CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

March 15, 2017

Dennis Lorenz, P.E.
Lorenz Design & Consulting
2501 Rio Grande NW, Suite A
Albuquerque, NM 87104

RE: Eagle Ranch MVD – Retail Drainage Report
Eagle Ranch Rd
Engineer's Stamp Date: 2/20/17
Hydrology File: B13D002C

Dear Mr. Lorenz:

Based upon the information provided in your submittal received on 2/27/17, the Drainage Report is approved for Site Development for Building Permit. Prior to Building Permit Approval the following must be addressed:

1. It is unclear how storm water quality requirements are meet.
   a. The proposal to route flows through 3" deep landscape areas does not acceptably pond onsite and allow to infiltrate, as the landscaped areas are not flat and will not uniformly pond 3" of water.
   b. There are several landscaped areas and parking islands that appear to be flat enough and large enough to depress and capture additional volume. These areas should be modified with curbcuts to allow inflow and calculate their volumes for additional storage.

2. Downstream Capacity.
   a. No master plan for this area is discussed; the capacity of the 36" storm drain stub out and downstream needs to be investigated to show the system has capacity for the increased runoff.
   b. The master plan for this area is for SAD 224; the downstream system was built with City Project No. 4392.90.

3. On figure 1 and 2 of the report body, show/label the site location.

4. This work will require an Erosion and Sediment Control Plan submitted to the storm water quality engineer (Curtis Cherne, PE, ccherne@cabq.gov) before Building Permit Approval.

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Orig: Drainage File

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5. Retaining Walls. The retaining walls as presented are acceptable; however they may become a clear sight hazard if they are to be topped with garden walls. The intersection with Eagle Ranch is the biggest area of concern. Additionally, several retaining walls are 10-15ft high; it may be more economic terrace these down.

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

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Orig: Drainage File

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: EAGLE RANCH NM MVD - RETAIL Building Permit #: _____ City Drainage #: B13-D002C

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: TRACT C, COTTONWOOD POINTE

City Address: EAGLE RANCH ROAD NW

Engineering Firm: LORENZ DESIGN & CONSULTING LLC Contact: DENNIS LORENZ

Address: 2501 RIO GRANDE NW, SUITE A, ALBUQUERQUE, NM 87104

Phone#: 505-888-6088 Fax#: 505-242-6655 E-mail: DENNISL@LORENZNM.COM

Owner: ALLEN SIGMON Contact: L. SIGMON

Address: 9201 MONTGOMERY BLVD NE, ALBUQUERQUE, NM 87111

Phone#: 505-884-4699 Fax#: _____ E-mail: _____

Architect: RICK BENNETT ARCHITECT Contact: R. BENNETT

Address: 1104 PARK AVE SW, ALBUQUERQUE, NM 87102

Phone#: 505-242-1859 Fax#: 505-242-6055 E-mail: _____

Other Contact: UNKNOWN Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

XXX HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN

_____ GRADING PLAN

_____ DRAINAGE MASTER PLAN

XXX DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: _____ Yes XXX No

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

XXX 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

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

DATE SUBMITTED: 2-27-2017 By: DENNIS A. LORENZ, PE

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

DRAINAGE REPORT
FOR
EAGLE RANCH NM MVD - RETAIL

Albuquerque, New Mexico

Prepared For:

Allen Sigmon Real Estate Group
9201 Montgomery Boulevard NE
Albuquerque, New Mexico 87111

Prepared by:

LORENZ
DESIGN & CONSULTING, LLC
Civil Engineering I Construction Management

February 2017

TABLE OF CONTENTS

APPENDIX INDEX

PURPOSE AND SCOPE

This project involves the development of the subject property for New Mexico MVD, and Eagle Ranch Retail Center. The project proposes site improvements to support the development, including access, grading, drainage and utility improvements.

The purpose of this report is to outline the criteria for development of the site and demonstrate that this project will not negatively impact the project site, or upstream and downstream properties. This report is prepared and submitted in support of a pending building permit application.

The scope of this report is to provide analysis of the existing and improved conditions utilizing storm drainage modeling tools, thereby demonstrating the before and after behavior of the project site during rainfall events. It will be demonstrated that this project will be developed in accordance with the City of Albuquerque, Development Process Manual, Volume 2, and the City of Albuquerque Drainage Ordinance.

EXISTING CONDITIONS

The 6.77-acre project site is presently undeveloped. The site is bounded north by developed residential property, on the west by Irving Boulevard NW, on the south by developed institutional property and undeveloped property, and on the east by Eagle Ranch Road NW. Site topography is very rugged and steep. Excess runoff generally drains from west to east, discharging to Eagle Ranch Road. All undeveloped excess runoff is intercepted by the Eagle Ranch Storm Drainage System that drains to the Calabacillas Arroyo, approximately one-quarter mile northeast from the site.

No offsite flows enter the property. As shown by FIRM Panel 35001C0108G, this property is not located within a mapped 100 year floodplain.

PROPOSED CONDITIONS

As shown by the Grading and Drainage Plan (see back pocket), the property is to be developed to support the proposed New Mexico MVD, and Eagle Ranch Retail Center. This is a phased project. The New Mexico MVD, and Eagle Ranch Retail Center will be developed as Phase 1. Phase 2 (3.60 aces) will be developed in the future. Site plans for Phase 2 will be presented to EPC and DRB for approval. A Phase 2 Grading and Drainage Plan will be submitted to support the planning and building permit process.

All Phase 1 drainage flows will be managed by grading and drainage improvements recommended by this plan. All excess runoff will be routed through landscaping improvements and 3 first flush ponding areas prior to discharge to a proposed private storm drain system. The storm drain system will connect to an existing 36" stubout that drains to the Eagle Ranch Storm Drainage System located within Eagle Ranch Rd NW.

As shown by the Grading & Drainage Plan – Overall Site and Drainage Plan, the developed site is divided into 5 drainage basins. Each drainage basin is described below:

Basin A represents Phase 2. Undeveloped Basin "A'" runoff drains to a temporary erosion control pond located south of the NM-MVD site. Future Phase 2 flows will drain to the private storm drain system.

Basin B is the NM-MVD site. All flows drain through landscaping improvements to First Flush Pond "B", which connects to the private storm drain system.

Basin C is the Eagle Ranch Retail site. All flows drain through landscaping improvements to First Flush Pond "C", which connects to the private storm drain system.

Basin D is a portion of the site access road. All flows drain to the private storm drain system.

Basin E is the existing portion of the site access road. All flows drain to the private storm drain system.

90th Percentile Storm

In accordance with the City of Albuquerque Drainage Ordinance, effective May 12, 2014, all new development projects are required to manage the runoff which occurs during the 90th percentile storm event. In order to comply with this criteria, where practical, all "first flush" surface drainage shall be routed through landscaped areas before release into downstream drainage facilities.

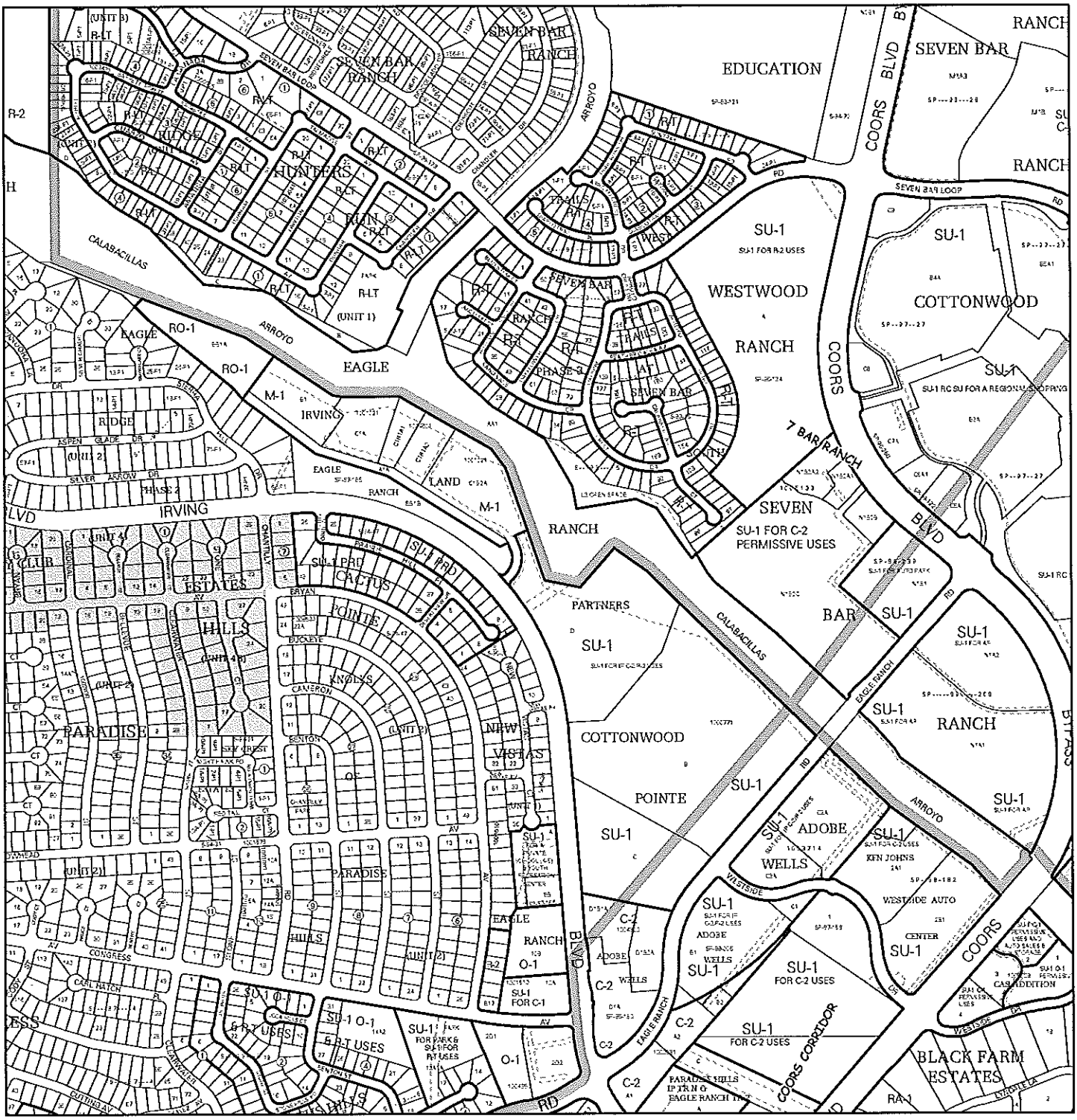
As shown by the calculations, the site easily satisfies the first flush requirement.

CALCULATIONS

Hydrology

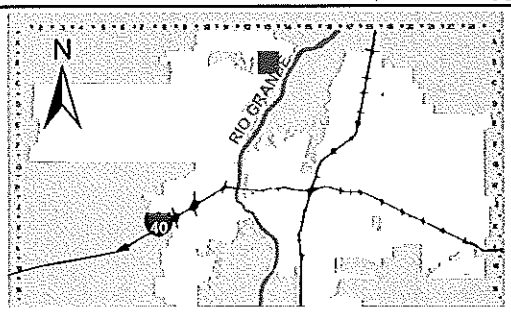
The calculations contained herein define the 100-year/6-hour rainfall event falling within the project site and contributing off-site areas under existing and developed conditions. The hydrology is per the City of Albuquerque, Development Process Manual, Chapter 22, Volume 2, 1997 Revision. The AHYMO 97 model is used to determine peak runoff. The calculations are presented to demonstrate the capacity and function of all proposed storm drainage improvements.

