

CITY OF ALBUQUERQUE



July 7, 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 7-01-2015 (File: F22-D002)**

Dear Mr. Soule:

Based upon the information provided in your submittal received 7-06-15, the above referenced plan is approved for Building Permit with the following conditions:

1. An approved plat showing the proposed storm drain easement is needed prior to construction.
2. A storm drain easement must be shown on the Engineer's certified plan prior to Certificate of Occupancy.

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

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

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: _____

Surveyor: _____ Contact: _____

Address: _____

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

Contractor: _____ Contact: _____

Address: _____

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

TYPE OF SUBMITTAL:

- _____ DRAINAGE REPORT
- _____ 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:

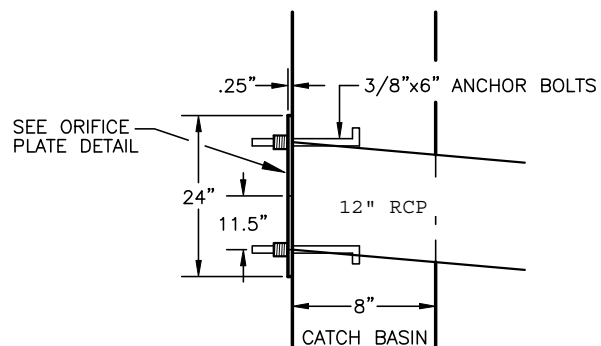
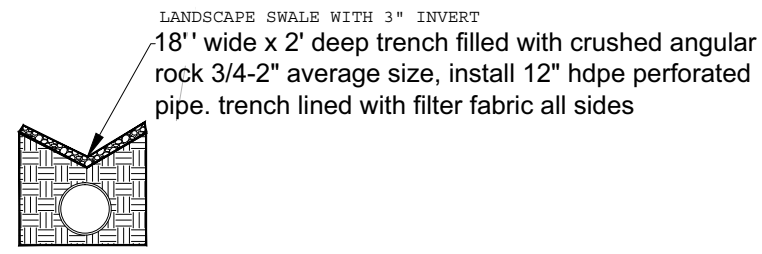
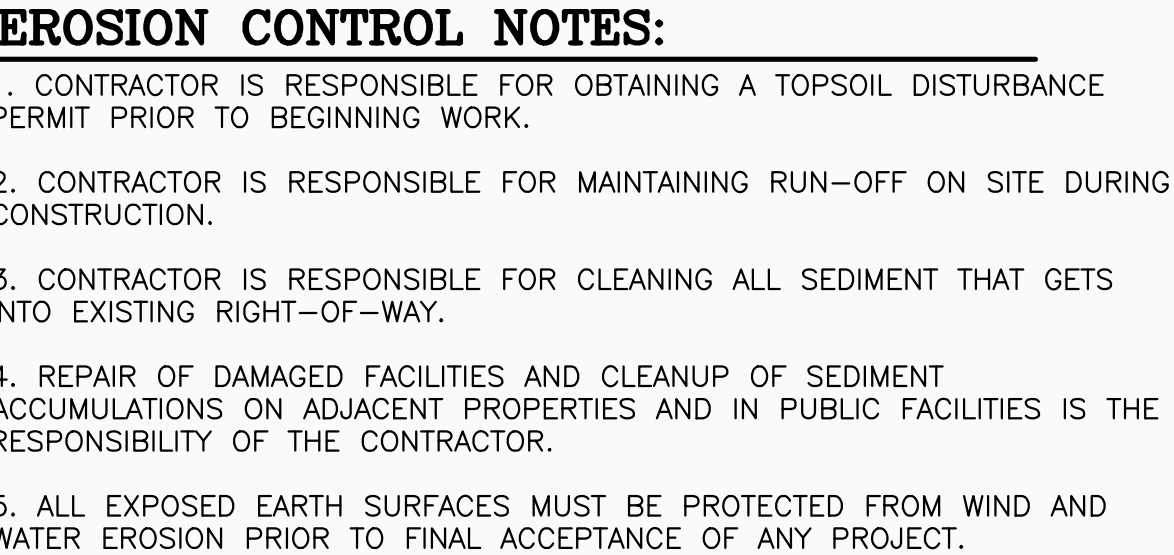
- _____ SIA/FINANCIAL GUARANTEE RELEASE
- _____ PRELIMINARY PLAT APPROVAL
- _____ S. DEV. PLAN FOR SUB'D APPROVAL
- _____ S. DEV. FOR BLDG. PERMIT APPROVAL
- _____ SECTOR PLAN APPROVAL
- _____ FINAL PLAT APPROVAL
- _____ CERTIFICATE OF OCCUPANCY (PERM)
- _____ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- _____ FOUNDATION PERMIT APPROVAL
- _____ BUILDING PERMIT APPROVAL
- _____ 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 _____ No _____ Copy Provided

DATE SUBMITTED: _____ By: _____

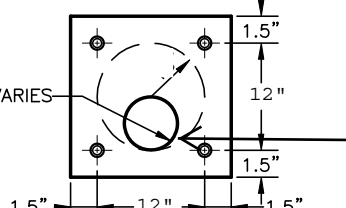
Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based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

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

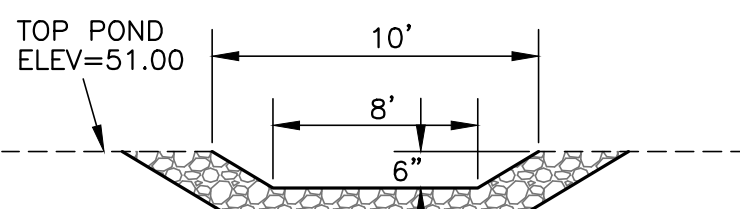


DETAIL A

TO BE INSTALLED @ THE OUTFLOW
OF THE CATCH BASINS (SEE THIS PLAN
FOR ORIFICE PLATE SIZES)

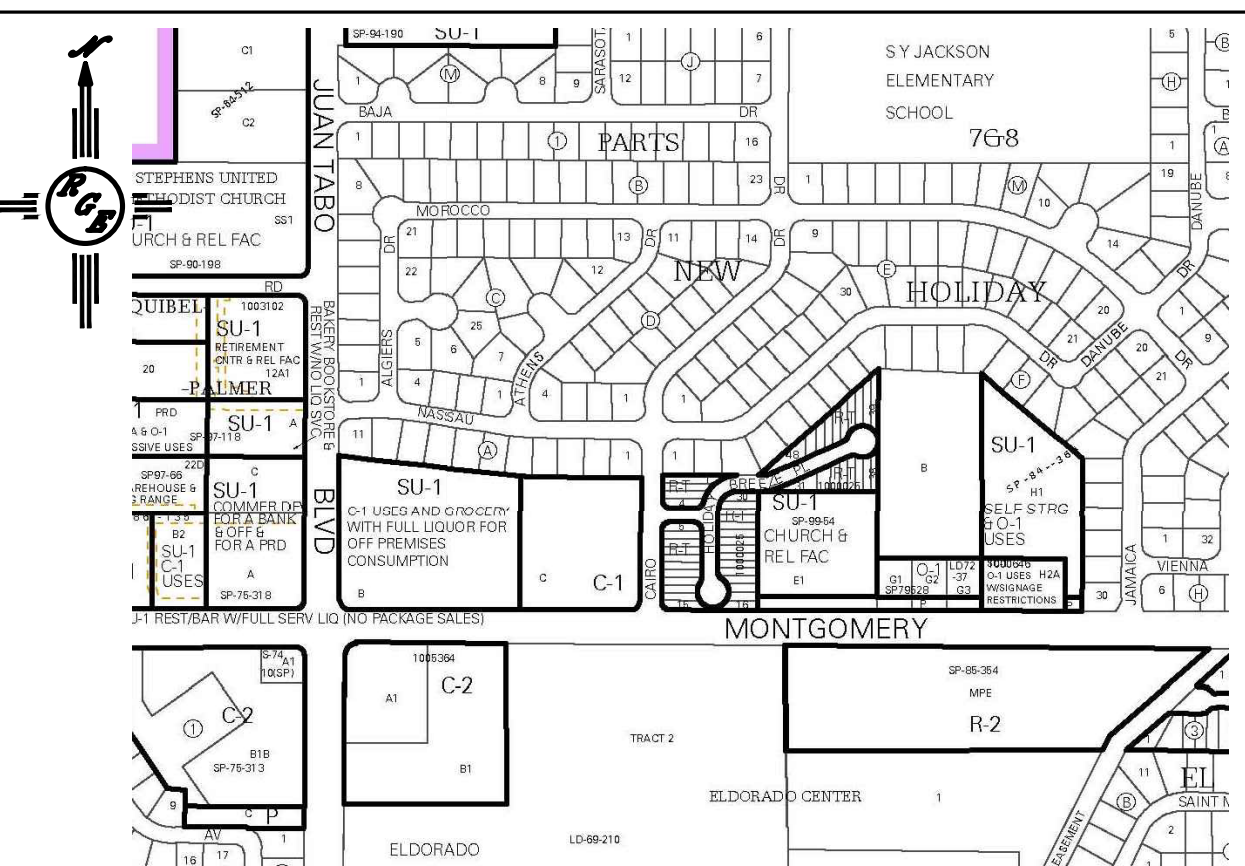
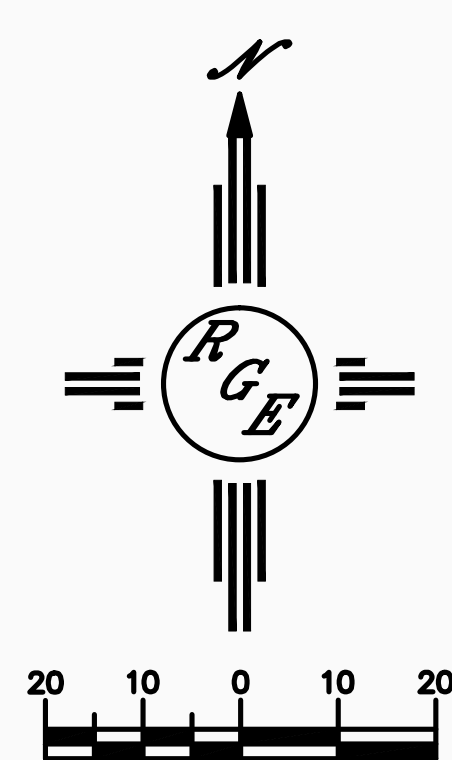


