CITY OF ALBUQUERQUE

August 22, 2017

Hugh Floyd
Respec
5971 Jefferson St NE
Albuquerque, NM 87109

RE: **I-25 west Frontage Rd between Venice & Pasadena**
Conceptual Grading and Drainage Report
Plan Date: 8/3/17
Hydrology File: B18D022

Dear Mr. Floyd:

Based upon the information provided in your submittal received 8/4/17, the above referenced submittal cannot be approved for Site Plan for Building Permit until the following comments are addressed:

1. A cross lot drainage easement will be required with University of Phoenix in order to discharge onto their lot.
2. An agreement and covenant with the owner of Lot A1 to maintain the temporary swale in the Venice ROW will be required.
3. The downstream storm drain inlets will need to be built in accordance with the ultimate design: 1x single A and 1x double C.
4. Per Ch. 22, Section C.e (2) of the DPM, channels draining to inlets must be armored. Provide concrete transition slabs and curb for the inlets and standard curb and gutter between the two inlets. Provide riprap protection around the inlets and immediately upstream.
5. Freeboard must be provided for the channel.
6. In section A-A, show the adjacent lot existing grade and the footer (if any); include a note that the wall, footer, and grading will not encroach upon the adjacent lot.
7. For conceptual grading and drainage plans, label as 'not for construction.'

Regarding the request for Building Permit and SO-19, a more detailed grading and drainage plan addressing these comments and potentially more will need to be prepared once more is known about the project. 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

Orig: Drainage file

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: I-25 WEST FRONTAGE BETWEEN VENICE & PASADENA Building Permit #: _____ City Drainage #: _____

DRB#: 1011277 EPC#: _____ Work Order#: _____

Legal Description: Tract A-1, Block 3, North Albuquerque Acres, Tract A, Unit B

City Address: _____

Engineering Firm: Respec Contact: Hugh Floyd

Address: 5971 Jefferson St NE; Albuquerque, NM 87109

Phone#: (505) 366-4187 Fax#: _____ E-mail: hugh.floyd@respec.com

Owner: Venice, LLC Contact: Angela Williamson

Address: 100 Sun Avenue NE, Suite 305; Albuquerque, NM 87109

Phone#: (505) 338-1499 (Ext. 1000) Fax#: _____ E-mail: awilliamson@modulusarchitects.com

Architect: Modulus Architects Contact: Stephen Dunbar

Address: 100 Sun Avenue NE, Suite 305; Albuquerque, NM 87109

Phone#: (505) 417-4164 Fax#: _____ E-mail: sdunbar@modulusarchitects.com

Other Contact: _____ Contact: _____

Address: _____

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

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

X CONCEPTUAL G & D PLAN

_____ GRADING PLAN

_____ DRAINAGE MASTER PLAN

_____ DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: _____ Yes X No

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY

_____ PRELIMINARY PLAT APPROVAL

_____ SITE PLAN FOR SUB'D APPROVAL

X SITE PLAN FOR BLDG. PERMIT APPROVAL

_____ FINAL PLAT APPROVAL

_____ SIA/ RELEASE OF FINANCIAL GUARANTEE

_____ FOUNDATION PERMIT APPROVAL

_____ GRADING PERMIT APPROVAL

X SO-19 APPROVAL

_____ PAVING PERMIT APPROVAL

_____ GRADING/ PAD CERTIFICATION

_____ WORK ORDER APPROVAL

_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

DATE SUBMITTED: August 3, 2017 By: Jeremy Shell (Respec)

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

Hydrology Calculations

The following calcualtions are based on Albuquerque's Development Process Manual, Seciton 22.2

Runoff Rate:

Treatment Type Areas

Subbasin	Area$_A$ (ac)	Area$_B$ (ac)	Area$_C$ (ac)	Area$_D$ (ac)	Total (ac)
Subbasin-1	0	0.1204	0.1204	0.9635	1.2044
Subbasin-2	0	0.0654	0.0654	0.1620	0.2927
Subbasin-3	0	0.0552	0.0552	0.4416	0.5520
Subbasin-4	0	0.0686	0.0686	0.2121	0.3493