MAPS



For more current information and details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System



Zone Atlas Page:

B-13-Z

Selected Symbols

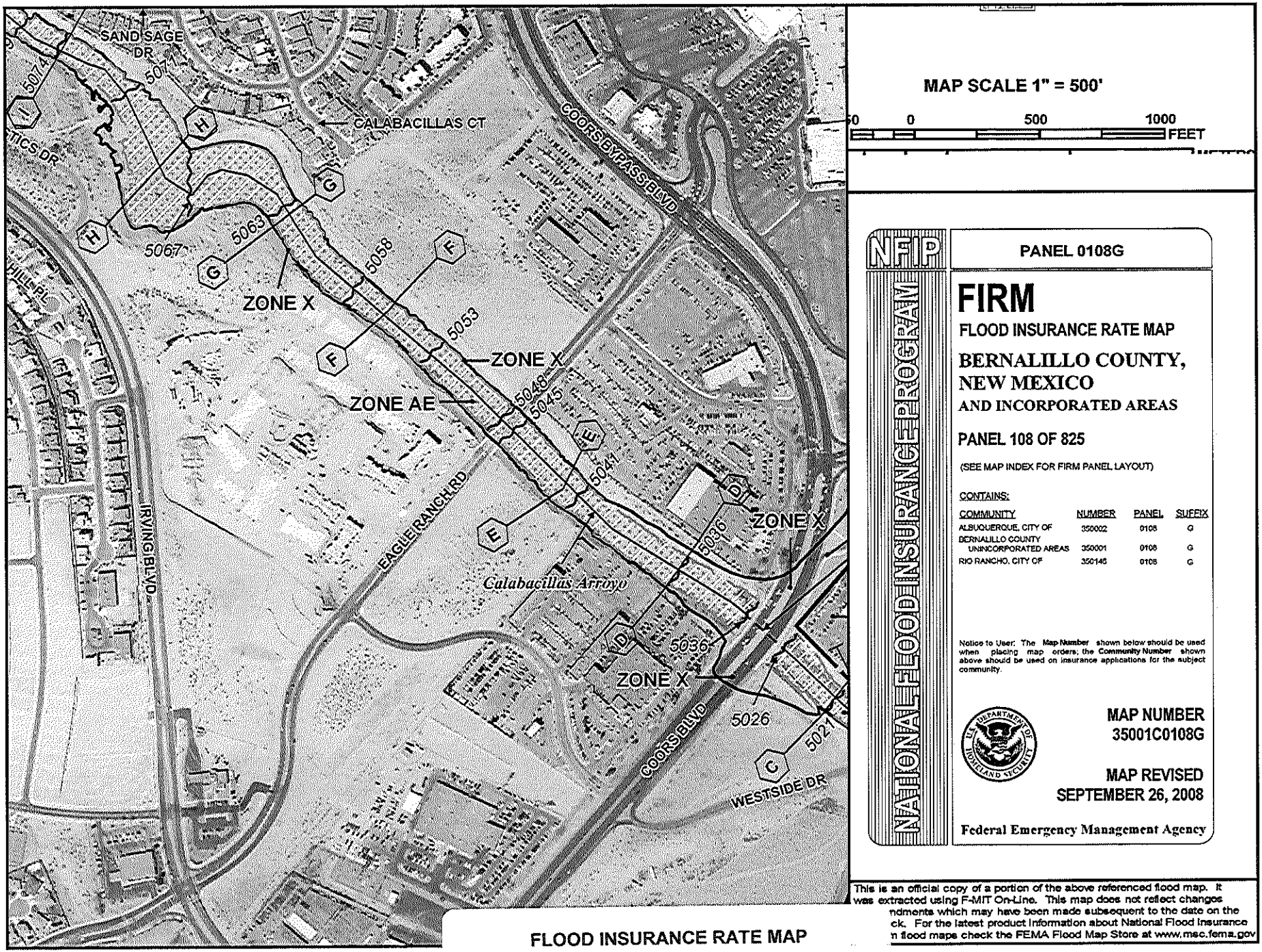
- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

Map amended through: 1/28/2

PROJECT LOCATION MAP

Figure 1

0 750 1,500 Feet



FLOOD INSURANCE RATE MAP

Figure 2

CALCULATIONS

FIRST FLUSH CRITERIA

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PROJECT E. RANCH
DATE 2-2017 PAGE ___

FIRST FLUSH CRITERIA

By ordinance the site is required to retain the 90th percentile rainfall depth. In order to comply with this criterion, where practical, all surface areas will be routed through landscaped areas before release to downstream public drainage facilities. The proposed plan will rout runoff through 2 proposed first flush detention ponds and a third first flush retention pond. Storage in excess of the 90th percentile rainfall will be provided as illustrated below.

90th percentile depth	0.44"
Less initial abstraction	0.10"
Total retained depth	034"

The first flush requirement will be based on Phase I development. Phase 2 will provide its own first flush storage at the time of development.

Phase I Area Type D = 2.43 ac.
Storage requirement = Ad(0.34") = 2.43 ac(43,560 sf/ac)(0.34"/12"/ft) = 2,999 cf

First Flush storage provided:

Total Phase I landscape area = 0.74 ac.
Landscape area too steep to accept first flush flow = 0.09 ac
Total landscape area available for first flush use = 0.65 ac

All landscape areas shall be graded 3" below adjacent paved surfaces

Total first flush volume = 0.65 ac(43,560sf/ac)(0.25')=8,059 cf
This volume does not include storage provided in the proposed first flush ponds (845cf)

FIRST FLUSH POND DESIGN

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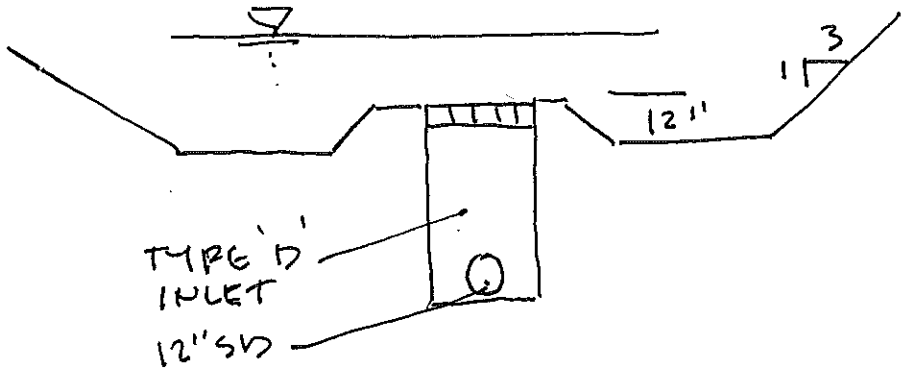
PROJECT E. RANCH
DATE 2·2017 PAGE

TYPE 'D' INLET @ FIRST FLUSH POMS

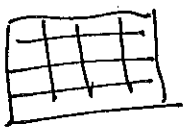


SECTION

POND 'B' Q = 4.7
POND 'C' Q = 6.

DETERMINE SUBMERGED INLET CAPACITY FOR AHYMO POMS ROUTING TABLE:

① INLET GRATE



OPEN AREA = 4.31 SF

$Q = CA\sqrt{2gh}$ $C = 0.6$

H	Q
0	0
1'	20.8
2'	29.4

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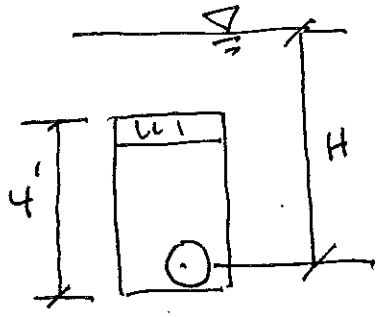
PROJECT E. RANCH
DATE 2·2017 PAGE

② CHECK 12" SD INLET CONTROL



$A_{12" PIPE} = 0.79 SF$

$C = 0.6$

$Q = CA\sqrt{2gh}$

H	Q
0	0
3.5	7.11
4.5	8.07
5.5	8.92

③ CHECK 12" SD PIPE FLOW BY MANNING'S

POND	PIPE S	Q CFS
B	33.0	20.0
C	48.0	24.1

⇒ LIMITING VARIABLE IS INLET CONTROL

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PROJECT E. RANCH
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POND ROUTING TABLES FOR AHYMO.

I. FIRST FLUSH POND 'B'		
ELEVATION	QOUT	STORAGE
ft	cfs	af
84.0	0	0
85.0	8.07	0.00893
86.0	8.92	0.02397
I. FIRST FLUSH POND 'C'		
ELEVATION	QOUT	STORAGE
ft	cfs	af
67.5	0	0
68.0	8.07	0.00181
69.0	8.92	0.00955

BASIN 'A' TEMPORARY EROSION CONTROL POND DESIGN

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PROJECT E-RANCH
DATE 2-2017 PAGE

TEMP EC POND - UNDEV BASIN 'A'

PER ATKINS: $Q_{100} = 9.4$ CFS

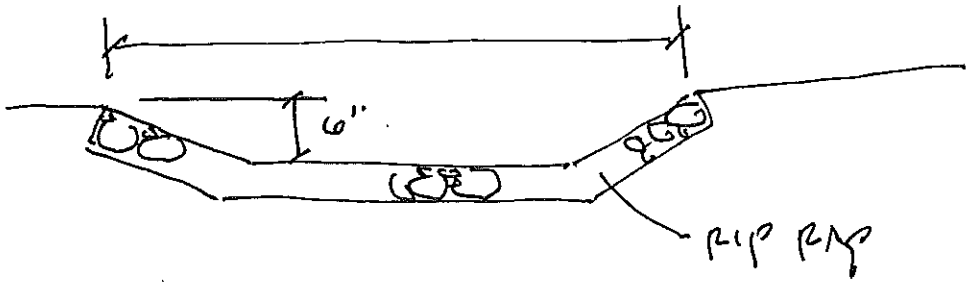
$V_{100} = 0.262$ AF

$= 11,413$ CF

⇒ 11,500 CF PROVIDED

EMERGENCY SPILLWAY

$Q_{100} = 9.4$ CFS



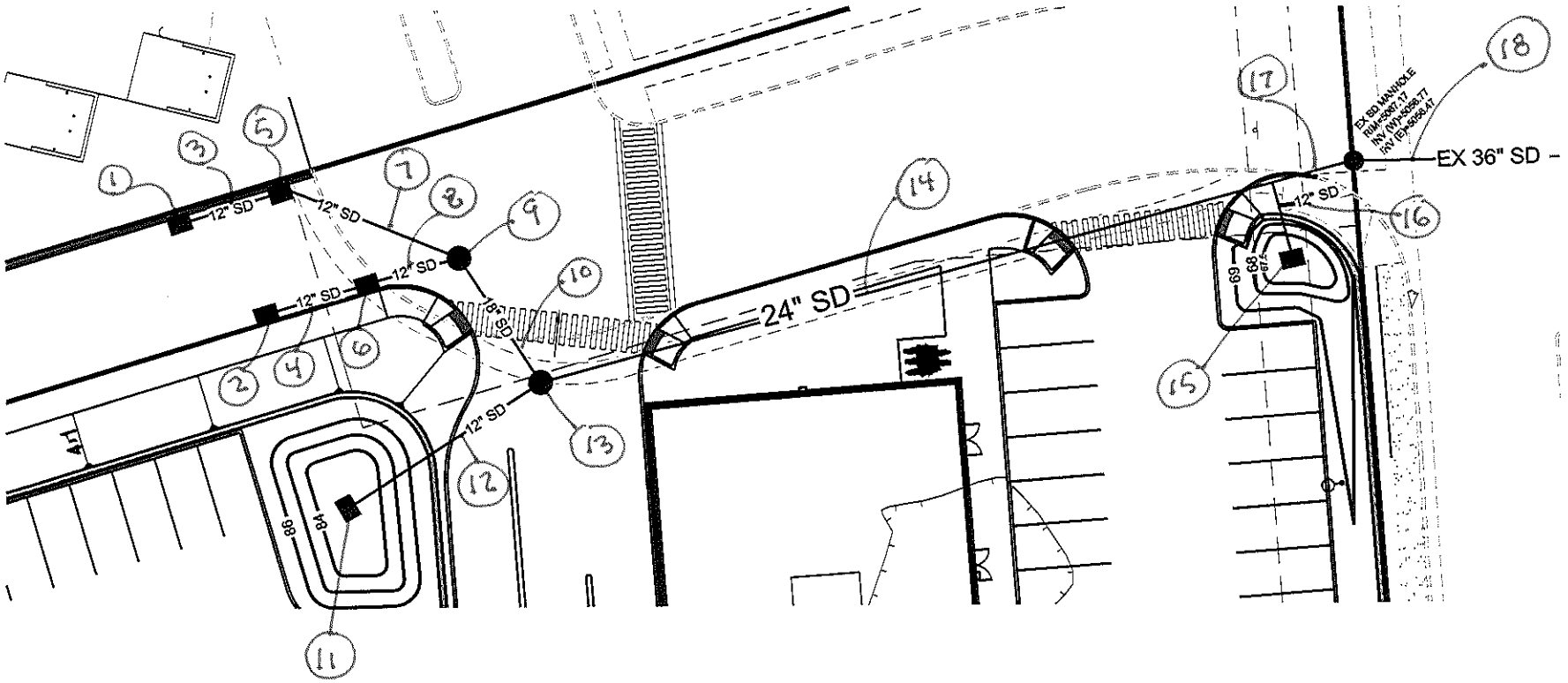
$Q = C L H^{3/2}$

$C = 2.5$

$H = 0.5'$

$L = Q / CH^{3/2} = 10.6'$ USE 12'