9" DIAMETER ORIFICE
INVERT=39.50
AT 12" PIPE CONNECTION



10' WIDE TOP /
8' BOTTOM, 6" DEEP
INV. OUT=50.50
EMERGENCY OVERFLOW
1' THCK FRACTURED ROCK
6" AVERAGE SIZE

OVERFLOW CROSS SECTION



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
3. ALL STORM DRAIN PIPES SHALL BE 12" HDPE N-12WT

LEGEND

—5601— EXISTING CONTOUR
 - - -5600- - - EXISTING INDEX CONTOUR
 —5601— PROPOSED CONTOUR
 —5600- - - PROPOSED INDEX CONTOUR
 — LOT LINE
 — CENTERLINE
 — RIGHT-OF-WAY
 — EXTENDED STEM WALL SEE ARCH PLANS FOR DETAIL
 — PROPOSED ROCK FACE WALL
 — EXISTING CURB AND GUTTER
 — PROPOSED EDGE OF CONCRETE
 PROPOSED FLOWLINE
 ▨ EXISTING WALL

ENGINEER'S SEAL	Safca & Starbuc	DRAWN BY DEM
DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER		DATE 8-14
6-29-15 7/1/15	GRADING AND DRAINAGE PLAN	Safca & Starbuc 000 Planning
DAVID SOULE P.E. #14522		 Rio Grande Engineering 1608 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 572-0880
		JOB # XXXXXX

RIO GRANDE ENGINEERING OF NEW MEXICO, LLC

July 1, 2015

Ms. Jeanne Wolfenbarger, PE
Senior Engineer, Planning Department
Development Review
City of Albuquerque

**RE: Grading and Drainage Plan
F22-D002
Sandia Area Credit Union**

Dear Ms. Wolfenbarger:

The purpose of this letter is to accompany the revised drainage submittal. The plan has been modified to address your written comments dated June 30 2015. The following is a response to your comments

1. We are adding this easement to the plat, the surveyor is preparing the second sheet
It will be emailed to you when completed and submitted by Friday for drb consideration.
2. We have added the benchmark
3. We have corrected the volume on infiltrator tank 2- we transposed numbers
4. We have corrected the top of pond elevations
5. We have added the orifice plate detail and labeled.
6. We have revised the detail in the report, we have single and doubles, also the layout was alternated to have 45 degree bends, the west tank is the tank for cleaning so we had to connect as shown
7. The 5740 was set so the first flush volume was maintained. The flow from the starbuck enters the inlet and that is how the pipe discharges 1.3 cfs at 5740
8. We included the pictures and file number
We are worried about draining next to a retaining wall we have stopped the sidewalk culvert short so the first flush flow is captured by a harvest trench and spills out a 2' opening as before.

Should you have any questions regarding this submittal, please do not hesitate to call me.

Sincerely,



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

REVISED
DRAINAGE REPORT

For

**SANDIA AREA FEDERAL CREDIT UNION/STARBUCKS
11301 MONTOMERY NE
Albuquerque, New Mexico**

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

JUNE 2015



6/18/15 7/1/15

David Soule P.E. No. 14522

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Site hydrology and hydraulic calculations	A
AHYMO Proposed	B
AHYMO Future	C
ADS infiltrator specifications.....	D

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 and constructed 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.