Peak Discharge values based on Zone 3 from Table A-9

Q_A = 1.87 cfs/ac Q_B = 2.60 cfs/ac Q_C = 3.45 cfs/ac Q_D = 5.02 cfs/ac

Peak Discharge calculation for a 100-yr, 24-hr storm event from equation A-10

Subbasin	Discharge (cfs)
Subbasin-1	5.6
Subbasin-2	1.2
Subbasin-3	2.6
Subbasin-4	1.5

Water Quality:

Required Water Quality volume for first flush of 0.34"

Subbasin	Required Volume (cu. ft.)	Drains to	Volume Provided (cu. Ft.)
Subbasin-1	1,189	WQ Ponds 1-3	1,627
Subbasin-3	545	WQ Pond 4	700
Total Required	1,734	WQ Ponds 1-4	2,327

Water Quality Pond Rating Curves

WQ Pond 1

Elev.	Area (Sq. Ft.)	Vol (Cu. Ft.)	Cum. (Cu. Ft.)
5193.90	8	0	0
5194	14	1	1
5195	127	70	71
5196	351	239	310
5196.40	471	164	475

WQ Pond 2

Elev.	Area (Sq. Ft.)	Vol (Cu. Ft.)	Cum. (Cu. Ft.)
5191.80	15	0	0
5192	27	4	4
5193	137	82	86
5194	329	233	319
5195	596	462	782
5195.30	689	193	974

WQ Pond 3

Elev.	Area (Sq. Ft.)	Vol (Cu. Ft.)	Cum. (Cu. Ft.)
5189.88	21	0	0
5190	30	3	3
5191	166	98	101
5191.38	242	77	178

WQ Pond 4

Elev.	Area (Sq. Ft.)	Vol (Cu. Ft.)	Cum. (Cu. Ft.)
5193.30	943	0	0
5193.80	1858	700	700

6'-4" CHANNEL MANNING'S CAPACITY

Rectangular Channel

Input

Flow	4.9 cfs
Slope	0.014286 ft/ft
Manning's n	0.013
Base Width	6.3333 ft
Right Side Slope	0:1
Left Side Slope	0:1

Output

Depth	0.183 ft
Flow Area	1.16 sf
Velocity	4.24 fps
Velocity Head	0.279 ft
Top Width	6.33 ft
Froude Number	1.75
Critical Depth	0.265 ft
Critical Slope	0.00427 ft/ft

Weir Calculation for 6.33' Curb Opening

Weir:

Head Water Depth (h):	0.5	ft
Discharge Coeff. (C_w):	3.33	
Length (L):	6.33	ft
Flow (Q) = $C_w \cdot L \cdot h \wedge (1.5)$		
Flow (Q) =	**7.5**	**cfs**

2' SIDEWALK CULVERT MANNING'S CAPACITY

Rectangular Channel

Input

Flow	6.8 cfs
Slope	0.02 ft/ft
Manning's n	0.013
Base Width	2 ft
Right Side Slope	0:1
Left Side Slope	0:1

