CITY OF ALBUQUERQUE

June 12, 2015

David Soule, PE
Rio Grande Engineering
PO Box 93924
Albuquerque, NM 87199

RE: **Sandia Area Credit Union and Starbucks, 11301 Montgomery Boulevard**
Grading and Drainage Plan
Engineer's Stamp Date 6-01-2015 (File: F22-D002)

Dear Mr. Soule:

Based upon the information provided in your submittal received 6-01-15, the above referenced plan cannot be approved for Building Permit until the following comments are addressed:

1) Show first flush calculation within the report. Show roof drain locations, and explain how first flush is being managed especially with regard to impervious facilities on the east side of the site. It appears as though an additional first flush pond may be needed to handle first flush from the building on the southeast corner of the site with added curb cuts to allow drainage into the pond from the drive-thru area. Label all first flush ponds as "first flush" along with volume information.

2) Show flow arrows and lot lines on the grading and drainage plan.

3) What are the curb cuts in the medians to the north of the Starbucks for? If a first flush pond was intended here, label it, and provide elevation and volume information. Provide curb flowline elevations at all curb openings.

4) Show existing curb elevations on Cairo at the access point, and show existing elevations along west property line to show how these existing elevations relate to new elevations. On the north side of the site, provide elevations for the existing building that abuts the property line, and ensure that the new contours tie into the correct existing contours.

5) Discuss what the temporary pond is for. What is the sizing of it based on since the 100-year 6-hour volume is much higher for Basin A? Discuss what the plans are for Basin A since an impervious area of 0.988 acres was given in the computations.

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New Mexico 87103

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Also provide riprap within the proposed swale to the bottom of the pond from the east to prevent erosion.

6) Provide a larger basin map. An 11x17 would be easier to read along with upsizing of the text for the labeling of the basins.

7) Label grate elevation for the new Type "D" inlet. Provide a detail showing all elevation information for inlet including information for orifice. Show how this inlet ties into the storm chambers with pipe invert and size information.

8) Label size of Nyloplat junction boxes and the pipes that tie into the storm chambers. Between the high invert elevation of 48.00 for discharge from the site and the high invert elevations of the connecting nyloplat junction boxes, how does the entire system manage to drain, given that the top of the storm chambers are set at elevation 42.50??

9) For the AHYMO Run, show what the pond routing information is based on. Provide computations based on orifice for which the elevations given match what is on the plan.

10) Discuss what the downstream capacity of 4.7 cfs for the existing outlet is based on. The proposed discharge flow should match downstream capacity.

11) On the proposed layout for the storm chambers with the report, label the number of chambers used and the volume of each chamber. Then provide the overall volume for the chamber on this sheet and on the plan view. Provide a cross-sectional view of the storm chamber similar to what is shown on the report showing a detail of the stone and fabric surrounding it if it is just for one row. (It should be similar to the cross-section provided in the report for the multiple chambers.)

12) In the report, explain location of infrastructure for which capacities calculations were provided. Where is there a channel? What are the "Volume Computations" based on? Also include capacity calculations for the sidewalk culvert and for the Type "D" inlet within the "Inlet Capacity Calculations". On the plan view for the grading and drainage plan, label the discharge flow from the site, and label the flow captured at each of the inlets.

13) North of the credit union building, there is a curb cut elevation at an elevation of 49.40 which should be lowered if the intent is to drain to the "water quality pond". Also, the nearby "water quality" pond is labeled at an elevation of 46.50 for the top elevation. Correct discrepancy. Also, provide additional elevation information for the corners of the trash receptacle area.

14) If the proposed elevations shown are at flowline, provide general note to this effect.

15) Show AHYMO Run in 10-minute increments until about 90% of the pond has drained to demonstrate a more clear relationship between inflow and outflow. How does the pond have a constant outflow of 1.68 cfs for a time period of more than 8 days when it peaks at 1.75 hours??

16) Provide a small valley gutter from the sidewalk culvert from Starbucks across the accessway to prevent flow from discharging out the accessway.

If you have any questions, you can contact me at 924-3924.

Sincerely,

Jeanne Wolfenbarger, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf Addressee via Email

CITY OF ALBUQUERQUE

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New Mexico 87103

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City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: sandia area federal credit union-starbucks Building Permit #: _____ City Drainage #: _____

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

Legal Description: lots 3a,3b,3c new holiday park

City Address: 13101 montgomery ne

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: sandia area federal credit union Contact: _____

Address: _____

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

Architect: slagle Herr Contact: _____

Address: _____

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

Surveyor: CONSTRUCTION SURVEY INCORPORATED Contact: JOHN GALLEGOS

Address: _____

Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

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

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- X DRAINAGE PLAN 1st SUBMITTAL
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL G & D PLAN
- ____ GRADING PLAN
- ____ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ____ ENGINEER'S CERT (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERT (TCL)
- ____ ENGINEER'S CERT (DRB SITE PLAN)
- ____ ENGINEER'S CERT (ESC)
- ____ SO-19
- ____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ____ SIA/FINANCIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ____ FOUNDATION PERMIT APPROVAL
- X BUILDING PERMIT APPROVAL
- X GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ GRADING CERTIFICATION
- ____ SO-19 APPROVAL
- ____ ESC PERMIT APPROVAL
- ____ ESC CERT. ACCEPTANCE
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED: ____ Yes X No ____ Copy Provided

DATE SUBMITTED: 5/29/15 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

DRAINAGE REPORT

For

SANDIA ARE FEDERAL CREDIT UNION/STARBUCKS
11301 MONTOMERY NE

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

MAY 2015

David Soule P.E. No. 14522

TABLE OF CONTENTS

Appendix

Map

Site Grading and Drainage Plan

PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the redevelopment of a 3 acre property located at 11301 Montgomery. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 3 -acre parcel of land located on the north side of Montgomery between Cairo and Juan Tabo NE The legal description of this site is tract c1,c2,c3 of the New Holiday Park subdivision. As shown on FIRM map35013C0144G, the entire site is located within Flood Zone X. The site has been fully developed in the past and this is a redevelopment of this site.

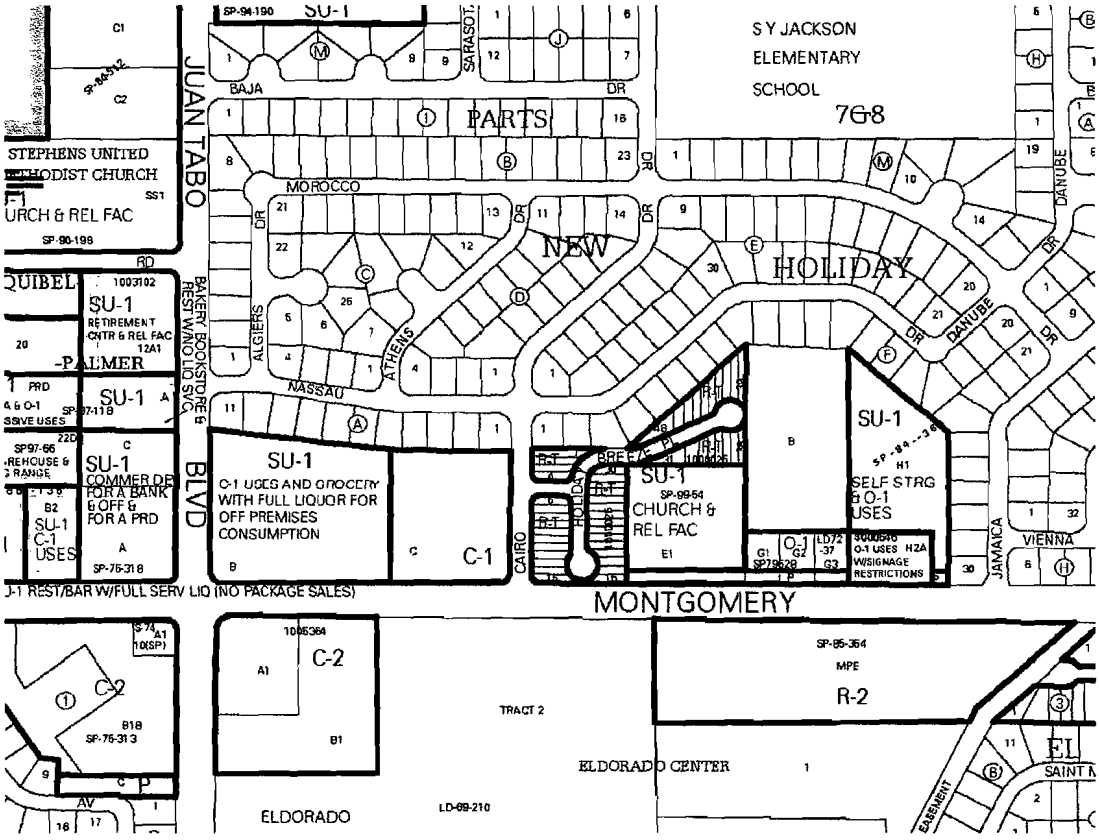
The site was designed with a buried retention tank and metered outflow. The outflow was limited to the 100-year 6-hour discharge rate assuming 100% native. The proposed development shall match existing patterns and limit the flow to similar rate. In addition the site shall retain onsite the first flush volume required.