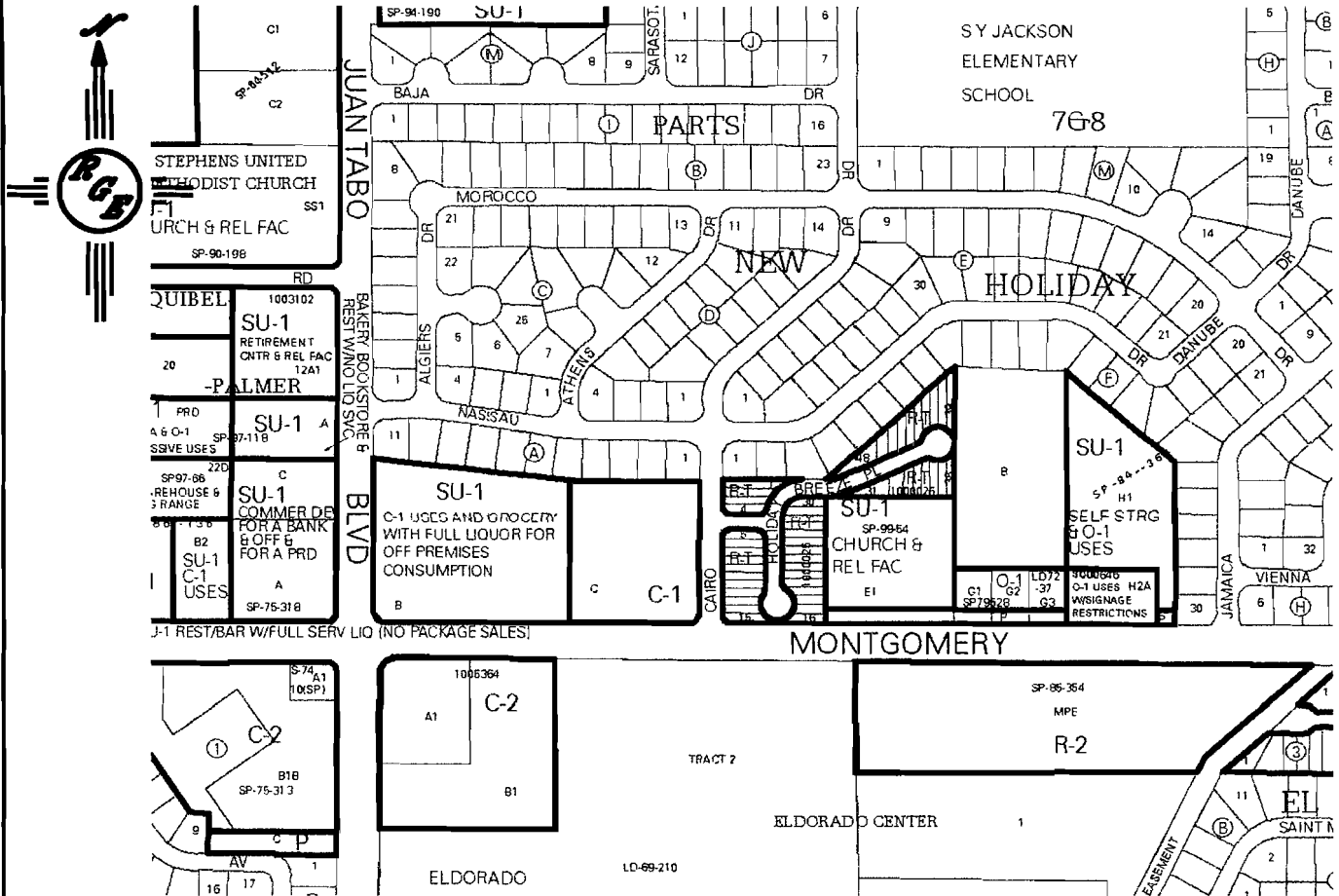
EXISTING CONDITIONS

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

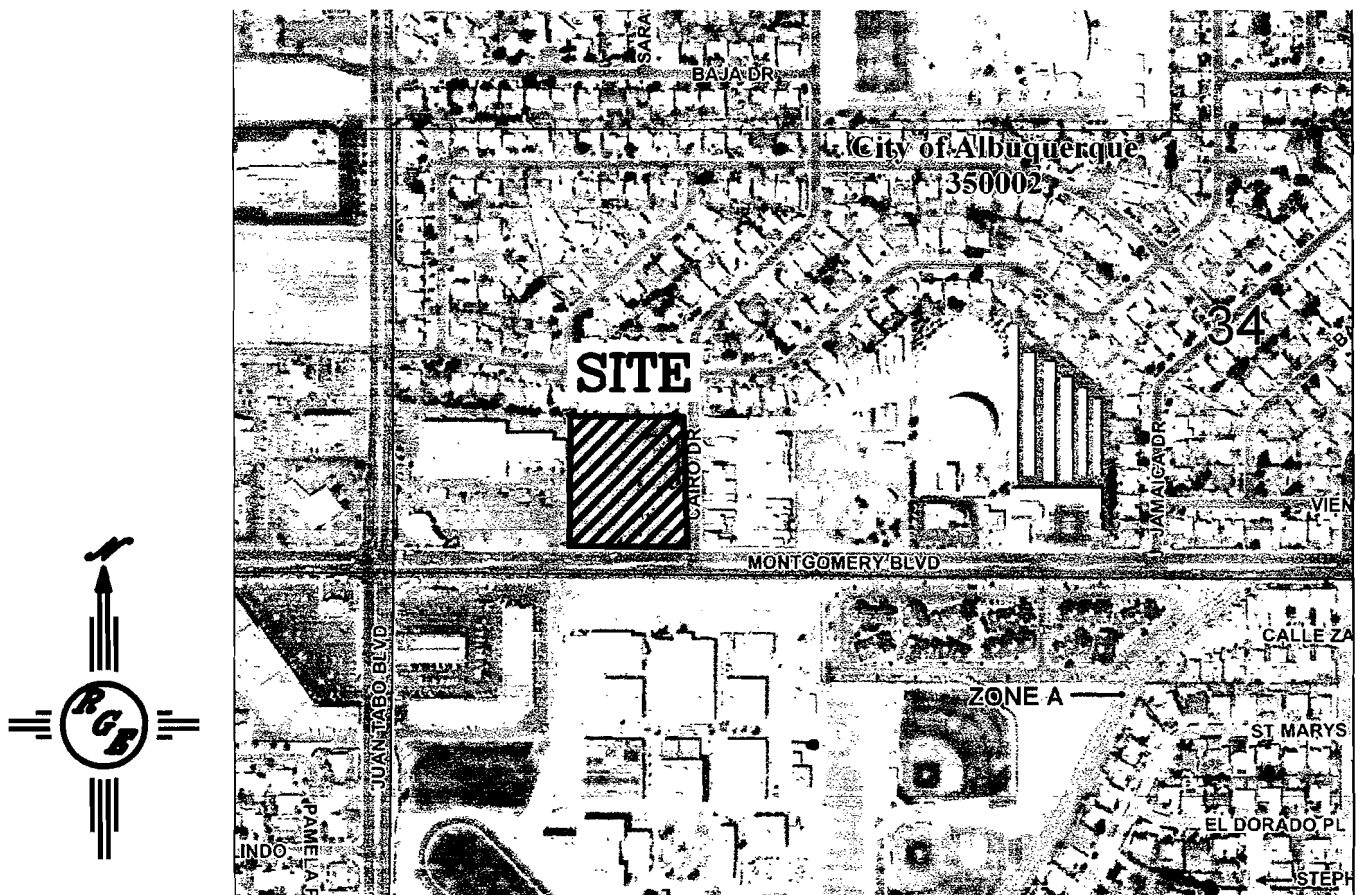
The proposed improvements consist of removal the replacement of the existing pavement and the construction of two new buildings and one parcel for future development. The lots have cross lot drainage easements and will free discharge to two inlets that are connected to an underground infiltration chamber. The site contains 5 onsite sub basins, which were partitioned to verify the capacity of each collection and conveyance structure. Basins E and D discharge 4.69 cfs to a type C inlet at the southwest corner of the site. Basin B and C discharge 3.95 cfs to a type C inlet located at the west property line. Basin A is a future development and will retain its developed flow onsite of 5600 cubic feet, with and emergency overflow. 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. The site was modeled for the interim condition and ultimate condition. As shown in appendix B, in the interim condition the site will discharge 3.98 cfs to the existing Montgomery storm system. In the ultimate condition the site will discharge 5.28 cfs which exceeds the existing by .58 cfs, which when the development occurs can be reduced by additional throttling of that discharge. The ultimate condition model located in appendix c was included as a guide for the future development. The interim condition which we are constructing discharges less than existing

The first flush volume is captured within the infiltrator tanks, the outlet of tank 1 is set at 40, which will retain the first 2379 cubic feet which is more than the 1922 cubic feet required. When the rear pad is developed the first flush volume will be retained by setting the outlet elevation of the tanks. A copy of the site hydrology and capacity calculations is included in appendix A. The tank volumes and stage storage spread sheet as well as the AHYMO model is included in appendix B for the proposed and ultimate conditions are in appendix C. The infiltrator details are located in appendix C.



VICINITY MAP:

F-22-Z



FIRM MAP:

35001C0144G

SUMMARY AND RECOMMENDATIONS

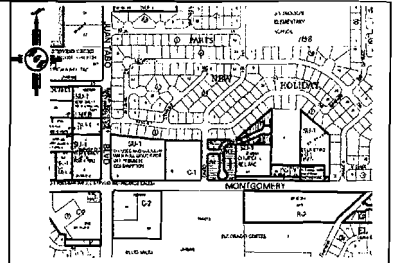
This project is a redevelopment of an existing site. The redevelopment is consistent with the approved grading plan. The proposed site will discharge less than existing and retain the first flush volume. The development will not affect the upstream or downstream properties or infrastructure. Since the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

APPENDIX A

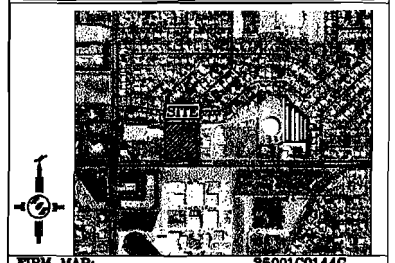
SITE HYDROLOGY AND HYDRAULIC CALCULATIONS

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.



VICINITY MAP: F-22-2



FIRM MAP: 85001CD144G

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
- EXISTING WALL

I, DAVID SOULE, HAVE PERSONALLY INSPECTED THE PROPERTY ON X-XC-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.

EXISTING 12" RCP
STORM DRAIN

11301 MONTGOMERY BLVD. NE

CAIRO DR. N.E.

	OWNER'S SOL	OWNER BY SOL
	DATE 8-14	DATE 8-14
	GRADING AND DRAINAGE PLAN	SHEET # 1 of 1
	DATE 3/17/15	JOB # XXXX

Weighted E Method

Existing Developed Basins

Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-hr.			10-day
			%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
BASIN A	52473	1.205	0%	0	15.0%	0.181	5.0%	0.06023	80%	0.964	2.347	0.236	5.81	0.364
BASIN A(interim)	52473	1.205	0%	0	45.0%	0.542	50.0%	0.60231	5%	0.060	1.348	0.135	4.15	0.143
BASIN B	20564	0.472	0%	0	6.0%	0.028	5.0%	0.0236	89%	0.420	2.487	0.098	2.38	0.154
BASIN C	13388	0.307	0%	0	14.0%	0.043	10.0%	0.03073	76%	0.234	2.304	0.059	1.47	0.090
BASIN D	29585	0.679	0%	0	8.0%	0.054	5.0%	0.03396	87%	0.591	2.456	0.139	3.39	0.218
BASIN E	11480	0.264	0%	0	10.0%	0.026	5.0%	0.01318	85%	0.224	2.425	0.053	1.30	0.083
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	0.016
TOTAL ONSITE	184774	4.242	0%		20.9%	0.886	18.3%	0.775	61%	2.581		0.724	18.59	
ALLOWED				0.000		0.152		0.037		0.544		-0.138	4.7CFS	-0.210

Equations:

Weighted E = $E_a \cdot A_a + E_b \cdot A_b + E_c \cdot A_c + E_d \cdot A_d$ / (Total Area)

