CITY OF ALBUQUERQUE

Planning Department David Campbell, Director



Mayor Timothy M. Keller

October 15, 2018

Kris Wiest Merrick & Company 5970 Greenwood Plaza Blvd Greenwood Village, CO 80015

RE: Chick-Fil-A @ Coors Pavilion Coors Pavilion, Lot 6 Grading and Drainage Plan Engineer's Stamp Date: 10/1/18 Drainage File: G11D069C

Dear Mr. Wiest:

PO Box 1293 Based on the submittal received on 10/10/18, the Grading and Drainage Plan is approved for Site Plan for Building Permit and Building Permit.

Albuquerque

Prior to Certificate of Occupancy (For Information):

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

^{NM 87103}
 A Bernalillo County Recorded <u>Drainage Covenant (No Public Easement)</u> is required for the infiltration trench. The original notarized form, exhibit A (legible on 8.5x11 paper), and recording fee (\$25, payable to Bernalillo County) 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. The routing and recording process for covenants can take a month or longer; Hydrology recommends beginning this process as soon as possible as to not delay approval for certificate of occupancy.

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



City of Albuquerque

Planning Department Development & Building Services Division DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title:	Building Permit #:	City Drainage #:			
DRB#: EPC#:		Work Order#:			
Legal Description:					
City Address:					
Engineering Firm:		Contact:			
Address:					
Phone#: Fax#:		E-mail:			
Owner:		Contact:			
Address:					
Phone#: Fax#:		_ E-mail:			
Architect:		Contact:			
Address:					
Phone#: Fax#:		E-mail:			
Other Contact:		Contact:			
Address:					
Phone#: Fax#:		E-mail:			
TRAFFIC/ TRANSPORTATION MS4/ EROSION & SEDIMENT CONTROL		BUILDING PERMIT APPROVAL CERTIFICATE OF OCCUPANCY			
TYPE OF SUBMITTAL:					
ENGINEER/ ARCHITECT CERTIFICATION		RY PLAT APPROVAL			
		SITE PLAN FOR SUB'D APPROVAL SITE PLAN FOR BLDG. PERMIT APPROVAL			
CONCEPTUAL G & D PLAN		FINAL PLAT APPROVAL			
GRADING PLAN					
DRAINAGE MASTER PLAN	FOUNDATIO	FOUNDATION PERMIT APPROVAL			
DRAINAGE REPORT	GRADING P	GRADING PERMIT APPROVAL			
CLOMR/LOMR	SO-19 APPR	SO-19 APPROVAL			
TRAFFIC CIRCUITATION LAVOUT (TOL)		PAVING PERMIT APPROVAL			
TRAFFIC CIRCULATION LAYOUT (TCL) TRAFFIC IMPACT STUDY (TIS)		PAD CERTIFICATION			
EROSION & SEDIMENT CONTROL PLAN (ESC)					
	CLOMR/LON	/IK			
OTHER (SPECIFY)	PRE-DESIGN	MEETING			
	OTHER (SPE	ECIFY)			
IS THIS A RESUBMITTAL?: Yes No					
DATE SUBMITTED:By: _					

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ____



October 1, 2018 Merrick Project No. 65119594

Dana Peterson City of Albuquerque PO Box 1293 Albuquerque, NM 87103

Re: Chick-fil-A @ Coors Pavilion, Coors Pavilion, Lot 6 Grading and Drainage Plan, Drainage File: G11D069C

Dear Mr. Peterson:

Merrick & Company has reviewed the comments dated September 17, 2018 regarding the Chick-fil-A @ Coors Pavilion Grading and Drainage Plan. The following summarizes Merrick's responses to the comments provided by the City of Albuquerque.

Based on the information provided in your submittal received 9/7/18, the Grading and Drainage Plan cannot be approved until the following are addressed:

Prior to Site Plan for Building Permit:

- Provide a basin map with land treatments, areas, peak runoff, and runoff volume for each subbasin. The grading and paving on the adjacent lot (Lot 5) need to be included as well. How will the Lot 5 grading and paving and Basin A-2 drain to the subdivision pond as defined in the subdivision master plan. Response: Basin limits have been delineated on the grading and drainage plan. Land treatments, areas, peak runoff, and runoff volume for each basin have been included. The disturbed area on Lot 5 has been included. Per the Master Drainage Plan, Lots 5 and 6 are to overland flow westerly to the private common drive where flow is conveyed via an existing drainage pan to the detention pond located within Lot 9.
- Proved details, dimensional data, rock graduation, and supporting calculations for the infiltration trench. This facility cannot be located in the public ROW. The City does not allow volume reduction for infiltration rate, so this trench will need to be designed as a pond minus rock volume (e = ~0.30). Ensure storage volume is provided for the contributing basins for the 100-yr, 10-day volume.

