORM FLOWS. FUTURE PROJECTS MAY BE REQUIRED TO INCREASE STORM DRAIN SIZE BASED ON 100-YR. 6-HR. STORM FLOWS.
 2. THE INTENDED FUTURE CONTRIBUTION FROM THE TRAILS UNIT 4 IS 20 CFS TO THE MAXIMUM DOWNSTREAM DISCHARGE OF 62 CFS IN UNIVERSE BLVD.

LEGEND

- ⊙ ANALYSIS POINT
- EXISTING STORM DRAIN
- FLOW DIRECTION
- - - FUTURE DEVELOPED STORM DRAIN



DATUM NAVD 1929

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UPDATE TO THE
AMENDMENT TO DMP FOR
THE TRAILS UNITS, 1, 2 AND 3
PLATE 1

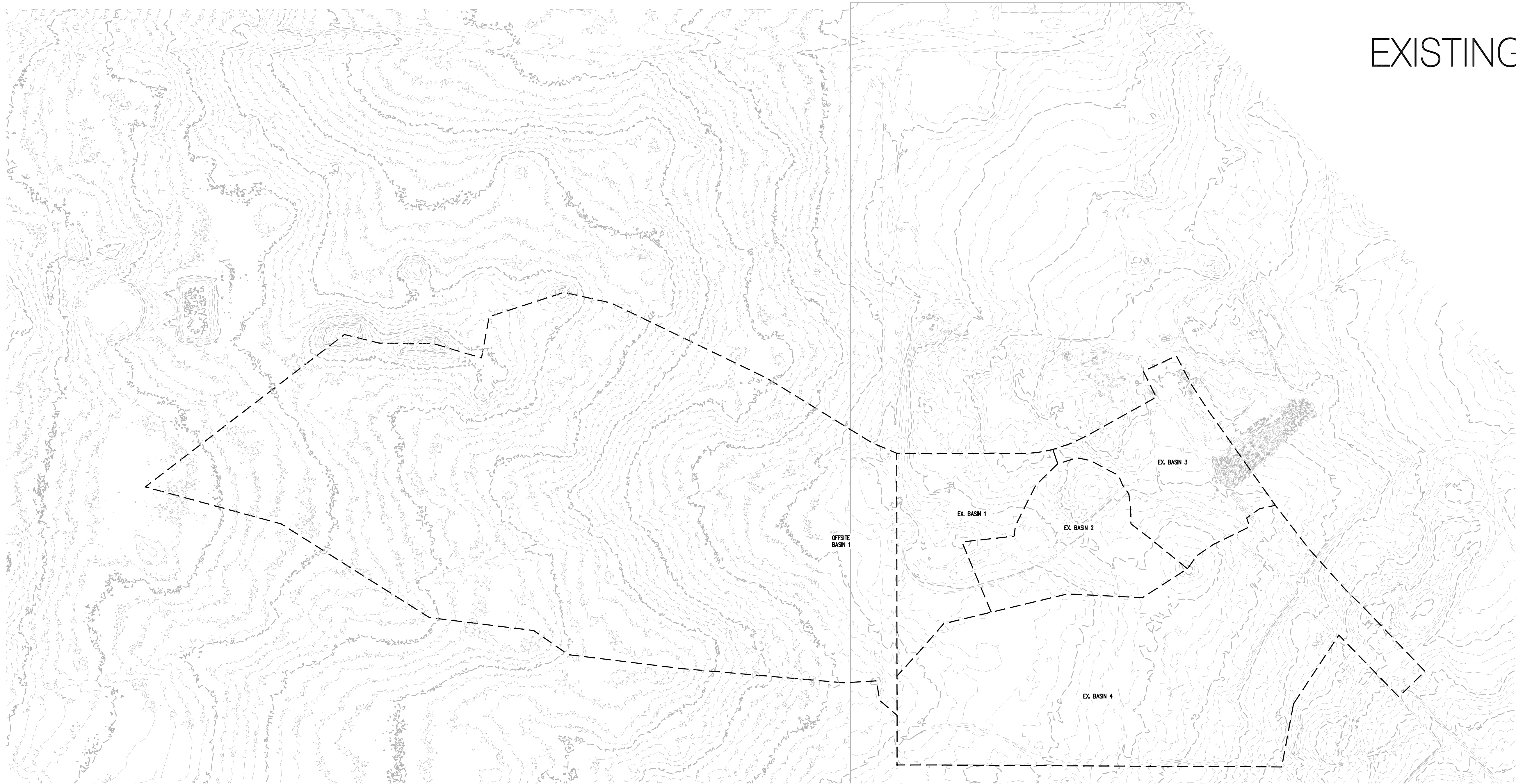
David H. Thompson
9677
PROFESSIONAL ENGINEER

EXHIBIT C:
EXISTING CONDITIONS BASIN MAP

CATALONIA SUBDIVISION

EXISTING BASINS MAP

MARCH 2019



LEGEND

BASIN BOUNDARY	
FLOW ARROW	
PROPOSED STORM DRAIN	
EXISTING STORM DRAIN	
PROPOSED STREET SLOPE OR FLOW PATH	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED STORM DRAIN INLET	

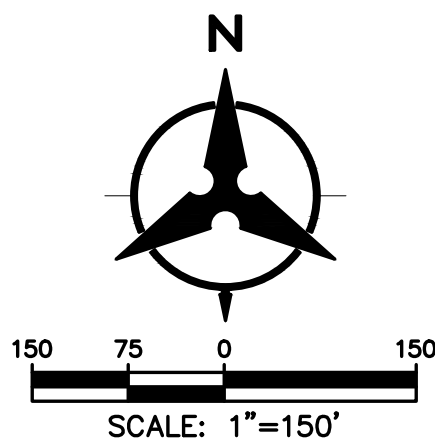
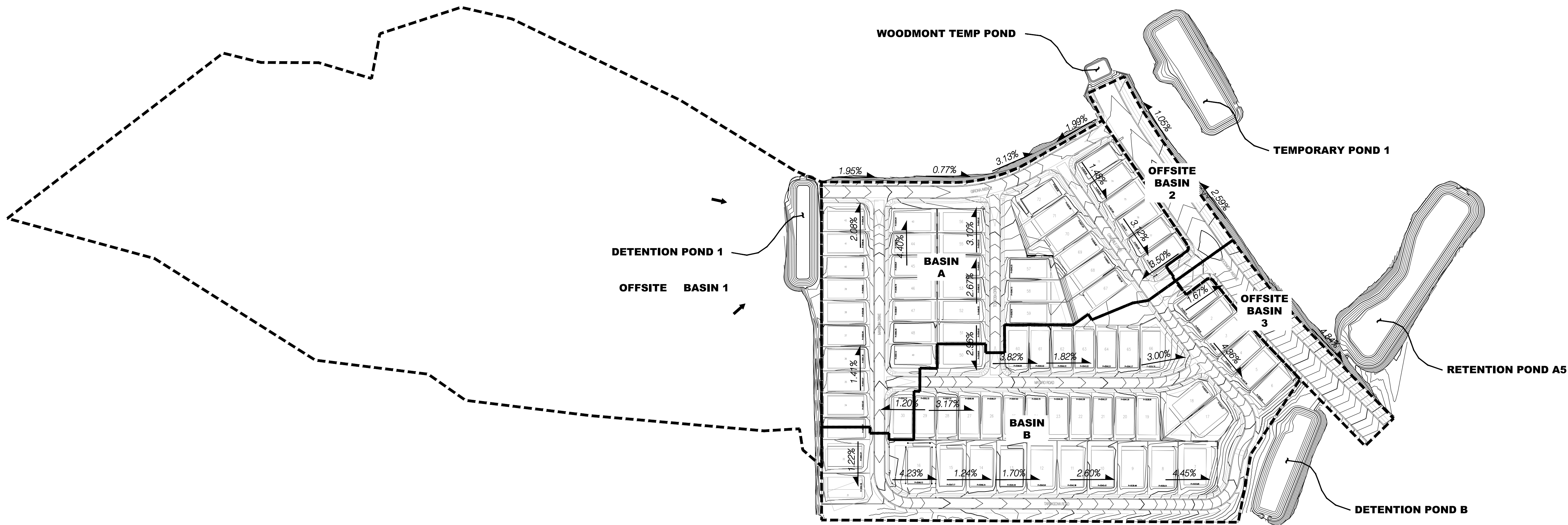