Volume = Weighted D * Total Area

Flow = $Q_a \cdot A_a + Q_b \cdot A_b + Q_c \cdot A_c + Q_d \cdot A_d$

132301
179963
-47662

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

$E_a = 0.8$	$Q_a = 2.2$
$E_b = 1.08$	$Q_b = 2.92$
$E_c = 1.46$	$Q_c = 3.73$
$E_d = 2.64$	$Q_d = 5.25$

water harvet volume
provided

67823*.341/12

1995.98 interim only- future will contain first flush
2379.00 infiltrator below outlet (40.00)
6244.29 temp pond for undeveloped tract(100-year,10-day volume)

DROP INLET CALCULATIONS

INLET	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
B	SINGLE C	3.84	7.7	0.1734	0.5
D	SINGLE C	3.84	9.38	0.2574	0.5

ORIFICE EQUATION

$$Q = CA \sqrt{2gH}$$

$$C = 0.6$$

$$g = 32.2$$

$$\text{INLET B} = \text{BASIN B} + C = 3.85 \text{ CFS} \quad 7.7$$

$$\text{INLET D} = \text{BASIN D} + E = 4.69 \text{ CFS} \quad 9.38$$

DOUBLED FLOW FOR CLOGGING FACTOR

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
Beginning	1.5	1.5	0.5	0.75	2.50	0.3	2	2.36	1.47	1.96
Beginning	10	6	0.5	4.00	10.12	0.3951357	1	10.70	5.81	1.45

sidewalk culvert at basin E

sidewalk culvert at basin C

retention pond overflow at basinA

Manning's Equation:

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

A = Area

R = D/4

S = Slope

n = 0.03

PROPOSED

TANK VOLUMES/STAGE STORAGE/AHYMO

APPENDIX B

interimPONROUTING061615.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

COMPUTE NM HYD ID=1 HYD NO=101 DA= .00243 SQ MI
PER A=00 PER B=12 PER C=6 PER D=82
TP=-.139 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=3

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)
0.00	0.03	39.00
1.30	0.06	40.00
1.99	0.07	40.50
2.49	0.08	41.00
2.91	0.10	41.50
3.28	0.11	42.00
3.61	0.12	42.50
3.91	0.13	43.00
4.19	0.14	43.50
4.45	0.15	44.00
4.70	0.15	44.50
4.93	0.16	45.00
5.16	0.16	45.50
5.37	0.17	46.00

PRINT HYD ID=2 CODE=20

FINISH

INTERIM AHYMO.OUT

AHYMO PROGRAM (AHYMO-S4) - Version: S4.01a - Rel: 01a
 RUN DATE (MON/DAY/YR) = 06/17/2015
 START TIME (HR:MIN:SEC) = 18:40:36 USER NO.=
 RioGrandeSingleA41963517
 INPUT FILE =
 Settings\Owner\Desktop\2014jobs\1498-11301MONTGOMERY\interimPONROUTING061615.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= .00243 SQ MI
 PER A=00 PER B=12 PER C=6 PER D=82
 TP=-.139 MASSRAIN=-1

K = 0.075755HR TP = 0.139000HR K/TP RATIO = 0.545000 SHAPE
 CONSTANT, N = 7.106428
 UNIT PEAK = 7.5443 CFS UNIT VOLUME = 0.9972 B = 526.28
 P60 = 2.2000
 AREA = 0.001993 SQ MI IA = 0.10000 INCHES INF = 0.04000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
 0.050000

K = 0.131509HR TP = 0.139000HR K/TP RATIO = 0.946108 SHAPE
 CONSTANT, N = 3.736321

INTERIM AHYMO.OUT
 UNIT PEAK = 1.0611 CFS UNIT VOLUME = 0.9881 B = 337.19
 P60 = 2.2000
 AREA = 0.000437 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	TIME FLOW HRS CFS	FLOW CFS	TIME FLOW HRS CFS	FLOW CFS	TIME FLOW HRS CFS	FLOW CFS
6.000	0.000	0.0	2.000	1.2	4.000	0.1
	0.1					
	1.000	0.5	3.000	0.1	5.000	0.1

RUNOFF VOLUME = 2.38959 INCHES = 0.3097 ACRE-FEET
 PEAK DISCHARGE RATE = 7.51 CFS AT 1.500 HOURS BASIN AREA = 0.0024 SQ. MI.

* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR

ROUTE RESERVOIR	ID=2	HYD NO=102	INFLOW=1	CODE=3
OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)		
0.00	0.03	39.00		
	1.30	0.06	40.00	
	1.99	0.07	40.50	
	2.49	0.08	41.00	
2.91	0.10	41.50		
3.28	0.11	42.00		
3.61	0.12	42.50		
3.91	0.13	43.00		
4.19	0.14	43.50		
4.45	0.15	44.00		
4.70	0.15	44.50		
4.93	0.16	45.00		
5.16	0.16	45.50		
5.37	0.17	46.00		

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	39.00	0.030	0.00
0.15	0.00	39.00	0.030	0.00
0.30	0.00	39.00	0.030	0.00
0.45	0.00	39.00	0.030	0.00
0.60	0.04	39.00	0.030	0.00
0.75	0.32	39.07	0.032	0.09
0.90	0.43	39.16	0.035	0.21
1.05	0.61	39.26	0.038	0.34
1.20	1.09	39.42	0.043	0.55
1.35	2.56	39.80	0.054	1.04
1.50	7.51	41.34	0.094	2.77
1.65	4.75	43.06	0.131	3.95

INTERIM AHYMO.OUT				
1.80	2.35	42.73	0.125	3.75
1.95	1.36	41.72	0.104	3.07
2.10	0.88	41.08	0.083	2.56
2.25	0.61	40.29	0.066	1.69
2.40	0.45	39.85	0.056	1.11
2.55	0.25	39.60	0.048	0.78
2.70	0.17	39.42	0.043	0.54
2.85	0.12	39.29	0.039	0.38
3.00	0.10	39.20	0.036	0.27
3.15	0.09	39.15	0.034	0.19
3.30	0.08	39.11	0.033	0.15
3.45	0.07	39.09	0.033	0.12
3.60	0.07	39.08	0.032	0.10
3.75	0.07	39.07	0.032	0.09
3.90	0.07	39.06	0.032	0.08
4.05	0.07	39.06	0.032	0.07
4.20	0.07	39.05	0.032	0.07
4.35	0.06	39.05	0.032	0.07
4.50	0.06	39.05	0.032	0.07
4.65	0.06	39.05	0.032	0.07
4.80	0.06	39.05	0.032	0.07
4.95	0.06	39.05	0.031	0.06
5.10	0.06	39.05	0.031	0.06
5.25	0.07	39.05	0.031	0.06
5.40	0.07	39.05	0.032	0.07
5.55	0.07	39.05	0.032	0.07
5.70	0.07	39.05	0.032	0.07
5.85	0.07	39.05	0.032	0.07
6.00	0.07	39.05	0.032	0.07
6.15	0.03	39.05	0.031	0.06
6.30	0.01	39.03	0.031	0.04
6.45	0.00	39.02	0.031	0.03
6.60	0.00	39.01	0.030	0.02
6.75	0.00	39.01	0.030	0.01
6.90	0.00	39.00	0.030	0.01
7.05	0.00	39.00	0.030	0.00

PEAK DISCHARGE = 3.976 CFS - PEAK OCCURS AT HOUR 1.70
 MAXIMUM WATER SURFACE ELEVATION = 43.117
 MAXIMUM STORAGE = 0.1323 AC-FT INCREMENTAL TIME= 0.050000HRS

PRINT HYD ID=2 CODE=20

PARTIAL HYDROGRAPH 102.00

TIME	TIME	FLOW	TIME	TIME	FLOW	TIME	FLOW
HRS	HRS	CFS	HRS	HRS	CFS	HRS	CFS
0.000	0.0	0.0	2.000	2.9	4.000	0.1	
6.000	0.1	0.3	3.000	0.3	5.000	0.1	
7.000	0.0						

RUNOFF VOLUME = 2.38948 INCHES = 0.3097 ACRE-FEET
 PEAK DISCHARGE RATE = 3.98 CFS AT 1.700 HOURS BASIN AREA =
 0.0024 SQ. MI.