EXISTING CONDITIONS

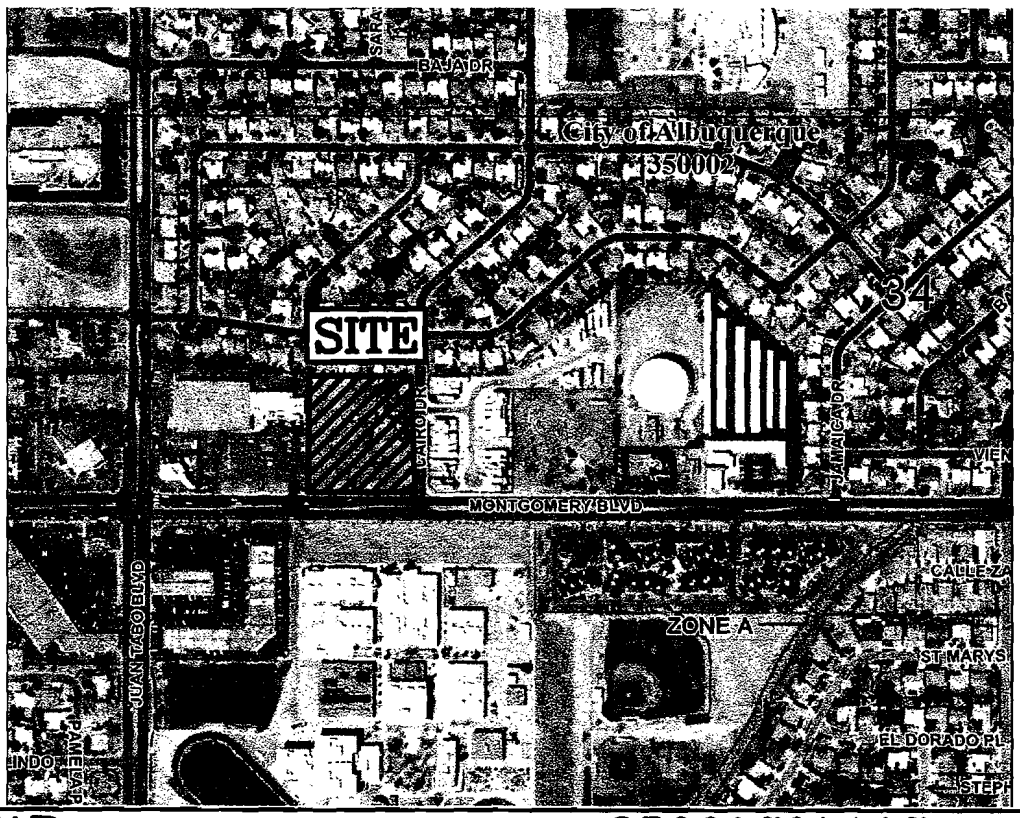
The site currently is graded per the grading plan F22-d2. The site drains to a single type d inlet. This inlet is connected to a large underground concrete vault. The outlet is sized such that the flow will not exceed 4.7 cfs.

PROPOSED CONDITIONS

The proposed improvements consist of removal an replacement of the existing pavement and the construction of two new buildings and one parcel for future development. The lots have cross lot drainage easements and will free discharge to two inlets that are connected to an underground infiltration chamber. The site contains 5 onsite sub basins, which were partitioned to verify the capacity of each collection and conveyance structure. Once the flows are captured they are stored in the infiltration system and metered out by a 9" orifice plate on the existing storm drain stub. The system was modeled using the AHYMO computer program. As shown on the computer model, the site will discharge 5.19 cfsm which is .49 cfs greater than the intial system, but due to site constraints we feel the impact is negligible. A copy of the site hydrology and capacity calculations is included in appendix A. The AHYMO Model is located in appendix B. The infiltrator specifications are located in appendix C. The site is required to retain 3,141 cubic feet as a first flush; this site retains 4,411 cubic feet.



VICINITY MAP: F-22-Z



FIRM MAP: 35001C0144G

LEGAL DESCRIPTION:

TRACT C, THE NEW HOLIDAY PARK SUBDIVISION
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO

SUMMARY AND RECOMMENDATIONS

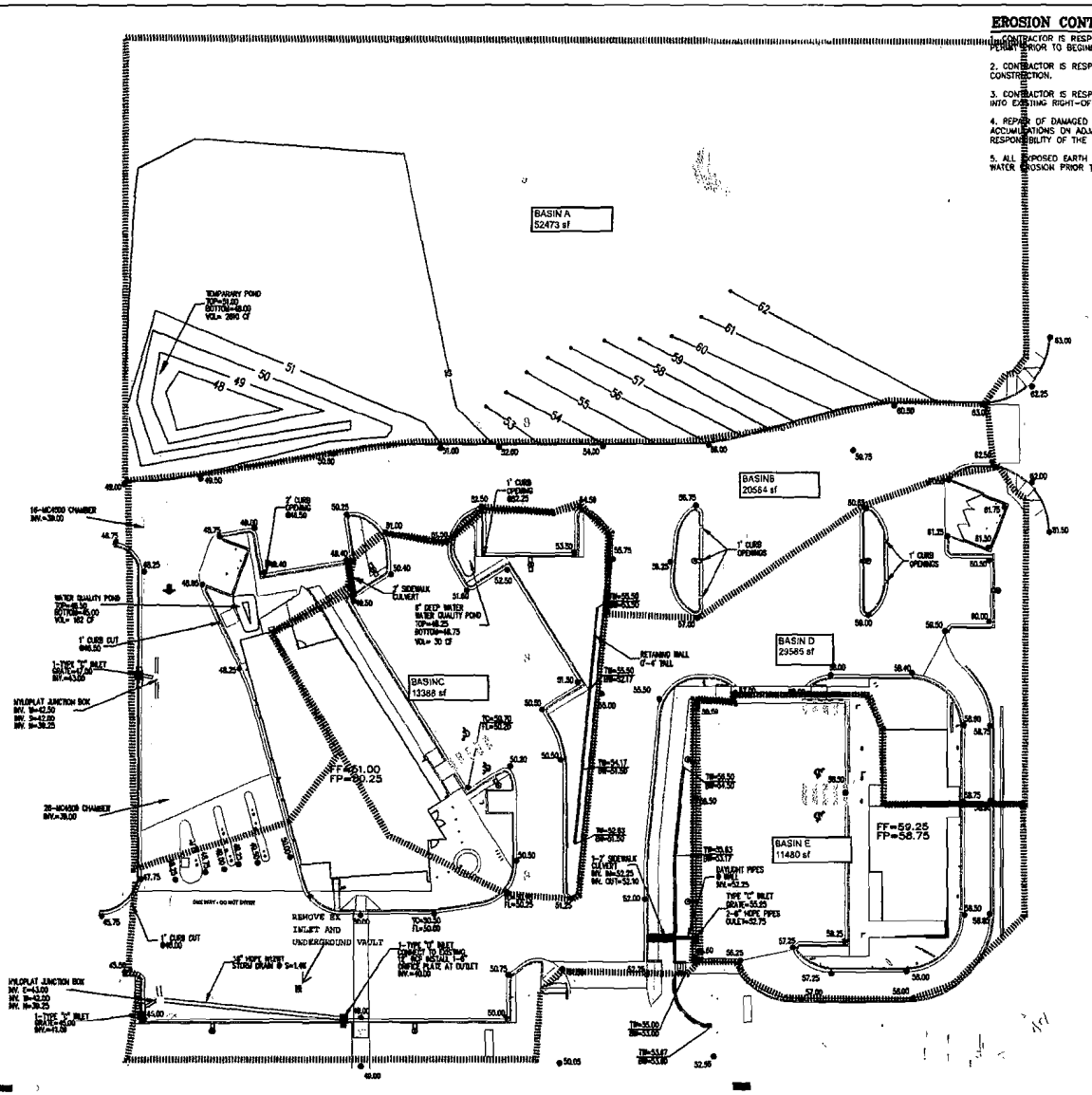
This project is a redevelopment of and existing site. The redevelopment is consistent with the approved grading plan. The site will discharge 5.19 cfs and retain the first flush volume. The development will not affect the upstream or downstream properties or infrastructure. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity.

APPENDIX A

SITE HYDROLOGY AND HYDRAULIC CALCULATIONS

EROSION CONTROL NOTES:

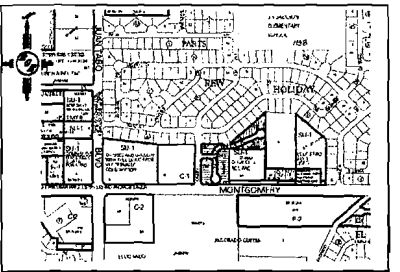
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.



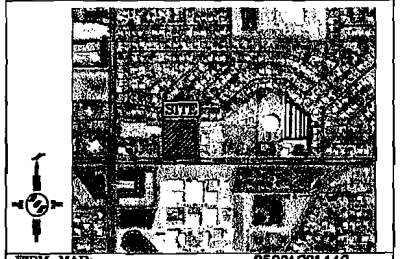
11301 MONTGOMERY BLVD. NE

EXISTING 12" RCP STORM DRAIN

CAUTION:
EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.