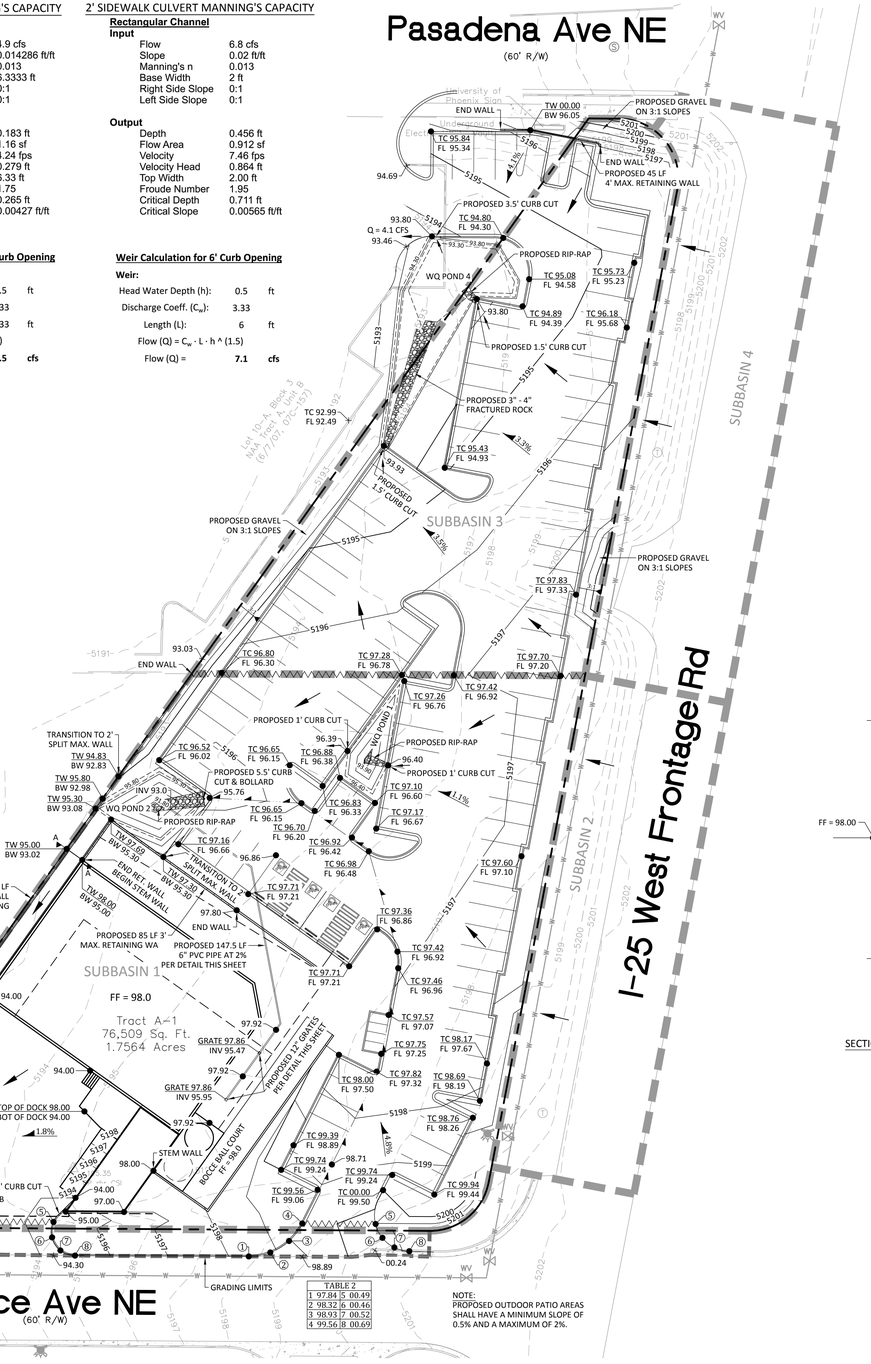
Output

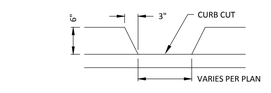
Depth	0.456 ft
Flow Area	0.912 sf
Velocity	7.46 fps
Velocity Head	0.864 ft
Top Width	2.00 ft
Froude Number	1.95
Critical Depth	0.711 ft
Critical Slope	0.00565 ft/ft

Weir Calculation for 6' Curb Opening

Weir:

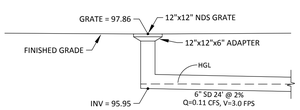
Head Water Depth (h):	0.5	ft
Discharge Coeff. (C_w):	3.33	
Length (L):	6	ft
Flow (Q) = $C_w \cdot L \cdot h \wedge (1.5)$		
Flow (Q) =	**7.1**	**cfs**

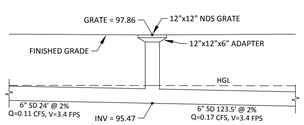


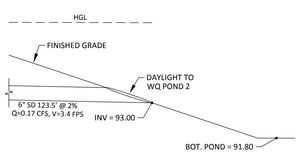


CURB CUT DETAIL

NTS

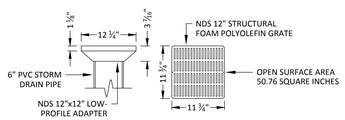






STORM DRAIN DETAILS

NTS



STORM DRAIN DETAILS

NTS

RIP-RAP NOTES:

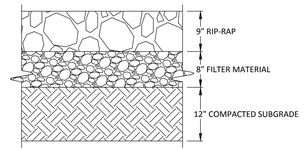
ALL RIP-RAP SHALL CONSIST OF 9" OF RIP-RAP OVER 8" OF FILTER MATERIAL. RIP-RAP SHALL CONSIST OF CRUSHED ROCK MEETING THE FOLLOWING GRADATION OR ENGINEER APPROVED EQUIVALENT.

