CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

April 4, 2017

Scott McGee, P.E.
Jeebs & Zuzu, LLC
11030 Menaul NE suite C
Albuquerque, NM, 871132

RE: Arroyo Vista Apartments
Grading and Drainage Plan
Engineer's Stamp Date 3-31-2017 (File: G16D153)

Dear Mr. McGee:

Based upon the information provided in your submittal received 4-4-2017, the above referenced Grading and Drainage Plan is approved for building permit.

Please attach a copy of this approved plan in the construction sets for Building Permit processing. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3999.

Sincerely,

Shahab Biazar, P.E.
City Engineer, Planning Dept.
Development Review Services

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

SITE AREA: 6.77 acres (294,977 sf)

OFFSITE FLOW: The west supporting slope of the North Diversion Channel is adjacent to the east with offsite area of 1.99-acre. This area presently sheetflows across the site along its east side. This runoff will continue to be accepted onsite and conveyed west through the site. Based on the proposed and existing trail areas the land treatment is 89% C and 11% D with runoff rate as follows:
Q= (3.14)(1.77) + (4.70)(0.22) = 6.6 CFS

DRAINAGE APPROACH: The drainage plan will continue to follow historic flow paths, but impervious areas will increase runoff. The new onsite depressed landscape areas provide 1st flush storage volume to mitigate site runoff.

DRAINAGE CALCULATIONS: Based on precipitation Zone: 2
Existing land treatment: 60% A and 40% B
Q= [(.60)(1.56)+(0.40)(2.28)](6.772)=12.5 CFS

Proposed land treatment overall: 7% B, 28% C and 65% D
Q= [(0.07)(2.28)+(0.28)(3.14)+(0.65)(4.70)](6.772)= 27.7 CFS

The site slopes down to the west and discharges to a 36" storm drain (installed by CPN 595281), which was designed to carry Q= 50.6 CFS from this site. The proposed development and the offsite flow have a combined discharge rate of 34.3 CFS. This is less than the SD design flow rate by 16.3 CFS. The onsite detention volume provided will also reduce the peak flow.

	DRAINAGE BASIN DATA				1ST FLUSH
BASIN	AREA	UNIT DISCHARGE	Q	'D'	VOL
	(AC.)	(4.09 CFS/AC)	(CFS)	(SF)	(CF)
A	1.05		4.3	33,340	945
B	0.41		1.7	8,120	230
C	0.75		3.1	25,730	729
D	0.24		1.0	10,750	305
E	0.81		3.3	23,975	679
F	0.30		1.2	8,910	252
G	0.14		0.6	5,400	153
H	0.42		1.7	6,720	190
I	1.72		7.0	46,235	1,310
J	0.93		3.8	22,790	645
TOTAL	6.77		27.7	191,970	5,438

Basin A runoff is captured by the domed inlet. Basin C and a portion of the offsite flow is picked up by the city curb-type inlet. Basin D and the remainder of the offsite flow are accepted by the domed inlet. Basin D is then picked up by

the final domed inlet. The dome inlet capacity (using a 20% clogging factor) is attached.

Manning pipe capacity is based on the following: Q= (1.49/n) A R*2/3 S*1/2
where n=0.011 and R=A/WP=R/2.

Basin	Pipe diam.	Slope %	Capacity CFS
A	12"	1.10	4.42
C	18"	0.85	11.47
D	18"	1.46	15.03
E	24"	0.60	20.76