STORM DRAINAGE SYSTEM



(1) ANALYSIS POINT - SEE SD INVENTORY

STORM DRAIN SYSTEM

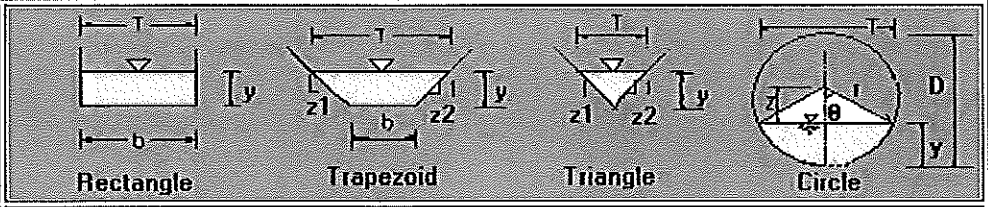
NTS

EAGLE RANCH NM MVD - RETAIL
STORM DRAIN SYSTEM INVENTORY

ANALYSIS POINT	Q100 cfs	DRAINAGE STRUCTURE	STREET DEPTH ft	PIPE SLOPE %	CAPACITY cfs	COMMENTS
1	8.3	TYPE C INLET	0.24	-	3.5	
2	8.3	TYPE C INLET	0.24	-	3.5	
3	3.5	12" SD	-	7.2	9.2	
4	3.5	12" SD	-	7.2	9.2	
5	5.5	TYPE C INLET	0.20	-	2.0	
6	5.5	TYPE C INLET	0.20	-	2.0	TOTAL 6.7 CFS SURFACE FLOW TO EAGLE RANCH
7	5.5	12" SD	-	11.1	11.5	
8	5.5	12" SD	-	35.4	20.7	
9	11.0	4' DIA SD MH	-	-	-	
10	11.0	18" SD	-	2.0	14.5	
11	4.7	TYPE D INLET	-	-	20.8	AT H=1.0'
12	4.7	12" SD	-	33.0	20.0	
13	15.7	4' DIA SD MH	-	-	-	
14	15.7	24" SD	-	6.8	58.0	
15	6.0	TYPE D INLET	-	-	20.8	AT H=1.0'
16	6.0	12" SD	-	48.0	24.1	
17	21.8	24" SD	-	6.8	58.0	
18	21.8	EXISTING 36" SD	-	** 2.0	31.3	** ASSUMED SLOPE

The open channel flow calculator

Select Channel Type: Triangle



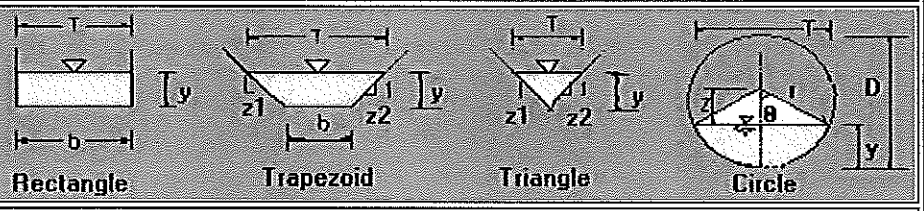
Velocity(V)&Discharge(Q) | Select unit system: Feet(ft)

Channel slope: .072 ft/ft	Water depth(y): .24 ft	Bottom W(b) 0 ft
Flow velocity 5.6749 ft/s	LeftSlope (Z1): 50 to 1 (H:V)	RightSlope (Z2): 1 to 1 (H:V)
Flow discharge 8.3353 ft^3/s	Input n value .017 or select n	
Calculate!	Status: Calculation finished	Reset
Wetted perimeter 12.34 ft	Flow area 1.47 ft^2	Top width(T) 12.24 ft
Specific energy 0.74 ft	Froude number 2.89	Flow status Supercritical flow
Critical depth 0.37 ft	Critical slope 0.0074 ft/ft	Velocity head 0.5 ft

½ STREET FLOW AT AP 1+2

The open channel flow calculator

Select Channel Type: Triangle

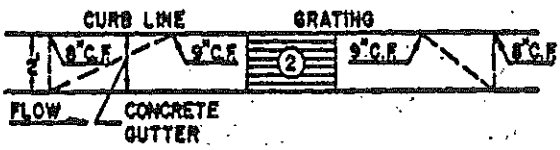


Velocity(V)&Discharge(Q) | Select unit system: Feet(ft)

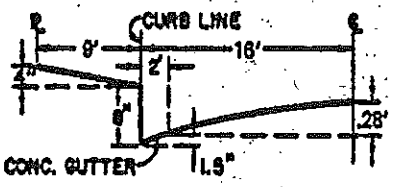
Channel slope: .072 ft/ft	Water depth(y): .195 ft	Bottom W(b) 0 ft
Flow velocity 4.9413 ft/s	LeftSlope (Z1): 50 to 1 (H:V)	RightSlope (Z2): 1 to 1 (H:V)
Flow discharge 4.7913 ft^3/s	Input n value .017 or select n	
Calculate!	Status: Calculation finished	Reset
Wetted perimeter 10.03 ft	Flow area 0.97 ft^2	Top width(T) 9.95 ft
Specific energy 0.57 ft	Froude number 2.79	Flow status Supercritical flow
Critical depth 0.29 ft	Critical slope 0.008 ft/ft	Velocity head 0.38 ft

1/2 STREET FLOW AT AP 5+6

GRATING CAPACITIES FOR TYPE "A" , "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

PLATE 22.3 D-5

PROJECT HYDROLOGY

EAGLE RANCH NM MVD - RETAIL
HYDROLOGY SUMMARY

BASIN	AREA	AREA	LAND TREATMENT AREAS (Percent)				Q 100	VOL 100
	acres	sq. mi.	A	B	C	D	cfs	ac-ft
EXISTING CONDITION								
SITE	6.77	0.01058	0	82	15	3	18.0	0.512
PROPOSED CONDITION								
SITE	6.77	0.01058	0	51	14	35	22.3	0.712
A	3.60	0.00563	0	85	15	0	9.4	0.262
B	1.16	0.00181	0	15	15	70	4.7	0.163
C	1.46	0.00228	0	11	11	78	6.0	0.211
D	0.27	0.00042	0	0	20	80	1.2	0.040
E	0.26	0.00041	0	3	3	94	1.2	0.041
FUTURE DEVELOPED CONDITION								
SITE	6.77	0.01058	0	8	12	80	28.3	0.993
A	3.60	0.00563	0	5	10	85	15.4	0.543
B	1.16	0.00181	0	15	15	70	4.7	0.163
C	1.46	0.00228	0	11	11	78	6.0	0.211
D	0.27	0.00042	0	0	20	80	1.2	0.040
E	0.26	0.00041	0	3	3	94	1.2	0.041

AHYMO OUTPUT FILES

```
*****************************************************************************
*                        EAGLE VISTA - NM MVD-RETAIL
*                             PROJECT HYDROLOGY
*****************************************************************************
START                TIME=0.0  PUNCH CODE=0
LOCATION             ALBUQUERQUE
RAINFALL             TYPE=1  RAIN QUARTER=0.0  RAIN ONE=1.87
                     RAIN SIX=2.20  RAIN DAY=2.66  DT=0.03333 HRS
*****************************************************************************
************************
* EXISTING CONDITIONS  *
************************
* SITE - 6.77 ACRES
COMPUTE NM HYD       ID=1  HYD NO=EX-SITE  DA=0.010578 SQ MI
                     PER A=0 PER B=82 PER C=15  PER D=3
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=1  CODE=20
************************
* DEVELOPED CONDITIONS  *
************************
* SITE - 6.77 ACRES
COMPUTE NM HYD       ID=2  HYD NO=DEV-SITE  DA=0.010578 SQ MI
                     PER A=0 PER B=51 PER C=14  PER D=35
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=2  CODE=20
* EXISTING BASIN A - 3.60 ACRES
COMPUTE NM HYD       ID=3  HYD NO=EXIST-A  DA=0.005625 SQ MI
                     PER A=0 PER B=85 PER C=15 PER D=0
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=3  CODE=20
* BASIN B - 1.18 ACRES
COMPUTE NM HYD       ID=4  HYD NO=DEV-B  DA=0.001844 SQ MI
                     PER A=0 PER B=15 PER C=15 PER D=70
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=4  CODE=20
* BASIN C - 1.46 ACRES
COMPUTE NM HYD       ID=5  HYD NO=DEV-C  DA=0.002281 SQ MI
                     PER A=0 PER B=11 PER C=11 PER D=78
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=5  CODE=20
* BASIN D - 0.27 ACRES
COMPUTE NM HYD       ID=6  HYD NO=DEV-D  DA=0.000422 SQ MI
                     PER A=0 PER B=0 PER C=20 PER D=80
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=6  CODE=20
* BASIN E - 0.26 ACRES
COMPUTE NM HYD       ID=7  HYD NO=DEV-E  DA=0.000406 SQ MI
                     PER A=0 PER B=3 PER C=3 PER D=94
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=7  CODE=20
* FUTURE BASIN A - 3.60 ACRES
COMPUTE NM HYD       ID=8  HYD NO=FUTURE-A  DA=0.005625 SQ MI
                     PER A=0 PER B=5 PER C=10 PER D=85
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=8  CODE=20
* FUTURE SITE - 6.77 ACRES
COMPUTE NM HYD       ID=9  HYD NO=FUTURE-SITE  DA=0.010578 SQ MI
                     PER A=0 PER B=8 PER C=12  PER D=80
                     TP=0.1333 HR  MASS RAIN=-1
PRINT HYD            ID=9  CODE=20
*****************************************************************
* ROUTE DEVELOPED BASIN B THROUGH DETENTION POND B               *
* THRU 12 INCH SD TO STORM MANHOLE                               *
```

```
**********************************************************************
ROUTE RESERVOIR      ID=10 HYD NO=POND.B.OUT  INFLOW ID=4  CODE=10
                     OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                     0.0           0                  84.00
                     8.07          0.00893            85.00
                     8.92          0.02397            86.00
PRINT HYD            ID=10 CODE=20
**********************************************************************
* ROUTE DEVELOPED BASIN C THROUGH DETENTION POND B                    *
* THRU 12 INCH SD TO 24" SD                                           *

**********************************************************************
ROUTE RESERVOIR      ID=11 HYD NO=POND.C.OUT  INFLOW ID=5  CODE=10
                     OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                     0.0           0                  67.50
                     8.07          0.00181            68.00
                     8.92          0.00955            69.00
PRINT HYD            ID=11 CODE=20
ADD HYD              ID=12  HYD NO=SD INLETS  ID I=8  ID II=6
PRINT HYD            ID=12  CODE=20
FINISH
```

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.01a, Rel: 01a RUN DATE (MON/DAY/YR) =02/22/2017
INPUT FILE = C:\Users\dennis\Desktop\Ahymo Files\Eagle.Ranch.txt USER NO.= Lorenz-NMSingleA33825816