MAX. DIMENSION	% SMALLER
12"	100
9"	50-60
6"	35-45
3"	10

FILTER MATERIAL SHALL CONSIST OF CRUSHED BASALT ROCK MEETING THE FOLLOWING GRADATION OR ENGINEER APPROVED EQUIVALENT.

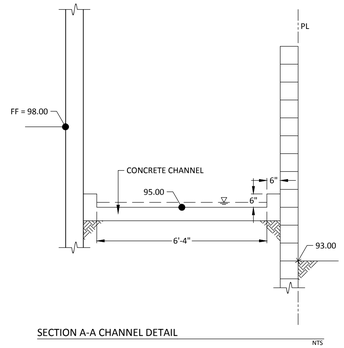
U.S. STANDARD SIEVE SIZE	PASSING BY WEIGHT
1"	100
¾"	45-65
#4	25-45
#40	0-20
#200	0-5

FILTER MATERIAL SHALL BE PLACED UNDER THE RIP-RAP CHANNEL PAVEMENT AND COMPACTED INTO SURFACE VOIDS OF THE RIP-RAP. THE SUBGRADES SHALL BE PROCESSED TO A 12" MIN. DEPTH AND COMPACTED TO 95% MIN. RELATIVE DENSITY PER ASTM D 1557. THE FILTER MTERIAL SHALL BE TAMPED AND SHAPED TO FORM A SMOOTH, EVEN, AND FIRM FOUNDATION FOR THE OVERLYING RIP-RAP. THE CONTRACTOR'S OPERATIONS AND METHODS OF PLACING SHALL PREVENT SEGREGATION OF THE MATERIALS. THE FILTER MATERIAL SHALL BE PLACED AND TAMPED IN THE VOIDS OF THE RIP-RAP.



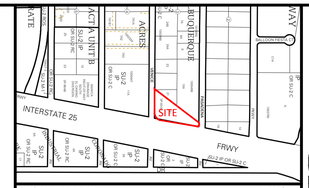
RIP-RAP DETAIL

NTS

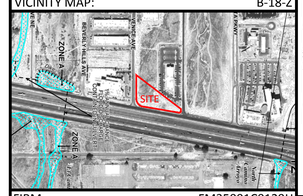


SECTION A-A CHANNEL DETAIL

NTS



VICINITY MAP: B-18-Z



FIRM: FM35001C0129H

LEGEND

- PROPERTY BOUNDARY
- PROPOSED SUBBASIN BOUNDARY
- 5195 EXISTING MAJOR CONTOUR
- 5194 EXISTING MINOR CONTOUR
- 5195 PROPOSED MAJOR CONTOUR
- 5194 PROPOSED MINOR CONTOUR
- PROPOSED GRADING LIMITS
- PROPOSED WALL
- PROPOSED WATER BLOCK
- PROPOSED FLOW LINE
- XX.XX PROPOSED SPOT ELEVATION

Background

Tract A-1 accounts for approximately 1.75 acres in Block 3, NAA Tract A, Unit B within the City of Albuquerque, Bernalillo County, New Mexico. This property is located west of the I-25 West Frontage Road between Venice Avenue and Pasadena Avenue. The site is currently undeveloped. The site receives offsite flows from the I-25 West Frontage Road located east of the property. The flow rate from the frontage road is accounted for in the runoff calculations. There is no floodplain on the site.