Response: Infiltration trench detail has been provided. 1.5" washed angular aggregate, complying with ASTM D2321 Class 1 material has been specified. Based on rock gradation information obtained from Advanced Drainage Systems, washed rock that is not compacted has a void ratio between 0.40 - 0.48. Calculations for the volume of the trench assume the lower end of that range. See attached for reference.





- Why is grading shown in the ROW (City and NMDOT)? If grading is required in the NMDOT ROW, then provide the approved construction permit from NMDOT. If grading is required in the City ROW, then an Excavation Permit will be required. Hydrology recommends confining the limits of grading to the private property. Response: Grading has been removed from City and NMDOT ROW.
- Due to the small size of this project, Hydrology recommends requesting approval for Building Permit (as well as SPBP) when resubmitting. This will avoid the need for a future submittal. Response: Understood.

.

Prior to Certificate of Occupancy (For Information):

 Engineer's Certification, per the DPM Chapter 22.7: Engineer's Certification Checklist For Non-Subdivision is required. Response: Understood.

We hope we have adequately addressed your comments. If you have any questions or need further clarification concerning the resubmitted plans, please don't hesitate to give me a call at (303) 353-3696.

Respectfully submitted, MERRICK & COMPANY

Logon Vogt Project Engineer logon.vogt@merrick.com



Tech Sheet



Porosity of Structural Backfill

Tech Sheet # 1 November 2012

General:

StormTech advises that a porosity of 40% is appropriate to use for the storage capacity of structural aggregate used in the bedding and embedment zones around StormTech chambers. This memo provides technical support for the use of a porosity of 40%. The major points of the memo are:

- 40% porosity is appropriate for the clean, open graded, angular aggregate material StormTech recommends for foundation and embedment.
- Most of the porosity data available is based on a compacted condition. StormTech requires compaction of the foundation (bedding) and allows dumped aggregate embedment around the chambers.
- Test data indicates that the average porosity of all gradations of the *compacted* foundation is approximately 40%. The porosity of the *dumped* backfill in the embedment zone is typically greater than 40% and the calculated weighted average porosity therefore exceeds 40% for typical StormTech systems.
- Porosity is protected from soils migration by a non-woven geotextile that surrounds the entire system. For some exfiltration systems, a drainage net is substituted for the geotextile on the bottom of the bed.

Terms:

Porosity (n) is defined as the volume voids over the total volume expressed as a percent: n = (V_v / V_t) x 100%. Other terms commonly used to describe porosity include; "voids" and "void space". A related term that should not be confused with porosity is *void ratio* (e) which is the volume of voids over the volume of solids expressed as a decimal: $e = V_v / V_{s.}$

Compilation of Known Test Data:

Sample AASHTO # 4 AASHTO # 57 AASHTO # 4 AASHTO # 57 AASHTO # 57 AASHTO # 57 AASHTO # 3 -1 ½" -1 ½" -1 ½" -1 ½" -1 ½" -1 ½"	StormTech lab StormTech lab StormTech lab NTH lab NTH lab Anderson Eng. Cons. Anderson Eng. Cons. Anderson Eng. Cons. Anderson Eng. Cons. Anderson Eng. Cons.	37.4% 38.7% 50 - 51% 50 - 52% 53 - 54% 41.9% 35.3% 37.8% 41.3% 38.2%	Bulk Density 94.3 lbs/ft ³ 87.2 lbs/ft ³ 103.0 lbs/ft ³ 97.7 lbs/ft ³ 96.8 lbs/ft ³ 101.7 lbs/ft ³ 98.6 lbs/ft ³ 93.6 lbs/ft ³ 98.7 lbs/ft ³	Test / Description dumped, corrected ¹ dumped, corrected ¹ jigged & tamped, corrected ¹ jigged & tamped, corrected ¹ tapped & agitated, dried ² tapped & agitated, dried ² tapped & agitated, dried ² dry rodded, C29 ³ dry rodded, C29 ³
-1 ½ -3/4" -3/4"	Anderson Eng. Cons. Anderson Eng. Cons. Anderson Eng. Cons.	38.5%	98.7 lbs/ft 100.3 lbs/ft ³ 97.9 bs/ft ³	dry rodded, C29 ³ dry rodded, C29 ³