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	0.00
LOCATION		ALBUQUERQUE									
RAINFALL TYPE= 1 NOAA 14										RAIN6=	2.200
COMPUTE NM HYD	EX-SITE	-	1	0.01058	18.03	0.512	0.90738	1.533	2.663	PER IMP=	3.00
COMPUTE NM HYD	DEV-SITE	-	2	0.01058	22.30	0.712	1.26184	1.533	3.293	PER IMP=	35.00
COMPUTE NM HYD	EXIST-A	-	3	0.00563	9.37	0.262	0.87394	1.533	2.603	PER IMP=	0.00
COMPUTE NM HYD	DEV-B	-	4	0.00184	4.73	0.163	1.65535	1.533	4.011	PER IMP=	70.00
COMPUTE NM HYD	DEV-C	-	5	0.00228	6.04	0.211	1.73492	1.533	4.140	PER IMP=	78.00
COMPUTE NM HYD	DEV-D	-	6	0.00042	1.16	0.040	1.78024	1.533	4.298	PER IMP=	80.00
COMPUTE NM HYD	DEV-E	-	7	0.00041	1.16	0.041	1.89406	1.500	4.457	PER IMP=	94.00
COMPUTE NM HYD	FUTURE-A	-	8	0.00563	15.37	0.543	1.81072	1.500	4.268	PER IMP=	85.00
COMPUTE NM HYD	FUTURE-SITE	-	9	0.01058	28.29	0.993	1.75988	1.533	4.178	PER IMP=	80.00
ROUTE RESERVOIR	POND.B.OUT	4	10	0.00184	4.75	0.163	1.65518	1.533	4.022	AC-FT=	0.005
ROUTE RESERVOIR	POND.C.OUT	5	11	0.00228	6.06	0.211	1.73478	1.533	4.153	AC-FT=	0.001
ADD HYD	SD	8& 6	12	0.00605	16.53	0.583	1.80851	1.500	4.270		
FINISH											

```
    AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
         RUN DATE (MON/DAY/YR) = 02/22/2017
         START TIME (HR:MIN:SEC) = 15:26:25     USER NO.= Lorenz-NMSingleA33825816
         INPUT FILE = C:\Users\dennis\Desktop\Ahymo Files\Eagle.Ranch.txt

**********************************************************************
*                     EAGLE VISTA - NM MVD-RETAIL
*                          PROJECT HYDROLOGY
**********************************************************************
START               TIME=0.0  PUNCH CODE=0
LOCATION            ALBUQUERQUE
     City of Albuquerque soil infiltration values (LAND FACTORS) used for computations.
     Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
          A             0.65                  1.67
          B             0.50                  1.25
          C             0.35                  0.83
          D             0.10                  0.04

RAINFALL            TYPE=1  RAIN QUARTER=0.0  RAIN ONE=1.87
                    RAIN SIX=2.20  RAIN DAY=2.66  DT=0.03333 HRS

               6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
               DT =   0.033330 HOURS       END TIME =     5.999400 HOURS
                 0.0000  0.0015  0.0029  0.0045  0.0061  0.0077  0.0096
                 0.0114  0.0133  0.0154  0.0175  0.0219  0.0264  0.0311
                 0.0361  0.0412  0.0466  0.0521  0.0577  0.0635  0.0693
                 0.0753  0.0814  0.0878  0.0946  0.1014  0.1091  0.1168
                 0.1296  0.1477  0.1657  0.1898  0.2140  0.2429  0.2767
                 0.3105  0.3612  0.4120  0.4810  0.5686  0.6562  0.8890
                 1.1224  1.3042  1.4336  1.5629  1.6282  1.6932  1.7463
                 1.7873  1.8282  1.8567  1.8850  1.9097  1.9304  1.9512
                 1.9670  1.9827  1.9942  2.0015  2.0087  2.0151  2.0215
                 2.0273  2.0326  2.0378  2.0426  2.0474  2.0521  2.0568
                 2.0614  2.0636  2.0659  2.0681  2.0702  2.0724  2.0744
                 2.0764  2.0784  2.0803  2.0823  2.0842  2.0860  2.0879
                 2.0896  2.0914  2.0931  2.0948  2.0965  2.0982  2.0999
                 2.1015  2.1030  2.1046  2.1062  2.1077  2.1092  2.1107
                 2.1122  2.1136  2.1150  2.1164  2.1178  2.1192  2.1206
                 2.1220  2.1233  2.1246  2.1260  2.1273  2.1286  2.1299
                 2.1312  2.1324  2.1337  2.1349  2.1362  2.1374  2.1386
                 2.1398  2.1410  2.1422  2.1434  2.1446  2.1457  2.1469
                 2.1480  2.1492  2.1503  2.1514  2.1525  2.1536  2.1547
                 2.1558  2.1569  2.1580  2.1591  2.1601  2.1612  2.1622
                 2.1633  2.1643  2.1653  2.1663  2.1673  2.1684  2.1693
                 2.1703  2.1713  2.1723  2.1733  2.1742  2.1752  2.1762
                 2.1771  2.1781  2.1790  2.1799  2.1809  2.1818  2.1827
                 2.1836  2.1845  2.1854  2.1863  2.1872  2.1881  2.1890
                 2.1898  2.1907  2.1916  2.1924  2.1933  2.1941  2.1950
                 2.1958  2.1967  2.1975  2.1983  2.1992  2.2000
```

```
**************************************************************************
************************
* EXISTING CONDITIONS  *
************************
* SITE - 6.77 ACRES
COMPUTE NM HYD       ID=1  HYD NO=EX-SITE  DA=0.010578 SQ MI
                     PER A=0 PER B=82 PER C=15  PER D=3
                     TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.2529    CFS   UNIT VOLUME =   0.9897       B =   526.28      P60 = 1.8700
     AREA =     0.000317 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.127107HR    TP =  0.133300HR    K/TP RATIO =  0.953538     SHAPE CONSTANT, N =  3.706151
     UNIT PEAK =   25.793    CFS   UNIT VOLUME =   0.9996       B =   335.08      P60 = 1.8700
     AREA =     0.010261 SQ MI    IA =   0.47680 INCHES    INF =   1.18505 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD            ID=1  CODE=20

                                    HYDROGRAPH FROM AREA EX-SITE

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      1.3          2.666      0.3          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      1.6          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     0.90738 INCHES     =       0.5119 ACRE-FEET
    PEAK DISCHARGE RATE =      18.03 CFS  AT   1.533 HOURS   BASIN AREA =  0.0106 SQ. MI.


************************
* DEVELOPED CONDITIONS  *
************************
* SITE - 6.77 ACRES
COMPUTE NM HYD       ID=2  HYD NO=DEV-SITE  DA=0.010578 SQ MI
                     PER A=0 PER B=51 PER C=14  PER D=35
                     TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   14.617    CFS   UNIT VOLUME =   0.9985       B =   526.28      P60 = 1.8700
     AREA =     0.003702 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.125580HR    TP =  0.133300HR    K/TP RATIO =  0.942088     SHAPE CONSTANT, N =  3.752895
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```
     UNIT PEAK =   17.452    CFS   UNIT VOLUME =   0.9994       B =   338.35      P60 = 1.8700
     AREA =     0.006876 SQ MI    IA =   0.46769 INCHES    INF =   1.15954 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=2  CODE=20

                                        HYDROGRAPH FROM AREA DEV-SITE

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          2.000      2.6          4.000      0.0          5.999      0.1
     0.667      0.0          2.666      0.3          4.666      0.0          6.666      0.0
     1.333      3.9          3.333      0.1          5.333      0.0

    RUNOFF VOLUME =     1.26184 INCHES     =       0.7119 ACRE-FEET
    PEAK DISCHARGE RATE =      22.30 CFS  AT   1.533 HOURS   BASIN AREA =  0.0106 SQ. MI.


* EXISTING BASIN A - 3.60 ACRES
COMPUTE NM HYD      ID=3  HYD NO=EXIST-A  DA=0.005625 SQ MI
                    PER A=0 PER B=85 PER C=15 PER D=0
                    TP=0.1333 HR  MASS RAIN=-1

     K =  0.127223HR    TP =  0.133300HR    K/TP RATIO =  0.954412     SHAPE CONSTANT, N =  3.702639
     UNIT PEAK =   14.129    CFS   UNIT VOLUME =   0.9993       B =   334.84      P60 = 1.8700
     AREA =     0.005625 SQ MI    IA =   0.47750 INCHES    INF =   1.18700 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=3  CODE=20

                                        HYDROGRAPH FROM AREA EXIST-A

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      0.5          2.666      0.1
     0.667      0.0          2.000      0.8          3.333      0.0

    RUNOFF VOLUME =     0.87394 INCHES     =       0.2622 ACRE-FEET
    PEAK DISCHARGE RATE =       9.37 CFS  AT   1.533 HOURS   BASIN AREA =  0.0056 SQ. MI.


* BASIN B - 1.18 ACRES
COMPUTE NM HYD      ID=4  HYD NO=DEV-B  DA=0.001844 SQ MI
                    PER A=0 PER B=15 PER C=15 PER D=70
                    TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   5.0961    CFS   UNIT VOLUME =   0.9973       B =   526.28      P60 = 1.8700
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```
     AREA =      0.001291 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.118429HR    TP =  0.133300HR    K/TP RATIO =  0.888442     SHAPE CONSTANT, N =  3.992344
     UNIT PEAK =   1.4719    CFS   UNIT VOLUME =   0.9915       B =   354.66      P60 = 1.8700
     AREA =      0.000553 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=4  CODE=20

                                        HYDROGRAPH FROM AREA DEV-B

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      1.2          2.666      0.0          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      0.6          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     1.65535 INCHES     =       0.1628 ACRE-FEET
    PEAK DISCHARGE RATE =       4.73 CFS  AT   1.533 HOURS   BASIN AREA =  0.0018 SQ. MI.


* BASIN C - 1.46 ACRES
COMPUTE NM HYD      ID=5  HYD NO=DEV-C  DA=0.002281 SQ MI
                    PER A=0 PER B=11 PER C=11 PER D=78
                    TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   7.0243    CFS   UNIT VOLUME =   0.9978       B =   526.28      P60 = 1.8700
     AREA =      0.001779 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.118429HR    TP =  0.133300HR    K/TP RATIO =  0.888442     SHAPE CONSTANT, N =  3.992344
     UNIT PEAK =   1.3352    CFS   UNIT VOLUME =   0.9906       B =   354.66      P60 = 1.8700
     AREA =      0.000502 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=5  CODE=20

                                        HYDROGRAPH FROM AREA DEV-C

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      1.6          2.666      0.1          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      0.8          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     1.73492 INCHES     =       0.2111 ACRE-FEET
    PEAK DISCHARGE RATE =       6.04 CFS  AT   1.533 HOURS   BASIN AREA =  0.0023 SQ. MI.
```

```
* BASIN D - 0.27 ACRES
COMPUTE NM HYD       ID=6  HYD NO=DEV-D  DA=0.000422 SQ MI
                     PER A=0 PER B=0 PER C=20 PER D=80
                     TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.3329    CFS   UNIT VOLUME =   0.9911       B =   526.28      P60 = 1.8700
     AREA =     0.000338 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE CONSTANT, N =  4.514592
     UNIT PEAK =  0.24575    CFS   UNIT VOLUME =   0.9486       B =   388.14      P60 = 1.8700
     AREA =     0.000084 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD            ID=6  CODE=20

                                        HYDROGRAPH FROM AREA DEV-D

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      0.3          2.666      0.0          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      0.2          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     1.78024 INCHES     =       0.0401 ACRE-FEET
    PEAK DISCHARGE RATE =       1.16 CFS  AT   1.533 HOURS   BASIN AREA =  0.0004 SQ. MI.


* BASIN E - 0.26 ACRES
COMPUTE NM HYD       ID=7  HYD NO=DEV-E  DA=0.000406 SQ MI
                     PER A=0 PER B=3 PER C=3 PER D=94
                     TP=0.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.5067    CFS   UNIT VOLUME =   0.9922       B =   526.28      P60 = 1.8700
     AREA =     0.000382 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.118429HR    TP =  0.133300HR    K/TP RATIO =  0.888442     SHAPE CONSTANT, N =  3.992344
     UNIT PEAK =  0.64813E-01CFS   UNIT VOLUME =   0.8761       B =   354.66      P60 = 1.8700
     AREA =     0.000024 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD            ID=7  CODE=20
```

HYDROGRAPH FROM AREA DEV-E

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.333	0.3	2.666	0.0	4.000	0.0	5.333	0.0
0.667	0.0	2.000	0.2	3.333	0.0	4.666	0.0	5.999	0.0

RUNOFF VOLUME = 1.89406 INCHES = 0.0410 ACRE-FEET
PEAK DISCHARGE RATE = 1.16 CFS AT 1.500 HOURS BASIN AREA = 0.0004 SQ. MI.

* FUTURE BASIN A - 3.60 ACRES
COMPUTE NM HYD ID=8 HYD NO=FUTURE-A DA=0.005625 SQ MI
PER A=0 PER B=5 PER C=10 PER D=85
TP=0.1333 HR MASS RAIN=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 18.877 CFS UNIT VOLUME = 0.9988 B = 526.28 P60 = 1.8700
AREA = 0.004781 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

K = 0.114242HR TP = 0.133300HR K/TP RATIO = 0.857028 SHAPE CONSTANT, N = 4.150443
UNIT PEAK = 2.3108 CFS UNIT VOLUME = 0.9944 B = 365.08 P60 = 1.8700
AREA = 0.000844 SQ MI IA = 0.40000 INCHES INF = 0.97000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.033330

PRINT HYD ID=8 CODE=20

HYDROGRAPH FROM AREA FUTURE-A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	2.000	2.2	4.000	0.0	5.999	0.1		
0.667	0.0	2.666	0.2	4.666	0.0	6.666	0.0		
1.333	4.3	3.333	0.0	5.333	0.1				

RUNOFF VOLUME = 1.81072 INCHES = 0.5432 ACRE-FEET
PEAK DISCHARGE RATE = 15.37 CFS AT 1.500 HOURS BASIN AREA = 0.0056 SQ. MI.