VICINITY MAP: F-22-Z



FIRM MAP: 35001C0144G

LEGAL DESCRIPTION:

TRACT C, THE NEW HOLIDAY PARK SUBDIVISION
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. UNDERGROUND WATER RETENTION SYSTEM SHALL BE STORM TECH MC4500.00

LEGEND

- EXISTING CONTOUR
- 5400 EXISTING INDEX CONTOUR
- 5401 PROPOSED CONTOUR
- 5400 PROPOSED INDEX CONTOUR
- LOT LINE
- CENTERLINE
- RIGHT-OF-WAY
- EXTENDED STEM WALL SEE ARCH PLANS FOR DETAILS
- PROPOSED ROCK FACE WALL
- EXISTING CURB AND GUTTER
- PROPOSED EDGE OF CONCRETE
- PROPOSED FLOWLINE
- EXISTING WALL

I, DAVID SOULE, HAVE PERSONALLY INSPECTED THE PROPERTY ON X-XX-13. NO EARTHWORK HAS BEEN PERFORMED AND THE SITE IS CONSISTENT WITH THE TOPO SHOWN

DAVID SOULE P.E. #14522 DATE

20 10 0 10 20
SCALE: 1"=20'

ENGINEER'S SEAL DAVID SOULE 3/17/14 DAVID SOULE P.E. #14522	Safca & Starbuc GRADING AND DRAINAGE PLAN Rio Grande Engineering	DRAWN BY DSH DATE 6-14 SHEET # 1 of 1 JOB # XXXXX

Weighted E Method

BASIN B

Existing Developed Basins

											100-Year, 6-hr.		
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
BASIN A	52473	1.205	0%	0	10.0%	0.120	5.0%	0.06023	82%	0.988	2.346	0.235	5.76
BASIN B	20564	0.472	0%	0	6.0%	0.028	5.0%	0.0236	89%	0.420	2.487	0.098	2.38
BASIN C	13388	0.307	0%	0	14.0%	0.043	10.0%	0.03073	76%	0.234	2.304	0.059	1.47
BASIN D	29585	0.679	0%	0	8.0%	0.054	5.0%	0.03396	87%	0.591	2.456	0.139	3.39
BASIN E	11480	0.264	0%	0	10.0%	0.026	5.0%	0.01318	85%	0.224	2.425	0.053	1.30
DRAINS TO ROW	4811	0.110	0%	0	10.0%	0.011	10.0%	0.01104	80%	0.088	0.410	0.004	0.10
TOTAL ONSITE	132301	3.037	0%		9.3%	0.284	5.7%	0.173	84%	2.545		0.588	14.39
ALLOWED				0.000		0.092		0.037		0.568		-0.138	4.7CFS

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

132301
127490
4811

Where for 100-year, 6-hour storm (zone 4)

Ea= 0.8
Eb= 1.08
Ec= 1.46
Ed= 2.64

Qa= 2.2
Qb= 2.92
Qc= 3.73
Qd= 5.25

water harvet volume 3140.76
provided 1810.00 infiltrator
2601 pond
4411.00 total

Channel Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
Beginning	2	2	0.5	1.00	3.00	0.3333333	2	3.38	1.30	1.30

Manning's Equation:

$Q = 1.49/n * A * R^{(2/3)} * S^{(1/2)}$

A = Area

R = D/4

S = Slope

n = 0.03

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
6	6	4	0.20	0.125	1.13	0.65	3.31

Manning's Equation:

$Q = 1.49/n * A * R^{(2/3)} * S^{(1/2)}$

A = Area
R = D/4
S = Slope
n = 0.013

DROP INLET CALCULATIONS

INLET	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
B	SINGLE C	3.84	9.61	0.2701	0.5
D	SINGLE C	3.84	4.69	0.0643	0.5

ORIFICE EQUATION

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

INLET B=BASIN A+B+C= 9.61 CFS

INLET D=BASIN D+E= 4.69

SINCE THERE IS OVERFLOW NO CLOGING FACTOR

APPENDIX B

AHYMO

VOLUME CALCULATIONS

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
39	1	0.08489	1.68
40	2	0.129	2.71
41	3	0.169	3.45
42	4	0.201	4.05
43	5	0.215	4.58
43.5	5.5	0.231	4.82
44	6	0.244	5.05
45	7	0.248	5.48
45.5	7.5	0.252	5.68

Orifice Equation

Q = CA SQRT(2gH)

C = 0.6

Diameter (in) 9

Area (ft^2)= 0.44178647

g = 32.2

H (Ft) = Depth of water above center of orifice

Q (CFS)= Flow

```
*S      AHYMO - safcu
*S              POND ROUTING

START                 TIME=0.0  PUNCH CODE=0


RAINFALL              TYPE=1
                      QUARTER=0.0    ONE= 2.20 IN
                      SIX= 2.90 IN   DAY= 3.70 IN   DT = 0.05 HR



COMPUTE NM HYD        ID=1  HYD NO=101  DA= .00468 SQ MI
                      PER A=00  PER B=12  PER C=6  PER D=82
                      TP=-.135  MASSRAIN=-1


PRINT HYD             ID=1  CODE=20


* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR
ROUTE RESERVOIR       ID=2   HYD NO=102   INFLOW=1   CODE=20
                      OUTFLOW(CFS)     STORAGE(AC-FT)     ELEV(FT)

                            1.68             0.085          39.00
                            2.71             0.129          40.00
                            3.45             0.169          41.00
                            4.05             0.201          42.00
                            4.58             0.214          43.00
                            4.82             0.231          43.50
                            5.05             0.244          44.00
                            5.48             0.248          45.00
                            5.68             0.252          45.50


PRINT HYD             ID=2   CODE=20


FINISH
```

```
       AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
            RUN DATE (MON/DAY/YR) = 05/29/2015
            START TIME (HR:MIN:SEC) = 11:29:20     USER NO.=
RioGrandeSingleA41963517
            INPUT FILE = ts and
Settings\Owner\Desktop\2014jobs\1498-11301MONTGOMERY\PONROUTING052715.txt


    *S     AHYMO - safcu
    *S             POND ROUTING

    START              TIME=0.0  PUNCH CODE=0


    RAINFALL           TYPE=1
                       QUARTER=0.0    ONE= 2.20 IN
                       SIX= 2.90 IN   DAY= 3.70 IN   DT = 0.05 HR



                   6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
                   DT =   0.050000 HOURS       END TIME =     6.000000 HOURS
                     0.0000  0.0047  0.0095  0.0146  0.0201  0.0259  0.0323
                     0.0415  0.0561  0.0718  0.0881  0.1056  0.1235  0.1418
                     0.1608  0.1800  0.2012  0.2234  0.2472  0.2763  0.3081
                     0.3508  0.3991  0.4587  0.5383  0.6279  0.7825  1.0229
                     1.4348  1.7243  1.9526  2.0673  2.1679  2.2402  2.2976
                     2.3477  2.3844  2.4181  2.4459  2.4701  2.4926  2.5127
                     2.5318  2.5487  2.5648  2.5804  2.5955  2.6079  2.6148
                     2.6216  2.6284  2.6346  2.6409  2.6469  2.6529  2.6588
                     2.6644  2.6699  2.6753  2.6806  2.6859  2.6909  2.6958
                     2.7007  2.7055  2.7103  2.7148  2.7194  2.7238  2.7282
                     2.7325  2.7368  2.7410  2.7452  2.7493  2.7534  2.7574
                     2.7614  2.7654  2.7692  2.7731  2.7769  2.7807  2.7844
                     2.7881  2.7917  2.7953  2.7989  2.8024  2.8059  2.8094
                     2.8128  2.8162  2.8196  2.8229  2.8262  2.8295  2.8327
                     2.8359  2.8391  2.8422  2.8453  2.8484  2.8515  2.8546
                     2.8576  2.8606  2.8635  2.8665  2.8694  2.8723  2.8751
                     2.8780  2.8808  2.8836  2.8864  2.8892  2.8919  2.8946
                     2.8973  2.9000

    COMPUTE NM HYD     ID=1  HYD NO=101  DA= .00468 SQ MI
                       PER A=00  PER B=12  PER C=6  PER D=82
                       TP=-.135  MASSRAIN=-1


        K =  0.073575HR    TP =  0.135000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   14.960    CFS   UNIT VOLUME =   0.9982       B =   526.28
 P60 = 2.2000
        AREA =     0.003838 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


        K =  0.127725HR    TP =  0.135000HR    K/TP RATIO =  0.946108     SHAPE
CONSTANT, N =  3.736321
```

UNIT PEAK = 2.1041 CFS UNIT VOLUME = 0.9953 B = 337.19
P60 = 2.2000
AREA = 0.000842 SQ MI IA = 0.45000 INCHES INF = 1.11000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

PRINT HYD ID=1 CODE=20

PARTIAL HYDROGRAPH 101.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	2.000	2.2	4.000	0.1
6.000	0.1				
1.000	1.0	3.000	0.2	5.000	0.1

RUNOFF VOLUME = 2.38959 INCHES = 0.5964 ACRE-FEET
PEAK DISCHARGE RATE = 14.67 CFS AT 1.500 HOURS BASIN AREA =
0.0047 SQ. MI.

* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR
ROUTE RESERVOIR ID=2 HYD NO=102 INFLOW=1 CODE=20

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)
1.68	0.085	39.00
2.71	0.129	40.00
3.45	0.169	41.00
4.05	0.201	42.00
4.58	0.214	43.00
4.82	0.231	43.50
5.05	0.244	44.00
5.48	0.248	45.00
5.68	0.252	45.50

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	37.37	0.013	0.00
1.00	1.04	39.00	0.085	1.68
2.00	2.18	43.06	0.216	4.61
3.00	0.20	39.00	0.085	1.68
4.00	0.13	39.00	0.085	1.68
5.00	0.12	39.00	0.085	1.68
6.00	0.13	39.00	0.085	1.68
7.00	0.00	39.00	0.085	1.68
8.00	0.00	39.00	0.085	1.68
9.00	0.00	39.00	0.085	1.68
10.00	0.00	39.00	0.085	1.68
11.00	0.00	39.00	0.085	1.68
12.00	0.00	39.00	0.085	1.68
13.00	0.00	39.00	0.085	1.68
14.00	0.00	39.00	0.085	1.68

15.00	0.00	39.00	0.085	1.68
16.00	0.00	39.00	0.085	1.68
17.00	0.00	39.00	0.085	1.68
18.00	0.00	39.00	0.085	1.68
19.00	0.00	39.00	0.085	1.68
20.00	0.00	39.00	0.085	1.68
21.00	0.00	39.00	0.085	1.68
22.00	0.00	39.00	0.085	1.68
23.00	0.00	39.00	0.085	1.68
24.00	0.00	39.00	0.085	1.68
25.00	0.00	39.00	0.085	1.68
26.00	0.00	39.00	0.085	1.68
27.00	0.00	39.00	0.085	1.68
28.00	0.00	39.00	0.085	1.68
29.00	0.00	39.00	0.085	1.68
30.00	0.00	39.00	0.085	1.68
31.00	0.00	39.00	0.085	1.68
32.00	0.00	39.00	0.085	1.68
33.00	0.00	39.00	0.085	1.68
34.00	0.00	39.00	0.085	1.68
35.00	0.00	39.00	0.085	1.68
36.00	0.00	39.00	0.085	1.68
37.00	0.00	39.00	0.085	1.68
38.00	0.00	39.00	0.085	1.68
39.00	0.00	39.00	0.085	1.68
40.00	0.00	39.00	0.085	1.68
41.00	0.00	39.00	0.085	1.68
42.00	0.00	39.00	0.085	1.68
43.00	0.00	39.00	0.085	1.68
44.00	0.00	39.00	0.085	1.68
45.00	0.00	39.00	0.085	1.68
46.00	0.00	39.00	0.085	1.68
47.00	0.00	39.00	0.085	1.68
48.00	0.00	39.00	0.085	1.68
49.00	0.00	39.00	0.085	1.68
50.00	0.00	39.00	0.085	1.68
51.00	0.00	39.00	0.085	1.68
52.00	0.00	39.00	0.085	1.68
53.00	0.00	39.00	0.085	1.68
54.00	0.00	39.00	0.085	1.68
55.00	0.00	39.00	0.085	1.68

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
56.00	0.00	39.00	0.085	1.68
57.00	0.00	39.00	0.085	1.68
58.00	0.00	39.00	0.085	1.68
59.00	0.00	39.00	0.085	1.68
60.00	0.00	39.00	0.085	1.68
61.00	0.00	39.00	0.085	1.68
62.00	0.00	39.00	0.085	1.68
63.00	0.00	39.00	0.085	1.68
64.00	0.00	39.00	0.085	1.68
65.00	0.00	39.00	0.085	1.68
66.00	0.00	39.00	0.085	1.68
67.00	0.00	39.00	0.085	1.68
68.00	0.00	39.00	0.085	1.68
69.00	0.00	39.00	0.085	1.68
70.00	0.00	39.00	0.085	1.68
71.00	0.00	39.00	0.085	1.68
72.00	0.00	39.00	0.085	1.68
73.00	0.00	39.00	0.085	1.68

74.00	0.00	39.00	0.085	1.68
75.00	0.00	39.00	0.085	1.68
76.00	0.00	39.00	0.085	1.68
77.00	0.00	39.00	0.085	1.68
78.00	0.00	39.00	0.085	1.68
79.00	0.00	39.00	0.085	1.68
80.00	0.00	39.00	0.085	1.68
81.00	0.00	39.00	0.085	1.68
82.00	0.00	39.00	0.085	1.68
83.00	0.00	39.00	0.085	1.68
84.00	0.00	39.00	0.085	1.68
85.00	0.00	39.00	0.085	1.68
86.00	0.00	39.00	0.085	1.68
87.00	0.00	39.00	0.085	1.68
88.00	0.00	39.00	0.085	1.68
89.00	0.00	39.00	0.085	1.68
90.00	0.00	39.00	0.085	1.68
91.00	0.00	39.00	0.085	1.68
92.00	0.00	39.00	0.085	1.68
93.00	0.00	39.00	0.085	1.68
94.00	0.00	39.00	0.085	1.68
95.00	0.00	39.00	0.085	1.68
96.00	0.00	39.00	0.085	1.68
97.00	0.00	39.00	0.085	1.68
98.00	0.00	39.00	0.085	1.68
99.00	0.00	39.00	0.085	1.68
100.00	0.00	39.00	0.085	1.68
101.00	0.00	39.00	0.085	1.68
102.00	0.00	39.00	0.085	1.68
103.00	0.00	39.00	0.085	1.68
104.00	0.00	39.00	0.085	1.68
105.00	0.00	39.00	0.085	1.68
106.00	0.00	39.00	0.085	1.68
107.00	0.00	39.00	0.085	1.68
108.00	0.00	39.00	0.085	1.68
109.00	0.00	39.00	0.085	1.68
110.00	0.00	39.00	0.085	1.68
111.00	0.00	39.00	0.085	1.68

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
112.00	0.00	39.00	0.085	1.68
113.00	0.00	39.00	0.085	1.68
114.00	0.00	39.00	0.085	1.68
115.00	0.00	39.00	0.085	1.68
116.00	0.00	39.00	0.085	1.68
117.00	0.00	39.00	0.085	1.68
118.00	0.00	39.00	0.085	1.68
119.00	0.00	39.00	0.085	1.68
120.00	0.00	39.00	0.085	1.68
121.00	0.00	39.00	0.085	1.68
122.00	0.00	39.00	0.085	1.68
123.00	0.00	39.00	0.085	1.68
124.00	0.00	39.00	0.085	1.68
125.00	0.00	39.00	0.085	1.68
126.00	0.00	39.00	0.085	1.68
127.00	0.00	39.00	0.085	1.68
128.00	0.00	39.00	0.085	1.68
129.00	0.00	39.00	0.085	1.68
130.00	0.00	39.00	0.085	1.68
131.00	0.00	39.00	0.085	1.68
132.00	0.00	39.00	0.085	1.68

133.00	0.00	39.00	0.085	1.68
134.00	0.00	39.00	0.085	1.68
135.00	0.00	39.00	0.085	1.68
136.00	0.00	39.00	0.085	1.68
137.00	0.00	39.00	0.085	1.68
138.00	0.00	39.00	0.085	1.68
139.00	0.00	39.00	0.085	1.68
140.00	0.00	39.00	0.085	1.68
141.00	0.00	39.00	0.085	1.68
142.00	0.00	39.00	0.085	1.68
143.00	0.00	39.00	0.085	1.68
144.00	0.00	39.00	0.085	1.68
145.00	0.00	39.00	0.085	1.68
146.00	0.00	39.00	0.085	1.68
147.00	0.00	39.00	0.085	1.68
148.00	0.00	39.00	0.085	1.68
149.00	0.00	39.00	0.085	1.68
150.00	0.00	39.00	0.085	1.68
151.00	0.00	39.00	0.085	1.68
152.00	0.00	39.00	0.085	1.68
153.00	0.00	39.00	0.085	1.68
154.00	0.00	39.00	0.085	1.68
155.00	0.00	39.00	0.085	1.68
156.00	0.00	39.00	0.085	1.68
157.00	0.00	39.00	0.085	1.68
158.00	0.00	39.00	0.085	1.68
159.00	0.00	39.00	0.085	1.68
160.00	0.00	39.00	0.085	1.68
161.00	0.00	39.00	0.085	1.68
162.00	0.00	39.00	0.085	1.68
163.00	0.00	39.00	0.085	1.68
164.00	0.00	39.00	0.085	1.68
165.00	0.00	39.00	0.085	1.68
166.00	0.00	39.00	0.085	1.68
167.00	0.00	39.00	0.085	1.68