Compilation of Known Test Data:

Sample	Data Source	<u>Porosity</u>	Bulk Density	Test / Description
AASHTO # 4	Universal Eng. Serv.	44.3%	78.6 lbs/ft ³	rodded C29 ⁴
AASHTO # 57	Universal Eng. Serv.	43.2%	79.8 lbs/ft ³	rodded C29 ⁴
AASHTO # 4	Universal Eng. Serv.	46.1%	70.8 lbs/ft ³	rodded C29 ⁵
AASHTO # 57	Universal Eng. Serv.	42.8%	74.8 lbs/ft ³	rodded C29 ⁵
-1 ¹ / ₂ " Crushed Rock	CTL Thompson TX	46%	90.5 lbs/ft ³	rodded C29 ⁶
-1" Crushed Rock	CTL Thompson TX	45%	91.6 lbs/ft ³	rodded C29 ⁶
-1 ¹ / ₂ " Crushed Conc	CTL Thompson TX	48%	77.1 lbs/ft ³	rodded C29 ⁶

¹Testing was conducted by StormTech in October, 2003 using aggregate from Connecticut. Water was used to fill voids and a correction factor that reduced porosities by 3 to 16% was calculated and applied to correct for wall effects of the test container.

²Testing was conducted by NTH Consultants,Ltd. Exton, PA in December, 2002 for ADS. This was dry testing in accordance with the "Civil Engineering Reference Manual, Sixth Edition" by Michael R. Lindburg, PE.

³Testing was conducted by Anderson Engineering Consultants, Inc., Little Rock, AR in February, 2000 for 7 different aggregate samples from four suppliers in Arkansas.

⁴The material tested was lime rock from central Florida. Testing was conducted by Universal Engineering Sciences in Orlando, FL in November, 2005.

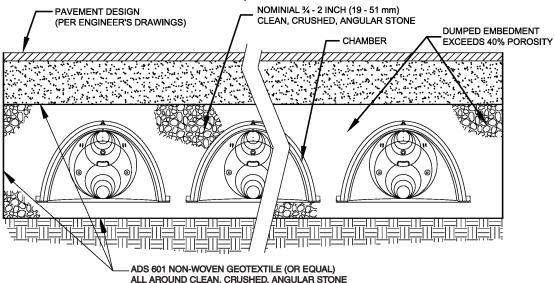
⁵The material tested was recycled, crushed concrete from central Florida. Testing was conducted by Universal Engineering Sciences in Orlando, FL in November, 2005.

⁶Testing was conducted by CTL | Thompson Texas, LLC in August, 2006.

ASTM C29 is the "Standard Test Method for Bulk Density (Unit Weight) and Voids in Aggregate".