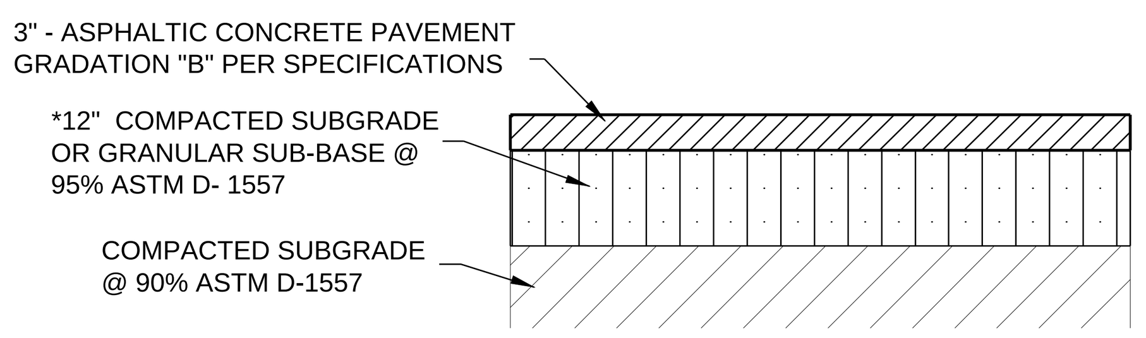
* FUTURE SITE - 6.77 ACRES
COMPUTE NM HYD ID=9 HYD NO=FUTURE-SITE DA=0.010578 SQ MI
PER A=0 PER B=8 PER C=12 PER D=80
TP=0.1333 HR MASS RAIN=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428

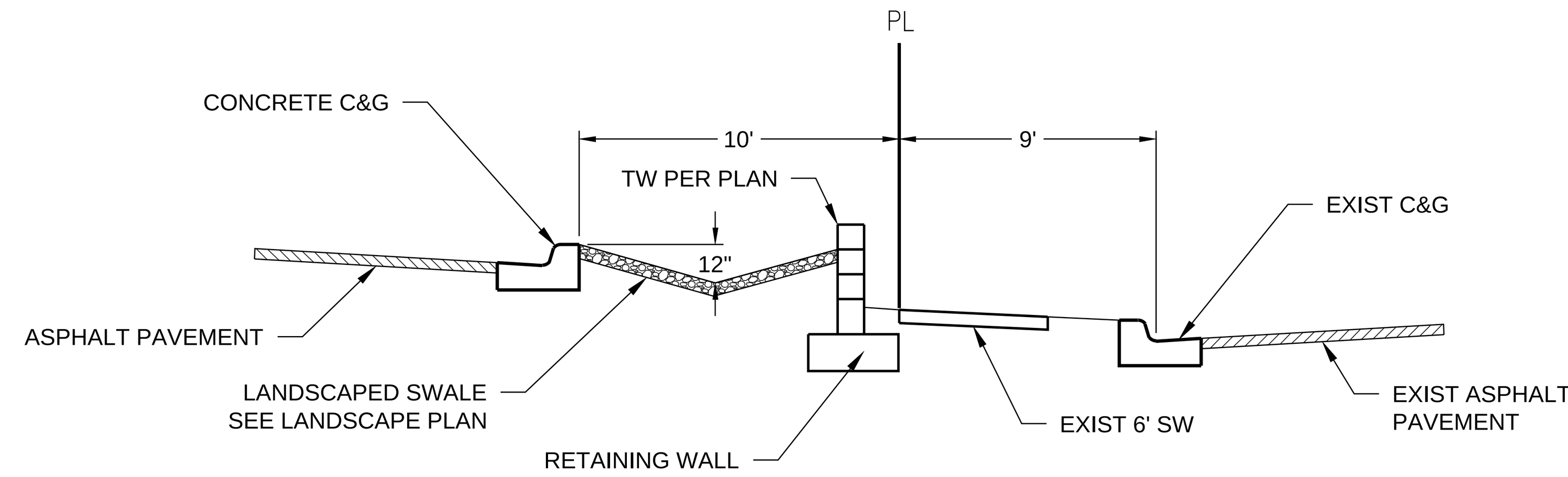
```
     UNIT PEAK =   33.410    CFS   UNIT VOLUME =   0.9990       B =   526.28      P60 = 1.8700
     AREA =     0.008462 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330


     K =  0.115917HR    TP =  0.133300HR    K/TP RATIO =  0.869594     SHAPE CONSTANT, N =  4.085527
     UNIT PEAK =   5.7268    CFS   UNIT VOLUME =   0.9980       B =   360.83      P60 = 1.8700
     AREA =     0.002116 SQ MI    IA =   0.41000 INCHES    INF =   0.99800 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033330

PRINT HYD           ID=9  CODE=20

                                    HYDROGRAPH FROM AREA FUTURE-SITE

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          2.000      4.0          4.000      0.0          5.999      0.1
     0.667      0.0          2.666      0.3          4.666      0.1          6.666      0.0
     1.333      7.7          3.333      0.1          5.333      0.1

    RUNOFF VOLUME =     1.75988 INCHES     =       0.9929 ACRE-FEET
    PEAK DISCHARGE RATE =      28.29 CFS  AT   1.533 HOURS   BASIN AREA =  0.0106 SQ. MI.


**********************************************************************
* ROUTE DEVELOPED BASIN B THROUGH DETENTION POND B                   *
* THRU 12 INCH SD TO STORM MANHOLE                                   *
**********************************************************************
ROUTE RESERVOIR     ID=10 HYD NO=POND.B.OUT  INFLOW ID=4  CODE=10
                    OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                    0.0           0                  84.00
                    8.07          0.00893            85.00
                    8.92          0.02397            86.00

  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

    TIME      INFLOW    ELEV      VOLUME    OUTFLOW
    (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

     0.00       0.00     84.00      0.000      0.00
     0.33       0.00     84.00      0.000      0.00
     0.67       0.00     84.00      0.000      0.00
     1.00       0.14     84.01      0.000      0.12
     1.33       1.21     84.14      0.001      1.10
     1.67       2.69     84.36      0.003      2.91
     2.00       0.65     84.08      0.001      0.68
     2.33       0.19     84.02      0.000      0.20
     2.67       0.05     84.01      0.000      0.05
     3.00       0.01     84.00      0.000      0.01
```

```
     3.33       0.01      84.00       0.000       0.01
     3.67       0.01      84.00       0.000       0.01
     4.00       0.01      84.00       0.000       0.01
     4.33       0.01      84.00       0.000       0.01
     4.67       0.01      84.00       0.000       0.01
     5.00       0.01      84.00       0.000       0.01
     5.33       0.01      84.00       0.000       0.01
     5.67       0.02      84.00       0.000       0.02
     6.00       0.02      84.00       0.000       0.02
     6.33       0.00      84.00       0.000       0.00
 PEAK DISCHARGE =         4.747 CFS - PEAK OCCURS AT HOUR    1.53
 MAXIMUM WATER SURFACE ELEVATION =        84.588
 MAXIMUM STORAGE =         0.0053 AC-FT      INCREMENTAL TIME=    0.033330HRS

PRINT HYD           ID=10 CODE=20

                                    HYDROGRAPH FROM AREA POND.B.OUT

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      1.1          2.666      0.1          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      0.7          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     1.65518 INCHES      =       0.1628 ACRE-FEET
    PEAK DISCHARGE RATE =       4.75 CFS  AT   1.533 HOURS   BASIN AREA =  0.0018 SQ. MI.


**********************************************************************
* ROUTE DEVELOPED BASIN C THROUGH DETENTION POND B                   *
* THRU 12 INCH SD TO 24" SD                                          *
**********************************************************************
ROUTE RESERVOIR     ID=11 HYD NO=POND.C.OUT  INFLOW ID=5  CODE=10
                    OUT (CFS)   STORAGE (AC-FT)    ELEV (FT)
                    0.0           0                  67.50
                    8.07          0.00181            68.00
                    8.92          0.00955            69.00

  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

    TIME      INFLOW    ELEV      VOLUME    OUTFLOW
    (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

     0.00       0.00     67.50       0.000      0.00
     0.33       0.00     67.50       0.000      0.00
     0.67       0.00     67.50       0.000      0.00
     1.00       0.19     67.51       0.000      0.18
     1.33       1.62     67.60       0.000      1.59
     1.67       3.43     67.72       0.001      3.49
     2.00       0.85     67.55       0.000      0.86
```

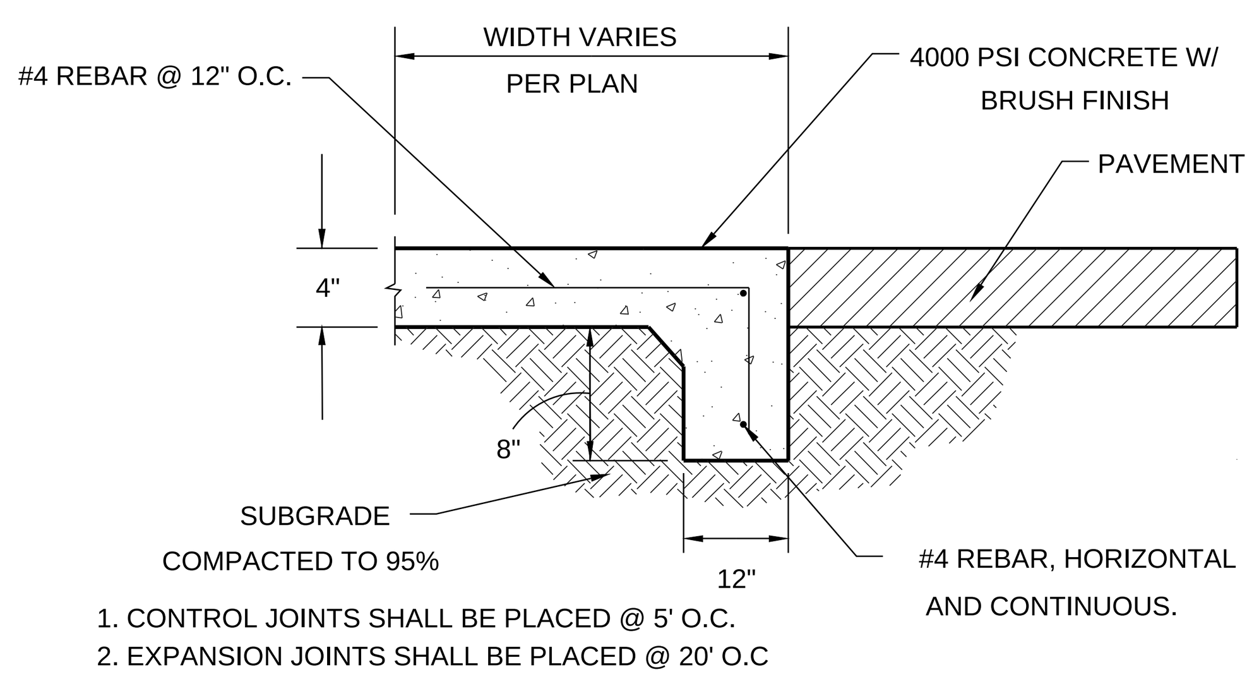
```
     2.33       0.25      67.52       0.000       0.25
     2.67       0.06      67.50       0.000       0.06
     3.00       0.02      67.50       0.000       0.02
     3.33       0.01      67.50       0.000       0.01
     3.67       0.01      67.50       0.000       0.01
     4.00       0.01      67.50       0.000       0.01
     4.33       0.01      67.50       0.000       0.01
     4.67       0.01      67.50       0.000       0.01
     5.00       0.02      67.50       0.000       0.02
     5.33       0.02      67.50       0.000       0.02
     5.67       0.02      67.50       0.000       0.02
     6.00       0.03      67.50       0.000       0.03
     6.33       0.00      67.50       0.000       0.00
 PEAK DISCHARGE =         6.063 CFS - PEAK OCCURS AT HOUR    1.53
 MAXIMUM WATER SURFACE ELEVATION =        67.876
 MAXIMUM STORAGE =         0.0014 AC-FT      INCREMENTAL TIME=    0.033330HRS

PRINT HYD           ID=11 CODE=20

                                    HYDROGRAPH FROM AREA POND.C.OUT

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          1.333      1.6          2.666      0.1          4.000      0.0          5.333      0.0
     0.667      0.0          2.000      0.9          3.333      0.0          4.666      0.0          5.999      0.0

    RUNOFF VOLUME =     1.73478 INCHES      =       0.2110 ACRE-FEET
    PEAK DISCHARGE RATE =       6.06 CFS  AT   1.533 HOURS   BASIN AREA =  0.0023 SQ. MI.


ADD HYD             ID=12  HYD NO=SD INLETS  ID I=8  ID II=6
PRINT HYD           ID=12  CODE=20

                                    HYDROGRAPH FROM AREA SD

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     0.000      0.0          2.000      2.4          4.000      0.0          5.999      0.1
     0.667      0.0          2.666      0.2          4.666      0.0          6.666      0.0
     1.333      4.6          3.333      0.0          5.333      0.1

    RUNOFF VOLUME =     1.80851 INCHES      =       0.5833 ACRE-FEET
    PEAK DISCHARGE RATE =      16.53 CFS  AT   1.500 HOURS   BASIN AREA =  0.0060 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 15:26:25
```



