CITY OF ALBUQUERQUE

December 19, 2017

Jeffery Wooten, P.E.
Wooten Engineering
1005 21st St SE, Suite A5
Rio Rancho, NM 87124

Hugh Floyd, P.E.
Respec
5971 Jefferson St NE, Suite 305
Albuquerque, NM 87109

RE: **4936 Pan American**
Grading and Drainage Plan
Onsite Engineer's Stamp Date: 12/6/2017
Offsite Engineers Stamp Date: 12/12/2017
Hydrology File: F17D032

Dear Mr. Wooten and Mr. Floyd:

Based upon the information provided in your submittal received 12/12/17, the Grading and Drainage Plan is approved for Preliminary Plat and Work Order.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Prior to Building Permit:

1. The site must be platted.
2. Payment of the Fee-in-Lieu is required for the first flush bypass volume (51CF x $8.00/CF, per sheet C1.3 of the onsite plan).
3. A Private Facility Drainage Covenant is required for the stormwater quality ponds/stormtechs. The original notarized forms, exhibits, and recording fee ($25, payable to City of Albuquerque) must be turned into DRC (4th, Plaza del Sol) for routing. Please contact Charlotte LaBadie (clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants.
4. Provide the Approved NMDOT Permit for construction along the frontage road.

Prior to Certificate of Occupancy:

5. The Drainage Covenants must be recorded with Bernalillo County and a copy included with the drainage certification.
6. Payment of Fee-in-Lieu will be required for any first flush required ponding areas not constructed and certified.

Orig: Drainage file

CITY OF ALBUQUERQUE

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

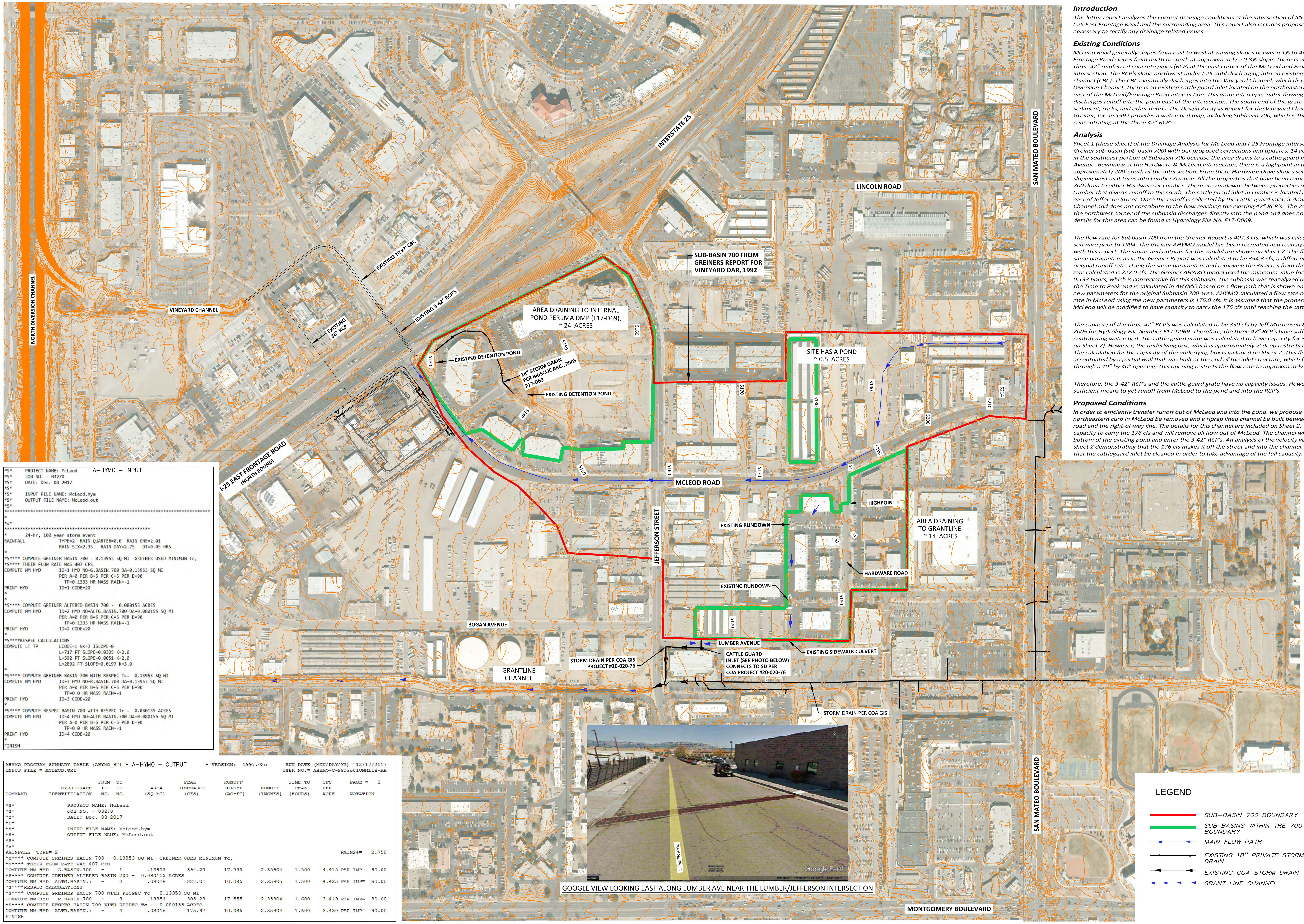
PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Orig: Drainage file



GOOGLE VIEW LOOKING EAST ALONG LUMBER AVE NEAR THE LUMBER/JEFFERSON INTERSECTION

Introduction

This letter report analyzes the current drainage conditions at the intersection of McLeod Road and the I-25 East Frontage Road and the surrounding area. This report also includes proposed solutions as necessary to rectify any drainage related issues.

Existing Conditions

McLeod Road generally slopes from east to west at varying slopes between 1% to 4%. The I-25 East Frontage Road slopes from north to south at approximately a 0.8% slope. There is an existing pond and three 42" reinforced concrete pipes (RCP) at the east corner of the McLeod and Frontage Road intersection. The RCP's slope northwest under I-25 until discharging into an existing 10'x7' concrete box channel (CBC). The CBC eventually discharges into the Vineyard Channel, which discharges into the North Diversion Channel. There is an existing cattle guard inlet located on the northeastern curb in McLeod just east of the McLeod/Frontage Road intersection. This grate intercepts water flowing in McLeod and discharges runoff into the pond east of the intersection. The south end of the grate is currently full of sediment, rocks, and other debris. The Design Analysis Report for the Vineyard Channel West of I-25 by Greiner, Inc. in 1992 provides a watershed map, including Subbasin 700, which is the subbasin concentrating at the three 42" RCP's.