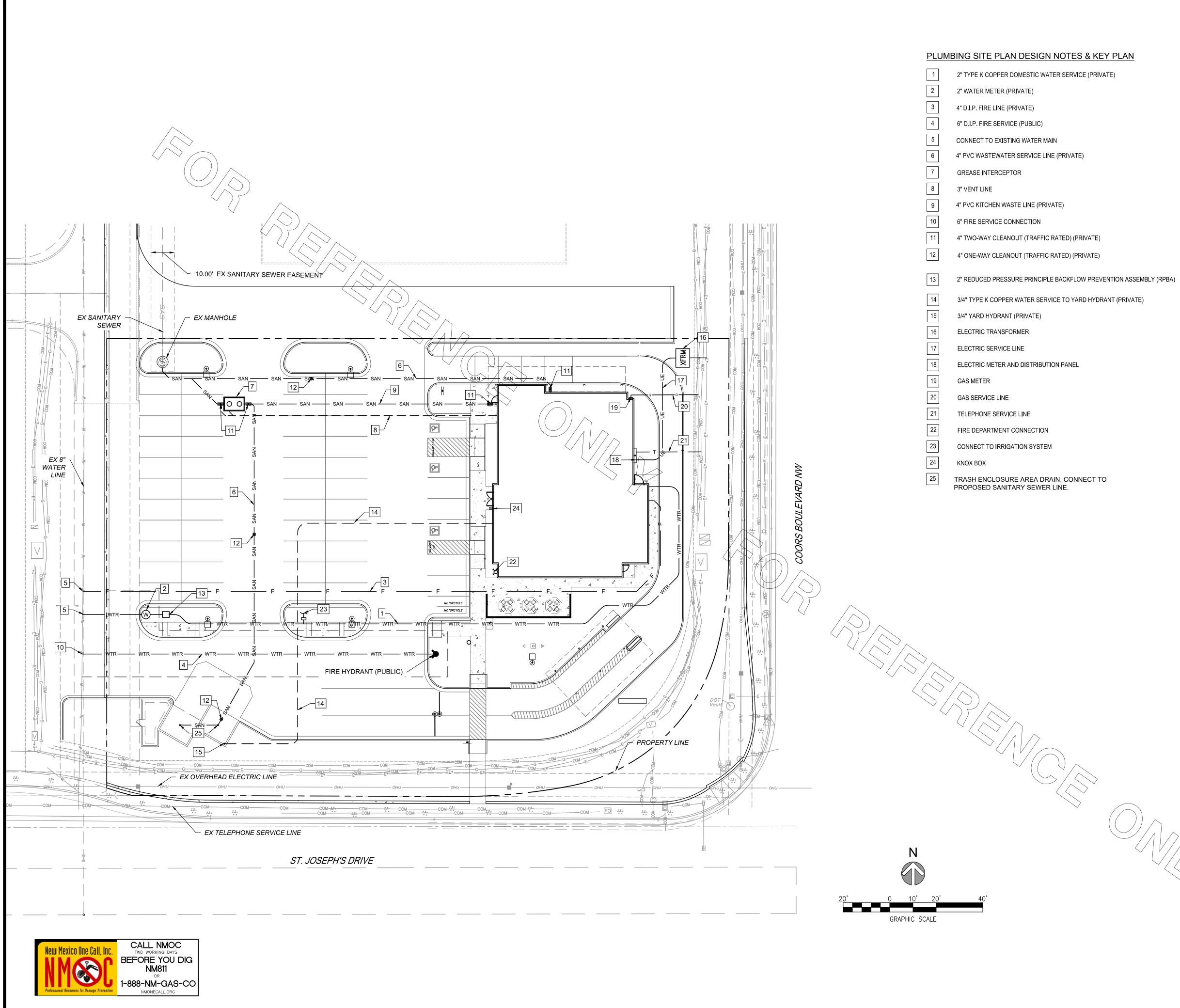
Porosity References:

- "Urban Runoff Quality Management" WEF MOP 23 / ASCE MOP 87. Table 5.12 lists uniform sized gravel at 40%.
- "Controlling Urban Runoff:" by Thomas R. Schueler, July 1987 describes storage volume of the void space in the trench at 40% of the excavated trench volume.
- "On-site Stormwater Management: Applications for Landscape and Engineering" Second Edition by Bruce Ferguson and Thomas Debo states that open graded crushed stone has 40% void space.



ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com StormTech is a registered trademark of StormTech, Inc. Universal Engineering Sciences is a registered trademark of Universal Engineering Sciences.

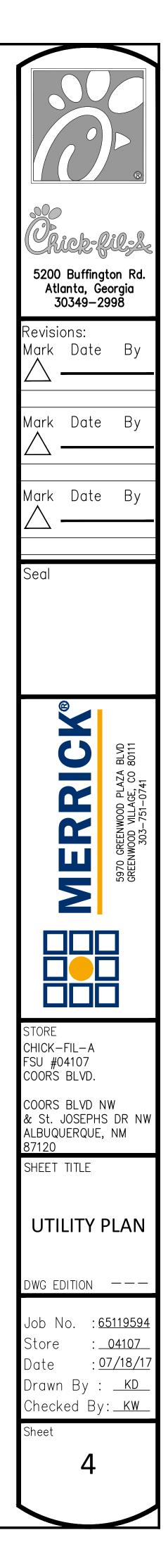
©2012 Advanced Drainage Systems, Inc. ST TS1 11/12