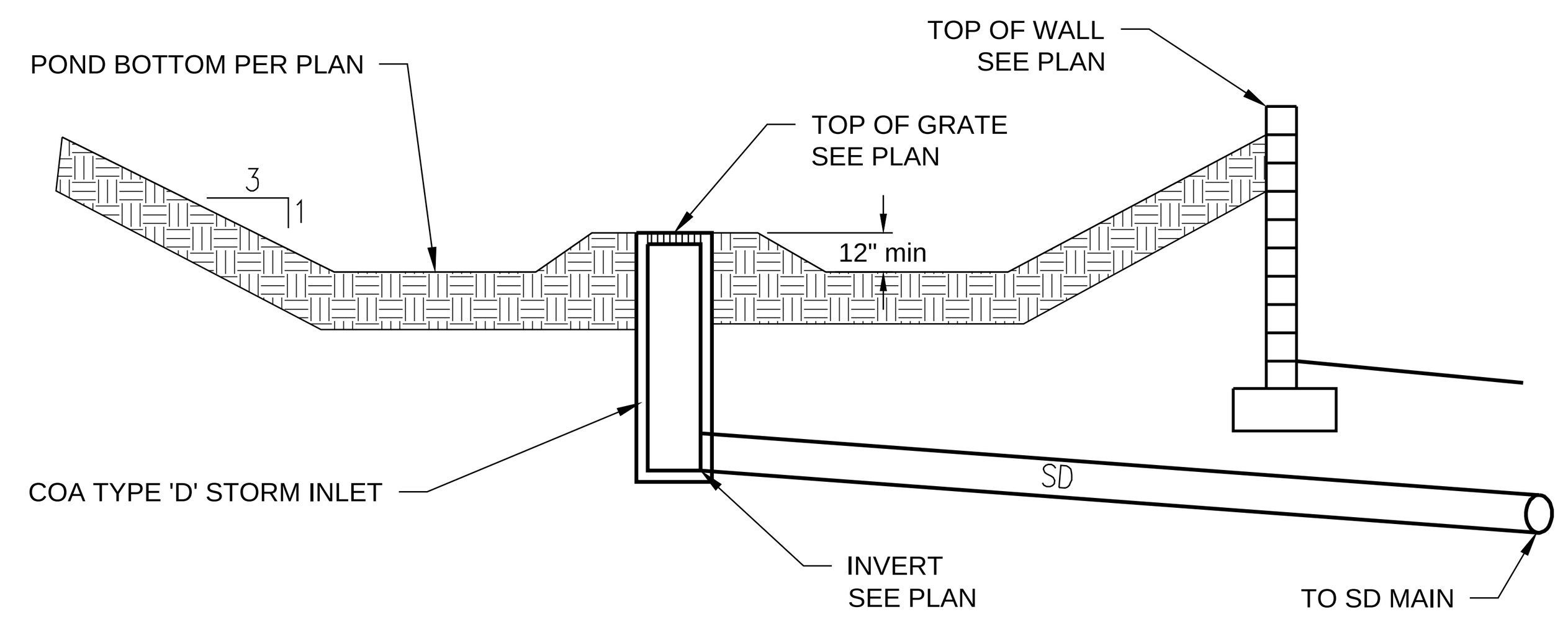
ASPHALT PAVEMENT SECTION A C-3.0
AUTO/PICKUP TRUCK NTS



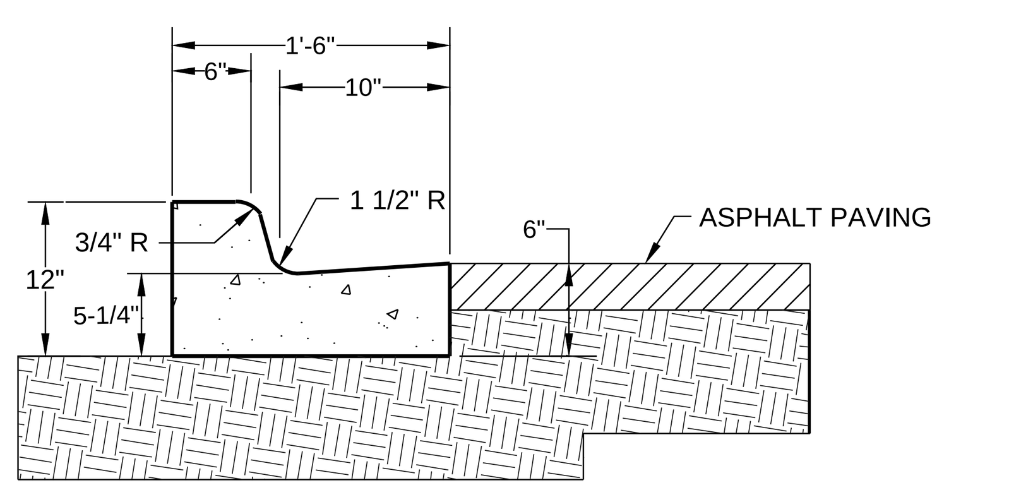
LANDSCAPED SWALE SECTION F C-3.0
NTS



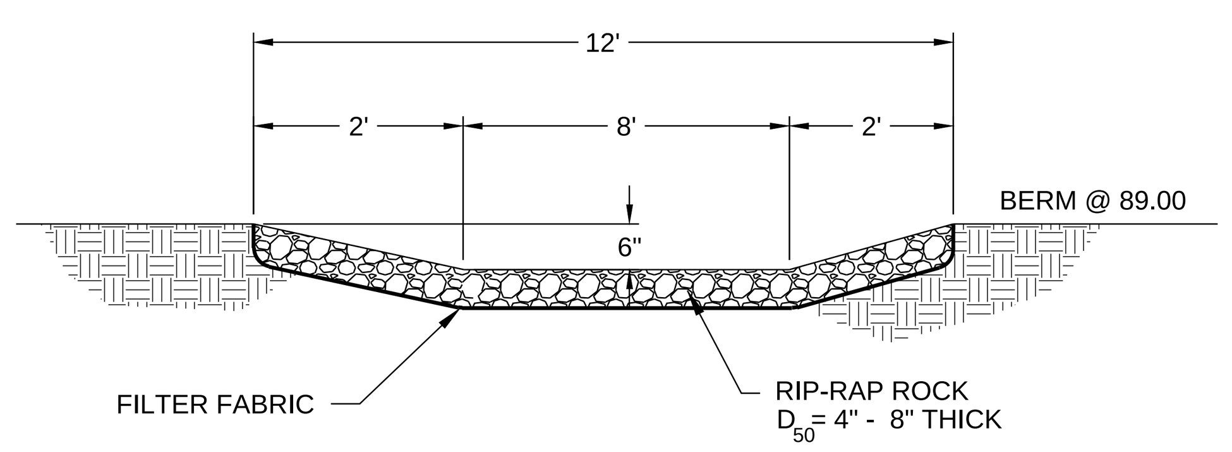
TURN DOWN SIDEWALK AT ACCESSIBLE ZONES B C-3.0
NTS