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
168.00	0.00	39.00	0.085	1.68
169.00	0.00	39.00	0.085	1.68
170.00	0.00	39.00	0.085	1.68
171.00	0.00	39.00	0.085	1.68
172.00	0.00	39.00	0.085	1.68
173.00	0.00	39.00	0.085	1.68
174.00	0.00	39.00	0.085	1.68
175.00	0.00	39.00	0.085	1.68
176.00	0.00	39.00	0.085	1.68
177.00	0.00	39.00	0.085	1.68
178.00	0.00	39.00	0.085	1.68
179.00	0.00	39.00	0.085	1.68
180.00	0.00	39.00	0.085	1.68
181.00	0.00	39.00	0.085	1.68
182.00	0.00	39.00	0.085	1.68
183.00	0.00	39.00	0.085	1.68
184.00	0.00	39.00	0.085	1.68
185.00	0.00	39.00	0.085	1.68
186.00	0.00	39.00	0.085	1.68
187.00	0.00	39.00	0.085	1.68
188.00	0.00	39.00	0.085	1.68
189.00	0.00	39.00	0.085	1.68
190.00	0.00	39.00	0.085	1.68
191.00	0.00	39.00	0.085	1.68

192.00	0.00	39.00	0.085	1.68
193.00	0.00	39.00	0.085	1.68
194.00	0.00	39.00	0.085	1.68
195.00	0.00	39.00	0.085	1.68
196.00	0.00	39.00	0.085	1.68
197.00	0.00	39.00	0.085	1.68
198.00	0.00	39.00	0.085	1.68
199.00	0.00	39.00	0.085	1.68

PEAK DISCHARGE = 5.185 CFS - PEAK OCCURS AT HOUR 1.75
MAXIMUM WATER SURFACE ELEVATION = 44.314
MAXIMUM STORAGE = 0.2453 AC-FT INCREMENTAL TIME= 0.050000HRS

PRINT HYD ID=2 CODE=20

PARTIAL HYDROGRAPH 102.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	40.000	1.7	80.000	1.7
120.000	1.7	160.000	1.7		
1.000	1.7	41.000	1.7	81.000	1.7
121.000	1.7	161.000	1.7		
2.000	4.6	42.000	1.7	82.000	1.7
122.000	1.7	162.000	1.7		
3.000	1.7	43.000	1.7	83.000	1.7
123.000	1.7	163.000	1.7		
4.000	1.7	44.000	1.7	84.000	1.7
124.000	1.7	164.000	1.7		
5.000	1.7	45.000	1.7	85.000	1.7
125.000	1.7	165.000	1.7		
6.000	1.7	46.000	1.7	86.000	1.7
126.000	1.7	166.000	1.7		
7.000	1.7	47.000	1.7	87.000	1.7
127.000	1.7	167.000	1.7		
8.000	1.7	48.000	1.7	88.000	1.7
128.000	1.7	168.000	1.7		
9.000	1.7	49.000	1.7	89.000	1.7
129.000	1.7	169.000	1.7		
10.000	1.7	50.000	1.7	90.000	1.7
130.000	1.7	170.000	1.7		
11.000	1.7	51.000	1.7	91.000	1.7
131.000	1.7	171.000	1.7		
12.000	1.7	52.000	1.7	92.000	1.7
132.000	1.7	172.000	1.7		
13.000	1.7	53.000	1.7	93.000	1.7
133.000	1.7	173.000	1.7		
14.000	1.7	54.000	1.7	94.000	1.7
134.000	1.7	174.000	1.7		
15.000	1.7	55.000	1.7	95.000	1.7
135.000	1.7	175.000	1.7		
16.000	1.7	56.000	1.7	96.000	1.7
136.000	1.7	176.000	1.7		
17.000	1.7	57.000	1.7	97.000	1.7
137.000	1.7	177.000	1.7		
18.000	1.7	58.000	1.7	98.000	1.7
138.000	1.7	178.000	1.7		
19.000	1.7	59.000	1.7	99.000	1.7
139.000	1.7	179.000	1.7		
20.000	1.7	60.000	1.7	100.000	1.7
140.000	1.7	180.000	1.7		
21.000	1.7	61.000	1.7	101.000	1.7

141.000	1.7	181.000	1.7				
22.000	1.7	62.000	1.7	102.000	1.7		
142.000	1.7	182.000	1.7				
23.000	1.7	63.000	1.7	103.000	1.7		
143.000	1.7	183.000	1.7				
24.000	1.7	64.000	1.7	104.000	1.7		
144.000	1.7	184.000	1.7				
25.000	1.7	65.000	1.7	105.000	1.7		
145.000	1.7	185.000	1.7				
26.000	1.7	66.000	1.7	106.000	1.7		
146.000	1.7	186.000	1.7				
27.000	1.7	67.000	1.7	107.000	1.7		
147.000	1.7	187.000	1.7				
28.000	1.7	68.000	1.7	108.000	1.7		
148.000	1.7	188.000	1.7				
29.000	1.7	69.000	1.7	109.000	1.7		
149.000	1.7	189.000	1.7				
30.000	1.7	70.000	1.7	110.000	1.7		
150.000	1.7	190.000	1.7				
31.000	1.7	71.000	1.7	111.000	1.7		
151.000	1.7	191.000	1.7				
32.000	1.7	72.000	1.7	112.000	1.7		
152.000	1.7	192.000	1.7				
33.000	1.7	73.000	1.7	113.000	1.7		
153.000	1.7	193.000	1.7				
34.000	1.7	74.000	1.7	114.000	1.7		
154.000	1.7	194.000	1.7				
35.000	1.7	75.000	1.7	115.000	1.7		
155.000	1.7	195.000	1.7				
36.000	1.7	76.000	1.7	116.000	1.7		
156.000	1.7	196.000	1.7				
37.000	1.7	77.000	1.7	117.000	1.7		
157.000	1.7	197.000	1.7				
38.000	1.7	78.000	1.7	118.000	1.7		
158.000	1.7	198.000	1.7				
39.000	1.7	79.000	1.7	119.000	1.7		
159.000	1.7	199.000	1.7				

RUNOFF VOLUME = 112.04522 INCHES = 27.9663 ACRE-FEET
PEAK DISCHARGE RATE = 5.19 CFS AT 1.750 HOURS BASIN AREA = 0.0047 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:29:20

APPENDIX C

ADS INFILTRATOR SPECIFICATIONS

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	PEGGY GRAHAM 720-982-6303 PEGGY.GRAHAM@ADS-PIPE.COM
ADS SALES REP:	PETER NICHOLS 505-301-5604 PETER.NICHOLS@ADS-PIPE.COM
PROJECT NO:	94281 REV1

ADVANCED DRAINAGE SYSTEMS, INC.

SAFCA & STARBUCKS

ALBUQUERQUE, NM

STORMWATER CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-4500 OR APPROVED EQUAL.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

1. STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTITIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS.

   STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm) MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT

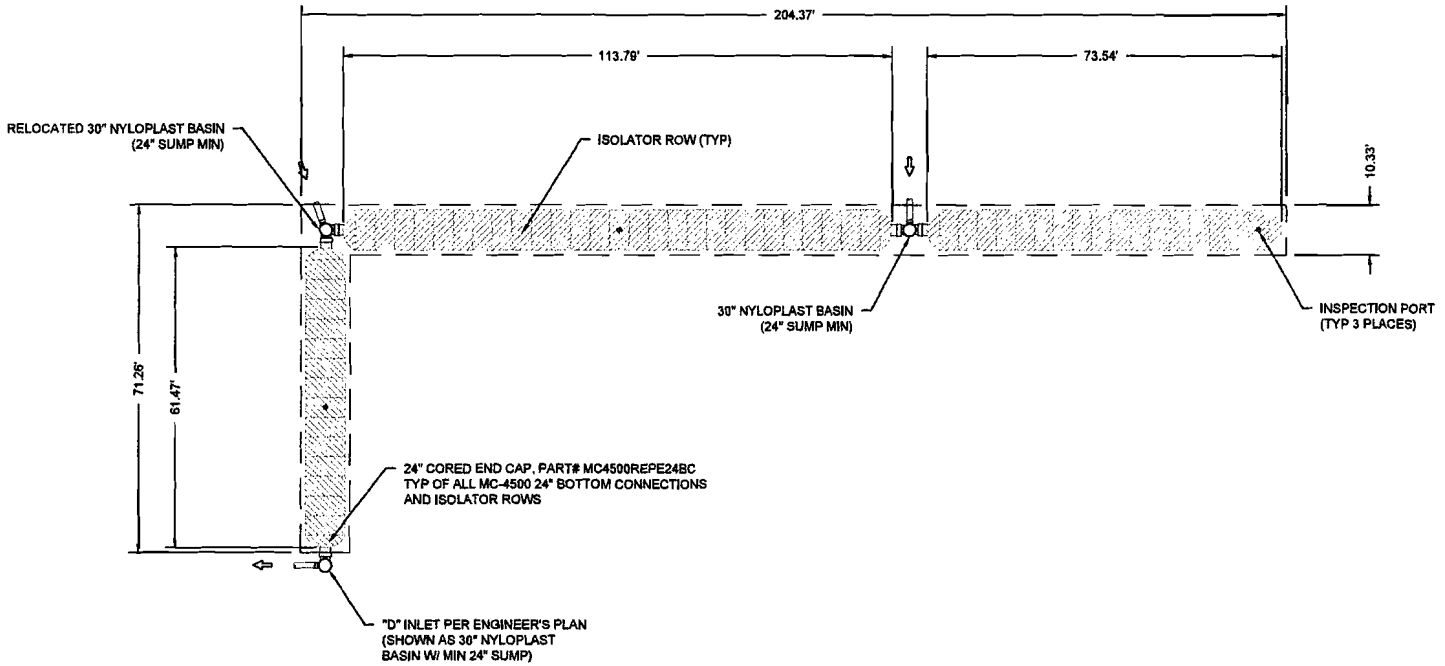
(58) STORMTECH MC-4500 CHAMBERS
(6) STORMTECH MC-4500 END CAPS
INSTALLED WITH 12" COVER STONE, 9" BASE STONE, 30% STONE VOID
AREA OF SYSTEM: 2,741 FT²
PERIMETER OF SYSTEM: 551 FT

PROPOSED ELEVATIONS

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	49.50
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	45.00
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	44.50
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	44.50
TOP OF STONE:	43.50
TOP OF CHAMBER:	42.50
24" ISOLATOR ROW INVERT:	37.69
BOTTOM OF CHAMBER:	37.50
BOTTOM OF STONE:	36.75

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.