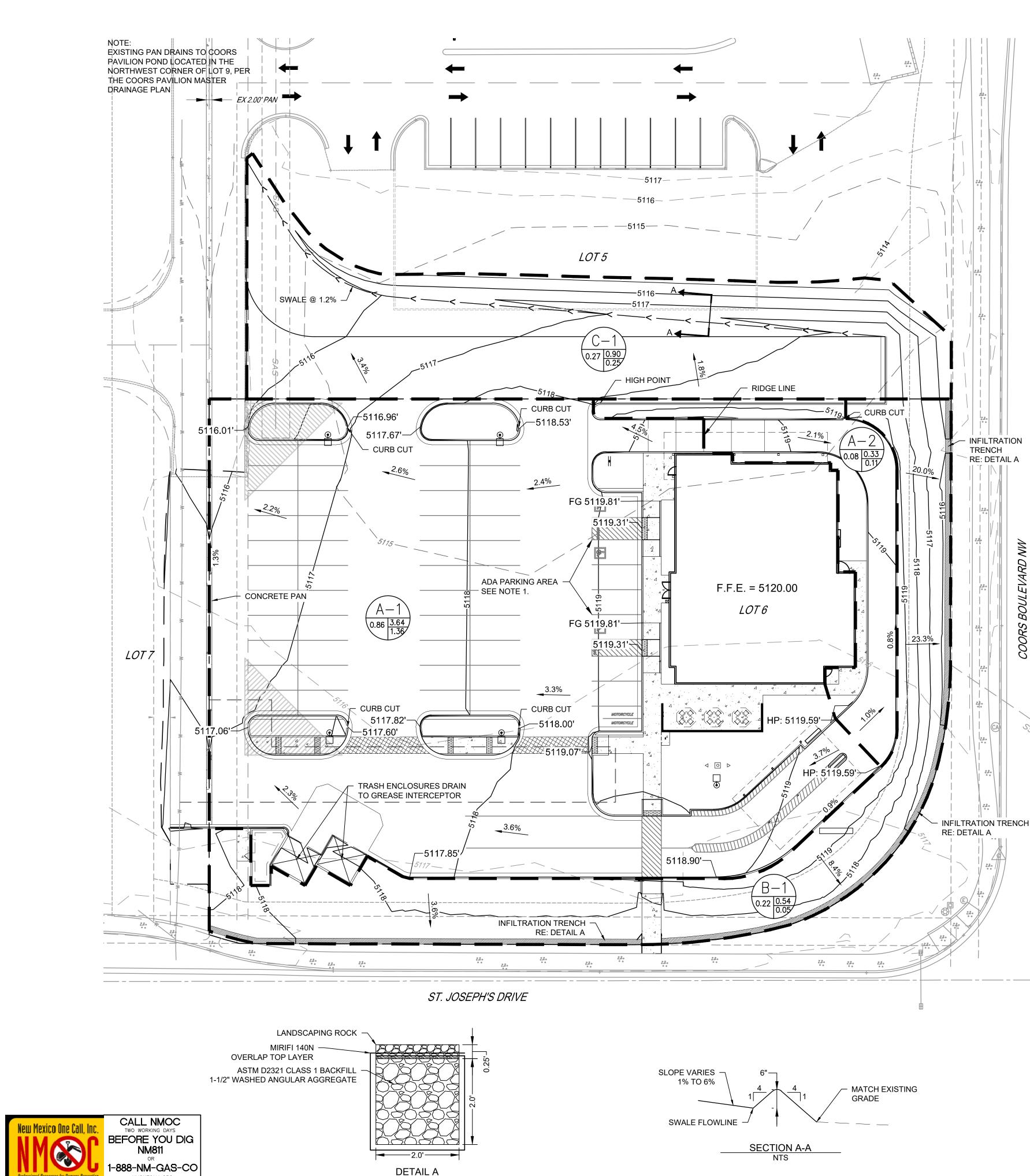


VICE (PRIVATE)	

L	EGEND:
_	
	\bigcirc
	ଚ
	00
	<u>بسماری</u>
	। । ।
	XFRM
	•
	• •
	(25)
_	———— F ————
	WTR
	SAN
	G
_	——— E ———
	т
_	5555
_	5555
	ŚD
	S
	¢
	UE
	G
	W
	SD
	SS
	UT
	-0-
	— - 5555 — —
	— - 5555 — —
	$\boxtimes \stackrel{\scriptscriptstyle{W}}{\rightarrowtail} \boxtimes$
	T
	E
	RWT