Analysis

Sheet 1 (these sheet) of the Drainage Analysis for Mc Leod and I-25 Frontage intersection shows the Greiner sub-basin (sub-basin 700) with our proposed corrections and updates. 14 acres has been removed in the southeast portion of Subbasin 700 because the area drains to a cattle guard inlet in Lumber Avenue. Beginning at the Hardware & McLeod intersection, there is a highpoint in the roadway approximately 200' south of the intersection. From there Hardware Drive slopes south until turning and sloping west as it turns into Lumber Avenue. All the properties that have been removed from Sub-basin 700 drain to either Hardware or Lumber. There are rundowns between properties on the west side of Lumber that diverts runoff to the south. The cattle guard inlet in Lumber is located approximately 240' east of Jefferson Street. Once the runoff is collected by the cattle guard inlet, it drains to the Grant Line Channel and does not contribute to the flow reaching the existing 42" RCP's. The 24 acres removed in the northwest corner of the subbasin discharges directly into the pond and does not enter McLeod. More details for this area can be found in Hydrology File No. F17-D069.

The flow rate for Subbasin 700 from the Greiner Report is 407.3 cfs, which was calculated using AHYMO software prior to 1994. The Greiner AHYMO model has been recreated and reanalyzed using AHYMO 97 with this report. The inputs and outputs for this model are shown on Sheet 2. The flow rate using the same parameters as in the Greiner Report was calculated to be 394.3 cfs, a difference of 13 cfs from the original runoff rate. Using the same parameters and removing the 38 acres from the watershed, the flow rate calculated is 227.0 cfs. The Greiner AHYMO model used the minimum value for Time to Peak of 0.133 hours, which is conservative for this subbasin. The subbasin was reanalyzed using better values for the Time to Peak and is calculated in AHYMO based on a flow path that is shown on this sheet. Using the new parameters for the original Subbasin 700 area, AHYMO calculated a flow rate of 305.3 cfs. The flow rate in McLeod using the new parameters is 176.0 cfs. It is assumed that the property frontages along McLeod will be modified to have capacity to carry the 176 cfs until reaching the cattle guard inlet.

The capacity of the three 42" RCP's was calculated to be 330 cfs by Jeff Mortensen & Associates, Inc. in 2005 for Hydrology File Number F17-D069. Therefore, the three 42" RCP's have sufficient capacity for the contributing watershed. The cattle guard grate was calculated to have capacity for 330 cfs as well (shown on Sheet 2). However, the underlying box, which is approximately 2' deep restricts the flow rate to 90 cfs. The calculation for the capacity of the underlying box is included on Sheet 2. This flow restriction is accentuated by a partial wall that was built at the end of the inlet structure, which forces all the flow through a 10" by 40" opening. This opening restricts the flow rate to approximately 15 cfs.

Therefore, the 3-42" RCP's and the cattle guard grate have no capacity issues. However, there is not sufficient means to get runoff from McLeod to the pond and into the RCP's.

Proposed Conditions

In order to efficiently transfer runoff out of McLeod and into the pond, we propose that 30LF of the northeastern curb in McLeod be removed and a riprap lined channel be built between the edge of the road and the right-of-way line. The details for this channel are included on Sheet 2. The channel will have capacity to carry the 176 cfs and will remove all flow out of McLeod. The channel will discharge to the bottom of the existing pond and enter the 3-42" RCP's. An analysis of the velocity vectors is shown on sheet 2 demonstrating that the 176 cfs makes it off the street and into the channel. It is also suggested that the cattleguard inlet be cleaned in order to take advantage of the full capacity.

A-HYMO – INPUT

```
*S*      PROJECT NAME: McLeod
*S*      JOB NO. - 03270
*S*      DATE: Dec. 08 2017
*S*
*S*      INPUT FILE NAME: McLeod.hym
*S*      OUTPUT FILE NAME: McLeod.out
*S*
***************************************************************************
*
*s*
****************************************************
*        24-hr, 100 year storm event
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=2.01
                    RAIN SIX=2.35   RAIN DAY=2.75   DT=0.05 HRS
*
*S**** COMPUTE GREINER BASIN 700 - 0.13953 SQ MI- GREINER USED MINIMUM Tc,
*S**** THEIR FLOW RATE WAS 407 CFS
COMPUTE NM HYD      ID=1 HYD NO=G.BASIN.700 DA=0.13953 SQ MI
                    PER A=0 PER B=5 PER C=5 PER D=90
                      TP=0.1333 HR MASS RAIN=-1
PRINT HYD           ID=1 CODE=20
*
*
*S**** COMPUTE GREINER ALTERED BASIN 700 -  0.080155 ACRES
COMPUTE NM HYD      ID=2 HYD NO=ALTG.BASIN.700 DA=0.080155 SQ MI
                    PER A=0 PER B=5 PER C=5 PER D=90
                      TP=0.1333 HR MASS RAIN=-1
PRINT HYD           ID=2 CODE=20
*
*S****RESPEC CALCULATIONS
COMPUTE LT TP       LCODE=1 NK=3 ISLOPE=0
                    L=717 FT SLOPE=0.0335 K=2.0
                    L=592 FT SLOPE=0.0051 K=2.0
                    L=2892 FT SLOPE=0.0197 K=3.0
*
*S**** COMPUTE GREINER BASIN 700 WITH RESPEC Tc-  0.13953 SQ MI
COMPUTE NM HYD      ID=3 HYD NO=R.BASIN.700 DA=0.13953 SQ MI
                    PER A=0 PER B=5 PER C=5 PER D=90
                      TP=0.0 HR MASS RAIN=-1
PRINT HYD           ID=3 CODE=20
*
*S**** COMPUTE RESPEC BASIN 700 WITH RESPEC Tc -  0.080155 ACRES
COMPUTE NM HYD      ID=4 HYD NO=ALTR.BASIN.700 DA=0.080155 SQ MI
                    PER A=0 PER B=5 PER C=5 PER D=90
                      TP=0.0 HR MASS RAIN=-1
PRINT HYD           ID=4 CODE=20
*
FINISH
```

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - A-HYMO – OUTPUT - VERSION: 1997.02c

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - A-HYMO - OUTPUT  - VERSION: 1997.02c   RUN DATE (MON/DAY/YR) =12/17/2017
INPUT FILE = MCLEOD.TXT                                                USER NO.= AHYMO-C-9803c01UNMLIB-AH