FINISH

INTERIM AHYMO.OUT
NORMAL PROGRAM FINISH
END TIME (HR:MIN:SEC) = 18:40:36

task 1

Project:

Chamber Model -
Units -
Number of Chambers -
Number of End Caps -
Voids in the stone (porosity) -
Base of Stone Elevation -
Amount of Stone Above Chambers -
Amount of Stone Below Chambers -
Area of system -

MC-4500	
Imperial	Click Here for Metric
14	
2	
30	%
37.00	ft
12	in
12	in
692	sf Min. Area - 576 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)
84	0.00	0.00	0.00	0.00	17.30	17.30	2546.96	44.00
83	0.00	0.00	0.00	0.00	17.30	17.30	2529.66	43.92
82	0.00	0.00	0.00	0.00	17.30	17.30	2512.36	43.83
81	0.00	0.00	0.00	0.00	17.30	17.30	2495.06	43.75
80	0.00	0.00	0.00	0.00	17.30	17.30	2477.76	43.67
79	0.00	0.00	0.00	0.00	17.30	17.30	2460.46	43.58
78	0.00	0.00	0.00	0.00	17.30	17.30	2443.16	43.50
77	0.00	0.00	0.00	0.00	17.30	17.30	2425.86	43.42
76	0.00	0.00	0.00	0.00	17.30	17.30	2408.56	43.33
75	0.00	0.00	0.00	0.00	17.30	17.30	2391.26	43.25
74	0.00	0.00	0.00	0.00	17.30	17.30	2373.96	43.17
73	0.00	0.00	0.00	0.00	17.30	17.30	2356.66	43.08
72	0.04	0.00	0.57	0.00	17.13	17.70	2339.36	43.00
71	0.12	0.01	1.63	0.02	16.81	18.45	2321.66	42.92
70	0.16	0.03	2.31	0.05	16.59	18.95	2303.20	42.83
69	0.21	0.05	2.92	0.10	16.39	19.41	2284.25	42.75
68	0.27	0.07	3.76	0.14	16.13	20.02	2264.84	42.67
67	0.45	0.09	6.34	0.18	15.35	21.86	2244.82	42.58
66	0.67	0.11	9.31	0.23	14.44	23.98	2222.96	42.50
65	0.80	0.14	11.19	0.28	13.86	25.33	2198.98	42.42
64	0.91	0.17	12.71	0.34	13.39	26.43	2173.65	42.33
63	1.00	0.19	14.04	0.38	12.97	27.40	2147.22	42.25
62	1.09	0.22	15.22	0.43	12.60	28.26	2119.82	42.17
61	1.16	0.24	16.29	0.48	12.27	29.04	2091.56	42.08
60	1.23	0.27	17.28	0.54	11.96	29.77	2062.52	42.00
59	1.30	0.30	18.20	0.60	11.66	30.45	2032.75	41.92
58	1.36	0.32	19.05	0.65	11.39	31.09	2002.30	41.83
57	1.42	0.35	19.86	0.70	11.13	31.69	1971.21	41.75
56	1.47	0.37	20.63	0.74	10.89	32.26	1939.51	41.67
55	1.53	0.39	21.35	0.79	10.66	32.80	1907.26	41.58
54	1.57	0.42	22.04	0.83	10.44	33.31	1874.46	41.50
53	1.62	0.44	22.70	0.88	10.23	33.81	1841.14	41.42
52	1.67	0.46	23.33	0.93	10.02	34.28	1807.34	41.33
51	1.71	0.48	23.93	0.97	9.83	34.73	1773.06	41.25
50	1.75	0.50	24.50	1.01	9.65	35.16	1738.33	41.17
49	1.79	0.53	25.05	1.05	9.47	35.57	1703.18	41.08
48	1.83	0.55	25.58	1.09	9.30	35.97	1667.61	41.00
47	1.86	0.56	26.09	1.13	9.13	36.35	1631.64	40.92
46	1.90	0.58	26.58	1.17	8.98	36.72	1595.28	40.83
45	1.93	0.60	27.05	1.20	8.83	37.07	1558.56	40.75
44	1.96	0.62	27.50	1.24	8.68	37.42	1521.49	40.67
43	2.00	0.64	27.93	1.28	8.54	37.75	1484.07	40.58
42	2.03	0.66	28.35	1.31	8.40	38.06	1446.33	40.50
41	2.05	0.67	28.75	1.35	8.27	38.37	1408.27	40.42
40	2.08	0.69	29.14	1.38	8.14	38.67	1369.90	40.33
39	2.11	0.71	29.51	1.41	8.02	38.95	1331.23	40.25
38	2.13	0.72	29.87	1.45	7.90	39.23	1292.28	40.17
37	2.16	0.74	30.22	1.48	7.79	39.49	1253.06	40.08
36	2.18	0.76	30.56	1.51	7.68	39.75	1213.57	40.00
35	2.21	0.77	30.88	1.54	7.57	39.99	1173.82	39.92
34	2.23	0.79	31.19	1.57	7.47	40.23	1133.82	39.83
33	2.25	0.80	31.48	1.60	7.37	40.46	1093.59	39.75
32	2.27	0.82	31.77	1.64	7.28	40.69	1053.13	39.67
31	2.29	0.84	32.05	1.68	7.18	40.91	1012.44	39.58
30	2.31	0.85	32.31	1.69	7.10	41.10	971.53	39.50
29	2.33	0.86	32.56	1.72	7.02	41.30	930.43	39.42
28	2.34	0.87	32.81	1.74	6.93	41.49	889.13	39.33
27	2.36	0.89	33.04	1.77	6.86	41.67	847.65	39.25
26	2.38	0.90	33.26	1.80	6.78	41.84	805.98	39.17
25	2.39	0.91	33.47	1.82	6.71	42.01	764.14	39.08
24	2.41	0.92	33.68	1.84	6.64	42.16	722.14	39.00
23	2.42	0.93	33.87	1.87	6.58	42.32	679.97	38.92
22	2.43	0.95	34.05	1.89	6.52	42.46	637.66	38.83
21	2.44	0.96	34.23	1.91	6.46	42.60	595.19	38.75
20	2.46	0.97	34.39	1.93	6.40	42.73	552.60	38.67
19	2.47	0.98	34.55	1.96	6.35	42.85	509.87	38.58

task 2

Project: _____

Chamber Model -
Units -
Number of Chambers -
Number of End Caps -
Voids in the stone (porosity) -
Base of Stone Elevation -
Amount of Stone Above Chambers -
Amount of Stone Below Chambers -
Area of system -