REV	DRW	CHK	DESCRIPTION
5/28/15	WCM	KMS	ADDED CHAMBERS / NEW ELEVATIONS

SAFCA & STARBUCKS
ALBUQUERQUE, NM

DATE: 3/31/15 | DRAWN: WCM | CHECKED: KAP | PROJECT #: 94281

StormTech
Chamber Systems for Water Quality
70 HAMWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 1888-892-2694 | WWW.STORMTECH.COM

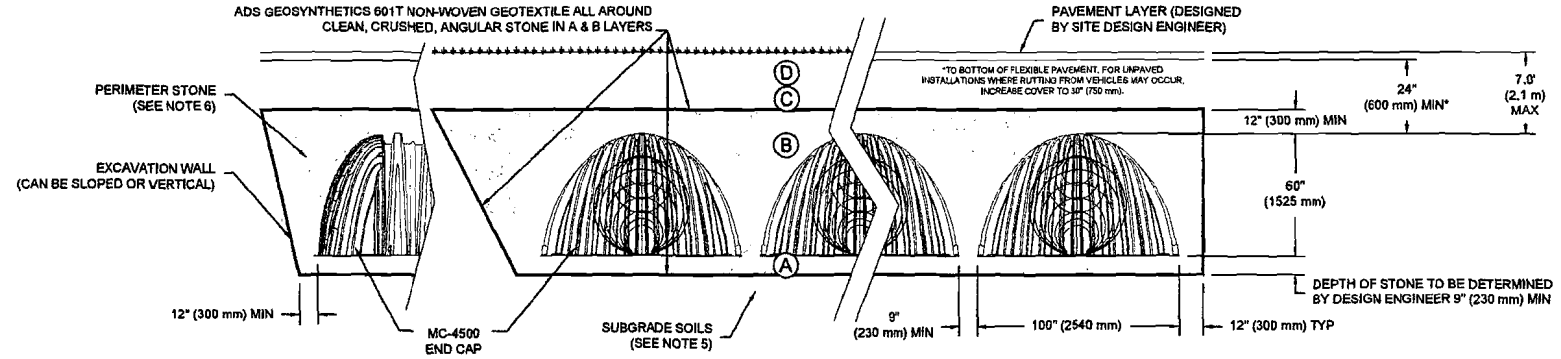
ADS
ADVANCED DRAINAGE SYSTEMS, INC
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

0 25' 50'

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[4] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4-2 INCH (20-50 mm)	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4-2 INCH (20-50 mm)	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

1. MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
5. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
7. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

SAFCA & STARBUCKS
ALBUQUERQUE, NM

REV	DRW	CHK	DESCRIPTION
5/28/15	VKCH	KMS	ADDED CHAMBERS / NEW ELEVATIONS

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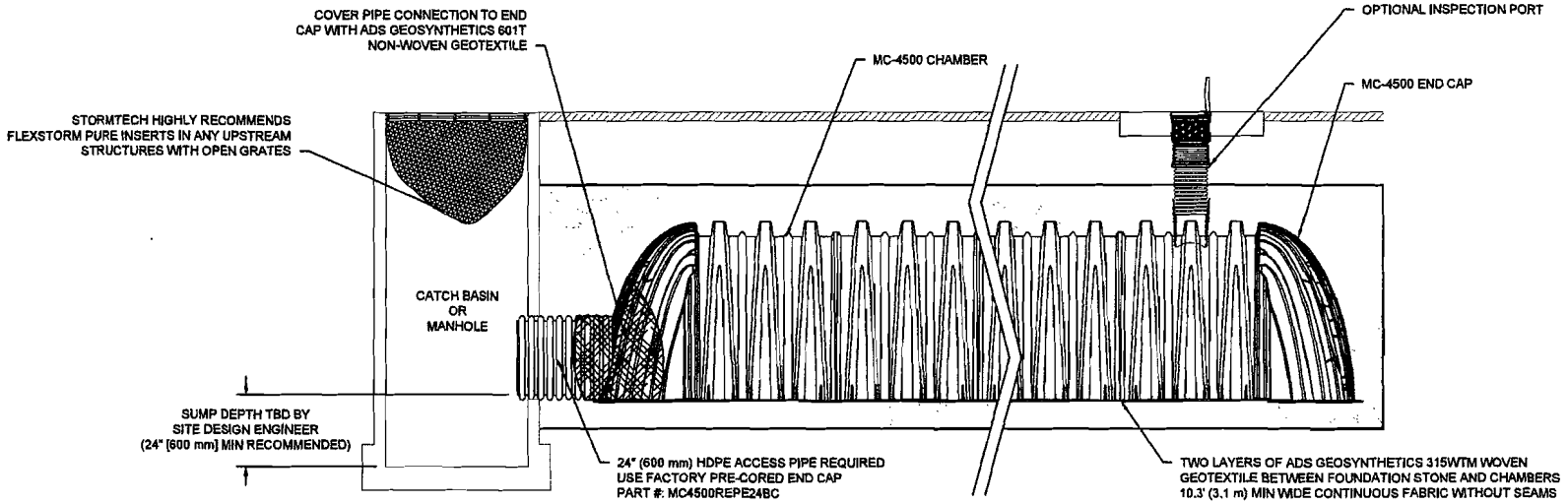
SHEET
3 OF



MC-4500 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

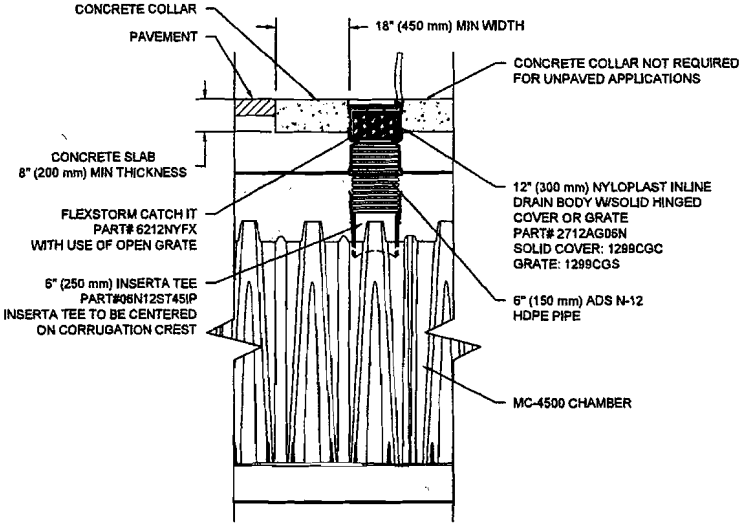
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



MC-4500 6" INSPECTION PORT DETAIL
NTS

REV	DRW	CHK	DESCRIPTION
5/28/15	WCM	KMS	ADDED CHAMBERS / NEW ELEVATIONS

SAFCA & STARBUCKS
ALBUQUERQUE, NM

DATE: 3/31/15 | DRAWN: WCM | CHECKED: KAP | PROJECT #: 94281

ADS
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HILLIARD, OH 43026
1-800-733-7473

StormTech
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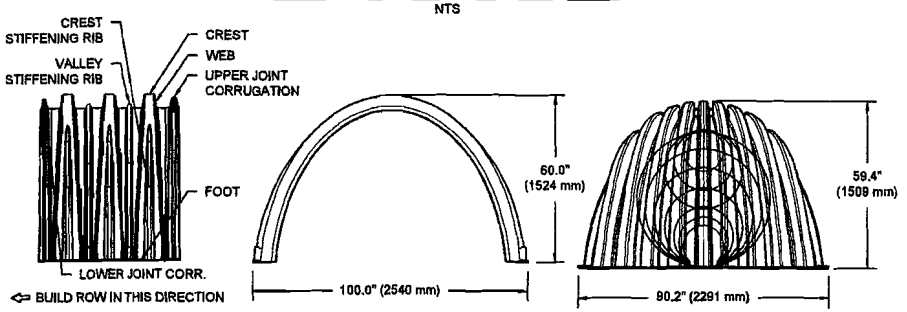
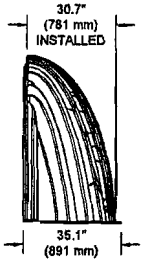
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