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

*S*                 PROJECT NAME: McLeod
*S*                 JOB NO. - 03270
*S*                 DATE: Dec. 08 2017
*S*
*S*                 INPUT FILE NAME: McLeod.hym
*S*                 OUTPUT FILE NAME: McLeod.out
*S*
*s*
RAINFALL  TYPE= 2                                                                        RAIN24=   2.750
*S**** COMPUTE GREINER BASIN 700 - 0.13953 SQ MI- GREINER USED MINIMUM Tc,
*S**** THEIR FLOW RATE WAS 407 CFS
COMPUTE NM HYD   G.BASIN.700    -    1    .13953    394.25    17.555   2.35904   1.500   4.415 PER IMP=  90.00
*S**** COMPUTE GREINER ALTERED BASIN 700 -  0.080155 ACRES
COMPUTE NM HYD   ALTG.BASIN.7   -    2    .08016    227.01    10.085   2.35905   1.500   4.425 PER IMP=  90.00
*S****RESPEC CALCULATIONS
*S**** COMPUTE GREINER BASIN 700 WITH RESPEC Tc-  0.13953 SQ MI
COMPUTE NM HYD   R.BASIN.700    -    3    .13953    305.28    17.555   2.35904   1.600   3.419 PER IMP=  90.00
*S**** COMPUTE RESPEC BASIN 700 WITH RESPEC Tc -  0.080155 ACRES
COMPUTE NM HYD   ALTR.BASIN.7   -    4    .08016    175.97    10.085   2.35904   1.600   3.430 PER IMP=  90.00
FINISH
```

03270

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

DESIGNED	HF
DRAWN	NF & JS
CHECKED	HF
DATE	12/11/17

REVISION

STAMP

HUGH W. FLOYD
NEW MEXICO
16633
LICENSED PROFESSIONAL ENGINEER

LEGAL DESCRIPTION:
LOTS 1A AND 2, NORRIS AND MARGARET PENNY ADDITION, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

DRAINAGE ANALYSIS OF THE MCLEOD AND I-25 EAST FRONTAGE ROAD INTERSECTION

GRAPHIC SCALE
0 125 250 500
(IN FEET)
1 inch = 250 ft.

SHEET NUMBER:
1

TABLE 1:

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)
A	0	0	0.11	0.33	0.44

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

Q_A = 1.56 cfs/ac Q_B = 2.28 cfs/ac Q_C = 3.14 cfs/ac Q_D = 4.7 cfs/ac

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

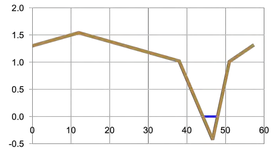
Subbasin	Discharge (cfs)
A	1.9

CROSS-SECTION 4+00:

Input

Flow	2 cfs
Slope	0.0073 ft/ft

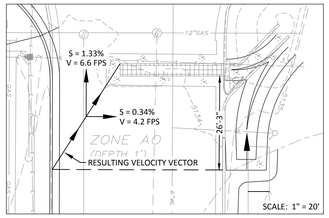
Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	1.3	0.016	12	1.54	0.016	24	1.3	0.016	35	1.08	0.016
38	1.02	0.016	46.67	-0.425	0.025	51	1.01	0.025	57	1.3	0.013

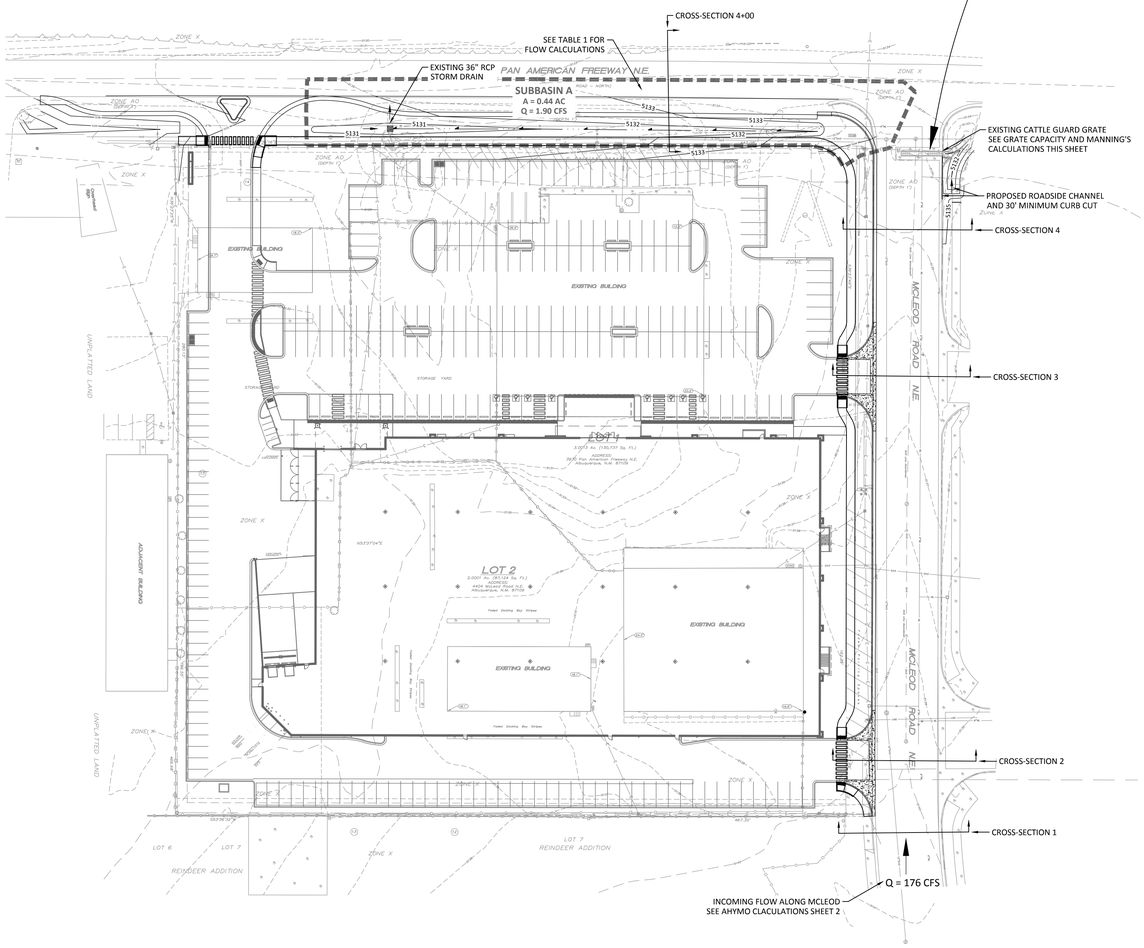


Output

WSElev	0.001 ft
Flow Area	0.816 sf
Velocity	2.45 fps
Velocity Head	0.0932 ft
Top Width	3.84 ft
Froude Number	0.936
Critical WSElev	-0.011 ft
Critical Slope	ft/ft

VELOCITY VECTOR:

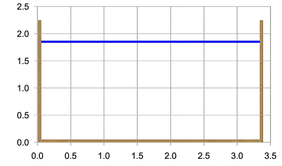




CATTLEGUARD UNDERLYING BOX CROSS-SECTION:

Input

Depth	1.83 ft
Slope	0.02 ft/ft
Manning's n	0.013
Base Width	3.33 ft
Right Side Slope	0:1
Left Side Slope	0:1



Output

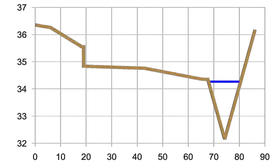
Flow	89.9 cfs
Flow Area	6.09 sf
Velocity	14.8 fps
Velocity Head	3.38 ft
Top Width	3.33 ft
Froude Number	1.92
Critical Depth	2.829 ft
Critical Slope	0.00654 ft/ft

CROSS-SECTION 4:

Input

Flow	176 cfs
Slope	0.01333 ft/ft

Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	36.35	0.013	6	36.26	0.013	6.01	36.26	0.035	18.33	35.55	0.035
18.34	35.55	0.013	19	35.55	0.013	19.01	34.84	0.013	21	34.83	0.013