MC-4500
Imperial
24
2
30
38.00
12
12
1086

Click Here for Metric

%
ft
in
in
sf

Min. Area - 942 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)
84	0.00	0.00	0.00	0.00	27.15	27.15	4119.90	45.00
83	0.00	0.00	0.00	0.00	27.15	27.15	4092.75	44.92
82	0.00	0.00	0.00	0.00	27.15	27.15	4065.60	44.83
81	0.00	0.00	0.00	0.00	27.15	27.15	4038.45	44.75
80	0.00	0.00	0.00	0.00	27.15	27.15	4011.30	44.67
79	0.00	0.00	0.00	0.00	27.15	27.15	3984.15	44.58
78	0.00	0.00	0.00	0.00	27.15	27.15	3957.00	44.50
77	0.00	0.00	0.00	0.00	27.15	27.15	3929.85	44.42
76	0.00	0.00	0.00	0.00	27.15	27.15	3902.70	44.33
75	0.00	0.00	0.00	0.00	27.15	27.15	3875.55	44.25
74	0.00	0.00	0.00	0.00	27.15	27.15	3848.40	44.17
73	0.00	0.00	0.00	0.00	27.15	27.15	3821.25	44.08
72	0.04	0.00	0.98	0.00	26.86	27.84	3794.10	44.00
71	0.12	0.01	2.79	0.02	26.31	29.11	3766.26	43.92
70	0.16	0.03	3.95	0.05	25.95	29.95	3737.15	43.83
69	0.21	0.05	5.01	0.10	25.62	30.72	3707.20	43.75
68	0.27	0.07	6.44	0.14	25.18	31.75	3676.47	43.67
67	0.45	0.09	10.87	0.18	23.84	34.88	3644.72	43.58
66	0.67	0.11	15.97	0.23	22.29	38.48	3609.84	43.50
65	0.80	0.14	19.18	0.28	21.31	40.77	3571.36	43.42
64	0.91	0.17	21.80	0.34	20.51	42.64	3530.58	43.33
63	1.00	0.19	24.07	0.38	19.81	44.27	3487.94	43.25
62	1.09	0.22	26.10	0.43	19.19	45.72	3443.68	43.17
61	1.16	0.24	27.92	0.48	18.63	47.03	3397.96	43.08
60	1.23	0.27	29.62	0.54	18.10	48.26	3350.92	43.00
59	1.30	0.30	31.19	0.60	17.61	49.40	3302.66	42.92
58	1.36	0.32	32.66	0.65	17.16	50.47	3253.26	42.83
57	1.42	0.35	34.05	0.70	16.73	51.47	3202.79	42.75
56	1.47	0.37	35.36	0.74	16.32	52.42	3151.32	42.67
55	1.53	0.39	36.60	0.79	15.93	53.32	3098.90	42.58
54	1.57	0.42	37.79	0.83	15.56	54.19	3045.58	42.50
53	1.62	0.44	38.91	0.88	15.21	55.01	2991.39	42.42
52	1.67	0.46	39.99	0.93	14.88	55.79	2936.39	42.33
51	1.71	0.48	41.02	0.97	14.55	56.54	2880.60	42.25
50	1.75	0.50	42.00	1.01	14.25	57.26	2824.05	42.17
49	1.79	0.53	42.94	1.05	13.95	57.95	2766.80	42.08
48	1.83	0.55	43.85	1.09	13.67	58.61	2708.85	42.00
47	1.86	0.56	44.72	1.13	13.39	59.25	2650.24	41.92
46	1.90	0.58	45.56	1.17	13.13	59.86	2590.99	41.83
45	1.93	0.60	46.36	1.20	12.88	60.45	2531.14	41.75
44	1.96	0.62	47.14	1.24	12.64	61.01	2470.69	41.67
43	2.00	0.64	47.88	1.28	12.40	61.56	2409.67	41.58
42	2.03	0.66	48.60	1.31	12.18	62.09	2348.11	41.50
41	2.05	0.67	49.29	1.35	11.96	62.60	2286.03	41.42
40	2.08	0.69	49.96	1.38	11.75	63.09	2223.43	41.33
39	2.11	0.71	50.59	1.41	11.55	63.56	2160.34	41.25
38	2.13	0.72	51.21	1.45	11.35	64.01	2096.79	41.17
37	2.16	0.74	51.81	1.48	11.16	64.45	2032.78	41.08
36	2.18	0.76	52.38	1.51	10.98	64.88	1968.32	41.00
35	2.21	0.77	52.93	1.54	10.81	65.28	1903.45	40.92
34	2.23	0.79	53.46	1.57	10.64	65.68	1838.17	40.83
33	2.25	0.80	53.97	1.60	10.48	66.05	1772.49	40.75
32	2.27	0.82	54.46	1.64	10.32	66.42	1706.44	40.67
31	2.29	0.84	54.94	1.68	10.16	66.78	1640.01	40.58
30	2.31	0.85	55.39	1.69	10.03	67.11	1573.23	40.50
29	2.33	0.86	55.82	1.72	9.89	67.43	1506.12	40.42
28	2.34	0.87	56.24	1.74	9.76	67.74	1438.70	40.33
27	2.36	0.89	56.64	1.77	9.63	68.04	1370.96	40.25
26	2.38	0.90	57.02	1.80	9.51	68.32	1302.92	40.17
25	2.39	0.91	57.38	1.82	9.39	68.59	1234.60	40.08
24	2.41	0.92	57.73	1.84	9.28	68.85	1166.01	40.00
23	2.42	0.93	58.06	1.87	9.17	69.10	1097.15	39.92
22	2.43	0.95	58.38	1.89	9.07	69.34	1028.05	39.83
21	2.44	0.96	58.68	1.91	8.97	69.56	958.72	39.75
20	2.46	0.97	58.96	1.93	8.88	69.78	889.15	39.67
19	2.47	0.98	59.23	1.96	8.80	69.98	819.38	39.58

1706.44	40.67	1521.49	40.67	3227.93	
1640.01	40.58	1484.07	40.58	3124.09	
1573.23	40.50	1446.33	40.50	3019.56	40.5
1506.12	40.42	1408.27	40.42	2914.39	
1438.70	40.33	1369.90	40.33	2808.59	
1370.96	40.25	1331.23	40.25	2702.19	
1302.92	40.17	1292.28	40.17	2595.20	
1234.60	40.08	1253.06	40.08	2487.66	
1166.01	40.00	1213.57	40.00	2379.57	40
1097.15	39.92	1173.82	39.92	2270.97	
1028.05	39.83	1133.82	39.83	2161.88	
958.72	39.75	1093.59	39.75	2052.31	
889.15	39.67	1053.13	39.67	1942.28	
819.38	39.58	1012.44	39.58	1831.82	
749.40	39.50	971.53	39.50	1720.93	39.5
679.23	39.42	930.43	39.42	1609.66	
608.88	39.33	889.13	39.33	1498.02	
538.36	39.25	847.65	39.25	1386.01	
467.68	39.17	805.98	39.17	1273.66	
396.85	39.08	764.14	39.08	1160.99	
325.80	39.00	722.14	39.00	1047.94	39
298.65	38.92	679.97	38.92	978.62	
271.50	38.83	637.66	38.83	909.16	
244.35	38.75	595.19	38.75	839.54	
217.20	38.67	552.60	38.67	769.80	
190.05	38.58	509.87	38.58	699.92	
162.90	38.50	467.01	38.50	629.91	38.5
135.75	38.42	424.04	38.42	559.79	
108.60	38.33	380.96	38.33	489.56	
81.45	38.25	337.77	38.25	419.22	
54.30	38.17	294.49	38.17	348.79	
27.15	38.08	251.11	38.08	278.26	
		207.60	38.00	207.60	38
		190.30	37.92	190.30	
		173.00	37.83	173.00	
		155.70	37.75	155.70	
		138.40	37.67	138.40	
		121.10	37.58	121.10	
		103.80	37.50	103.80	37.5
		86.50	37.42	86.50	
		69.20	37.33	69.20	
		51.90	37.25	51.90	
		34.60	37.17	34.60	
		17.30	37.08	17.30	

tank 3		tank 2		tank 1		cumulative	
		4149.90		2600.96		6750.86	45.5
		4144.90		2597.96		6742.86	
		4139.90		2594.96		6734.86	
		4134.90		2591.96		6726.86	
		4129.90		2588.96		6718.86	
		4124.90		2585.96		6710.86	
		4119.90	45.00	2582.96		6702.86	45
		4092.75	44.92	2579.96		6672.71	
		4065.60	44.83	2576.96		6642.56	
		4038.45	44.75	2573.96		6612.41	
		4011.30	44.67	2570.96		6582.26	
		3984.15	44.58	2567.96		6552.11	
		3957.00	44.50	2564.96		6521.96	44.5
		3929.85	44.42	2561.96		6491.81	
		3902.70	44.33	2558.96		6461.66	
		3875.55	44.25	2555.96		6431.51	
		3848.40	44.17	2552.96		6401.36	
		3821.25	44.08	2549.96		6371.21	
		3794.10	44.00	2546.96	44.00	6341.06	44
		3766.26	43.92	2529.66	43.92	6295.92	
		3737.15	43.83	2512.36	43.83	6249.51	
		3707.20	43.75	2495.06	43.75	6202.25	
		3676.47	43.67	2477.76	43.67	6154.23	
		3644.72	43.58	2460.46	43.58	6105.18	
		3609.84	43.50	2443.16	43.50	6053.00	43.5
		3571.36	43.42	2425.86	43.42	5997.21	
		3530.58	43.33	2408.56	43.33	5939.14	
		3487.94	43.25	2391.26	43.25	5879.20	
		3443.68	43.17	2373.96	43.17	5817.63	
		3397.96	43.08	2356.66	43.08	5754.61	
		3350.92	43.00	2339.36	43.00	5690.28	43
		3302.66	42.92	2321.66	42.92	5624.32	
		3253.26	42.83	2303.20	42.83	5556.47	
		3202.79	42.75	2284.25	42.75	5487.05	
		3151.32	42.67	2264.84	42.67	5416.16	
		3098.90	42.58	2244.82	42.58	5343.72	
		3045.58	42.50	2222.96	42.50	5268.53	42.5
		2991.39	42.42	2198.98	42.42	5190.37	
		2936.39	42.33	2173.65	42.33	5110.03	
		2880.60	42.25	2147.22	42.25	5027.81	
		2824.05	42.17	2119.82	42.17	4943.87	
		2766.80	42.08	2091.56	42.08	4858.36	
		2708.85	42.00	2062.52	42.00	4771.37	42
		2650.24	41.92	2032.75	41.92	4682.99	
		2590.99	41.83	2002.30	41.83	4593.29	
		2531.14	41.75	1971.21	41.75	4502.34	
		2470.69	41.67	1939.51	41.67	4410.20	
		2409.67	41.58	1907.26	41.58	4316.93	
		2348.11	41.50	1874.46	41.50	4222.57	41.5
		2286.03	41.42	1841.14	41.42	4127.17	
		2223.43	41.33	1807.34	41.33	4030.77	
		2160.34	41.25	1773.06	41.25	3933.40	
		2096.79	41.17	1738.33	41.17	3835.12	
		2032.78	41.08	1703.18	41.08	3735.95	
		1968.32	41.00	1667.61	41.00	3635.93	41
		1903.45	40.92	1631.64	40.92	3535.09	
		1838.17	40.83	1595.28	40.83	3433.45	
		1772.49	40.75	1558.56	40.75	3331.05	

VOLUME CALCULATIONS

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
39	0	0.025	0.01
40	0.75	0.055	1.30
40.5	1.25	0.070	1.99
41	1.75	0.084	2.49
41.5	2.25	0.098	2.91
42	2.75	0.111	3.28
42.5	3.25	0.122	3.61
43	3.75	0.131	3.91
43.5	4.25	0.140	4.19
44	4.75	0.147	4.45
44.5	5.25	0.152	4.70
45	5.75	0.155	4.93
45.5	6.25	0.156	5.16
46	6.75	0.165	5.37

Orifice Equation

$$Q = CA \text{ SQRT}(2gH)$$

$$C = 0.6$$

$$\text{Diameter (in)} = 9$$

$$\text{Area (ft}^2\text{)} = 0.44178647$$

$$g = 32.2$$

$$H \text{ (Ft)} = \text{Depth of water above center of orifice}$$

$$Q \text{ (CFS)} = \text{Flow}$$

FUTURE

TANK VOLUMES/STAGE STORAGE/AHYMO

APPENDIX C

ult.