EXHIBIT D:
PROPOSED CONDITIONS BASIN MAP

CATALONIA SUBDIVISION

PROPOSED BASINS MAP

MARCH 2019



DEVELOPED BASIN SUMMARY											
BASIN	AREA	AREA	Lots	% LAND TREATMENT				DISCHARGE (CFS)	DISCHARGE (CFS)	VOLUME (AC-FT)	VOLUME (AC-FT)
I.D.	(ft)	(AC)		A	B	C	D	10 yr	100YR	10 yr	
BASIN A	400914	9.20	39	0.00%	29.6%	29.6%	40.8%	16.9	29.7	0.54	0.99
BASIN B	483543	11.10	39	0.00%	29.6%	29.6%	40.8%	20.4	35.9	0.65	1.20
OFFSITE BASIN 1	1342745	30.83	0	100.00%	0.0%	0.0%	0.0%	7.7	39.1	0.21	1.13
OFFSITE BASIN 2	51247	1.18	0	0.00%	0.0%	10.0%	90.0%	3.2	5.0	0.11	0.18
OFFSITE BASIN 3	62458	1.43	0	0.00%	0.0%	10.0%	90.0%	3.9	6.1	0.14	0.22
TOTAL	2340907.00	53.7	78.00					52.2	115.7	1.6	3.7

LEGEND

BASIN BOUNDARY

FLOW ARROW

PROPOSED STORM DRAIN

EXISTING STORM DRAIN

PROPOSED STREET SLOPE OR FLOW PATH

PROPOSED STORM DRAIN MANHOLE

PROPOSED STORM DRAIN INLET

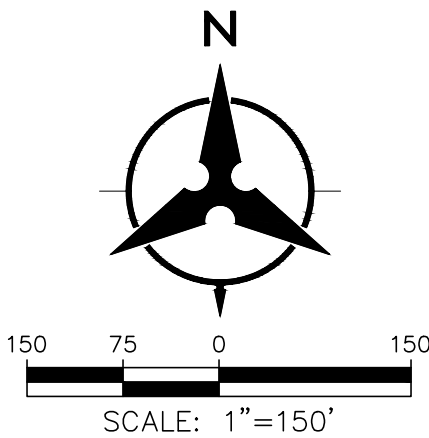


EXHIBIT E:
STORM DRAIN NETWORK

CATALONIA SUBDIVISION

STORM DRAIN EXHIBIT

MARCH 2019

OFFSITE POND 1
Q_IN = 39.6 CFS
Q_OUT = 9.25 CFS
V_S = 0.745 AC-FT

WOODMONT TEMP POND
Q_IN = 20.0 CFS
Q_OUT = 11.4 CFS
V_S = 0.109 AC-FT

TEMPORARY POND 1
Q_IN = 39.65 CFS
V_S = 1.53 AC-FT

RETENTION POND A5
V_S = 4.61 AC-FT

DETENTION POND B
Q_IN = 35.9 CFS
Q_OUT = 3.36 CFS
V_S = 1.045 AC-FT

STORM DRAIN PIPE TABLE					
PIPE #	Size in.	Slope	Capacity ¹ cfs	ACTUAL FLOW cfs	PIPE LENGTH ft
ONSITE					
SDP1	24	3.00%	39.18	35.90	
SDP2	24	1.00%	22.62	3.36	
SDP3	24	0.70%	18.93	9.25	
SDP4	24	3.00%	39.18	9.25	
SDP6	18	2.00%	14.86	14.85	
SDP7	18	2.00%	14.86	14.85	
SDP8	36	2.00%	94.33	34.68	
SDP9	24	1.00%	22.62	11.40	
SDP10	48	1.00%	143.64	46.09	

1- Capacity Based on Manning's Eq w/ N= 0.013

INLET TABLE			
Inlet #	Inlet Type	Actual Flow	Avail Head ft
IN1	1-DBL COA TYPE A	35.90	0.83
IN2	1-SGL COA TYPE C	14.85	0.83
IN3	1-SGL COA TYPE C	14.85	0.83

LEGEND

BASIN BOUNDARY	
FLOW ARROW	
PROPOSED STORM DRAIN	
EXISTING STORM DRAIN	
PROPOSED STREET SLOPE OR FLOW PATH	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED STORM DRAIN INLET	