INFILTRATION TRENCH NTS

NMONECALL.ORG



FIRM MAP NO 35001C0114H

DRAINAGE INFORMATION

LOCATION & DESCRIPTION

THE PROPOSED SITE IS LOT 6 OF COORS PAVILION AND IS 1.16 ACRES LOCATED ON THE NORTH SIDE OF ST. JOSEPH'S BLVD. AND THE WEST SIDE OF COORS BLVD. THE PROPOSED DEVELOPMENT WILL BE A FAST FOOD RESTAURANT WITH ALL THE ASSOCIATED IMPROVEMENTS.

FLOODPLAIN STATUS

DATED AUGUST 16, 2012 IS NOT WITHIN A DESIGNATED 100-YEAR FLOODPLAIN. AN EXHIBIT WITH THE SITE SHOWN ON THE FIRM PANEL IS INCLUDED ON THIS SHEET.

METHODOLOGY

METHOD.

PRECIPITATION THE 100-YR 6-HR DURATION STORM WAS USED AS THE DESIGN STORM FOR THIS ANALYSIS. THIS SITE IS WITHIN ZONE 1 AS IDENTIFIED IN THE CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL, SECTION 22.2

EXISTING DRAINAGE

THE SITE IS WITHIN THE AREA OF THE COORS PAVILION DRAINAGE MASTER PLAN. THE EXISTING DRAINAGE FLOWS TO THE NORTHWEST TO A PROPOSED POND FOR SHARED USE BY LOTS INCLUDED IN THE MASTER DRAINAGE PLAN. THE LAND USE PERCENTAGES OF THAT STUDY ARE UTILIZED IN THE ANALYSIS.

DEVELOPED CONDITION

CONCRETE PAN IN THE MIDDLE OF THE PRIVATE DRIVE ON THE WEST SIDE OF THE SITE VIA A COMBINATION OF CURB AND GUTTER AND OVERLAND FLOW. THE PAN WILL ULTIMATELY DIRECT THE FLOW INTO THE FIRST FLUSH POND PROVIDED BY THE DEVELOPMENT. THE 100 YEAR PEAK RUNOFF FROM THIS DEVELOPMENT IS IN ACCORDANCE WITH THE MASTER DRAINAGE REPORT. RUNOFF FROM BASIN B-1 ADJACENT TO COORS BLVD AND ST. JOSEPH'S DR WILL BE CAPTURED BY AN INFILTRATION TRENCH AT THE REAR OF THE EXISTING SIDEWALK, ALLOWING NO RUNOFF FROM THIS SITE TO ENTER EITHER ROADWAY RIGHT-OF-WAY.

REQUIRED FIRST FLUSH VOLUME

LOT DRAINAGE AS DEPICTED ON THIS PLAN SHALL BE MAINTAINED

LOT DEPICTED HEREON SHALL BE RESPONSIBLE FOR MAINTAINING FIRST FLUSH RUNOFF RETENTION INDICATED ON THE LOT IMMEDIATELY PRIOR TO DISCHARGE. THE TOTAL VOLUME SHALL BE EQUAL TO: IMPERVIOUS AREA * (0.44-0.10)/12 IN CUBIC FEET.

IMPERVIOUS AREA: 36,758 SF

REQUIRED VOLUME = 36,758 * (0.44-0.10)/12 = 1041 FT³

PROVIDED VOLUME ON SITE (BASIN A) = 0 FT^3 PROVIDED VOLUME IN DEVELOPMENT POND = 1200 FT³

Land Treatment (ac)			
Basin	А	В	С
A-1	0	0	0.08
A-2	0	0	0.02
B-1	0	0.13	0.08
Lot 6 Total	0	0.13	0.18
C-1	0	0.06	0.08

		Ba
	A-1	A-2
100 YR RUNOFF (cfs)	3.68	0.31
10 YR RUNOFF (cfs)	2.40	0.20
2 YR RUNOFF (cfs)	1.37	1.37
V360 (cu-ft)	5937	487

REQUIRED VOLUME ON SITE (BASIN B) = 637 FT^3 PROVIDED VOLUME ON SITE (BASIN B) = (410 * (2*2))0.4) = 656 FT³