21.01	34.83	0.016	43	34.76	0.016	65	34.36	0.016	65.01	34.36	0.013
67	34.35	0.013	67.01	34.35	0.013	67.67	34.35	0.013	74.27	32.15	0.013
86	36.12	0.013									



Output

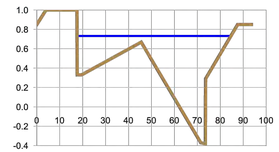
WSElev	34.265 ft
Flow Area	13.3 sf
Velocity	13.2 fps
Velocity Head	2.71 ft
Top Width	12.6 ft
Froude Number	2.27
Critical WSElev	34.994 ft
Critical Slope	ft/ft

CROSS-SECTION 3:

Input

Flow	176 cfs
Slope	0.013 ft/ft

Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	0.85	0.013	4	1	0.013	17	1	0.013	17.5	1	0.016
17.6	0.33	0.016	19.5	0.33	0.016	45.5	0.668	0.016	71.5	-0.37	0.013
73.5	-0.38	0.013	73.6	0.29	0.035	87.6	0.85	0.013	93.6	0.85	0.13



Output

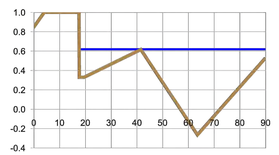
WSElev	0.732 ft
Flow Area	26.7 sf
Velocity	6.59 fps
Velocity Head	0.674 ft
Top Width	67.1 ft
Froude Number	1.84
Critical WSElev	0.947 ft
Critical Slope	ft/ft

CROSS-SECTION 2:

Input

Flow	176 cfs
Slope	0.013 ft/ft

Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	0.85	0.013	4	1	0.013	17	1	0.013	17.5	1	0.016
17.6	0.33	0.016	19.5	0.33	0.016	41.5	0.616	0.016	63.5	-0.264	0.013
89.5	0.516	0.013	55.2	0.252	0.013	62.2	0.352	0.035	67.2	0.492	0.035



Output

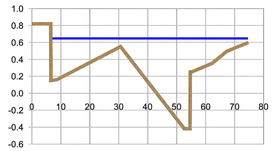
WSElev	0.619 ft
Flow Area	26.3 sf
Velocity	6.69 fps
Velocity Head	0.695 ft
Top Width	71.9 ft
Froude Number	1.95
Critical WSElev	0.824 ft
Critical Slope	ft/ft

CROSS-SECTION 1:

Input

Flow	176 cfs
Slope	0.0134 ft/ft

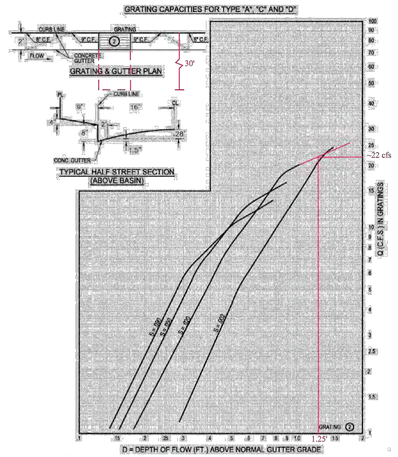
Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	0.82	0.013	6	0.82	0.013	6.5	0.82	0.013	6.6	0.15	0.016
8.6	0.16	0.016	30.6	0.55	0.016	52.6	-0.418	0.016	54.6	-0.419	0.013
54.7	0.252	0.013	55.2	0.252	0.013	62.2	0.352	0.035	67.2	0.492	0.035
74.2	0.592	0.013									



Output

WSElev	0.646 ft
Flow Area	26.8 sf
Velocity	6.57 fps
Velocity Head	0.670 ft
Top Width	67.7 ft
Froude Number	1.84
Critical WSElev	0.859 ft
Critical Slope	ft/ft

CATTLEGUARD GRATE CAPACITY CALCULATION:



The cattleguard inlet is 40' wide, just like a type "D" inlet. A type "D" is 24" perpendicular to flow. This cattleguard inlet is 30' perpendicular to the flow. Therefore,

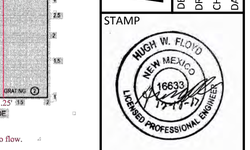
$\frac{30'}{2'}$ x 22 cfs = 330 cfs

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

REVISION

DESIGNED	HF	
DRAWN	NF & JS	
CHECKED	HF	
DATE	12/11/17	

STAMP



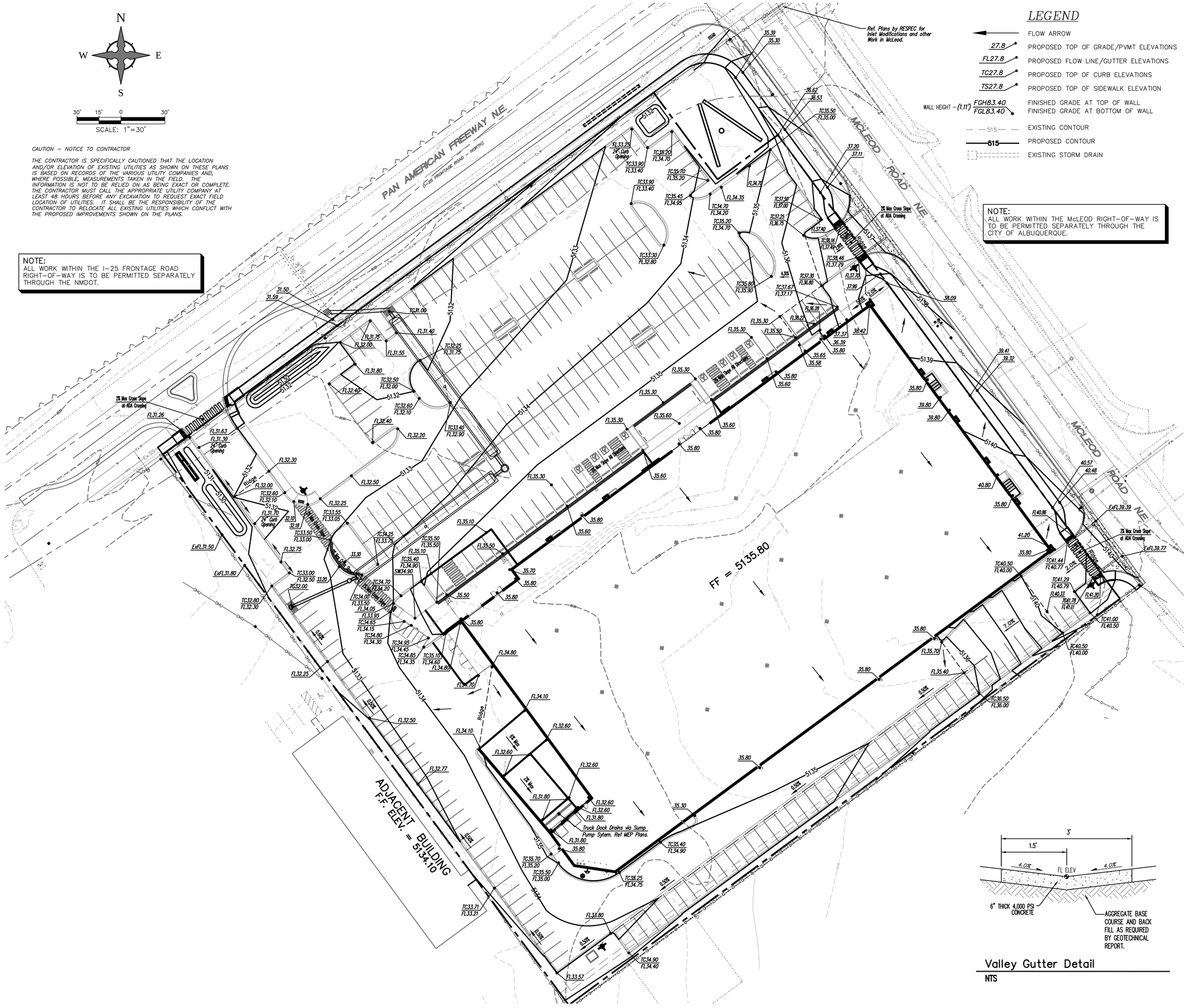
LEGAL DESCRIPTION:
LOTS 1A AND 2, NORRIS AND MARGARET PENNY ADDITION, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

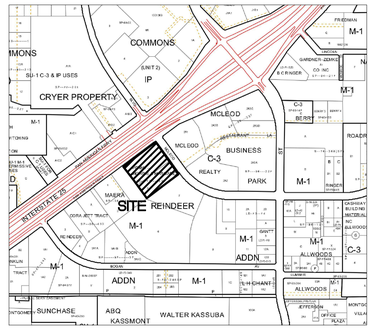
DRAINAGE ANALYSIS OF THE MCLEOD AND I-25 EAST FRONTAGE ROAD INTERSECTION

GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft.
0
50
100

SHEET NUMBER:
2

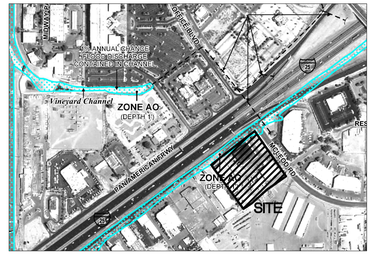
03/20





VICINITY MAP - Zone Map F-17-Z
Legal Description: Lots Numbered One (1) and Two (2) of the Norris and Margaret Penny Addition

BENCHMARK:
ACS MONUMENT "I25-18", NAD 1983, X=1535672.415, Y=1505666.336, Z=5128.34 (NAVD 1988), GROUND TO GRID = 0.999671141



FIRM MAP 35001C0138H