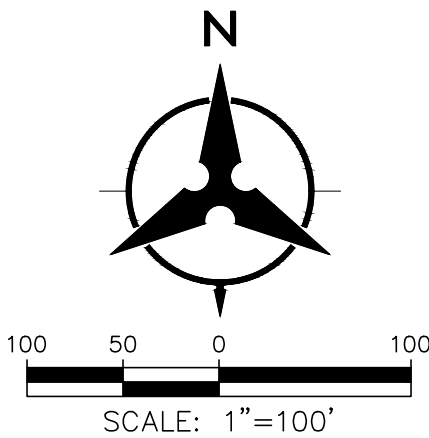
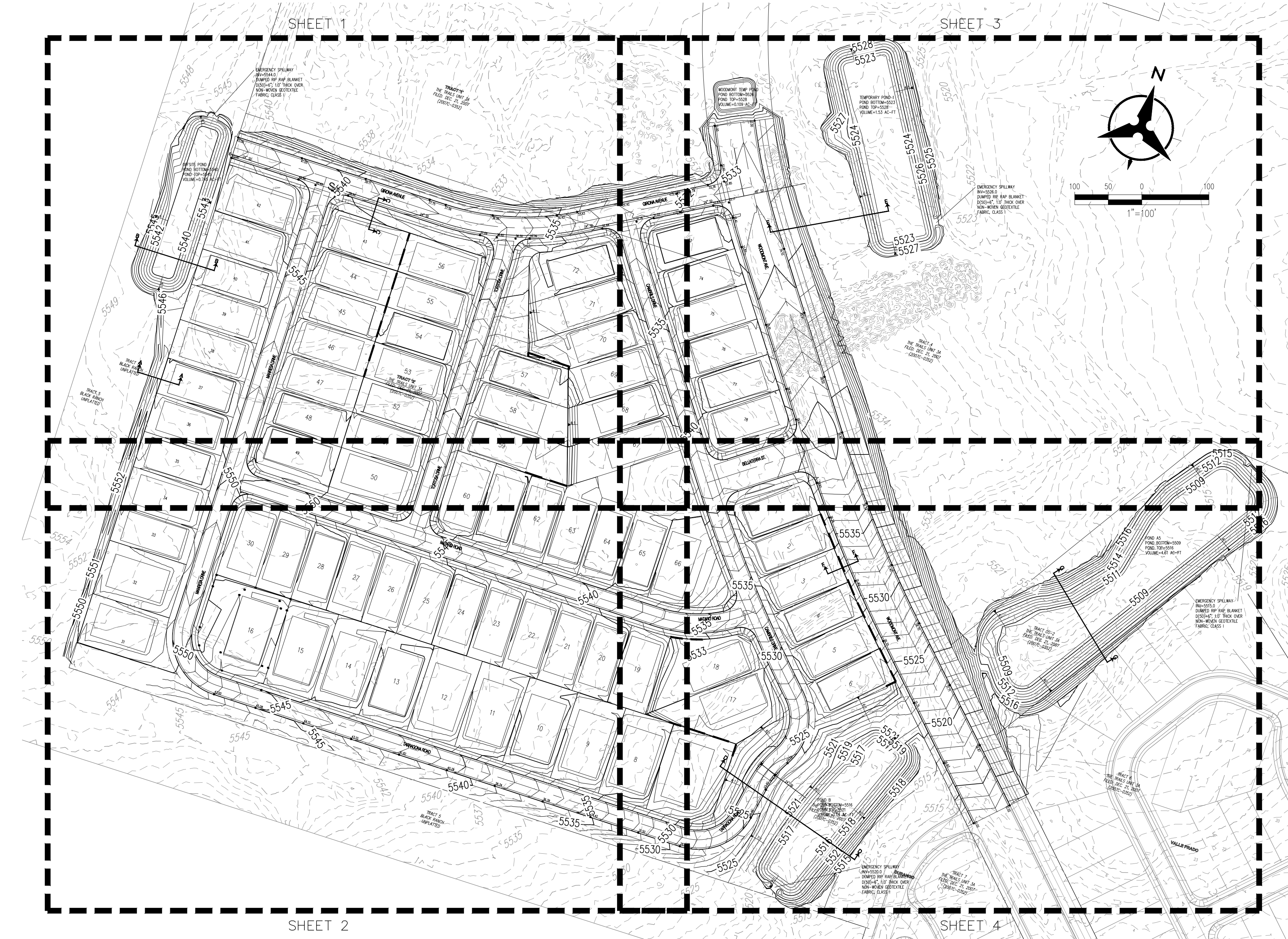
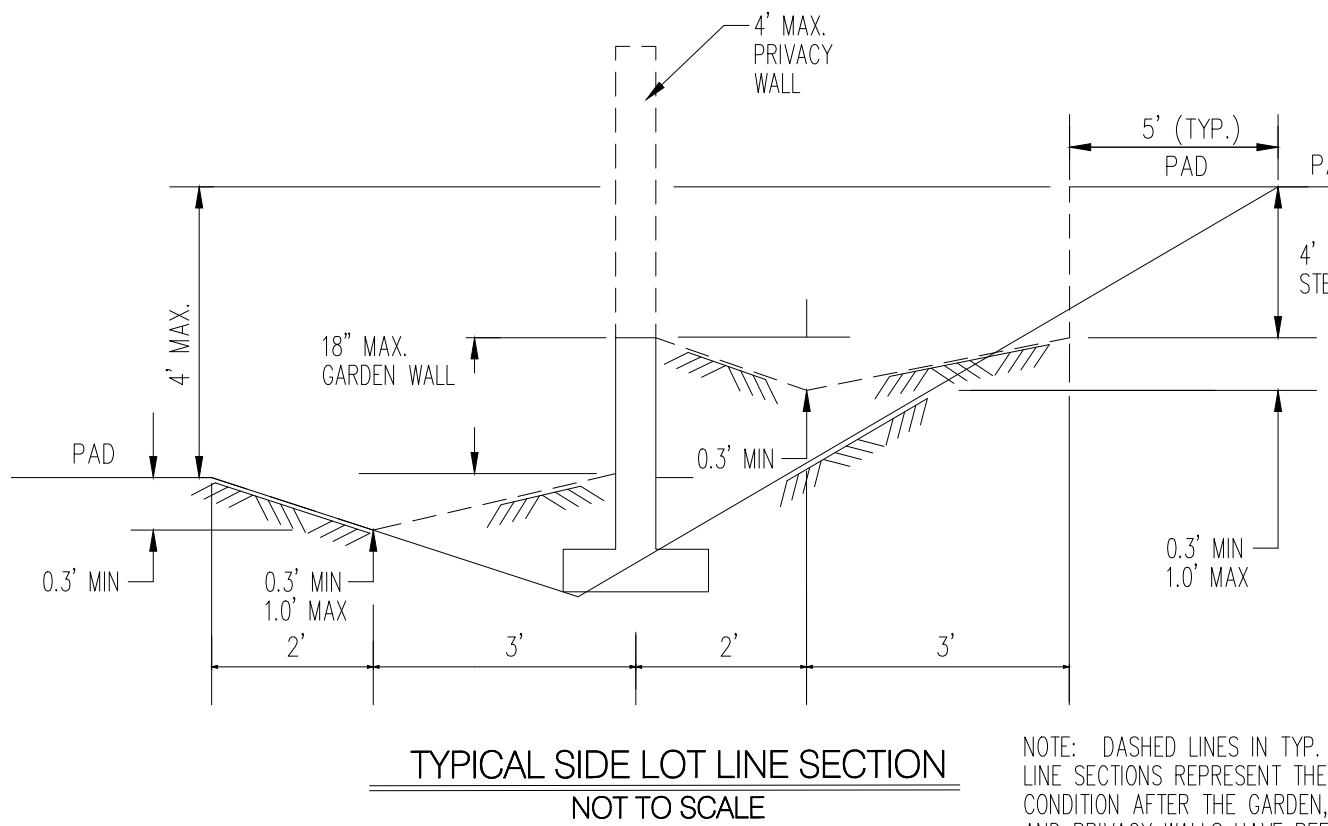