The southern portion of Tract A-1 is allowed free discharge to Venice Avenue and the northern portion of Tract A-1 is allowed free discharge to Pasadena Avenue per the San Mateo Business Park Drainage Report (SMBPDR) by C.L. Weiss Engineering, Inc. 1999 (B18-D008). Other background reports include the Citicorp Site Drainage Report (CSDR) by Bohannan Huston, Inc. 1996, which is referenced in the SMBPDR, and the Drainage Report for Beverly Hills Ave & Venice Ave Office/Warehouse Public Improvements (BVOWPIDR) by Isaacson & Arfman, P.A. 2000 (B18-D007), which references both the SMBPDR and CSDR.

Methodology

Hydrology Calculations for the site are performed in accordance with the Albuquerque Development Process Manual (DPM) Section 22.2 using the Rational Method to calculate peak flow rates in order to ensure all flow paths are sufficient to carry flows effectively throughout the site. The water quality pond volumes are calculated using a first flush runoff value of 0.34". All hydrologic and hydraulic calculations can be found on this sheet.

Existing Conditions

The existing property slopes from east to west at approximately 3%. Historically, the site drains across the adjacent property to the west. Runoff eventually reaches Venice Avenue and enters a storm drain system designed in the BVOWPIDR.

Proposed Conditions

The property has been split into four separate subbasins. See the Hydrology Calculations located at the top left corner of this sheet for peak flow rates and required water quality volumes.

Subbasin 1 consists of the southern portion of the site. It is 1.2 acres and generates 5.6 cfs. Subbasin 2 consists of a potion of the I-25 West Frontage Road that enters Subbasin 1. Subbasin 2 is 0.3 acres and generates 1.2 cfs. Therefore, the southern portion of Tract A-1 has a peak rate of 6.8 cfs discharging into Venice Ave. Water from Subbasin 1 first enters WQ Pond 1, which provides 475 cubic feet of water quality volume in a parking lot median at the north end of the subbasin, and discharges back into the parking lot. The water quality pond rating curves are included on the left side of this sheet. The northern and eastern portion of the subbasin enters WQ Pond 2, which is 974 cubic feet. There is also a small diameter storm drain that drains to WQ Pond 2 from the patio area located east of the proposed building. See details this sheet. Once full, 4.9 cfs spills into a 6'-4"x6" concrete channel at an elevation of 95.3'. See detail and Manning's & Weir calculations on this sheet. This channel discharges into the truck dock area southwest of the proposed building. Runoff is collected in WQ Pond 3, which provides 178 cubic feet of water quality volume. The total amount of water quality volume provided for this site is 1,627 cubic feet, which is greater than the required amount of 1,189 cubic feet. Water then discharges into a 2' sidewalk culvert through a 6' opening. The Manning's & Weir calculations are included on this sheet. Once the runoff is offsite, water flows west in the proposed earthen swale until reaching the proposed inlets located approximately 350' west of the subject property (see BVOWPIDR). These inlets will connect to an existing storm drain. This existing storm drain has capacity to accept the proposed flows from the southern portion of Tract A-1 per the BVOWPIDR referenced above. The owner of Tract A-1 has agreed to maintain these interim facilities in the public right-of-way until such time that the downstream roadway is constructed. See sheet C-2 for more details.

Subbasin 3 consists of the northern portion of Tract A-1. It is 0.6 acres and generates 2.6 cfs. Subbasin 4 consists of a portion of the I-25 West Frontage Road that enters Subbasin 3. Subbasin 4 is 0.3 acres and generates 1.5 cfs. Therefore, the northern portion of Tract A-1 has a peak flow rate of 4.1 cfs discharging to Pasadena Ave. Water from Subbasin 3 flows generally to the northwest and enters WQ Pond 4. WQ Pond 4 is 700 cubic feet, which is greater than the required water quality volume of 545 cubic feet. Once full, WQ Pond 4 discharges water into the University of Phoenix (UofP) property located northwest of the property. The owner of the UofP property has agreed to allow cross-lot drainage. The site plan is included on sheet C-3. See Hydrology file B18-D014. Runoff eventually reaches 8-2' sidewalk culverts at the northwest corner of the UofP site. The amount of flow reaching the sidewalk culverts from the UofP site is 11.0 cfs. See Hydrology Calculations on sheet C-3 The proposed 4.1 cfs from the northern portion of Tract A-1 brings the total amount of proposed flow to these 8-2' sidewalk culverts is 15.1 cfs. The sidewalk culverts have capacity for 18.8 cfs. See the Manning's and Weir calculations on sheet C-3. Therefore, the UofP property has capacity for the proposed flows. Once runoff discharges out of the sidewalk culverts, the downstream system in Pasadena has capacity to accept the proposed flows from the northern portion of Tract A-1 per the SMBPDR referenced above.