Per FIRM Map 35001C0138H, dated August 16, 2012, the northern portion of the site along the I25 Frontage Rd is located in Zone 'AO' (Depth 1') The remainder of the site is not located in the Floodplain and determined to be outside the 0.2% chance Annual Floodplain.'

GRADING NOTES

1. EXCEPT AS PROVIDED HEREIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.
2. THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST.
3. ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "GEOTECHNICAL INVESTIGATION," AS PROVIDED BY THE ARCHITECT OR OWNER. ALL OTHER WORK SHALL, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT, (FIRST PRIORITY) SPECIFICATIONS, AND/OR THE CITY OF ALBUQUERQUE (COA) STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY).
4. EARTH SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.
5. 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.
6. 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 OR SILT FENCE AT THE PROPERTY LINES AND WETTING THE SOIL TO PROTECT IT FROM WIND EROSION.
7. A DISPOSAL SITE FOR ANY & ALL EXCESS EXCAVATION MATERIAL, AND UNSUITABLE MATERIAL AND/OR A BORROW SITE CONTAINING ACCEPTABLE FILL 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 OR BORROW SITE AND HAUL TO OR FROM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.
8. PAVING AND ROADWAY GRADES SHALL BE +/– 0.05' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/– 0.05' FROM BUILDING PLAN ELEVATION.
9. ALL PROPOSED CONTOURS AND SPOT ELEVATIONS REFLECT TOP OF PAVEMENT ELEVATIONS IN THE PARKING AREA AND MUST BE ADJUSTED FOR PAVEMENT, MEDIANS, AND ISLANDS.
10. VERIFY ALL ELEVATIONS SHOWN ON PLAN FROM BASIS OF ELEVATION CONTROL STATION (IF APPLICABLE) PRIOR TO BEGINNING CONSTRUCTION.
11. THE CONTRACTOR SHALL PROVIDE THE SWPPP DOCUMENT (IF NECESSARY) AND 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.

REV	DATE	BY	REVISION
6			
5			
4			
3			
2			
1			

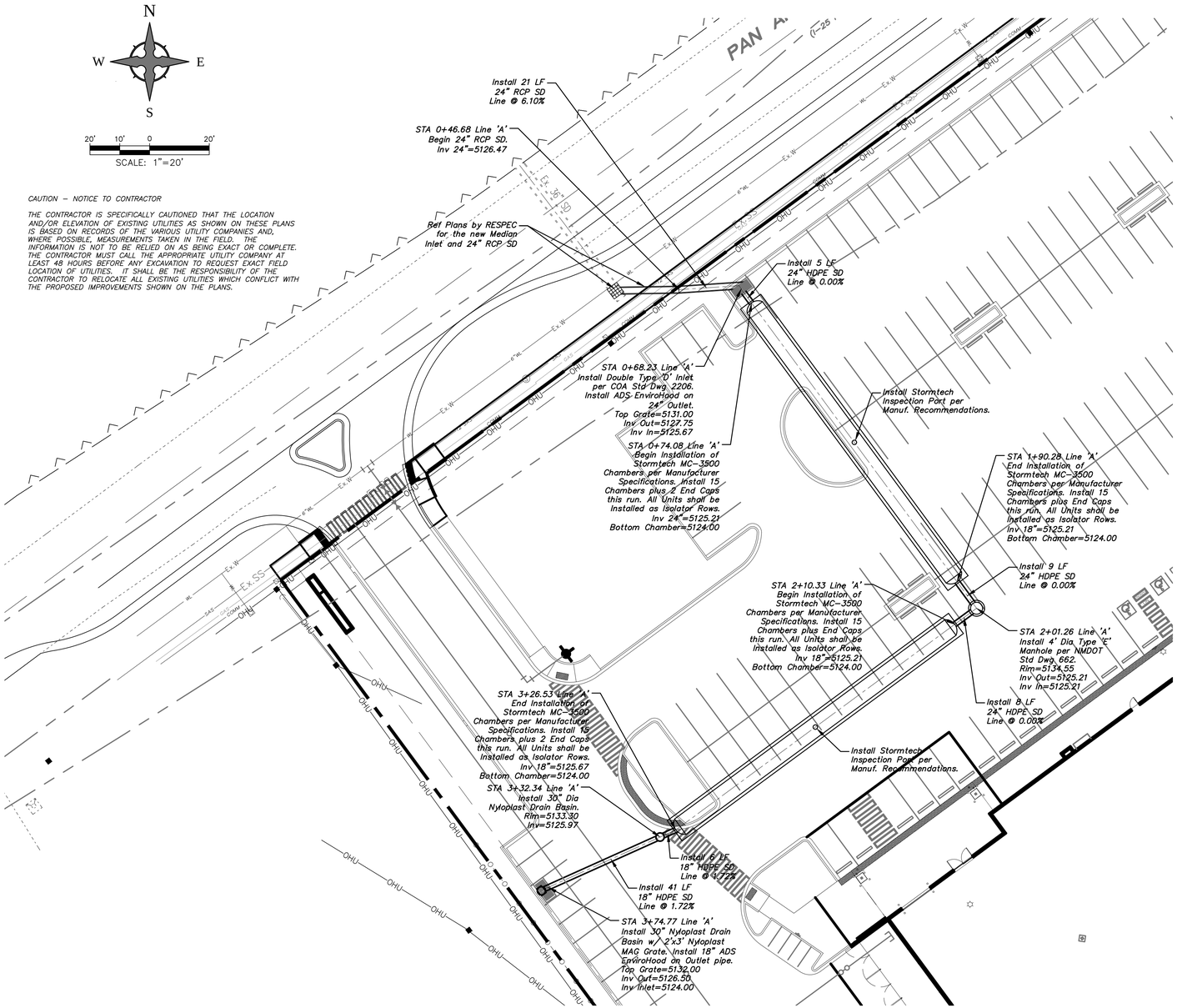
MODULUS ARCHITECTS
100 SUN AVENUE N.E., Ste 305
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 338-1499 FAX (505) 338-1498

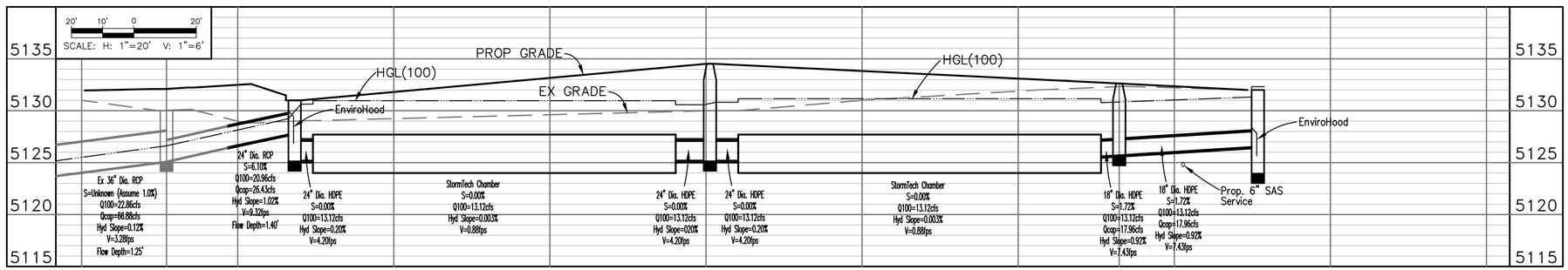
JEFFREY TODD WOOTEN NEW MEXICO 16892 LICENSED PROFESSIONAL ENGINEER
12/6/2017

PROJECT TITLE: 4936 PAN AMERICAN FRWY NE
MCLEOD AND I25
ALBUQUERQUE, NEW MEXICO 87120
PROJECT MANAGER: JEFF WOOTEN
JOB NO.: 2017018
DRAWN BY: OLIVIA WOOTEN
SHEET TITLE: Grading Plan

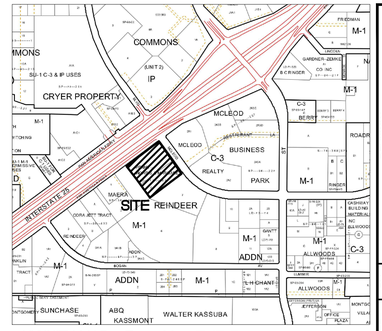
Wooten Engineering
1005 21st St SE, Suite 13
Rio Rancho, N.M. 87124
Phone: (505) 980-3560

DATE: 12/6/2017
SCALE: AS NOTED
sheet- C1.1
of- 2

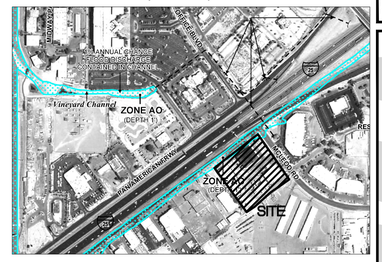




STORM DRAIN LINE 'A'



VICINITY MAP – Zone Map F-17-Z
Legal Description: Lots Numbered One (1) and Two (2) of the Norris and Margaret Penny Addition



FIRM MAP 35001C0138H

Per FIRM Map 35001C0138H, dated August 16, 2012, the northern portion of the site along the I25 Frontage Rd is located in Zone 'AO' (depth 1') The remainder of the site is not located in the Floodplain and determined to be outside the 0.2% chance Annual Floodplain.'

GRADING NOTES

1. *EXCEPT AS PROVIDED HEREIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.*
2. *THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST.*