EXHIBIT F:
GRADING PLAN

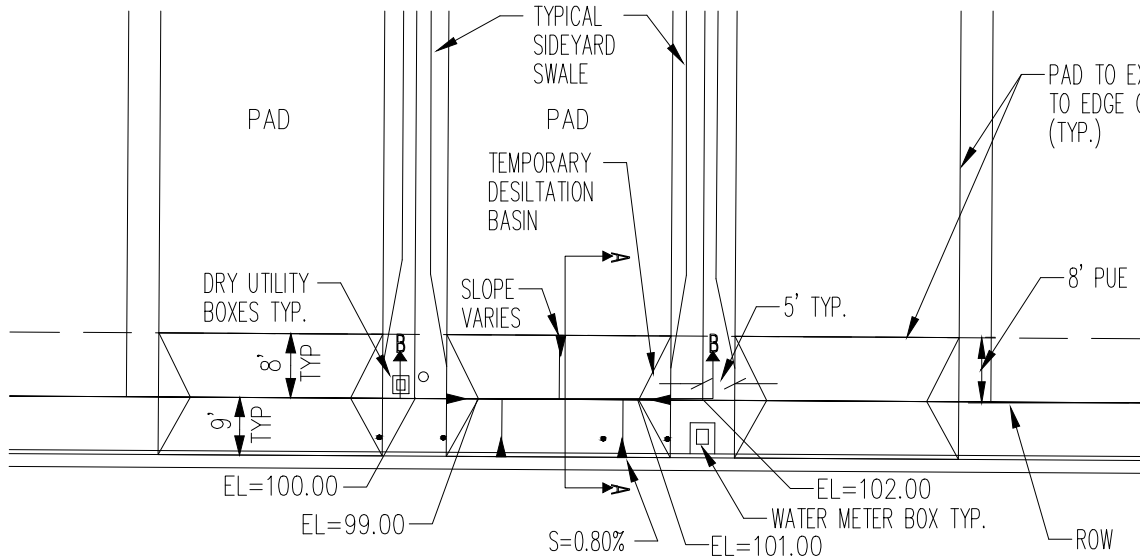


NOTE

ALL SLOPES ON HOA TRACTS TO BE STABILIZED BY NATIVE SEED AND MULCH PER STD SPEC 1012 WITH GRAVEL MULCH OR BETTER.

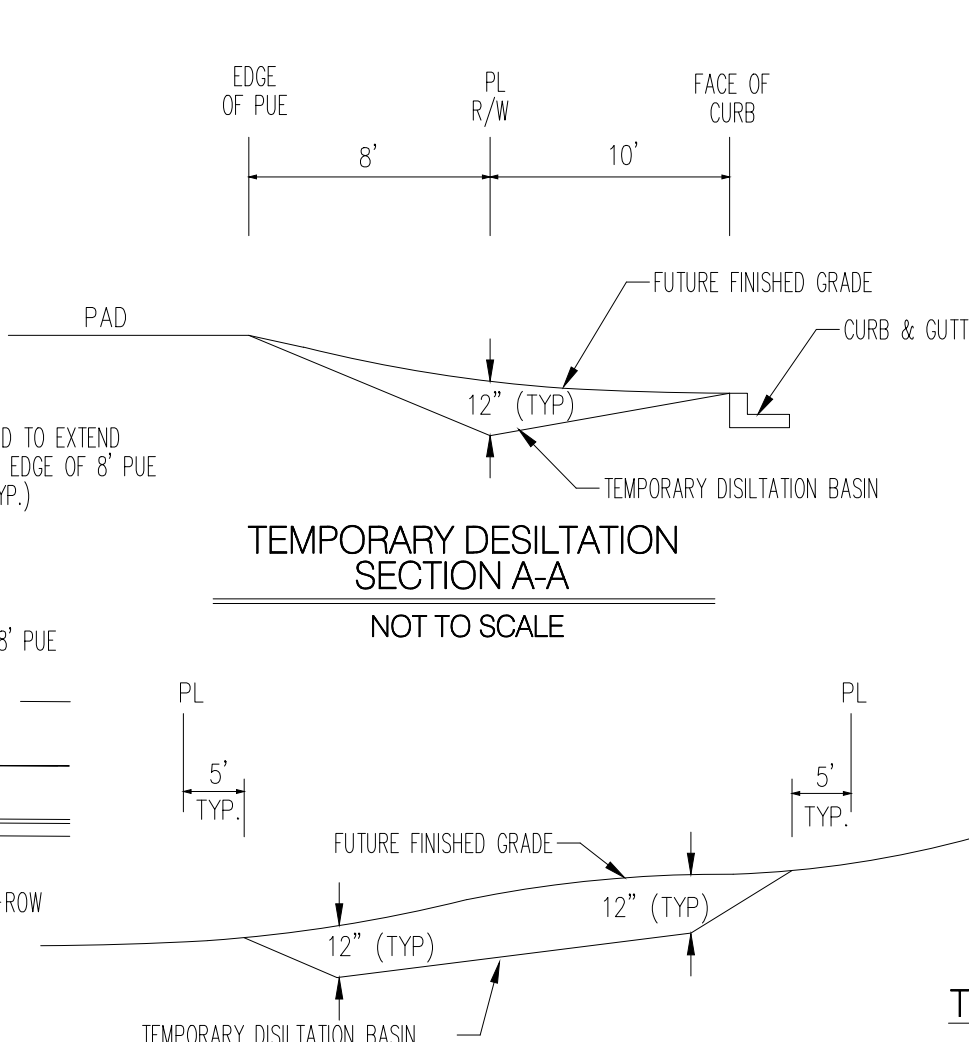


NOTE: DASHED LINES IN TYP. SIDE LOT LINE SECTIONS REPRESENT THE FINAL CONDITION AFTER THE GARDEN, STEM, AND PRIVACY WALLS HAVE BEEN CONSTRUCTED. THE INTERIM CONDITION, WHICH IS TO BE CONSTRUCTED BY THE GRADING CONTRACTOR AND CERTIFIED BY THE ENGINEER, IS REPRESENTED BY THE SOLID LINES. RETAINING WALLS WILL BE CONSTRUCTED PRIOR TO GRADING CERTIFICATION.