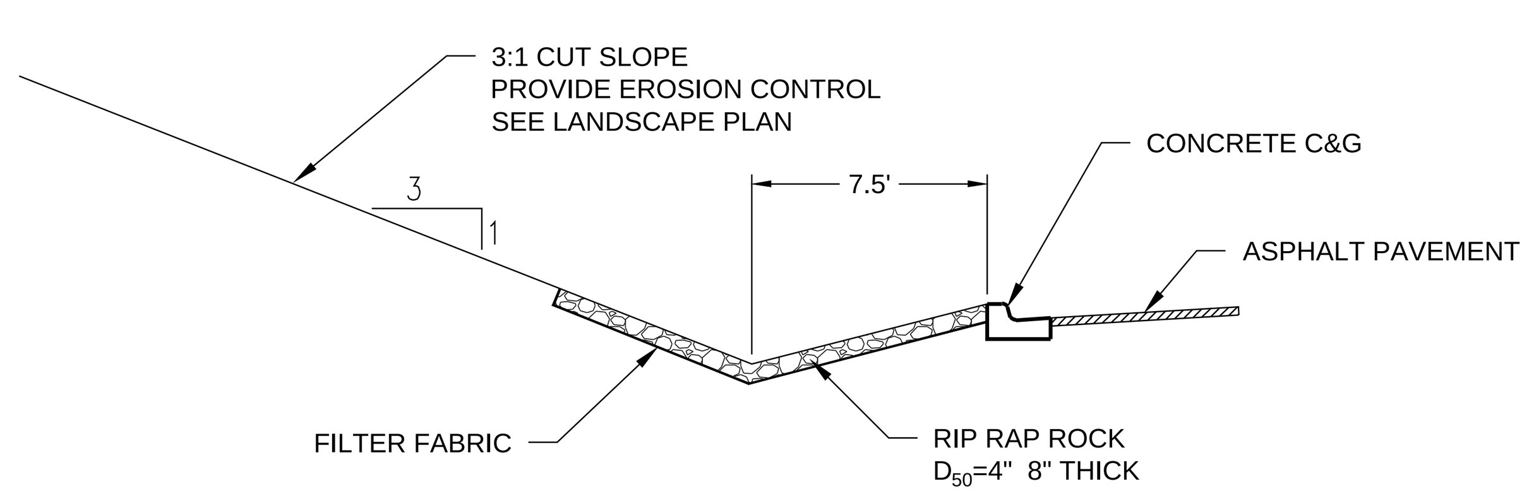
TYPICAL POND SECTION G C-3.0
NTS



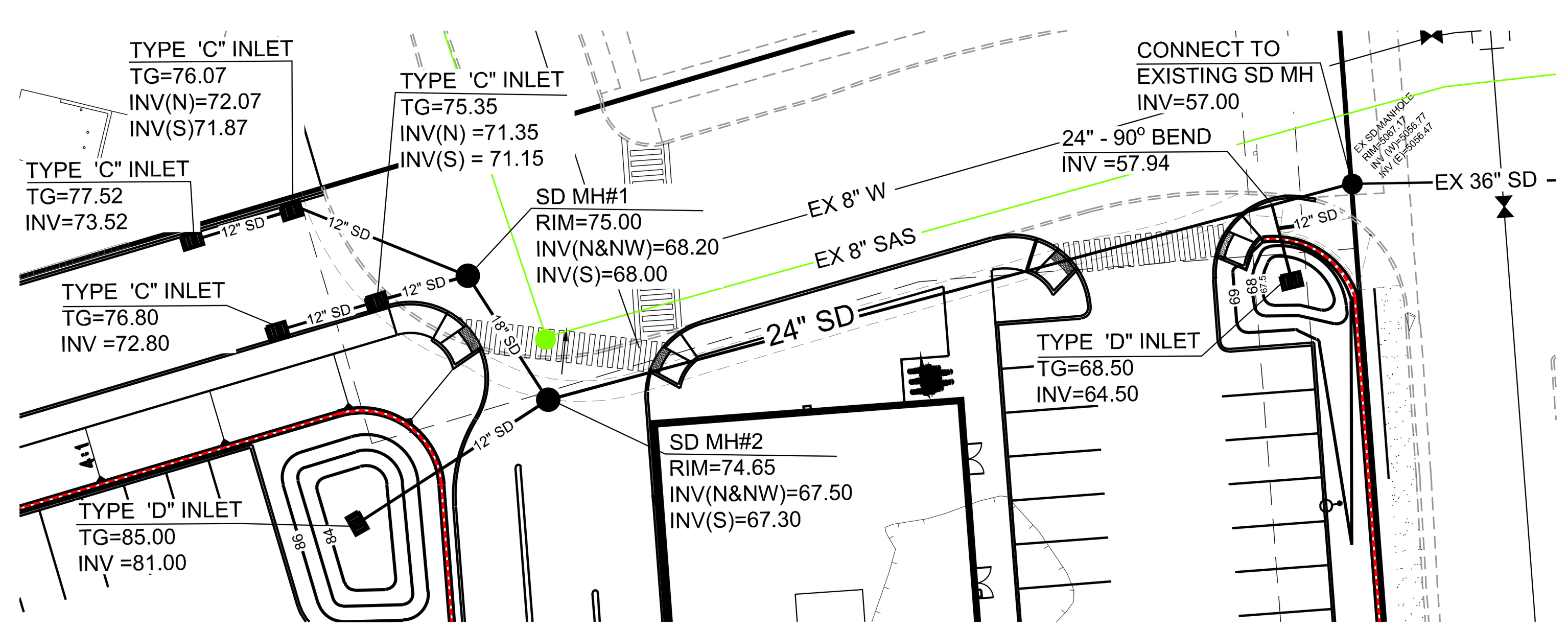
CONCRETE CURB AND GUTTER C C-3.0
NTS



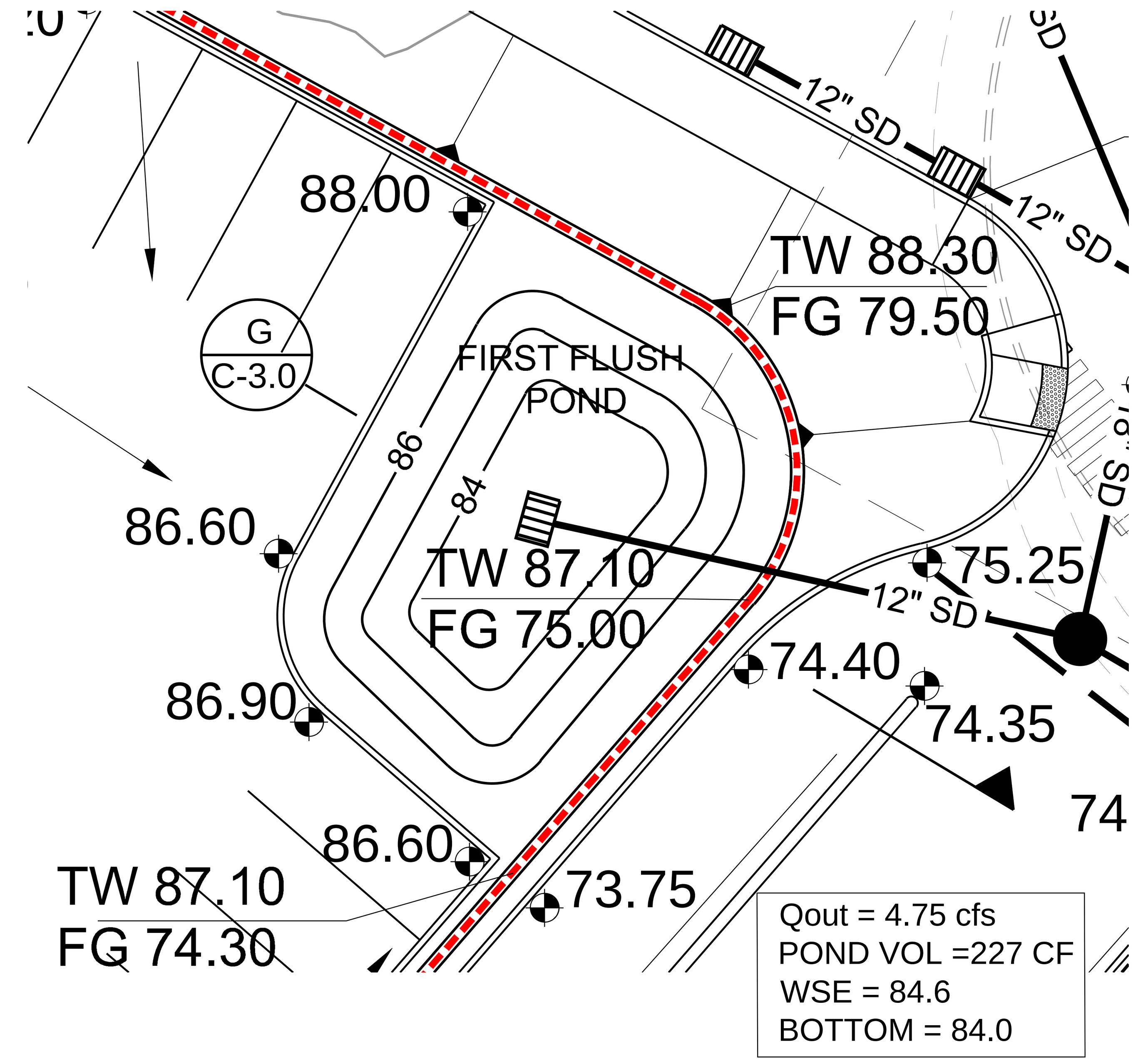
OVERFLOW SPILLWAY H C-3.0
NTS



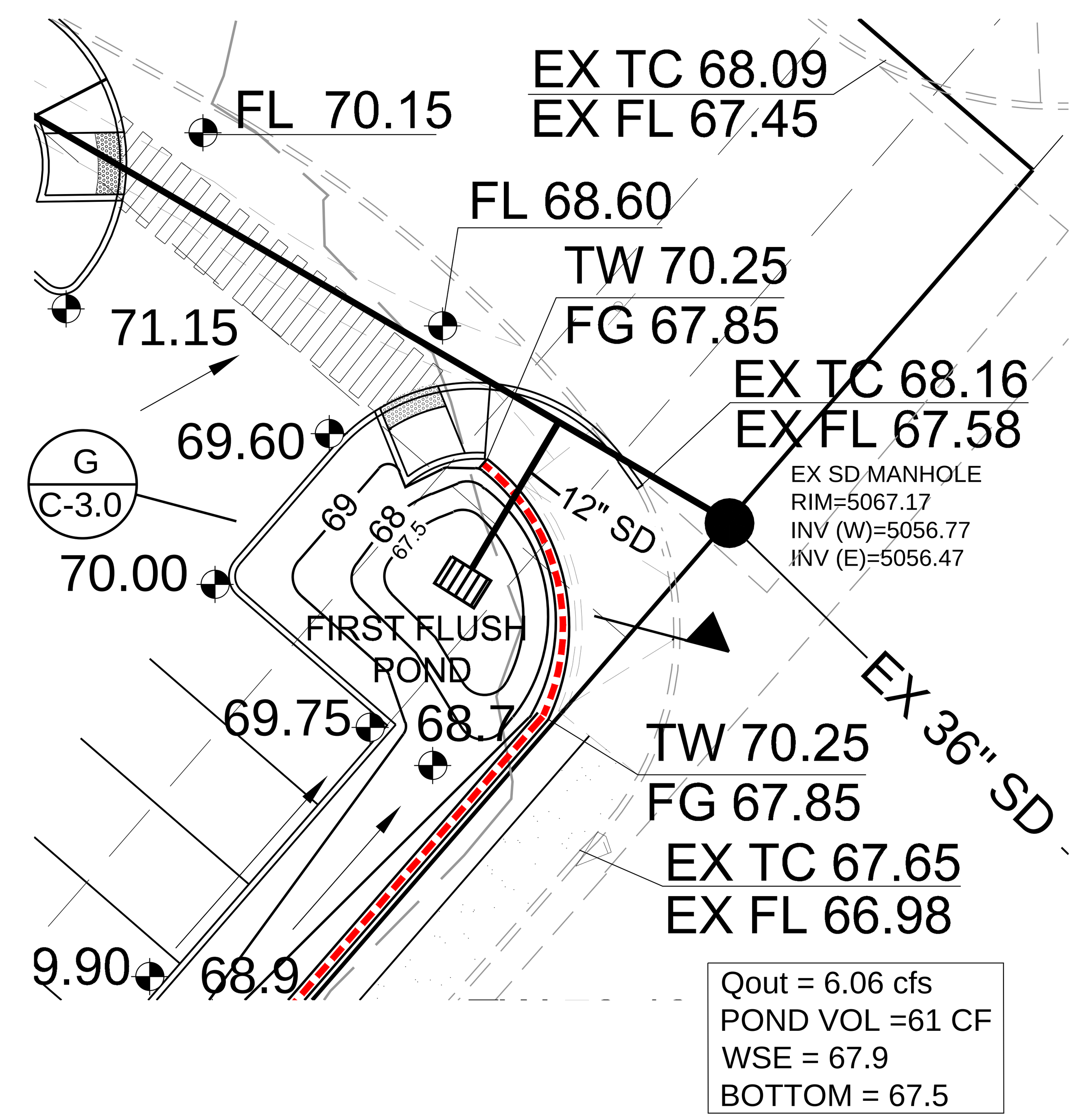
CUT SLOPE/SWALE SECTION E C-3.0
NTS



STORM DRAIN PLAN J C-3.0
1" = 30'



FIRST FLUSH POND "B" DETAIL K C-3.0
1" = 10'



FIRST FLUSH POND "C" DETAIL L C-3.0
1" = 10'

LORENZ
2501 Rio Grande Blvd NW, Suite A Albuquerque, New Mexico 87104
Ph: 505-888-6088 Fax: 505-242-6655

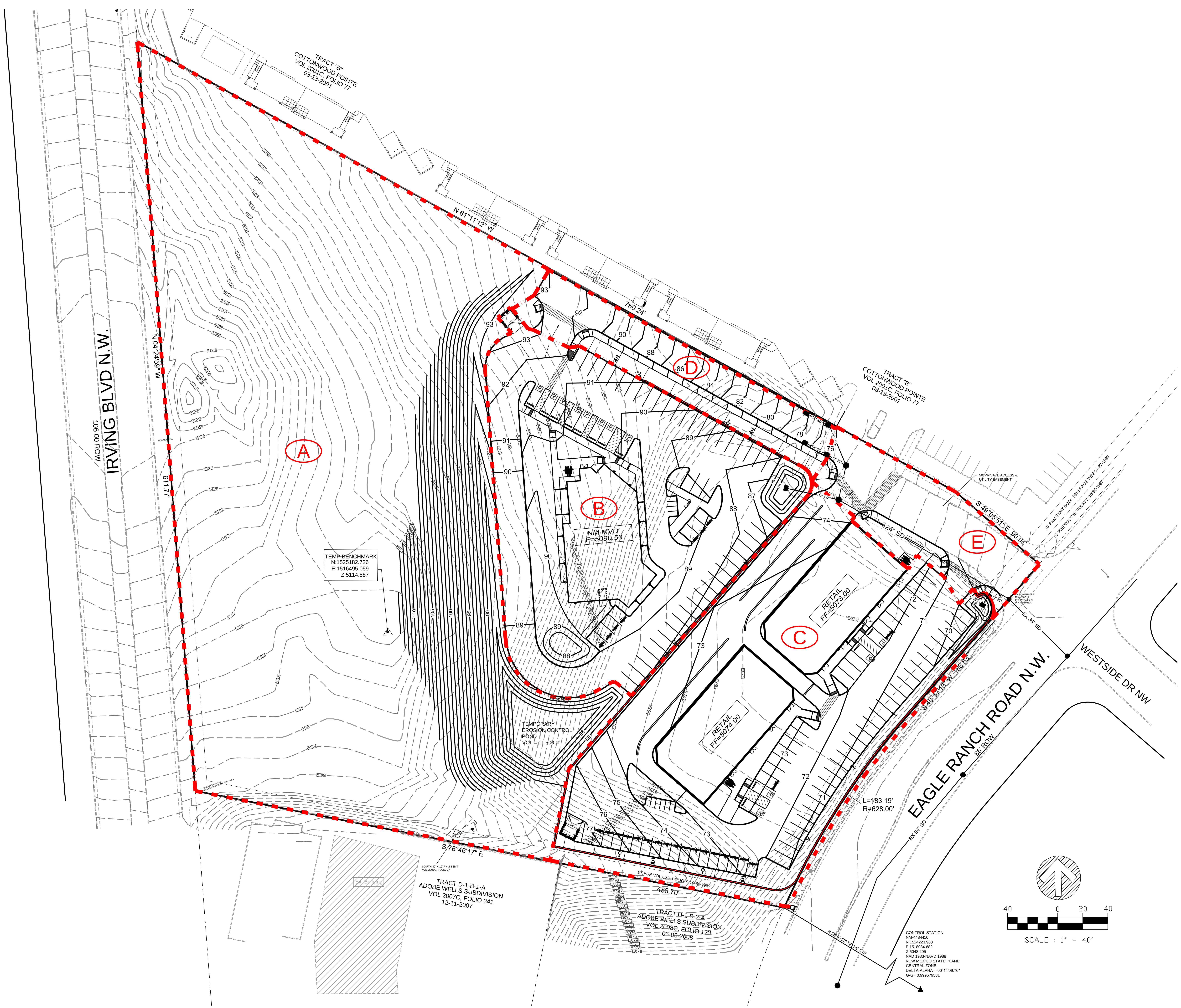
EAGLE RANCH NM MVD - RETAIL
Albuquerque, New Mexico
SITE DETAILS