3. *ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "GEOTECHNICAL INVESTIGATION," AS PROVIDED BY THE ARCHITECT OR OWNER. ALL OTHER WORK SHALL, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT, (FIRST PRIORITY) SPECIFICATIONS, AND/OR THE CITY OF ALBUQUERQUE (COA) STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY).*
4. *EARTH SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.*
5. *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.*
6. *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 OR SILT FENCE AT THE PROPERTY LINES AND WETTING THE SOIL TO PROTECT IT FROM WIND EROSION.*
7. *A DISPOSAL SITE FOR ANY & ALL EXCESS EXCAVATION MATERIAL, AND UNSUITABLE MATERIAL AND/OR A BORROW SITE CONTAINING ACCEPTABLE FILL 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 OR BORROW SITE AND HAUL TO OR FROM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.*
8. *PAVING AND ROADWAY GRADES SHALL BE +/– 0.05' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/– 0.05' FROM BUILDING PLAN ELEVATION.*
9. *ALL PROPOSED CONTOURS AND SPOT ELEVATIONS REFLECT TOP OF PAVEMENT ELEVATIONS IN THE PARKING AREA AND MUST BE ADJUSTED FOR PAVEMENT, MEDIANS, AND ISLANDS.*
10. *VERIFY ALL ELEVATIONS SHOWN ON PLAN FROM BASIS OF ELEVATION CONTROL STATION (IF APPLICABLE) PRIOR TO BEGINNING CONSTRUCTION.*
11. *THE CONTRACTOR SHALL PROVIDE THE SWPPP DOCUMENT (IF NECESSARY) AND 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.*

REV	DATE	BY	REVISION
6			
5			
4			
3			
2			
1			

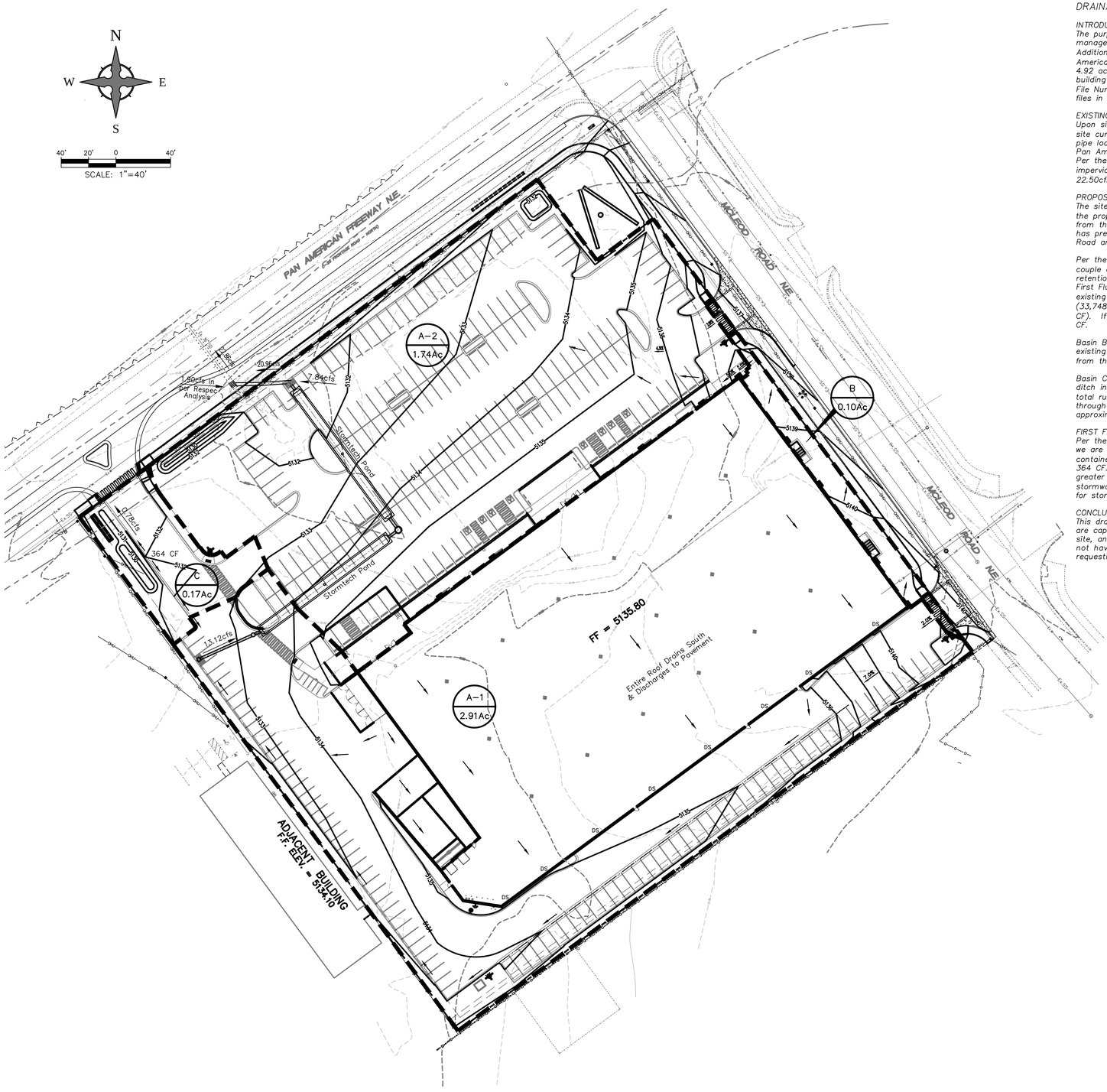
MODULUS ARCHITECTS
100 SUN AVENUE N.E., Ste 305
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 338-1499 FAX (505) 338-1498

JEFFREY TODD WOOTEN NEW MEXICO 16892 REGISTERED PROFESSIONAL ENGINEER
12/6/2017

PROJECT TITLE: 4936 PAN AMERICAN FRWY NE MCLEOD AND I25 ALBUQUERQUE, NEW MEXICO 87120
PROJECT MANAGER: JEFF WOOTEN
DRAWN BY: OLIVIA WOOTEN
JOB NO.: 2017018
SHEET TITLE: Storm Drain Plan

Wooten Engineering
1005 21st St SE, Suite 13
Rio Rancho, N.M. 87124
Phone: (505) 980-3560

DATE: 12/6/2017
SCALE: AS NOTED
sheet- C1.2 of- 2



DRAINAGE MANAGEMENT PLAN

INTRODUCTION

The purpose of this submittal is to provide a grading plan and drainage management plan for the development of Lot 1-A-1, Norris and Margaret Penny Addition. The site is located at 4936 Pan American Freeway NE (SEC of Pan American Freeway and McLeod) in Albuquerque, NM. The site contains approximately 4.92 acres. The proposed development consists of a new Floor & Decor retail building with the associated parking lot and landscaping. The current City Drainage File Numbers are F17/D018 and F17/D032; however, we were not able to locate the files in the Hydrology Department.

EXISTING HYDROLOGIC CONDITIONS

Upon site investigation and per the topographic survey provided by Surv-Tek, the site current surface drains from east to west and into an existing 36" storm drain pipe located in the frontage road of Pan American Fwy. This pipe drains under the Pan American Freeway and continues west eventually to the North Diversion Channel. Per the calculations table this sheet, the existing site was approximately 92% impervious and the total discharge into the existing 36" storm drain pipe was 22.50cfs (36,435 CF) during the 100-Yr, 6-Hr storm event.