MC-4500 TECHNICAL SPECIFICATION

NTS





NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m³)
WEIGHT	130.0 lbs.	(59.0 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	90.2" X 59.4" X 30.7"	(2291 mm X 1509 mm X 781 mm)
END CAP STORAGE	35.7 CUBIC FEET	(1.01 m³)
MINIMUM INSTALLED STORAGE*	108.7 CUBIC FEET	(3.08 m³)
WEIGHT	135.0 lbs.	(61.2 kg)

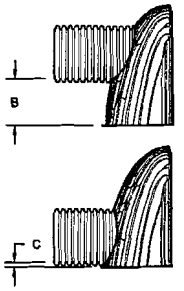
*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	B	C
MC4500REPE06T	6" (150 mm)	42.54" (1.081 m)	—
MC4500REPE06B		—	0.86" (22 mm)
MC4500REPE08T	8" (200 mm)	40.50" (1.029 m)	—
MC4500REPE08B		—	1.01" (26 mm)
MC4500REPE10T	10" (250 mm)	38.37" (975 mm)	—
MC4500REPE10B		—	1.33" (34 mm)
MC4500REPE12T	12" (300 mm)	35.69" (907 mm)	—
MC4500REPE12B		—	1.55" (39 mm)
MC4500REPE15T	15" (375 mm)	32.72" (831 mm)	—
MC4500REPE15B		—	1.70" (43 mm)
MC4500REPE18TC	18" (450 mm)	29.38" (746 mm)	—
MC4500REPE18BC		—	1.97" (50 mm)
MC4500REPE24TC	24" (600 mm)	23.05" (585 mm)	—
MC4500REPE24BC		—	2.26" (57 mm)
MC4500REPE30BC	30" (750 mm)	—	2.95" (75 mm)
MC4500REPE36BC	36" (900 mm)	—	3.25" (83 mm)
MC4500REPE42BC	42" (1050 mm)	—	3.55" (90 mm)

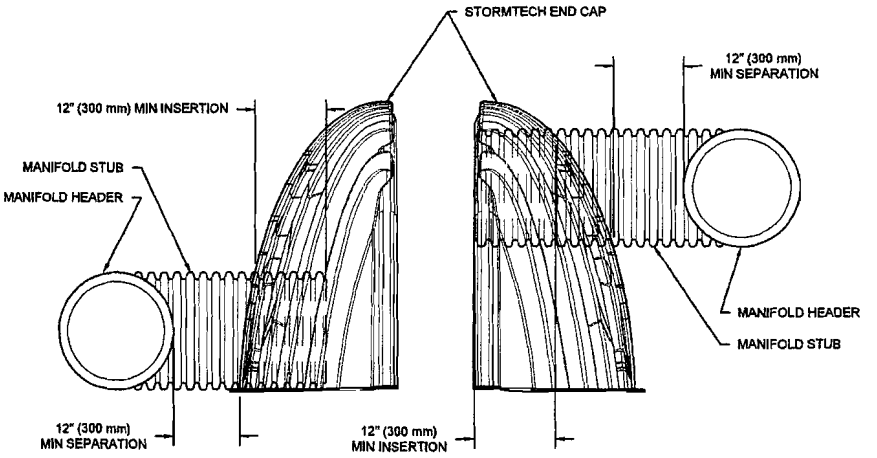
NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS.
CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm)
THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHTEST POSSIBLE FOR THE PIPE SIZE.



MC-SERIES END CAP INSERTION DETAIL

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

REV	DRW	CHK	DESCRIPTION
5/29/15	WCM	KMS	ADDED CHAMBERS / NEW ELEVATIONS

SAFCA & STARBUCKS
ALBUQUERQUE, NM

DATE: 3/31/15 DRAWN: WCM
PROJECT #: 94281 CHECKED: KAP

StormTech
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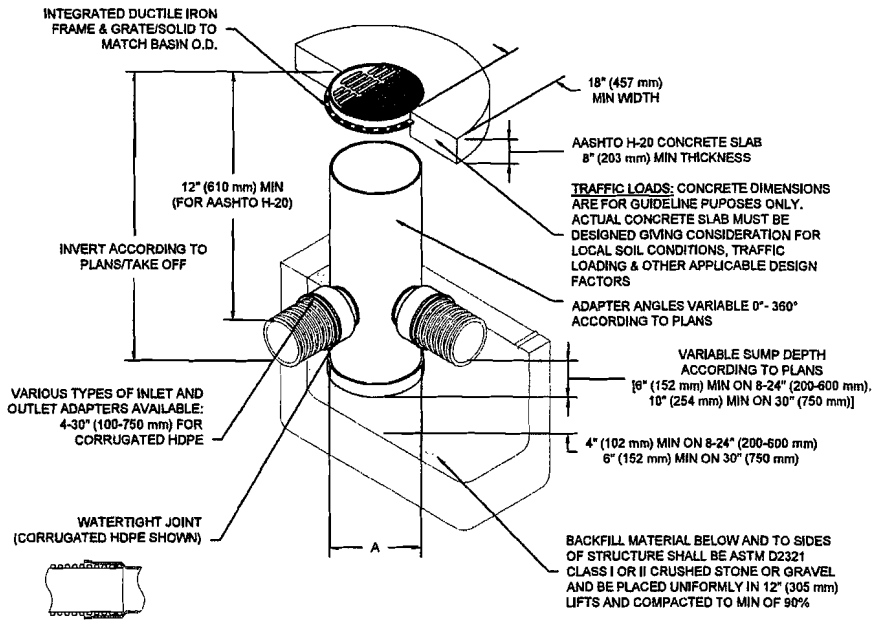
NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

SAFCA & STARBUCKS
ALBUQUERQUE, NM

REV	DRW	CHK	DESCRIPTION
5/29/15	WCM	MKS	ADDED CHAMBERS / NEW ELEVATIONS

DATE: 3/31/15 DRAWN: WCM
PROJECT #: 94281 CHECKED: KAP

ADS ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

Project: 94281 - Safca & Starbucks - REV0

StormTech
A division of ADS

Chamber Model -	MC-4500	
Units -	Imperial	Click Here for Metric
Number of Chambers -	58	
Number of End Caps -	6	
Voids in the stone (porosity) -	30	%
Base of Stone Elevation -	36.75	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	9	in
Area of system -	2741	sf Min. Area - 2314 sf min. area