RESPEC
WATER & NATURAL RESOURCES
5971 JEFFERSON ST NE
SUITE 101
ALBUQUERQUE, NM 87109
PHONE: 505.366.4187

REVISION

DESIGNED	HF	
DRAWN	JS	
CHECKED	HF	8/3/17
DATE		

STAMP

HUGH W. FLOYD NEW MEXICO 16633 REGISTERED PROFESSIONAL ENGINEER

LEGAL DESCRIPTION:
TRACT A-1, BLOCK 3, NORTH ALBUQUERQUE ACRES, TRACT A, UNIT B, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

I-25 WEST FRONTAGE ROAD VENICE & PASADENA

GRADING & DRAINAGE PLAN

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.
30 0 15 30

SHEET NUMBER:
C-1

03115

Hydrology Calculations

The following calcualtions are based on Albuquerque's Development Process Manual, Seciton 22.2

Runoff Rate:

Treatment Type Areas

Subbasin	$Area_A$ (ac)	$Area_B$ (ac)	$Area_C$ (ac)	$Area_D$ (ac)	Total (ac)
Offsite Subbasin-1	0.1845	0.0654	0.0654	0.2983	0.6135

Peak Discharge values based on Zone 3 from Table A-9

Q_A = 1.87 cfs/ac Q_B = 2.60 cfs/ac Q_C = 3.45 cfs/ac Q_D = 5.02 cfs/ac

Peak Discharge calculation for a 100-yr, 24-hr storm event from equation A-10

Subbasin	Discharge (cfs)
Offsite Subbasin-1	2.2
Tract A-1	6.8
Total	9.0

SWALE MANNING'S CAPACITY

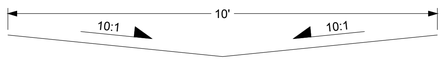
Triangular Channel

Input

Flow	9.0 cfs
Slope	0.025 ft/ft
Manning's n	0.025
Base Width	0 ft
Right Side Slope	10:1
Left Side Slope	10:1