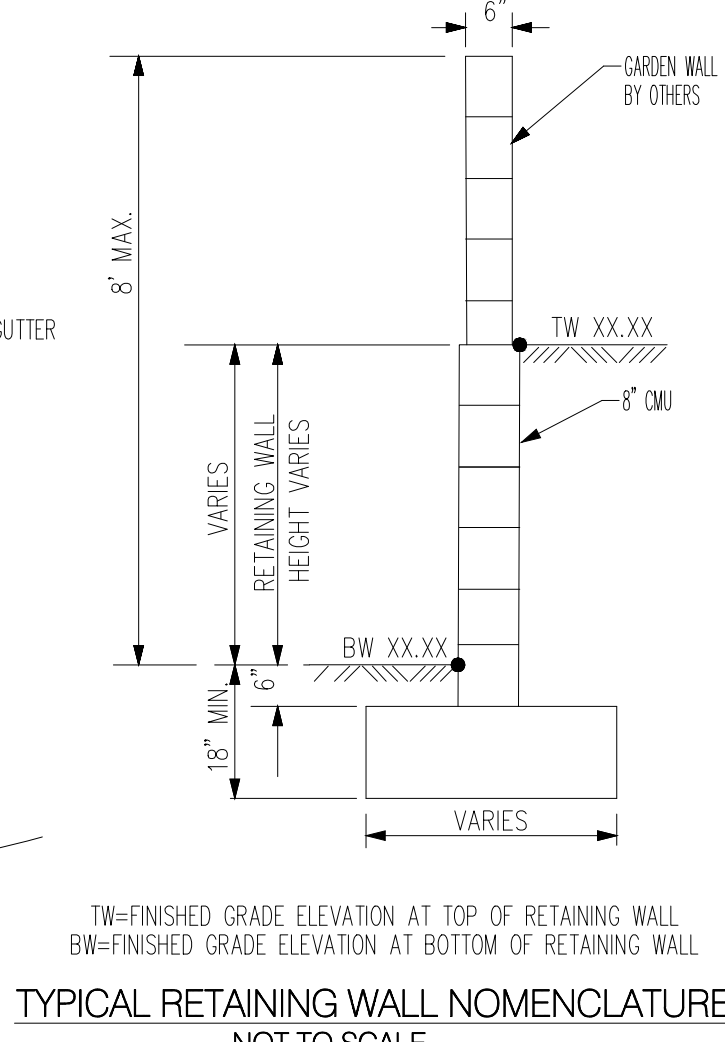


TEMPORARY DESILTATION BASIN NOT TO SCALE

** BOTTOM OF BASIN IS 1' BELOW PROPERTY LINE ELEVATION SEE GRADING PLANS FOR EXACT ELEVATIONS



TEMPORARY DESILTATION SECTION B-B NOT TO SCALE



(RETAINING HEIGHT IS TAKEN TO BE DIFFERENCE IN FINISHED GRADES ON LEFT AND RIGHT SIDE OF WALL.) HEIGHT IS IN ACCORDANCE WITH CITY COMPREHENSIVE ZONING CODE, SECTION 14-16-3-19, GENERAL HEIGHT AND DESIGN REGULATIONS FOR WALLS, FENCES, AND RETAINING WALLS.

GENERAL NOTES

- ALL WORK DETAILED ON THESE PLANS AND PERFORMED UNDER THIS CONTRACT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE PROJECT GEOTECHNICAL REPORT. WHERE APPLICABLE, CITY OF ALBUQUERQUE PUBLIC WORKS STANDARDS SHALL APPLY.
- THE CONTRACTOR SHALL ABIDE BY ALL LOCAL, STATE, AND FEDERAL LAWS, RULES AND REGULATIONS WHICH APPLY TO THE CONSTRUCTION OF THESE IMPROVEMENTS, INCLUDING EPA REQUIREMENTS WITH RESPECT TO STORM WATER DISCHARGE.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL POTENTIAL OBSTRUCTIONS INCLUDING ALL UNDERGROUND UTILITIES. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION OBSERVER OR ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT LINE LOCATING SERVICE FOR LOCATION OF EXISTING UTILITIES.
- ALL ELECTRICAL, TELEPHONE, CABLE TV, GAS AND OTHER UTILITY LINES, CABLES, AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION, SHALL BE COORDINATED WITH THAT UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY ADJUSTMENTS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DELAYS OR INCONVENIENCES CAUSED BY UTILITY COMPANY WORK CREWS. THE CONTRACTOR MAY BE REQUIRED TO RESCHEDULE HIS ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITY LINES WITHIN THE CONSTRUCTION AREA. ANY DAMAGE TO EXISTING FACILITIES CAUSED BY CONSTRUCTION ACTIVITY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE AND APPROVED BY THE CONSTRUCTION OBSERVER.
- CONSTRUCTION ACTIVITY SHALL BE LIMITED TO THE PROPERTY AND/OR PROJECT LIMITS. ANY DAMAGE TO ADJACENT PROPERTIES RESULTING FROM THE CONSTRUCTION PROCESS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE PUBLIC RIGHT-OF-WAY.
- THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FOR THE PROJECT PRIOR TO COMMENCING CONSTRUCTION (I.E., BARRICADING, TOPSOIL DISTURBANCE, EXCAVATION PERMITS, EPA STORM WATER PERMITS, ETC.).
- ALL PROPERTY CORNERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL PROPERTY CORNERS MUST BE RESET BY A REGISTERED LAND SURVEYOR.
- THE CONTRACTOR SHALL PREPARE A CONSTRUCTION TRAFFIC CONTROL AND SIGNING PLAN AND OBTAIN APPROVAL OF SUCH PLAN FROM THE CITY OF ALBUQUERQUE, TRAFFIC ENGINEERING DEPARTMENT, PRIOR TO BEGINNING ANY CONSTRUCTION WORK ON OR ADJACENT TO EXISTING STREETS.
- ALL BARRICADES AND CONSTRUCTION SIGNING SHALL CONFORM TO APPLICABLE SECTIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), US DEPARTMENT OF TRANSPORTATION, LATEST EDITION.
- THE CONTRACTOR SHALL MAINTAIN ALL CONSTRUCTION BARRICADES AND SIGNING AT ALL TIMES. THE CONTRACTOR SHALL VERIFY THE PROPER LOCATION OF ALL BARRICADING AT THE END AND BEGINNING OF EACH DAY.
- THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO CONFORM WITH EPA REQUIREMENTS, INCLUDING COMPLIANCE WITH NPDES PHASE 2 REQUIREMENTS.