☑ Include Perimeter Stone in Calculations

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	68.53	68.53	10024.67	43.50
80	0.00	0.00	0.00	0.00	68.53	68.53	9956.14	43.42
79	0.00	0.00	0.00	0.00	68.53	68.53	9887.62	43.33
78	0.00	0.00	0.00	0.00	68.53	68.53	9819.09	43.25
77	0.00	0.00	0.00	0.00	68.53	68.53	9750.57	43.17
76	0.00	0.00	0.00	0.00	68.53	68.53	9682.04	43.08
75	0.00	0.00	0.00	0.00	68.53	68.53	9613.52	43.00
74	0.00	0.00	0.00	0.00	68.53	68.53	9544.99	42.92
73	0.00	0.00	0.00	0.00	68.53	68.53	9476.47	42.83
72	0.00	0.00	0.00	0.00	68.53	68.53	9407.94	42.75
71	0.00	0.00	0.00	0.00	68.53	68.53	9339.42	42.67
70	0.00	0.00	0.00	0.00	68.53	68.53	9270.89	42.58
69	0.04	0.00	2.38	0.00	67.81	70.19	9202.37	42.50
68	0.12	0.01	6.73	0.06	66.49	73.28	9132.18	42.42
67	0.16	0.03	9.55	0.16	65.61	75.32	9058.90	42.33
66	0.21	0.05	12.11	0.29	64.81	77.20	8983.58	42.25
65	0.27	0.07	15.56	0.41	63.73	79.70	8906.38	42.17
64	0.45	0.09	26.26	0.53	60.49	87.28	8826.67	42.08
63	0.67	0.11	38.59	0.68	56.75	96.01	8739.40	42.00
62	0.80	0.14	46.34	0.85	54.37	101.56	8643.39	41.92
61	0.91	0.17	52.67	1.01	52.42	106.10	8541.83	41.83
60	1.00	0.19	58.17	1.15	50.73	110.05	8435.73	41.75
59	1.09	0.22	63.07	1.29	49.22	113.57	8325.68	41.67
58	1.16	0.24	67.48	1.45	47.85	116.78	8212.11	41.58
57	1.23	0.27	71.57	1.62	46.57	119.76	8095.33	41.50
56	1.30	0.30	75.38	1.79	45.37	122.54	7975.57	41.42
55	1.36	0.32	78.94	1.94	44.26	125.14	7853.03	41.33
54	1.42	0.35	82.29	2.09	43.21	127.59	7727.89	41.25
53	1.47	0.37	85.45	2.23	42.22	129.90	7600.30	41.17
52	1.53	0.39	88.46	2.36	41.28	132.10	7470.40	41.08
51	1.57	0.42	91.32	2.50	40.38	134.20	7338.30	41.00
50	1.62	0.44	94.04	2.64	39.52	136.20	7204.10	40.92
49	1.67	0.46	96.64	2.78	38.70	138.12	7067.90	40.83
48	1.71	0.48	99.13	2.90	37.92	139.95	6929.78	40.75
47	1.75	0.50	101.51	3.03	37.16	141.70	6789.83	40.67
46	1.79	0.53	103.78	3.15	36.45	143.38	6648.13	40.58
45	1.83	0.55	105.98	3.27	35.75	145.00	6504.76	40.50
44	1.86	0.56	108.08	3.39	35.09	146.55	6359.76	40.42
43	1.90	0.58	110.10	3.50	34.44	148.05	6213.21	40.33
42	1.93	0.60	112.05	3.61	33.83	149.48	6065.16	40.25
41	1.96	0.62	113.92	3.72	33.23	150.87	5915.67	40.17
40	2.00	0.64	115.72	3.83	32.66	152.21	5764.80	40.08
39	2.03	0.66	117.45	3.93	32.11	153.49	5612.60	40.00
38	2.05	0.67	119.12	4.04	31.58	154.74	5459.10	39.92
37	2.08	0.69	120.73	4.14	31.06	155.93	5304.37	39.83
36	2.11	0.71	122.27	4.24	30.57	157.08	5148.43	39.75
35	2.13	0.72	123.76	4.34	30.09	158.20	4991.35	39.67
34	2.16	0.74	125.20	4.44	29.63	159.28	4833.15	39.58
33	2.18	0.76	126.59	4.54	29.19	160.31	4673.87	39.50
32	2.21	0.77	127.92	4.63	28.76	161.31	4513.56	39.42
31	2.23	0.79	129.20	4.72	28.35	162.27	4352.25	39.33
30	2.25	0.80	130.43	4.81	27.95	163.20	4189.98	39.25
29	2.27	0.82	131.62	4.92	27.56	164.11	4026.78	39.17
28	2.29	0.84	132.76	5.04	27.18	164.99	3862.68	39.08
27	2.31	0.85	133.86	5.08	26.85	165.78	3697.69	39.00
26	2.33	0.86	134.90	5.15	26.51	166.56	3531.91	38.92
25	2.34	0.87	135.91	5.23	26.18	167.33	3365.35	38.83
24	2.36	0.89	136.87	5.31	25.87	168.05	3198.02	38.75
23	2.38	0.90	137.80	5.39	25.57	168.75	3029.97	38.67
22	2.39	0.91	138.68	5.46	25.28	169.42	2861.21	38.58
21	2.41	0.92	139.52	5.53	25.01	170.06	2691.79	38.50
20	2.42	0.93	140.32	5.61	24.75	170.67	2521.73	38.42
19	2.43	0.95	141.08	5.67	24.50	171.25	2351.06	38.33
18	2.44	0.96	141.80	5.74	24.26	171.80	2179.81	38.25
17	2.46	0.97	142.48	5.80	24.04	172.33	2008.00	38.17
16	2.47	0.98	143.13	5.87	23.83	172.82	1835.68	38.08

EROSION CONTROL NOTES:

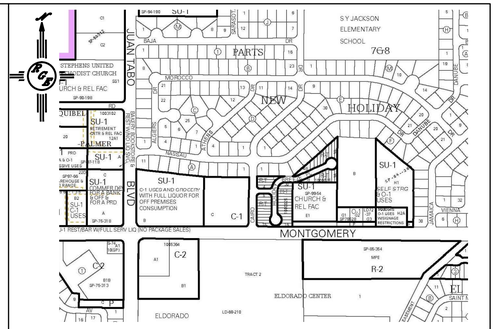
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.

2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.

3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.

4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.



VICINITY MAP: F-22-Z

FIRM MAP: 35001C0144G

LEGAL DESCRIPTION:

TRACT C, THE NEW HOLIDAY PARK SUBDIVISION
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO

NOTES:

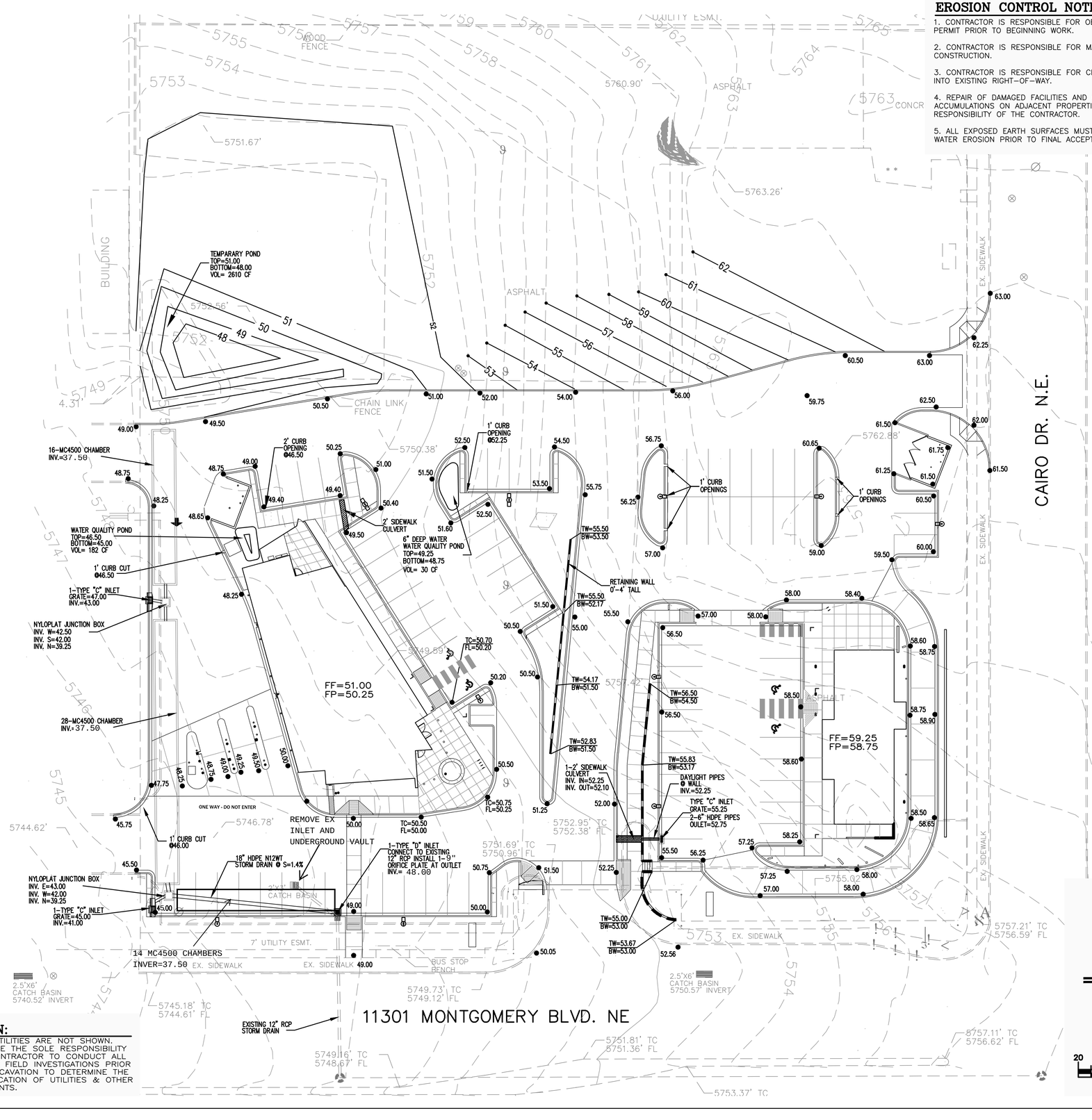
1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. UNDERGROUND WATER RETENTION SYSTEM SHALL BE STORM TECH MC4500.00

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- LOT LINE
- CENTERLINE
- RIGHT-OF-WAY
- EXTENDED STEM WALL SEE ARCH PLANS FOR DETAILS
- PROPOSED ROCK FACE WALL
- EXISTING CURB AND GUTTER
- PROPOSED EDGE OF CONCRETE
- PROPOSED FLOWLINE
- EXISITNG WALL

I DAVID SOULE, HAVE PERSONALLY INSPECTED THE PROPERTY ON X-XX-13. NO EARTHWORK HAS BEEN PERFORMED AND THE SITE IS CONSISTENT WITH THE TOPO SHOWN.

DAVID SOULE P.E. #14522 DATE



CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.

N

20 10 0 10 20

SCALE: 1"=20'

ENGINEER'S SEAL	Safca & Starbuc
DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER	GRADING AND DRAINAGE PLAN
3/17/15	
DAVID SOULE P.E. #14522	Rio Grande Engineering 1606 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999
DRAWN BY DEM	
DATE 8-14	
Safca & Starbuc GRD Plan.dwg	
SHEET # 1 of 1	
JOB # XXXXX	