PROPOSED HYDROLOGIC CONDITIONS

The site will continue to surface drain from east to west via the parking lot. Since the proposed site has fewer impervious surfaces (approximately 88%) and the runoff from the site will be reduced, on-site detention is not being proposed. RESPEC Inc. has prepared plans for offsite drainage Improvements in both the I-25 Frontage Road and McLeod.

Per the Drainage Calculations Table this sheet, Basins A-1 and A-2 will drain to a couple of Type 'D' (Double) Inlets which will flow into a new Stormtech below ground retention system to provide the required Stormwater Quality Pond storage per the First Flush Calculations this sheet. The total flow discharging the site into the existing 36" pipe located in the Pan American Fwy Frontage Road is 20.96cfs (33,748 CF) during the 100-Yr, 6-Hr storm. This is a reduction of 1.54cfs (2,687 CF). If we account for the Stormtech storage, the total volume reduction is 7,661 CF.

Basin B will surface drain into McLeod, head west along McLeod and then into the existing NMDOT inlet located at the edge of the Frontage Road. The total runoff from this basin is 0.45cfs (732 CF).

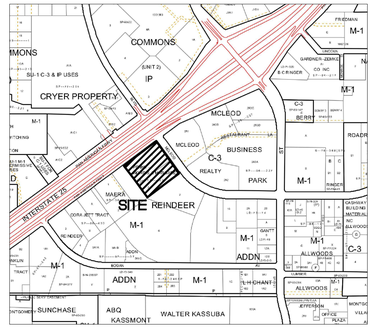
Basin C will surface drain into the Frontage Road, head south along an existing bar ditch in the Frontage Road, and eventually into the North Diversion CHannel. The total runoff from this basin is 0.78cfs (1,248 CF). This drainage is being routed through a stormwater quality pond along the south property line which can contain approximately 364 CF, reducing the runoff volume to 884 CF.

FIRST FLUSH CALCULATIONS

Per the Impervious Area and Water Harvesting Pond Calculations tables this sheet, we are required to provide Water Quality Ponding to contain 4,202 CF. The volume contained in the Stormtech system is 4,974 CF and the pond in Basin 'C' contains 364 CF. The total stormwater quality ponding provided is 5,338 CF, which is greater than that required; however, we are unable to route a total of 51 CF to the stormwater ponds so those areas will be required to pay the 'payment in lieu' fee for stormwater quality ponding.

CONCLUSION

This drainage management plan provides for grading and drainage elements which are capable of safely passing the 100 year storm, contains the First Flush from the site, and meets city requirements. The proposed improvements for the site should not have any negative impacts to facilities downstream. With this submittal, we are requesting grading permit and building permit approval.

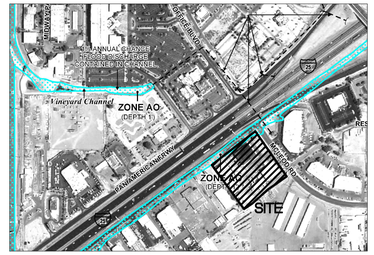


VICINITY MAP - Zone Map F-17-Z

Legal Description: Lots Numbered One (1) and Two (2) of the Norris and Margaret Penny Addition

BENCHMARK:

ACS MONUMENT "I25-18", NAD 1983, X=1535672.415, Y=1505666.336, Z=5128.34 (NAVD 1988), GROUND TO GRID = 0.999671141



FIRM MAP 35001C0138H

Per FIRM Map 35001C0138H, dated August 16, 2012, the northern portion of the site along the I25 Frontage Rd is located in Zone 'AO' (Depth 1') The remainder of the site is not located in the Floodplain and determined to be outside the 0.2% chance Annual Floodplain.'