GRADING NOTES

- EXCEPT AS PROVIDED HEREIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.
- CONTRACTOR SHALL OBTAIN AND ABIDE BY A TOPSOIL DISTURBANCE PERMIT FROM THE CITY OF ALBUQUERQUE ENVIRONMENTAL HEALTH DIVISION. PRIOR TO CONSTRUCTION, THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE, AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.
- ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SOILS REPORT PREPARED BY XBEVINYARD DATED JULY 22, 2013. ALL OTHER WORK, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS (FIRST PRIORITY), AND/OR THE CITY OF ALBUQUERQUE (COA) STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY).
- TWO WORKING DAYS PRIOR TO EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE (765-1264) FOR LOCATION OF EXISTING UTILITIES.
- PRIOR TO GRADING, ALL VEGETATION DEBRIS, AND NEAR SURFACE ORGANICALLY CONTAMINATED SOIL SHALL BE STRIPPED FROM ALL AREAS TO BE GRADED. VEGETATION AND DEBRIS SHALL BE DISPOSED OF OFF-SITE OR STOCK-PILED FOR USE IN PLANTERS AND NON-STRUCTURAL FILLS.
- EARTH SLOPES SHALL NOT EXCEED 4 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.
- IT IS THE INTENT OF THESE PLANS THAT THIS CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE OF THE PROPERTY BOUNDARIES EXCEPT AS REQUIRED BY THIS PLAN.
- THE CONTRACTOR IS TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY OR PUBLIC RIGHT-OF-WAY. THIS SHOULD BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES WETTING THE SOIL TO PROTECT IT FROM WIND EROSION.
- A DISPOSAL SITE FOR ALL EXCESS EXCAVATION AND UNSUITABLE MATERIAL SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE OBSERVER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL SITE AND HAUL THERE TO SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT, AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.
- PAVING AND ROADWAY GRADES SHALL BE +/- 0.1' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/- 0.05' FROM BUILDING ELEVATION.
- ALL SPOT ELEVATIONS ARE TO FLOWLINE UNLESS OTHERWISE NOTED. VALLEY CUTTER ELEVATIONS ARE SHOWN AT FLOWLINE ELEVATION.

LEGEND

- PROPOSED SPOT ELEVATION: ● 5235.25
- EXISTING SPOT ELEVATION: ● EX 5235.25
- PROPOSED CONTOUR: — 5225 —
- EXISTING STORM DRAIN LINE: - - - - -
- PROPOSED STORM DRAIN INLET: □
- PROPOSED STORM DRAIN LINE: =
- PROPOSED STORM DRAIN MANHOLE: ○
- PROPOSED WATER BLOCK: ————
- RETAINING WALL: ————
- PAD: □
- TURNED BLOCK: TB
- STREET SLOPE: XX

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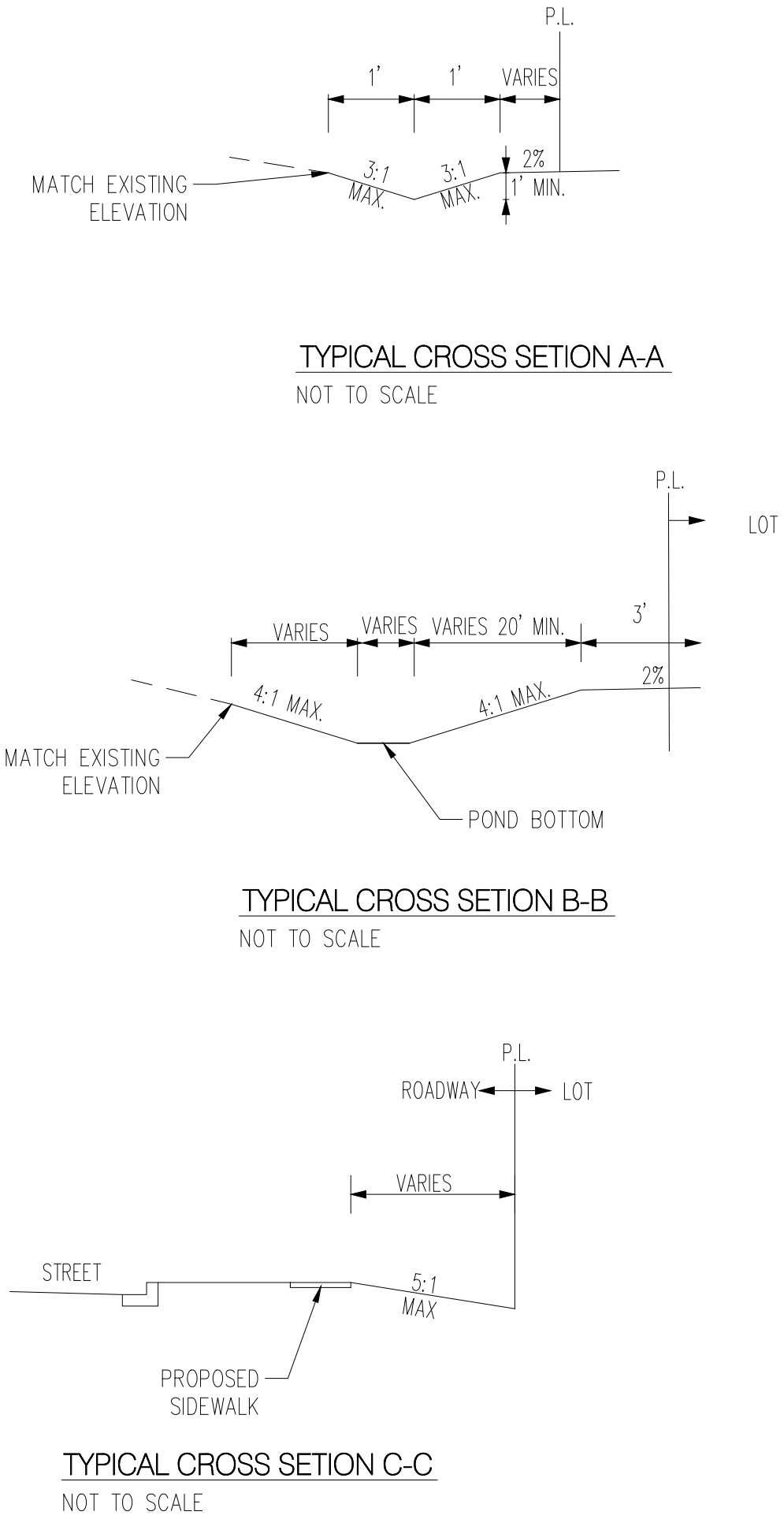
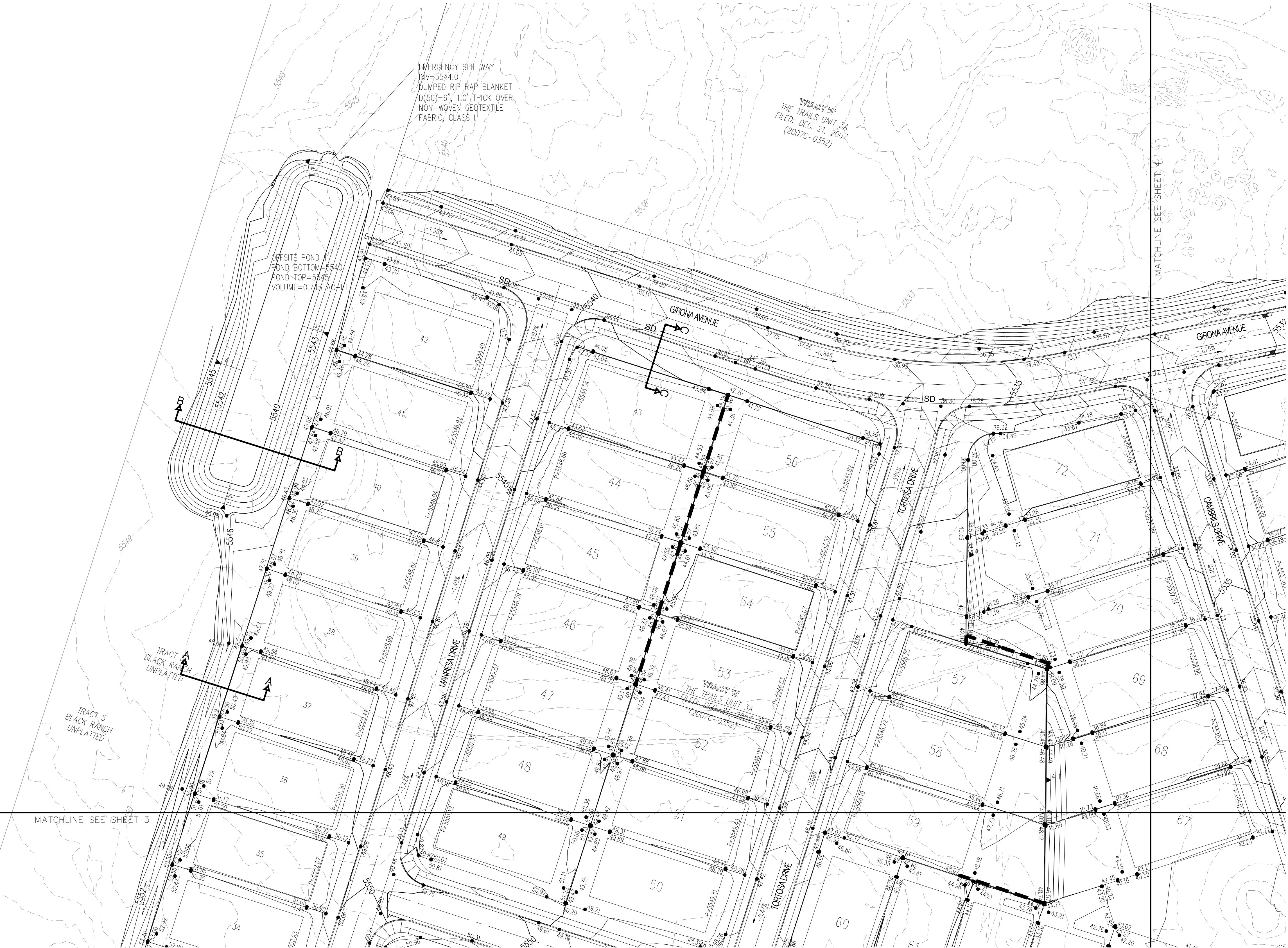