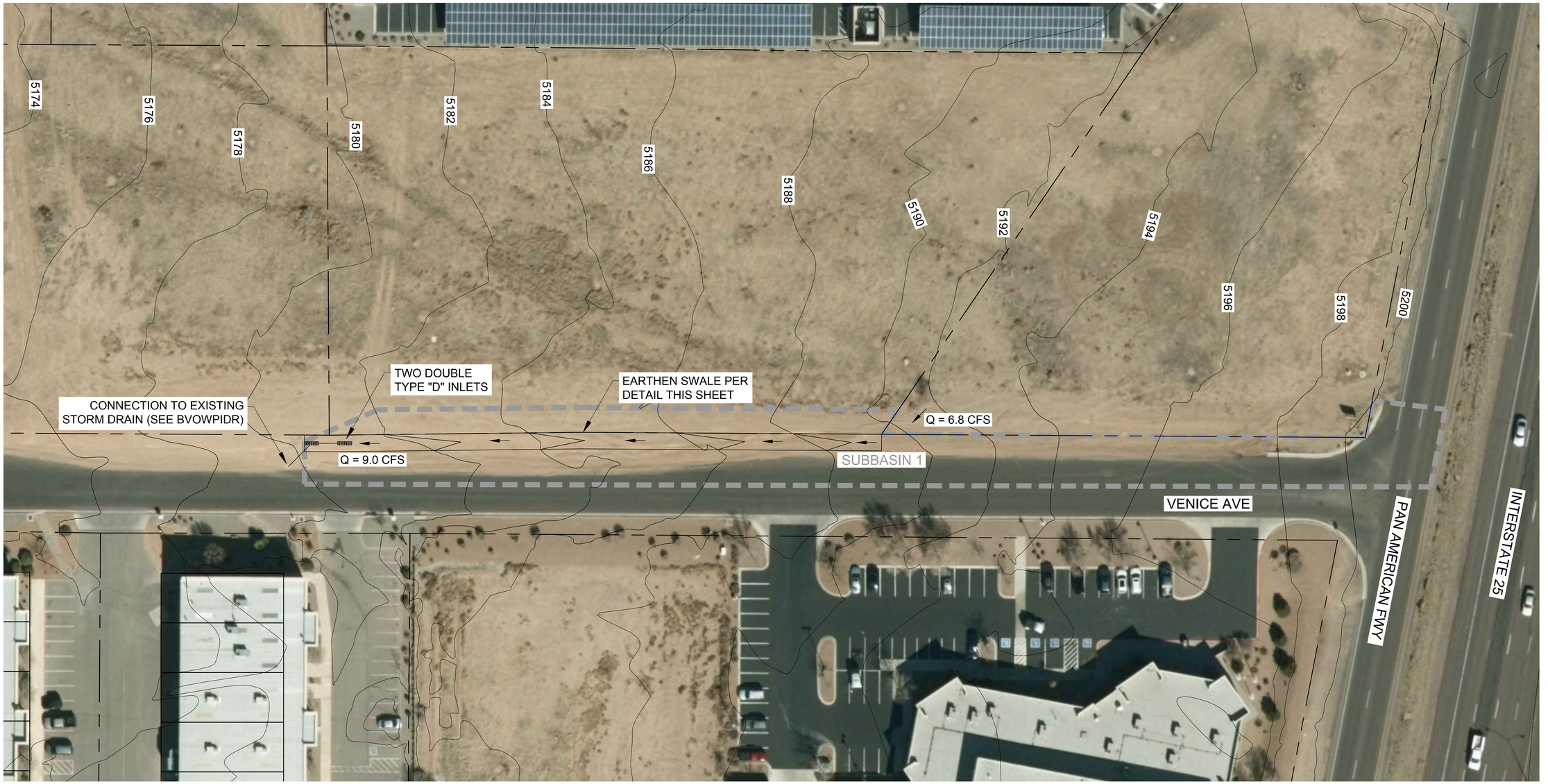
Output

Depth	0.494 ft
Flow Area	2.44 sf
Velocity	3.69 fps
Velocity Head	0.211 ft
Top Width	9.88 ft
Froude Number	1.31
Critical Depth	0.550 ft
Critical Slope	0.0141 ft/ft



SWALE DETAIL

NTS



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CHECKED	HF
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STAMP

HUGH W. FLOYD
NEW MEXICO
16633
LICENSED PROFESSIONAL ENGINEER

LEGAL DESCRIPTION:
TRACT A-1, BLOCK 3, NORTH ALBUQUERQUE ACRES, TRACT A, UNIT B, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

I-25 WEST FRONTAGE ROAD
VENICE & PASADENA

OFFSITE EXHIBIT

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.
60 30 15 0 30

SHEET NUMBER:
C-2

Hydrology Calculations

The following calcualtions are based on Albuquerque's Development Process Manual, Seciton 22.2

Runoff Rate:

Treatment Type Areas

Subbasin	$Area_A$ (ac)	$Area_B$ (ac)	$Area_C$ (ac)	$Area_D$ (ac)	Total (ac)
Subbasin-1	0	0.0728	0.0728	0.5822	0.7277
Subbasin-2	0	0.2375	0.2375	1.8996	2.3745

Peak Discharge values based on Zone 3 from Table A-9

Q_A = 1.87 cfs/ac Q_B = 2.60 cfs/ac Q_C = 3.45 cfs/ac Q_D = 5.02 cfs/ac

Peak Discharge calculation for a 100-yr, 24-hr storm event from equation A-10

Subbasin	Discharge (cfs)
Subbasin-1	3.4
Subbasin-2	11.0
Tract A-1	4.1
Total	15.1

8-2' SIDEWALK CULVERTS MANNING'S CAPACITY

Rectangular Channel

Input

Flow	15.1 cfs
Slope	0.02 ft/ft
Manning's n	0.013
Base Width	16 ft
Right Side Slope	0:1
Left Side Slope	0:1