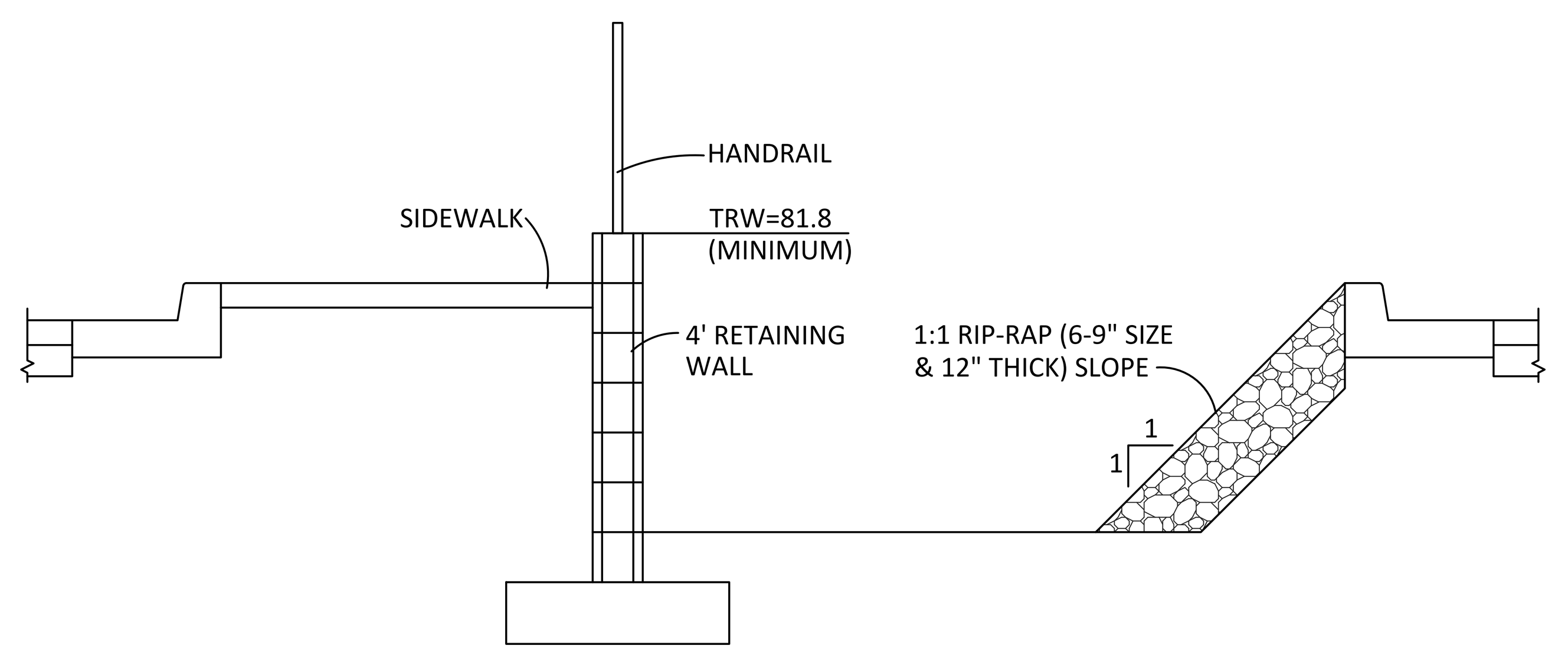
Sidewalk culvert capacity is based on the Orifice equation: Q=K A (2gH)*1/2
Where K = 0.6

12" width--A= 0.62 SF and H= 0.31 Q=(0.6)(0.62)(4.47) = 1.7 CFS
18" width--A= 0.93 SF and H= 0.31 Q=(0.6)(0.93)(4.47) = 2.5 CFS
24" width--A= 1.24 SF and H= 0.31 Q=(0.6)(1.24)(4.47) = 3.4 CFS

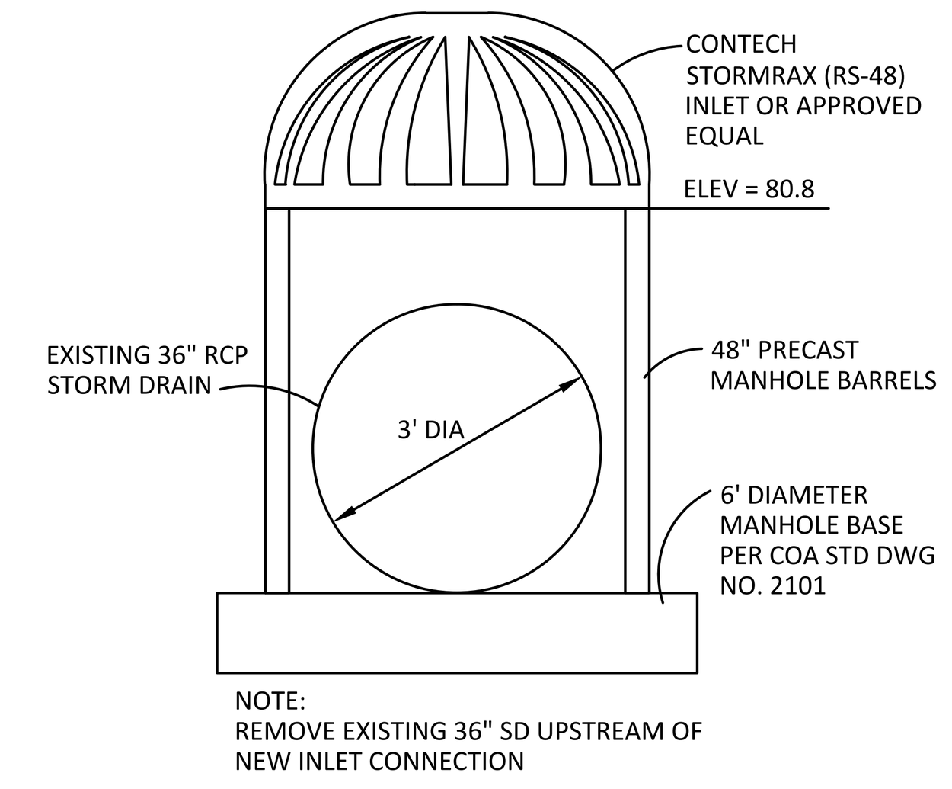
Curb openings accept flow directed to the domed inlets in depressed landscape medians. Basin G will surface flow (Q= 0.6 CFS) into the abutting access drive to the west. A retention area provided along the west side of the site provides first flush volume.