Existing McLeod / I25 Drainage Calculations

This table is based on the COA DPM Section 22.2, Zone: 2

BASIN	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	WT E	$V(100)_{360}$	$V(100)_{1440}$	$V(100)_{1Oday}$
	(SQ. FT)	(AC.)	A	B	C	D	(cfs/ac.)	(CFS)	(inches)	(CF)	(CF)	(CF)
Existing Site	214239	**4.92**	**0.0%**	**0.0%**	**8.0%**	**92.0%**	**4.58**	***22.50***	***2.04***	***36435***	***43005***	***62715***
TOTAL	214239	**4.92**						***22.50***		***36435***	***43005***	***62715***

Proposed McLeod / I25 Drainage Calculations

Ultimate Development Conditions Basin Data Table

This table is based on the COA DPM Section 22.2, Zone: 2

BASIN	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	WT E	$V(100)_{360}$	$V(100)_{1440}$	$V(100)_{1Oday}$
	(SQ. FT)	(AC.)	A	B	C	D	(cfs/ac.)	(CFS)	(inches)	(CF)	(CF)	(CF)
A-1	126644	**2.91**	**0.0%**	**0.0%**	**12.0%**	**88.0%**	**4.51**	***13.12***	***2.00***	***21120***	***24835***	***35980***
A-2	75722	**1.74**	**0.0%**	**0.0%**	**12.0%**	**88.0%**	**4.51**	***7.84***	***2.00***	***12628***	***14849***	***21513***
B	4388	**0.10**	**0.0%**	**0.0%**	**12.0%**	**88.0%**	**4.51**	***0.45***	***2.00***	***732***	***860***	***1247***
C	7484	**0.17**	**0.0%**	**0.0%**	**12.0%**	**88.0%**	**4.51**	***0.78***	***2.00***	***1248***	***1468***	***2126***
TOTAL	214238	**4.92**						***22.19***		***35728***	***42012***	***60865***

IMPERVIOUS AREA CALCULATIONS

PROPOSED SITE CONDITIONS

TOTAL SITE AREA: 214,239 SF
PERVIOUS AREA: 25,710 SF (12%)
IMPERVIOUS AREA: 188,529 SF (88%)

FIRST FLUSH CALCULATIONS

BASIN 'A'
TOTAL IMPERVIOUS AREA = 188,529 SF
FIRST FLUSH = 188,529 * 0.26" / 12 = **4,084 CF**
TOTAL VOLUME PROVIDED (STORMTECH POND) = **4,974 CF**

BASIN 'B'
TOTAL IMPERVIOUS AREA = 426 SF
FIRST FLUSH = 426 * 0.26" / 12 = **9 CF**
TOTAL FIRST FLUSH NOT CAPTURED = **9 CF**

BASIN 'C'
TOTAL IMPERVIOUS AREA = 5,057 SF
IMP AREA CAPTURED BY POND = 3,099 * 0.26" / 12 = **67 CF**
IMP AREA NOT CAPTURED BY POND = 1,958 * 0.26" / 12 = **42 CF**
TOTAL POND VOLUME PROVIDED = **364 CF**

☐ WATER HARVESTING POND VOLUME CALCULATIONS

STORMTECH SYSTEM UTILIZED FOR STORMWATER QUALITY POND
MODEL: MC-3500
NUMBER OF CHAMBERS INSTALLED: 30
VOLUME PROVIDED PER CHAMBER: 109.9 CF
VOLUME OF GRAVEL PER CHAMBER: 186.3 CF
VOLUME OF VOIDS PER CHAMBER: 186.3 CF * 0.30 = 55.89 CF
TOTAL WATER STORAGE PER CHAMBER: 109.9 CF + 55.89 CF = 165.8 CF
TOTAL VOLUME PROVIDED (NOT INCLUDING END CAPS): 165.8*30 = 4,974 CF

Wooten Engineering
1005 21st St SE, Suite 13
Rio Rancho, N.M. 87124
Phone: (505) 980-3560

REV	DATE	BY	REVISION
6			
5			
4			
3			
2			
1			

MODULUS ARCHITECTS
100 SUN AVENUE N.E., Ste 305
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 338-1499 FAX (505) 338-1498

JEFFREY TODD WOOTEN NEW MEXICO 16892 PROFESSIONAL ENGINEER
12/6/2017

PROJECT TITLE: 4936 PAN AMERICAN FRWY NE
MCLEOD AND I25
ALBUQUERQUE, NEW MEXICO 87120
PROJECT MANAGER: JEFF WOOTEN
JOB NO.: 2017018
DRAWN BY: OLIVIA WOOTEN
SHEET TITLE: Drainage Management Plan

DATE: 12/6/2017
SCALE: AS NOTED
sheet- C1.3 of- 2