CITY OF ALBUQUERQUE
DEPARTMENT OF
MUNICIPAL DEVELOPMENT

CATALONIA
OVERALL GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.
PROJECT NO.		ZONE MAP NO. C-08	SHEET 1	OF

BHI JOB NO. 20190248



LEGEND

- PROPOSED SPOT ELEVATION • 5235.25
- EXISTING SPOT ELEVATION • EX 5235.25
- PROPOSED CONTOUR — 5025 —
- EXISTING STORM DRAIN LINE - - - - -
- PROPOSED STORM DRAIN INLET □
- PROPOSED STORM DRAIN LINE ≡≡≡
- PROPOSED STORM DRAIN MANHOLE ○
- PROPOSED WATER BLOCK ▭
- RETAINING WALL ———
- PAD □
- TURNED BLOCK TB
- STREET SLOPE XY

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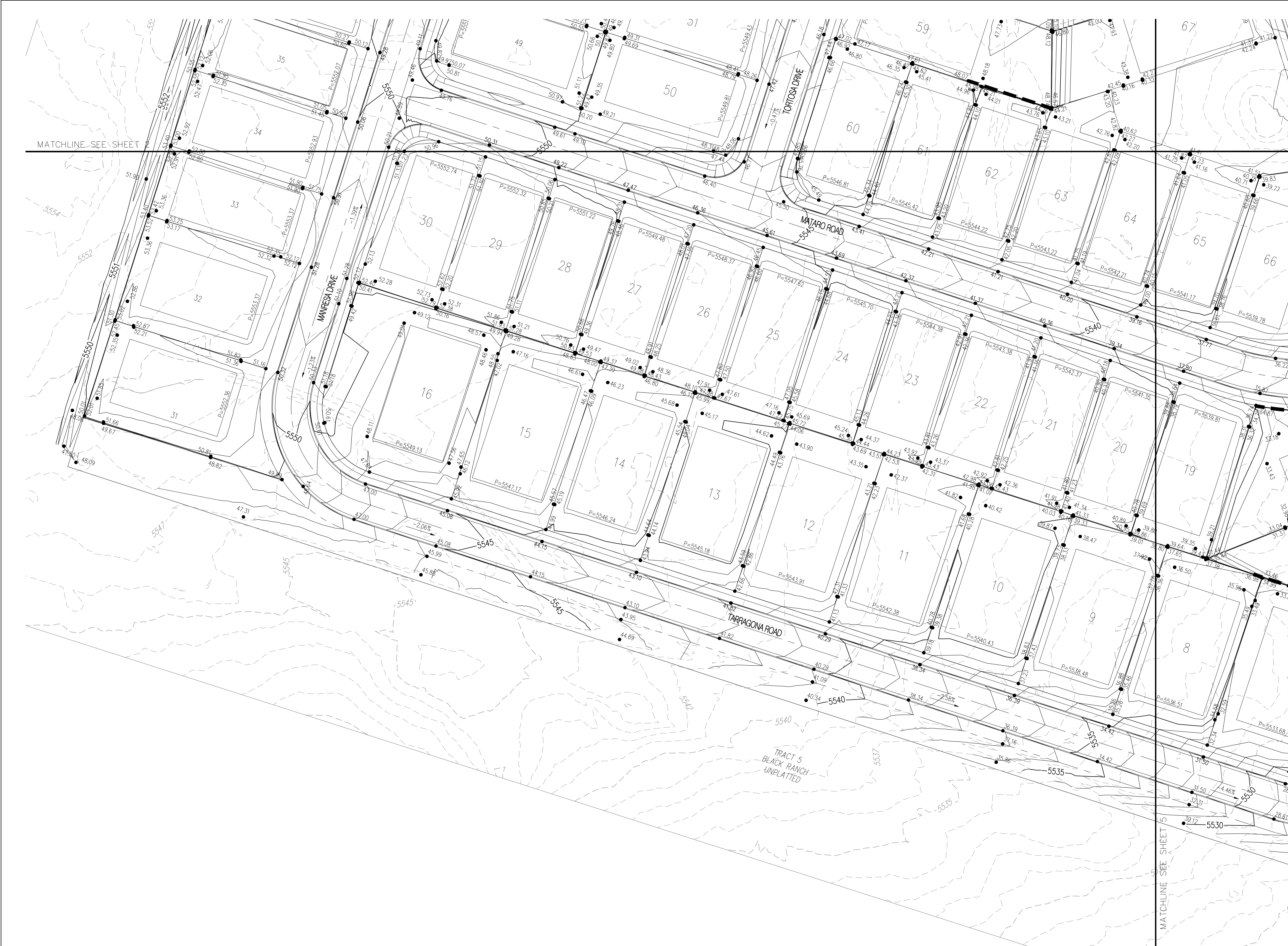
CITY OF ALBUQUERQUE
DEPARTMENT OF
MUNICIPAL DEVELOPMENT