REVISION DATE

RBA ARCHITECTURE PC

DATE 02-20-2017

SHEET NUMBER
C-3.0



LEGEND

ITEM	EXISTING	PROPOSED
PROPERTY LINE		
SPOT ELEVATION	75.5	01.5
CONTOUR W/ ELEVATION	5800	5800
BLOCK WALL		
RETAINING WALL		
STORM DRAIN	84" SD	24" SD
DIRECTION OF FLOW		
DRAINAGE SWALE		
RIDGE LINE		
SLOPE GRADING		3 : 1
CONCRETE CURB		
DRAINAGE BASIN ID		A
DRAINAGE BASIN BOUNDARY		

PROJECT DATA

PROPERTY ADDRESS:

EAGLE RANCH ROAD NW
ALBUQUERQUE, NEW MEXICO

LEGAL DESCRIPTION:

TRACT C
COTTONWOOD POINTE
ALBUQUERQUE, NEW MEXICO

SURVEY:

ALL PROJECT SURVEYING BY CONSTRUCTION SURVEY TECHNOLOGIES, INC.

IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE DRAINAGE ORDINANCE, EFFECTIVE MAY 12, 2014, ALL NEW DEVELOPMENT PROJECT S ARE REQUIRED TO MANAGE THE RUNOFF WHICH OCCURS DURING THE 90TH PERCENTILE STORM EVENT. IN ORDER TO COMPLY WITH THIS CRITERIA, WHERE PRACTICAL, ALL SURFACE DRAINAGE SHALL BE ROUTED THROUGH LANDSCAPED AREAS BEFORE RELEASE INTO DOWNSTREAM DRAINAGE FACITLITIES. THIS PLAN RECOMMENDS ALL LANDSCAPED AREAS BE DEPRESSED A MINIMUM OF 3-INCHES BELOW THE ADJACENT PAVED SURFACE TO RETAIN THE FIRST FLUSH RUNOFF.

LORENZ

EAGLE RANCH NM MVD - RETAIL

Albuquerque, New Mexico

GRADING & DRAINAGE PLAN

Overall Site & Drainage Basins

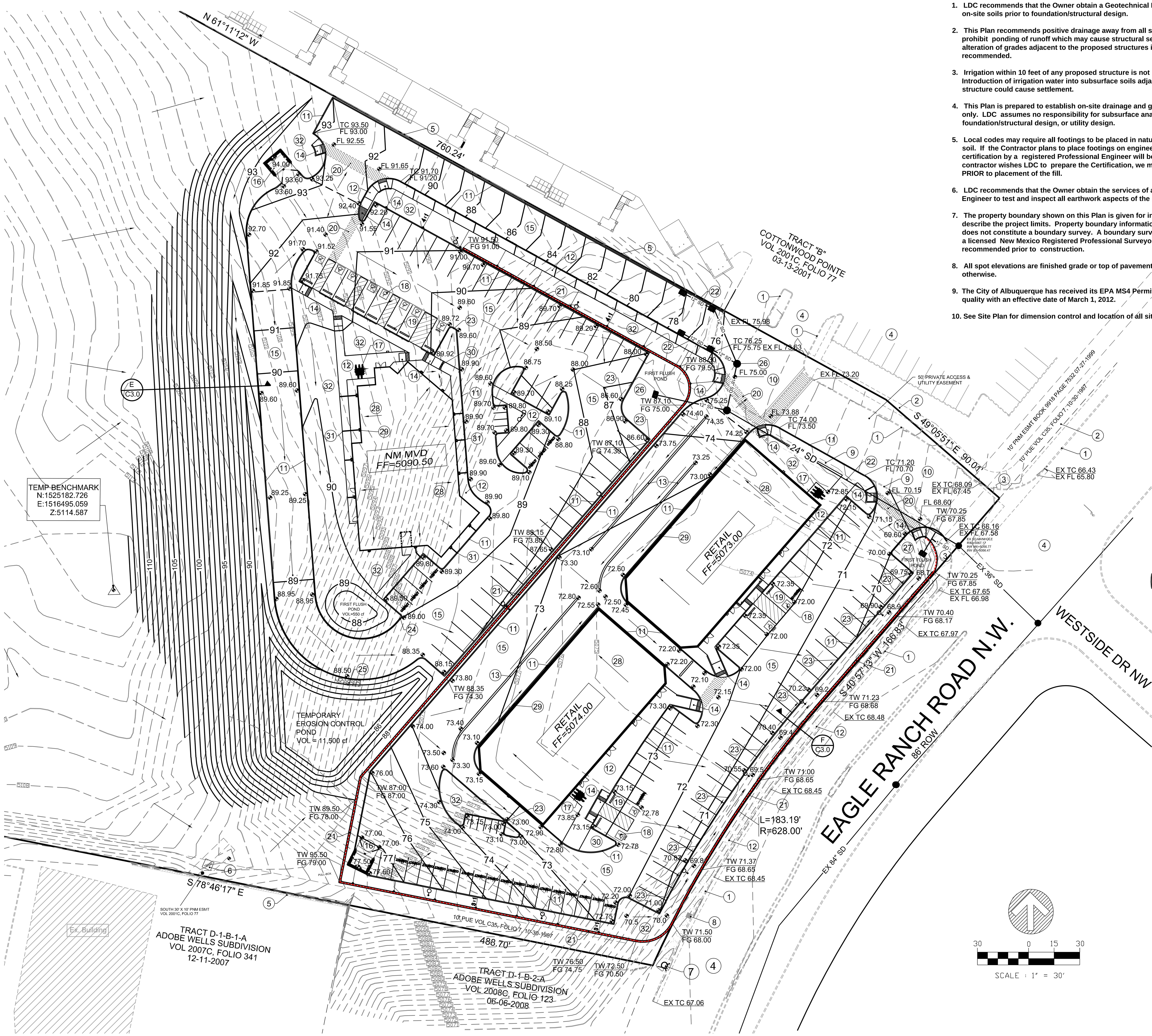
REVISION DATE

RBA ARCHITECTURE PC PLANNING DESIGN

DATE 02-20-2017

SHEET NUMBER

C-1.0



DRAINAGE PLAN NOTES

1. LDC recommends that the Owner obtain a Geotechnical Evaluation of the on-site soils prior to foundation/structural design.
2. This Plan recommends positive drainage away from all structures to prohibit ponding of runoff which may cause structural settlement. Future alteration of grades adjacent to the proposed structures is not recommended.
3. Irrigation within 10 feet of any proposed structure is not recommended. Introduction of irrigation water into subsurface soils adjacent to the structure could cause settlement.
4. This Plan is prepared to establish on-site drainage and grading criteria only. LDC assumes no responsibility for subsurface analysis, foundation/structural design, or utility design.
5. Local codes may require all footings to be placed in natural undisturbed soil. If the Contractor plans to place footings on engineered fill, a certification by a registered Professional Engineer will be required. If the contractor wishes LDC to prepare the Certification, we must be notified PRIOR to placement of the fill.
6. LDC recommends that the Owner obtain the services of a Geotechnical Engineer to test and inspect all earthwork aspects of the project.
7. The property boundary shown on this Plan is given for information only to describe the project limits. Property boundary information shown hereon does not constitute a boundary survey. A boundary survey performed by a licensed New Mexico Registered Professional Surveyor is recommended prior to construction.
8. All spot elevations are finished grade or top of pavement, unless noted otherwise.
9. The City of Albuquerque has received its EPA MS4 Permit for stormwater quality with an effective date of March 1, 2012.
10. See Site Plan for dimension control and location of all site improvements.

LEGEND

ITEM	EXISTING	PROPOSED
PROPERTY LINE		
SPOT ELEVATION	75.5	01.5
CONTOUR W/ ELEVATION	5800	5800
DIRECTION OF FLOW		
RIDGE LINE		
SLOPE GRADING		3 : 1
TOP CURB/FLOWLINE	EX TC 75.75 EX FL 75.25	TC 75.75 FL 75.25
TOP WALL/FINSIH GRADE	EX TW 75.75 EX FG 75.25	TW 75.75 FG 75.25
CONCRETE CURB		
BLOCK WALL		
RETAINING WALL		
STORM DRAIN	84" SD	24" SD
UTILITY POLE	PP	
WATER METER	WM	
ELECTRIC TRANSFORMER	XFMR	
FIRE HYDRANT		

KEYED NOTES

1. *EXISTING CONCRETE CURB.*
2. *EXISTING CONCRETE SIDEWALK.*
3. *EXISTING HANDICAP RAMP.*
4. *EXISTING ASPHALT PAVEMENT.*
5. *EXISTING BLOCK WALL.*
6. *EXISTING ELECTRIC TRANSFORMER.*
7. *EXISTING FIRE HYDRANT.*
8. *EXISTING WATER METER.*
9. *REM & DISPOSE EXISTING CONCRETE CURB & GUTTER AND SIDEWALK TO LIMITS SHOWN.*
10. *REM & DISPOSE ASPHALT PAVEMENT TO LIMITS SHOWN FOR UNDERGROUND UTILITY CONSTRUCTION. SEE UTILITY PLAN.*
11. *CONSTRUCT 6" CONCRETE CURB & GUTTER. SEE SHEET C-3.0.*
12. *CONSTRUCT SIDEWALK. SEE SITE PLAN.*
13. *CONSTRUCT MOUNTABLE CURB AT DRIVE THRU LANES. SEE SHEET AS-1.2.*
14. *CONSTRUCT HANDICAP RAMP. SEE SHEET AS-1.2.*
15. *CONSTRUCT ASPHALT PAVEMENT. SEE SHEET C-3.0.*
16. *CONSTRUCT REFUSE ENCLOSURE. SEE SHEET AS-1.2.*
17. *INSTALL BICYCLE RACK. SEE SHEET AS-1.2.*
18. *INSTALL HANDICAPPED PARKING STRIPING AND SIGNAGE. SEE SHEET AS-1.2.*
19. *INSTALL CONCRETE TIRE STOPS.*
20. *INSTALL PEDESTRIAN CROSSWALK STRIPING. SEE SHEET AS-1.2.*
21. *CONSTRUCT RETAINING WALL. DESIGN BY OTHERS.*
22. *CONSTRUCT STORM DRAIN SYSTEM. SEE DETAIL J/C-3.0.*
23. *PROVIDE 12-INCH CURB BLOCKOUT FOR DRAINAGE.*
24. *PROVIDE 24-INCH CURB BLOCKOUT FOR FIRST FLUSH POND OVERFLOW.*
25. *CONSTRUCT OVERFLOW SPILLWAY AT TEMPORARY EROSION CONTROL POND. SEE SHEET C-3.0.*
26. *CONSTRUCT FIRST FLUSH POND-B. SEE DETAIL K/C-3.0.*
27. *CONSTRUCT FIRST FLUSH POND-C. SEE DETAIL L/ C-3.0.*
28. *DIRECTION OF ROOF DRAINAGE.*
29. *DOWNSPOUT LOCATION. SEE SHEET A-5.0 FOR ROOF PLAN.*
30. *CONSTRUCT 12" SIDEWALK CULVERT PER COA STD DRAWING 2236.*
31. *CONNECT 4-INCH SD TO ROOF DOWNSPOUT. CONSTRUCT 4-INCH CURB PENETRATION PER COA STD DRAWING 2235, OR DAYLIGHT TO GRAVEL SWALE.*
32. *LANDSCAPING.*

LORENZ

EAGLE RANCH NM MVD - RETAIL
Albuquerque, New Mexico
GRADING & DRAINAGE PLAN
Phase 1 Plan

REVISION DATE

RBA ARCHITECTURE PC

DATE
02-20-2017

SHEET NUMBER
C-2.0