Total flow to the domed grated inlet is the sum of all basins except F and G which is 25.9 CFS plus the Offsite flow of 6.6 CFS for a total Q = 32.5 CFS.

The inlet capacity (based on the Weir equation) is:
Q = K (2g)*1/2 L (H)*3/2 = (0.6)(8.0)(12.56)(1.0) = 60.5 CFS
The additional capacity of 60.5-32.5 = 28.0 allows an additional 46% for the inlet bar area and clogging.



SECTION
NOT TO SCALE



STORM INLET
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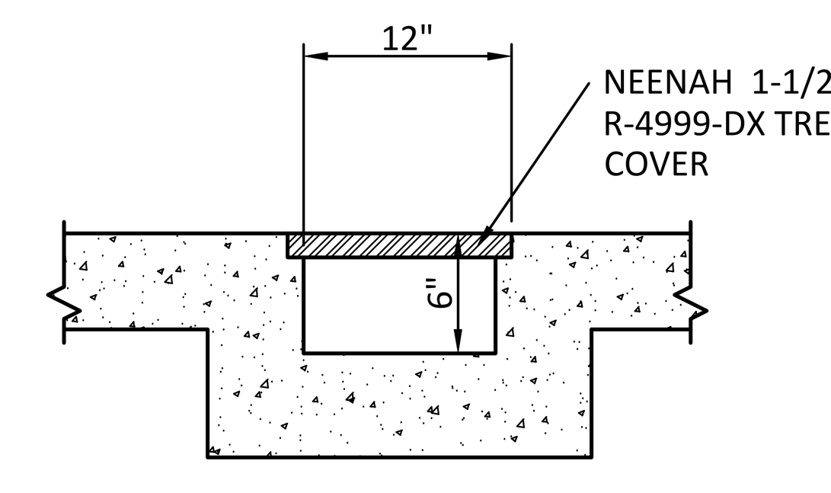
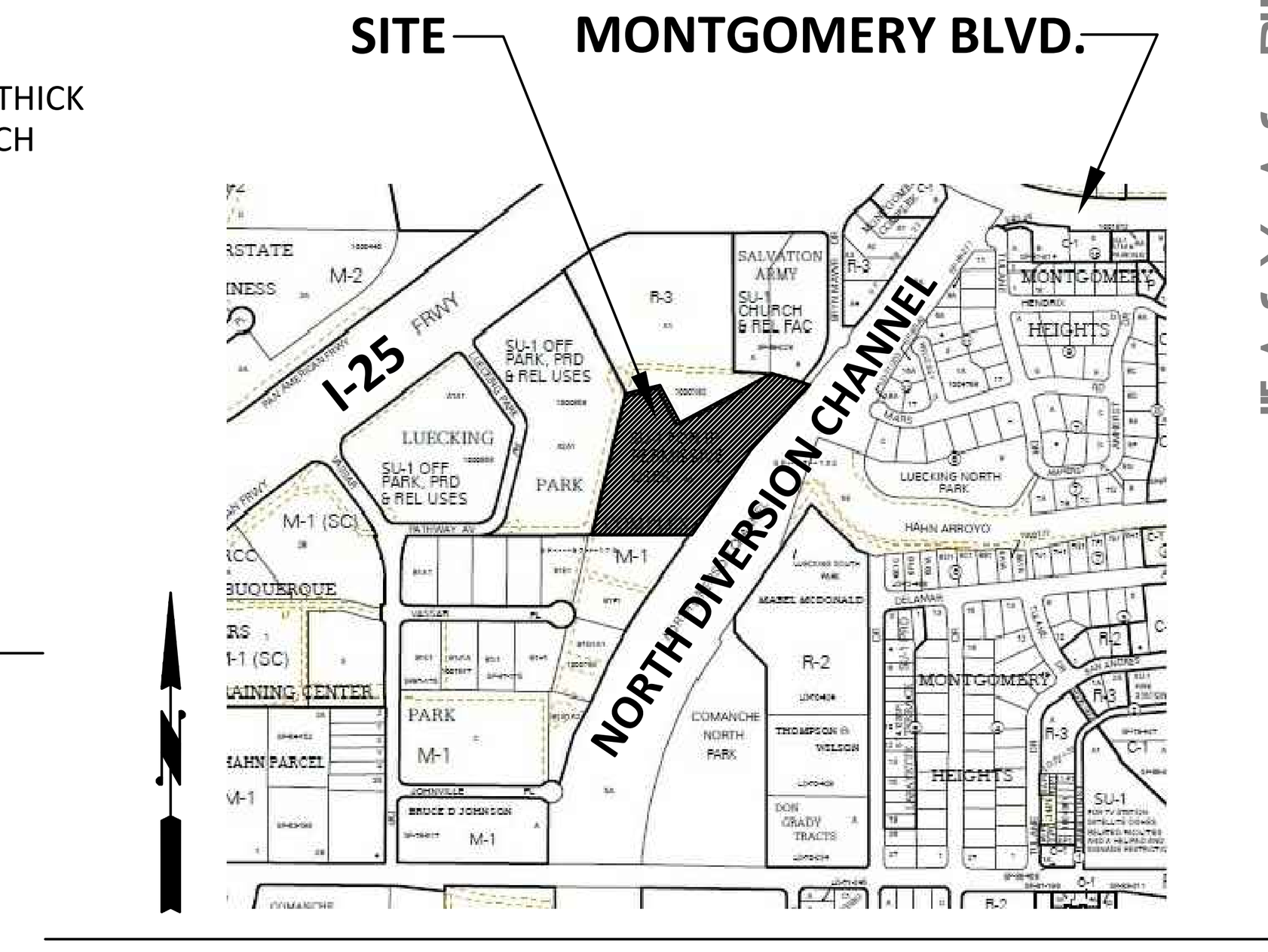
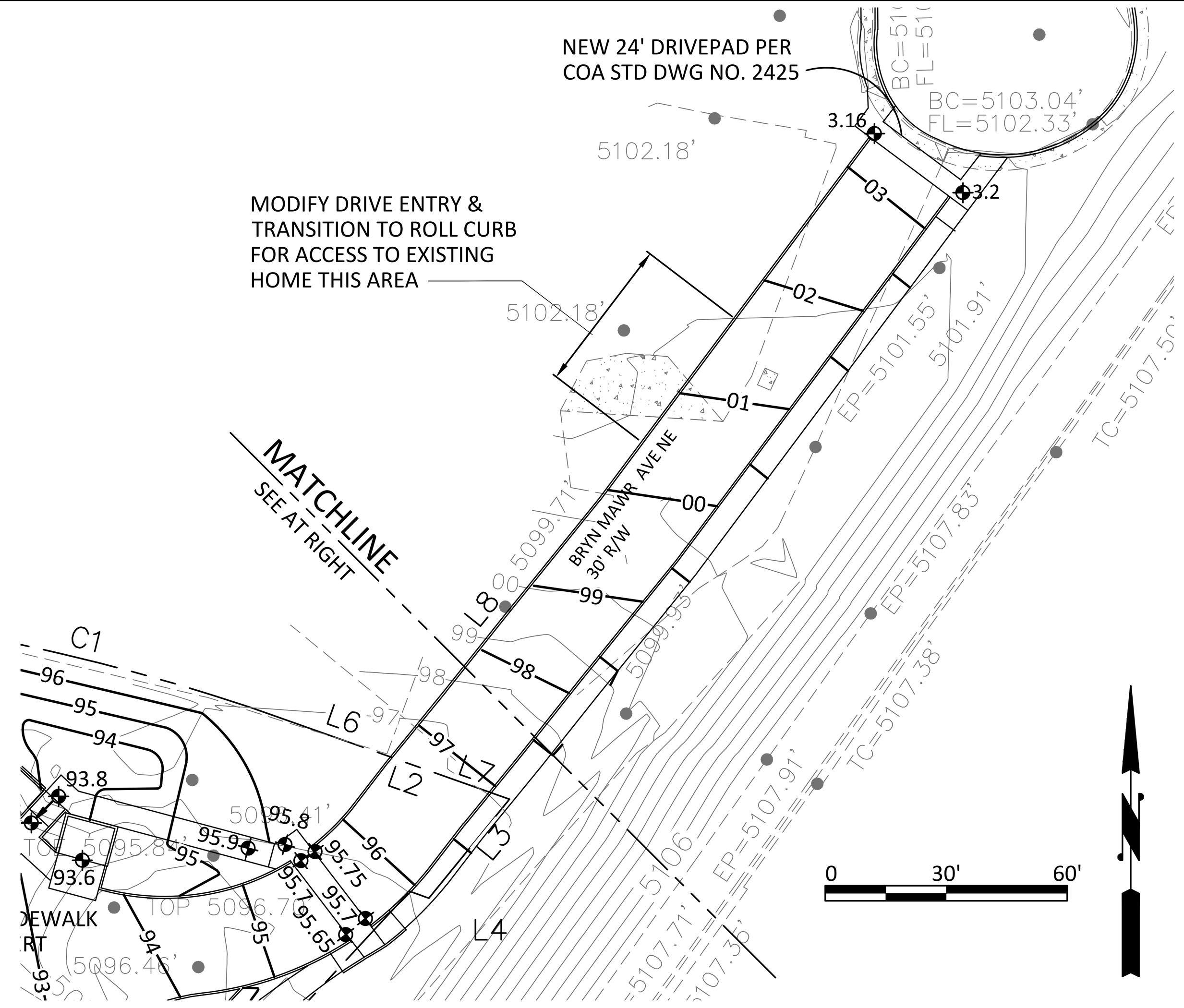
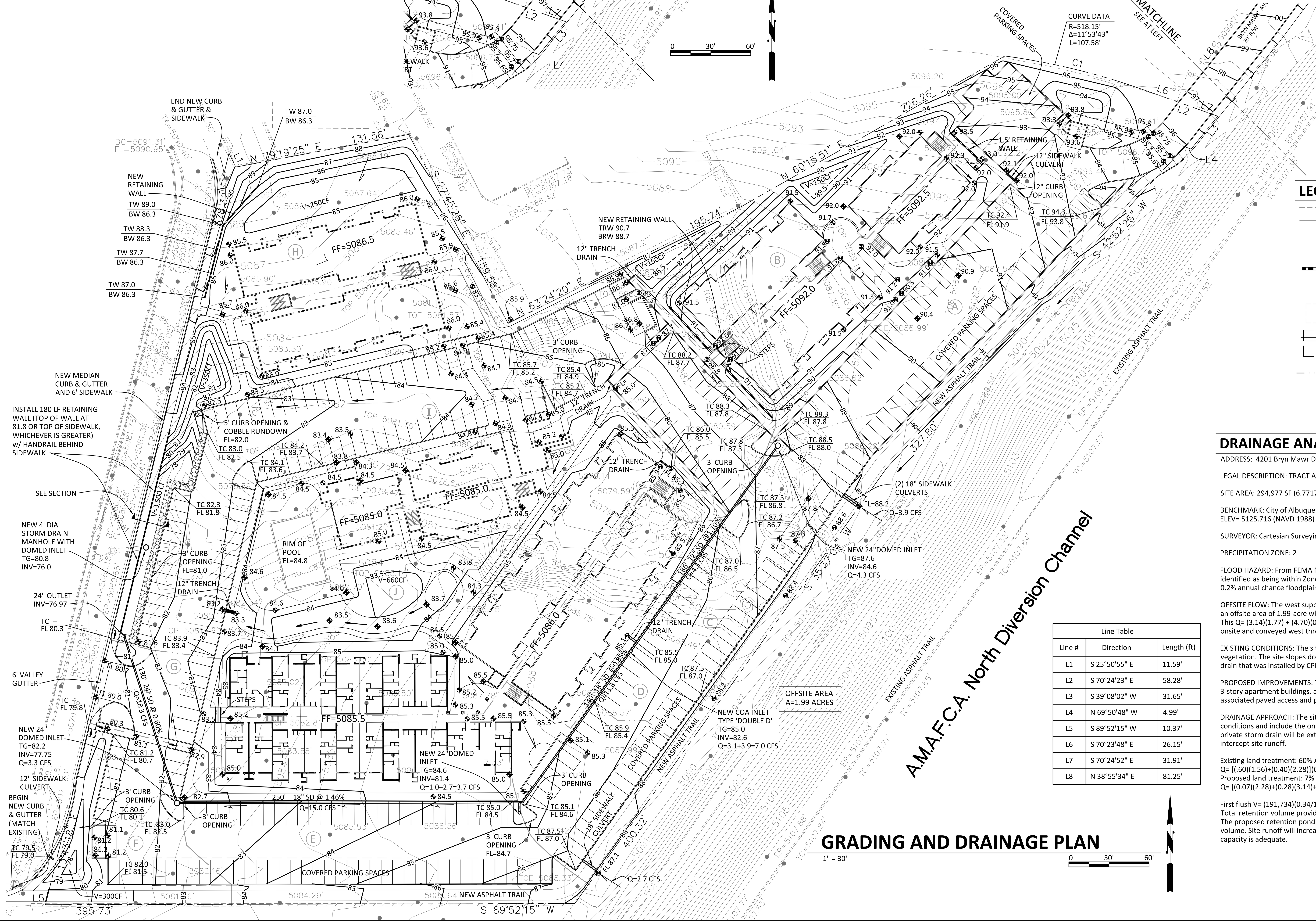