PONROUTING061615.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

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=-.139 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=3
	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)	
	0.00	0.03	39.00	
	1.30	0.08	40.00	
	1.99	0.11	40.50	
	2.49	0.14	41.00	
	2.91	0.16	41.50	
	3.28	0.19	42.00	
	3.61	0.21	42.50	
	3.91	0.23	43.00	
	4.19	0.25	43.50	
	4.45	0.26	44.00	
	4.70	0.27	44.50	
	4.93	0.28	45.00	
	5.16	0.29	45.50	
	5.37	0.31	46.00	

PRINT HYD ID=2 CODE=20

FINISH

AHYMO.OUT

AHYMO PROGRAM (AHYMO-S4) - Version: S4.01a - Rel: 01a
 RUN DATE (MON/DAY/YR) = 06/17/2015
 START TIME (HR:MIN:SEC) = 18:15:31 USER NO.=
 RioGrandeSingleA41963517
 INPUT FILE = ts and
 Settings\Owner\Desktop\2014jobs\1498-11301MONTGOMERY\PONROUTING061615.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=-.139 MASSRAIN=-1

K = 0.075755HR TP = 0.139000HR K/TP RATIO = 0.545000 SHAPE
 CONSTANT, N = 7.106428
 UNIT PEAK = 14.530 CFS UNIT VOLUME = 0.9978 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 = 0.131509HR TP = 0.139000HR K/TP RATIO = 0.946108 SHAPE
 CONSTANT, N = 3.736321

AHYMO.OUT
 UNIT PEAK = 2.0435 CFS UNIT VOLUME = 0.9950 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	TIME	FLOW	TIME	TIME	FLOW	TIME	FLOW
	FLOW			FLOW			
HRS	HRS	CFS	HRS	HRS	CFS	HRS	CFS
6.000	0.000	0.0	2.000	2.2	4.000	0.1	
	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 = 14.45 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=3

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)	
0.00	0.03	39.00	
	1.30	0.08	40.00
	1.99	0.11	40.50
	2.49	0.14	41.00
2.91	0.16		41.50
3.28	0.19		42.00
3.61	0.21		42.50
3.91	0.23		43.00
4.19	0.25		43.50
4.45	0.26		44.00
4.70	0.27		44.50
4.93	0.28		45.00
5.16	0.29		45.50
5.37	0.31		46.00

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	39.00	0.030	0.00
0.15	0.00	39.00	0.030	0.00
0.30	0.00	39.00	0.030	0.00
0.45	0.00	39.00	0.030	0.00
0.60	0.08	39.00	0.030	0.00
0.75	0.61	39.08	0.034	0.11
0.90	0.83	39.21	0.041	0.28
1.05	1.18	39.36	0.048	0.47
1.20	2.10	39.61	0.060	0.79
1.35	4.92	40.11	0.087	1.45
1.50	14.45	41.84	0.180	3.16
1.65	9.14	45.23	0.285	5.03

			AHYMO.OUT	
1.80	4.52	45.76	0.300	5.27
1.95	2.62	44.97	0.279	4.92
2.10	1.69	43.48	0.249	4.18
2.25	1.18	42.69	0.218	3.72
2.40	0.87	41.95	0.187	3.24
2.55	0.48	41.43	0.157	2.85
2.70	0.34	40.84	0.130	2.33
2.85	0.26	40.46	0.108	1.94
3.00	0.21	40.15	0.089	1.51
3.15	0.17	39.90	0.075	1.17
3.30	0.16	39.69	0.064	0.89
3.45	0.14	39.53	0.056	0.69
3.60	0.14	39.41	0.051	0.54
3.75	0.13	39.33	0.046	0.43
3.90	0.13	39.27	0.043	0.34
4.05	0.13	39.22	0.041	0.29
4.20	0.13	39.19	0.039	0.24
4.35	0.12	39.16	0.038	0.21
4.50	0.12	39.14	0.037	0.19
4.65	0.12	39.13	0.037	0.17
4.80	0.12	39.12	0.036	0.16
4.95	0.12	39.11	0.036	0.15
5.10	0.12	39.11	0.035	0.14
5.25	0.13	39.11	0.035	0.14
5.40	0.13	39.10	0.035	0.13
5.55	0.13	39.10	0.035	0.13
5.70	0.13	39.10	0.035	0.13
5.85	0.13	39.10	0.035	0.13
6.00	0.13	39.10	0.035	0.13
6.15	0.06	39.10	0.035	0.12
6.30	0.02	39.08	0.034	0.10
6.45	0.01	39.06	0.033	0.08
6.60	0.00	39.04	0.032	0.06
6.75	0.00	39.03	0.032	0.04
6.90	0.00	39.02	0.031	0.03
7.05	0.00	39.02	0.031	0.02
7.20	0.00	39.01	0.031	0.02
7.35	0.00	39.01	0.030	0.01
7.50	0.00	39.01	0.030	0.01
7.65	0.00	39.00	0.030	0.01
7.80	0.00	39.00	0.030	0.00

PEAK DISCHARGE = 5.278 CFS - PEAK OCCURS AT HOUR 1.75
 MAXIMUM WATER SURFACE ELEVATION = 45.781
 MAXIMUM STORAGE = 0.3013 AC-FT INCREMENTAL TIME= 0.050000HRS

PRINT HYD ID=2 CODE=20

PARTIAL HYDROGRAPH 102.00

TIME	TIME	FLOW	TIME	TIME	FLOW	TIME	FLOW
HRS	FLOW	CFS	HRS	FLOW	CFS	HRS	CFS
0.000	0.0	0.0	2.000	4.7	4.000	0.3	
6.000	0.1	0.4	8.000	0.0			
7.000	1.000	0.4	3.000	1.5	5.000	0.1	
	0.0						

RUNOFF VOLUME = 2.38953 INCHES = 0.5964 ACRE-Feet
 PEAK DISCHARGE RATE = 5.28 CFS AT 1.750 HOURS BASIN AREA =
 0.0047 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 18:15:31

AHYMO.OUT

Tank3

Project:

Chamber Model -
 Units -
 Number of Chambers -
 Number of End Caps -
 Voids in the stone (porosity) -
 Base of Stone Elevation -
 Amount of Stone Above Chambers -
 Amount of Stone Below Chambers -
 Area of system -