CATALONIA
GRADING 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

ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS		AS-BUILT INFORMATION	
		NO.	BY	DATE	ACS MONUMENT STAMPED "UNION"	CONTRACTOR	DATE
					GEOGRAPHIC POSITION (NAD 83)	WORKED BY	DATE
					N.M. STATE PLANE COORDINATES (CENTRAL ZONE)	INSPECTOR'S	DATE
					N = 1,523,503.475 E = 1,493,655.030	ACCEPTANCE BY	DATE
					GROUND-TO-GRID FACTOR = 0.999664360	VERIFICATION BY	DATE
					$\Delta\alpha = -00^{\circ}16'58.96"$	DRAWINGS	DATE
					NAVD 1988 ELEVATION = 5524.950	MICRO-FILM INFORMATION	
						RECORDED BY	DATE
						NO.	DATE
ERQUE		NO. DATE		REMARKS		BY	
NT				REVISIONS			
				DESIGN			
		DESIGNED BY YPM		DATE04/19			
		DRAWN BY AR		DATE04/19			
		CHECKED BY YPM		DATE04/19			
		</					



LEGEND

PROPOSED SPOT ELEVATION ● 5235.25

EXISTING SPOT ELEVATION ● EX 5235.25

PROPOSED CONTOUR --- 5025 ---

EXISTING STORM DRAIN LINE = = = = =

PROPOSED STORM DRAIN INLET □

PROPOSED STORM DRAIN LINE ————

PROPOSED STORM DRAIN MANHOLE ○

PROPOSED WATER BLOCK ————

RETAINING WALL ————

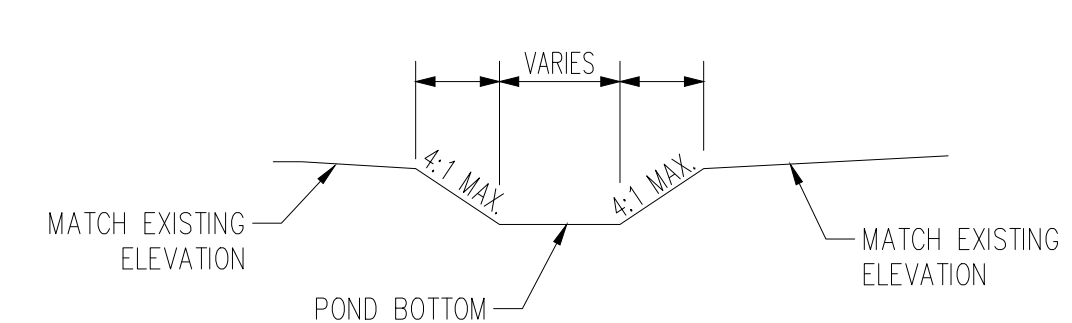
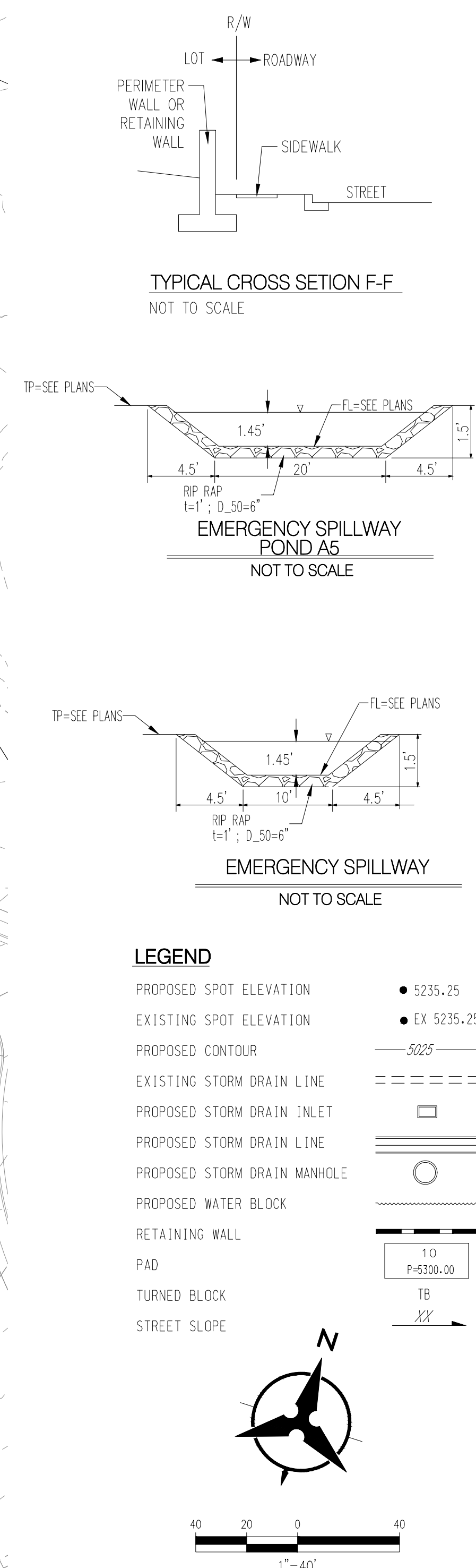
PAD □ 10 P=5300.00

TURNED BLOCK TB

STREET SLOPE XX

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		CITY OF ALBUQUERQUE DEPARTMENT OF MUNICIPAL DEVELOPMENT	
CATALONIA GRADING PLAN			
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.
CITY PROJECT NO.	ZONE MAP NO. C-08	SHEET 3	OF 3



TYPICAL CROSS SECTION G-G
NOT TO SCALE