Output

Depth	0.184 ft
Flow Area	2.94 sf
Velocity	5.14 fps
Velocity Head	0.411 ft
Top Width	16.0 ft
Froude Number	2.12
Critical Depth	0.303 ft
Critical Slope	0.00385 ft/ft

Weir Calculation for 8-2' Sidewalk Culverts

Weir:

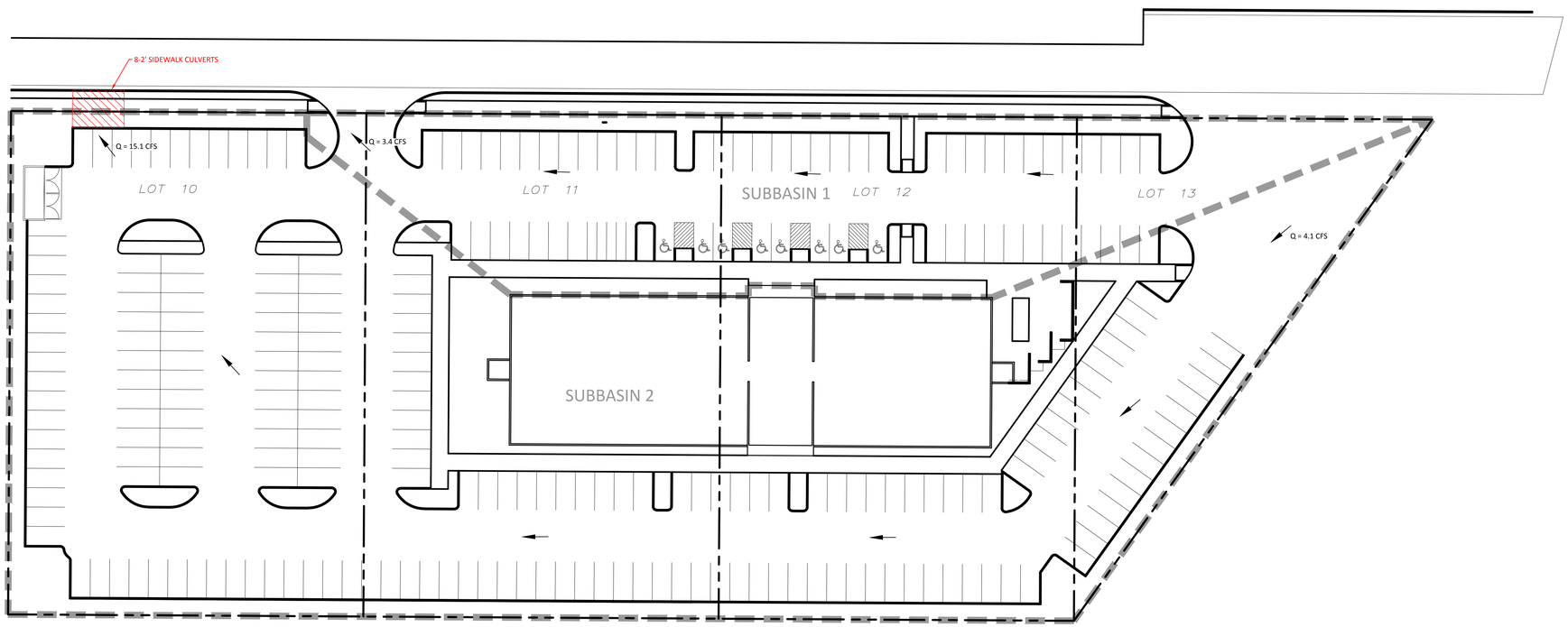
Head Water Depth (h): 0.5 ft

Discharge Coeff. (C_w): 3.33

Length (L): 16 ft

Flow (Q) = $C_w \cdot L \cdot h \wedge (1.5)$

Flow (Q) = **18.8** **cfs** > 15.1 cfs [OK]



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I-25 WEST FRONTAGE ROAD
VENICE & PASADENA

UNIVERSITY OF PHOENIX

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.
60 30 15 0 30

SHEET NUMBER:
C-3

03115