TRENCH DRAIN
NOT TO SCALE



VICINITY MAP
G-16-Z NOT TO SCALE





GRADING AND DRAINAGE PLAN
1" = 30'
0 30' 60'

LEGEND

Symbol	Description
— — — —	EXISTING CONTOUR
———	NEW CONTOUR
FF=5092.00	NEW BUILDING FINISH FLOOR ELEV
36.5	NEW SPOT ELEVATION
5080.5	EXISTING SPOT ELEVATION
▬▬▬	RETAINING WALL
TRW	TOP OF RETAINING WALL
BW	BOTTOM OF WALL
	COVERED PARKING
	12" STORM DRAIN
	TRENCH DRAIN
— · · —	DRAINAGE BASIN BOUNDARY
(A)	DRAINAGE BASIN NUMBER
←	FLOW DIRECTION ARROW

Line Table		
Line #	Direction	Length (ft)
L1	S 25°50'55" E	11.59'
L2	S 70°24'23" E	58.28'
L3	S 39°08'02" W	31.65'
L4	N 69°50'48" W	4.99'
L5	S 89°52'15" W	10.37'
L6	S 70°23'48" E	26.15'
L7	S 70°24'52" E	31.91'
L8	N 38°55'34" E	81.25'

DRAINAGE ANALYSIS

ADDRESS: 4201 Bryn Mawr Drive NE, Albuquerque, NM

LEGAL DESCRIPTION: TRACT A-2, LUECKING PARK COMPLEX

SITE AREA: 294,977 SF (6.7717 acres)

BENCHMARK: City of Albuquerque Station ' 7-G17' being a brass cap.
ELEV= 5125.716 (NAVD 1988)

SURVEYOR: Cartesian Surveying Inc. dated August, 2016

PRECIPITATION ZONE: 2

FLOOD HAZARD: From FEMA Map 35001C0138H (8/16/12), this site is identified as being within Zone 'X' which is determined to be outside the 0.2% annual chance floodplain.

OFFSITE FLOW: The west supporting slope of the North Diversion Channel is an offsite area of 1.99-acre which drains across the site along its east side. This Q= (3.14)(1.77) + (4.70)(0.22) = 6.6 CFS will continue to be accepted onsite and conveyed west through the site.

EXISTING CONDITIONS: The site is currently undeveloped with some sparse vegetation. The site slopes down to the west and discharges to a 36" storm drain that was installed by CPN 595281 and designed to carry Q= 50.6 CFS.

PROPOSED IMPROVEMENTS: The proposed improvements include 6 new 3-story apartment buildings, a community building with swimming pool, associated paved access and parking, and landscaping.

DRAINAGE APPROACH: The site drainage pattern will follow historic conditions and include the onsite retention of the first flush volume. The private storm drain will be extended onsite to provide for catch basins to intercept site runoff.

Existing land treatment: 60% A and 40% B
Q= [(.60)(1.56)+(0.40)(2.28)](6.772)=12.5 CFS
Proposed land treatment: 7% B, 28% C and 65% D
Q= [(0.07)(2.28)+(0.28)(3.14)+(0.65)(4.70)](6.772)= 27.7 CFS

First flush V= (191,734)(0.34/12)= 5,432 CF
Total retention volume provided onsite is 5,750 CF
The proposed retention pond areas will combine to contain the first flush volume. Site runoff will increase from historic but the existing storm drain capacity is adequate.

"EASY AS PIE"
JEEBS & ZUZU, LLC
ARCHITECTS & CONTRACTORS
MAKING HOUSE CALLS
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ALBUQUERQUE, NM 87112
P: 505-797-1318
WWW.JEEBSANDZUZU.COM

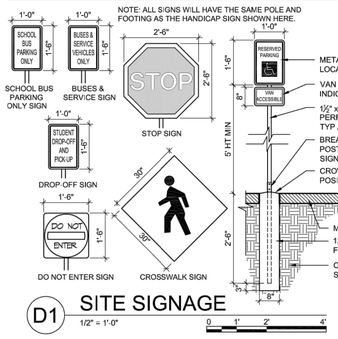
SCOTT M. McGEE
NEW MEXICO
10519
REGISTERED PROFESSIONAL ENGINEER
3/31/17

job no:	16-022
drawn:	CB
checked:	SMM
date:	March 31, 2017

Revisions:

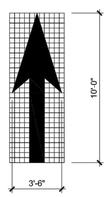
ARROYO VISTA APARTMENTS
4201 BRYN MAWR DR. NE
ALBUQUERQUE NM, 87107

SHEET NO: C-101

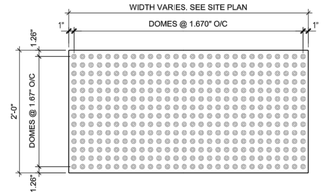


D1 SITE SIGNAGE
1/2" = 1'-0"

NOTE:
1. ARROWS TO BE REFLECTIVE PAINT COLOR: WHITE



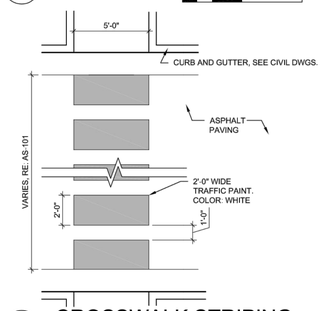
D2 PAVEMENT ARROWS
1/4" = 1'-0"



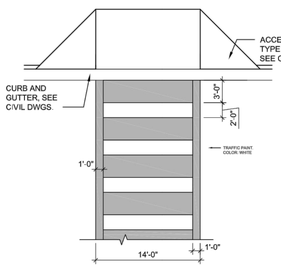
MANUFACTURER: ARMOR-TILE ADA
24"X60" SURFACE APPLIED MAT INLINE DOME TACTILE TILE
PART Nº: ADA-S-2460-BL
COLOR: YELLOW (PER ADAAG 4.29.5)
DISTRIBUTOR: WHITE CAP CONSTRUCTION SUPPLY
(505) 872-2244 - WWW.ARMOR-TILE.COM

NOTE: INSTALLATION PER MANUFACTURER'S SPECIFICATIONS

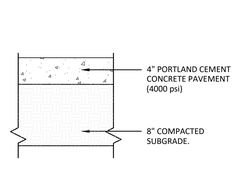
E3 DETECTABLE WARNING
1" = 1'-0"



D3 CROSSWALK STRIPING
1/4" = 1'-0"

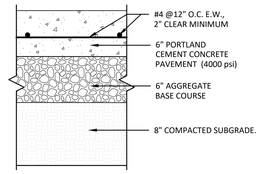


D4 CROSSWALK STRIPING
1/8" = 1'-0"



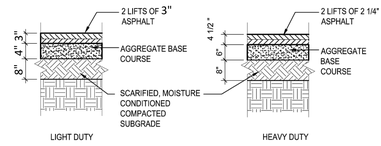
CONCRETE PAVEMENT SECTION

1 1/2" = 1'-0"



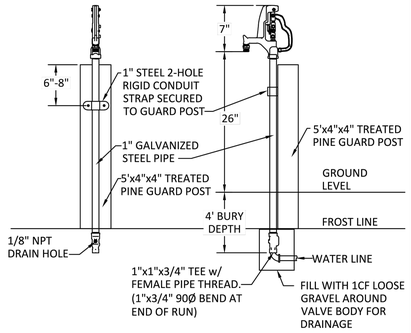
REINFORCED CONCRETE PAVEMENT SECTION

1 1/2" = 1'-0"

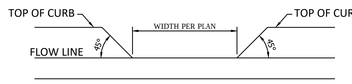


ASPHALT PAVING SECTIONS

1/2" = 1'-0"

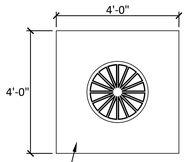


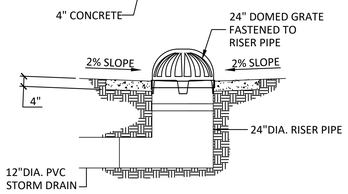
NOTE: HYDRANT SHALL BE WOODFORD MODEL R34.



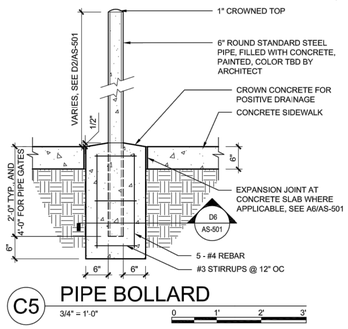
D5 CURB CUT
NTS

D6 FREEZELESS YARD HYDRANT
NTS

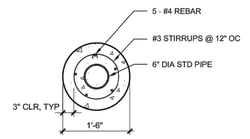




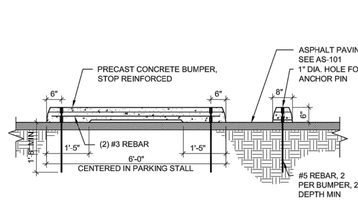
C2 DOMED GRATE INLET DETAIL
NTS



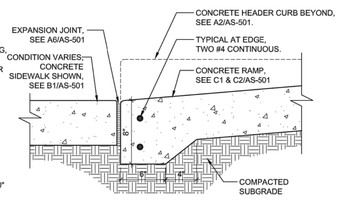
C5 PIPE BOLLARD
3/4" = 1'-0"



C6 PIPE BOLLARD FOOTING SECTION
3/4" = 1'-0"



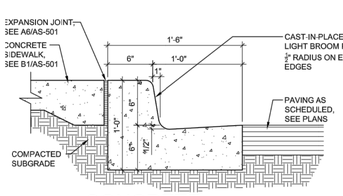
B4 PARKING BUMPER
1/2" = 1'-0"



B5 RAMP TRANSITION
1 1/2" = 1'-0"

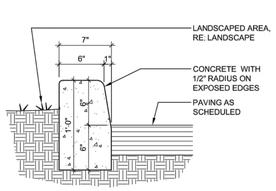
B2

NOTE.
1. JOINTING SHALL REFLECT THE JOINTING OF ADJACENT FLATWORK, SEE PLANS.
2. WHERE BACK OF CURB AND GUTTER IS EXPOSED ALONG A RAMP, ADD 1/2" RADIUS ON EXPOSED EDGES.

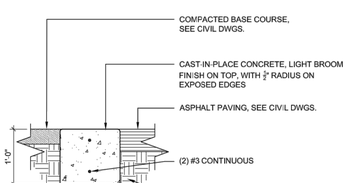


A1 CONCRETE CURB & GUTTER
1 1/2" = 1'-0"

NOTE: PROVIDE CONTROL JOINTS @ 6'-0" O.C. MAX. AND DOWELED EXPANSION JOINTS @ 24'-0" O.C. MAX. UNLESS SHOWN OTHERWISE. RE: CONCRETE JOINT AND EXPANSION JOINT DETAILS AND SITE PLAN.

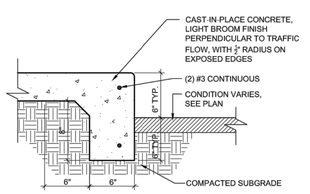


A2 CONCRETE CURB, FREE-STANDING
1 1/2" = 1'-0"

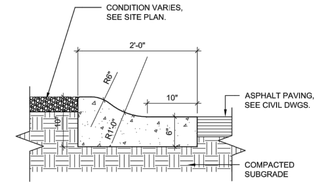


A3 CONCRETE FLUSH CURB
1" = 1'-0"

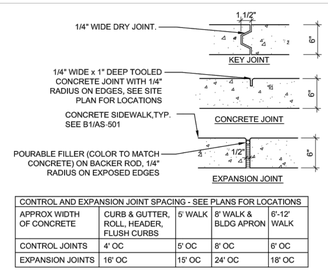
NOTE:
1. SEE PLANS AND A6/AS-501 FOR SIDEWALK JOINTING



A4 CONCRETE TURNDOWN SIDEWALK
1 1/2" = 1'-0"



A5 CONCRETE ROLL CURB
1" = 1'-0"



CONTROL AND EXPANSION JOINT SPACING - SEE PLANS FOR LOCATIONS				
APPROX WIDTH OF CONCRETE	CURB & GUTTER, ROLL, HEADER, FLUSH CURBS	5' WALK	8' WALK & BLDG APRON	6'-12' WALK
CONTROL JOINTS	4' OC	5' OC	8' OC	6' OC
EXPANSION JOINTS	16' OC	15' OC	24' OC	18' OC

A6 CONCRETE JOINT and EXPANSION JOINT
1 1/2" = 1'-0"

WWW.JEBSANDZUZU.COM

SCOTT M. MOORE
NEW MEXICO
10519
REGISTERED PROFESSIONAL ENGINEER
3/31/17

"EASY AS PIE"

JEBS & ZUZU, LLC
ARCHITECTS & CONTRACTORS
MAKING HOUSE CALLS

11030 MENAUL NE SUITE C
ALBUQUERQUE, NM 87112
P: 505-797-1318

job no:	16-022
drawn:	CB
checked:	SMM
date:	MAR. 31, 2017

Revisions:
(Δ1) 11-21-16
(Δ2) 12-02-16

ARROYO VISTA APARTMENTS
CIVIL DETAILS
4201 BRYN MAWR DR. NE
ALBUQUERQUE NM, 87107

SHEET NO:
C-105