MC-4500
Imperial
24
2
30
38.00
12
12
1086

%
ft
in
in

Min. Area - 942 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)
84	0.00	0.00	0.00	0.00	27.15	27.15	4119.90	45.00
83	0.00	0.00	0.00	0.00	27.15	27.15	4092.75	44.92
82	0.00	0.00	0.00	0.00	27.15	27.15	4065.60	44.83
81	0.00	0.00	0.00	0.00	27.15	27.15	4038.45	44.75
80	0.00	0.00	0.00	0.00	27.15	27.15	4011.30	44.67
79	0.00	0.00	0.00	0.00	27.15	27.15	3984.15	44.58
78	0.00	0.00	0.00	0.00	27.15	27.15	3957.00	44.50
77	0.00	0.00	0.00	0.00	27.15	27.15	3929.85	44.42
76	0.00	0.00	0.00	0.00	27.15	27.15	3902.70	44.33
75	0.00	0.00	0.00	0.00	27.15	27.15	3875.55	44.25
74	0.00	0.00	0.00	0.00	27.15	27.15	3848.40	44.17
73	0.00	0.00	0.00	0.00	27.15	27.15	3821.25	44.08
72	0.04	0.00	0.98	0.00	26.86	27.84	3794.10	44.00
71	0.12	0.01	2.79	0.02	26.31	29.11	3766.26	43.92
70	0.16	0.03	3.95	0.05	25.95	29.95	3737.15	43.83
69	0.21	0.05	5.01	0.10	25.62	30.72	3707.20	43.75
68	0.27	0.07	6.44	0.14	25.18	31.75	3676.47	43.67
67	0.45	0.09	10.87	0.18	23.84	34.88	3644.72	43.58
66	0.67	0.11	15.97	0.23	22.29	38.48	3609.84	43.50
65	0.80	0.14	19.18	0.28	21.31	40.77	3571.36	43.42
64	0.91	0.17	21.80	0.34	20.51	42.64	3530.58	43.33
63	1.00	0.19	24.07	0.38	19.81	44.27	3487.94	43.25
62	1.09	0.22	26.10	0.43	19.19	45.72	3443.68	43.17
61	1.16	0.24	27.92	0.48	18.63	47.03	3397.96	43.08
60	1.23	0.27	29.62	0.54	18.10	48.26	3350.92	43.00
59	1.30	0.30	31.19	0.60	17.61	49.40	3302.66	42.92
58	1.36	0.32	32.66	0.65	17.16	50.47	3253.26	42.83
57	1.42	0.35	34.05	0.70	16.73	51.47	3202.79	42.75
56	1.47	0.37	35.36	0.74	16.32	52.42	3151.32	42.67
55	1.53	0.39	36.60	0.79	15.93	53.32	3098.90	42.58
54	1.57	0.42	37.79	0.83	15.56	54.19	3045.58	42.50
53	1.62	0.44	38.91	0.88	15.21	55.01	2991.39	42.42
52	1.67	0.46	39.99	0.93	14.88	55.79	2936.39	42.33
51	1.71	0.48	41.02	0.97	14.55	56.54	2880.60	42.25
50	1.75	0.50	42.00	1.01	14.25	57.26	2824.05	42.17
49	1.79	0.53	42.94	1.05	13.95	57.95	2766.80	42.08
48	1.83	0.55	43.85	1.09	13.67	58.61	2708.85	42.00
47	1.86	0.56	44.72	1.13	13.39	59.25	2650.24	41.92
46	1.90	0.58	45.56	1.17	13.13	59.86	2590.99	41.83
45	1.93	0.60	46.36	1.20	12.88	60.45	2531.14	41.75
44	1.96	0.62	47.14	1.24	12.64	61.01	2470.69	41.67
43	2.00	0.64	47.88	1.28	12.40	61.56	2409.67	41.58
42	2.03	0.66	48.60	1.31	12.18	62.09	2348.11	41.50
41	2.05	0.67	49.29	1.35	11.96	62.60	2286.03	41.42
40	2.08	0.69	49.96	1.38	11.75	63.09	2223.43	41.33
39	2.11	0.71	50.59	1.41	11.55	63.56	2160.34	41.25
38	2.13	0.72	51.21	1.45	11.35	64.01	2096.79	41.17
37	2.16	0.74	51.81	1.48	11.16	64.45	2032.78	41.08
36	2.18	0.76	52.38	1.51	10.98	64.88	1968.32	41.00
35	2.21	0.77	52.93	1.54	10.81	65.28	1903.45	40.92
34	2.23	0.79	53.46	1.57	10.64	65.68	1838.17	40.83
33	2.25	0.80	53.97	1.60	10.48	66.05	1772.49	40.75
32	2.27	0.82	54.46	1.64	10.32	66.42	1706.44	40.67
31	2.29	0.84	54.94	1.68	10.16	66.78	1640.01	40.58
30	2.31	0.85	55.39	1.69	10.03	67.11	1573.23	40.50
29	2.33	0.86	55.82	1.72	9.89	67.43	1506.12	40.42
28	2.34	0.87	56.24	1.74	9.76	67.74	1438.70	40.33
27	2.36	0.89	56.64	1.77	9.63	68.04	1370.96	40.25
26	2.38	0.90	57.02	1.80	9.51	68.32	1302.92	40.17
25	2.39	0.91	57.38	1.82	9.39	68.59	1234.60	40.08
24	2.41	0.92	57.73	1.84	9.28	68.85	1166.01	40.00
23	2.42	0.93	58.06	1.87	9.17	69.10	1097.15	39.92
22	2.43	0.95	58.38	1.89	9.07	69.34	1028.05	39.83
21	2.44	0.96	58.68	1.91	8.97	69.56	958.72	39.75
20	2.46	0.97	58.96	1.93	8.88	69.78	889.15	39.67
19	2.47	0.98	59.23	1.96	8.80	69.98	819.38	39.58

Tank 2

Project: _____

Chamber Model -
Units -
Number of Chambers -
Number of End Caps -
Voids in the stone (porosity) -
Base of Stone Elevation -
Amount of Stone Above Chambers -
Amount of Stone Below Chambers -
Area of system -

MC-4500	
Imperial	Click Here for Metric
34	
2	
30	%
38.50	ft
12	in
12	in
1500	sf Min. Area - 1308 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)
84	0.00	0.00	0.00	0.00	37.50	37.50	5734.85	45.50
83	0.00	0.00	0.00	0.00	37.50	37.50	5697.35	45.42
82	0.00	0.00	0.00	0.00	37.50	37.50	5659.85	45.33
81	0.00	0.00	0.00	0.00	37.50	37.50	5622.35	45.25
80	0.00	0.00	0.00	0.00	37.50	37.50	5584.85	45.17
79	0.00	0.00	0.00	0.00	37.50	37.50	5547.35	45.08
78	0.00	0.00	0.00	0.00	37.50	37.50	5509.85	45.00
77	0.00	0.00	0.00	0.00	37.50	37.50	5472.35	44.92
76	0.00	0.00	0.00	0.00	37.50	37.50	5434.85	44.83
75	0.00	0.00	0.00	0.00	37.50	37.50	5397.35	44.75
74	0.00	0.00	0.00	0.00	37.50	37.50	5359.85	44.67
73	0.00	0.00	0.00	0.00	37.50	37.50	5322.35	44.58
72	0.04	0.00	1.39	0.00	37.08	38.48	5284.85	44.50
71	0.12	0.01	3.95	0.02	36.31	40.28	5246.37	44.42
70	0.16	0.03	5.60	0.05	35.80	41.46	5206.10	44.33
69	0.21	0.05	7.10	0.10	35.34	42.53	5164.64	44.25
68	0.27	0.07	9.12	0.14	34.72	43.98	5122.11	44.17
67	0.45	0.09	15.39	0.18	32.83	48.40	5078.12	44.08
66	0.67	0.11	22.62	0.23	30.65	53.49	5029.72	44.00
65	0.80	0.14	27.17	0.28	29.27	56.71	4976.23	43.92
64	0.91	0.17	30.88	0.34	28.14	59.35	4919.52	43.83
63	1.00	0.19	34.10	0.38	27.16	61.64	4860.17	43.75
62	1.09	0.22	36.97	0.43	26.28	63.68	4798.53	43.67
61	1.16	0.24	39.56	0.48	25.49	65.53	4734.85	43.58
60	1.23	0.27	41.96	0.54	24.75	67.25	4669.32	43.50
59	1.30	0.30	44.19	0.60	24.06	68.85	4602.08	43.42
58	1.36	0.32	46.27	0.65	23.42	70.35	4533.23	43.33
57	1.42	0.35	48.24	0.70	22.82	71.75	4462.88	43.25
56	1.47	0.37	50.09	0.74	22.25	73.08	4391.13	43.17
55	1.53	0.39	51.86	0.79	21.71	74.35	4318.05	43.08
54	1.57	0.42	53.53	0.83	21.19	75.56	4243.70	43.00
53	1.62	0.44	55.13	0.88	20.70	76.71	4168.14	42.92
52	1.67	0.46	56.65	0.93	20.23	77.80	4091.43	42.83
51	1.71	0.48	58.11	0.97	19.78	78.85	4013.63	42.75
50	1.75	0.50	59.50	1.01	19.35	79.86	3934.77	42.67
49	1.79	0.53	60.84	1.05	18.93	80.82	3854.92	42.58
48	1.83	0.55	62.12	1.09	18.54	81.75	3774.09	42.50
47	1.86	0.56	63.36	1.13	18.15	82.64	3692.34	42.42
46	1.90	0.58	64.54	1.17	17.79	83.50	3609.70	42.33
45	1.93	0.60	65.68	1.20	17.43	84.32	3526.21	42.25
44	1.96	0.62	66.78	1.24	17.09	85.11	3441.89	42.17
43	2.00	0.64	67.83	1.28	16.77	85.88	3356.77	42.08
42	2.03	0.66	68.85	1.31	16.45	86.61	3270.90	42.00
41	2.05	0.67	69.83	1.35	16.15	87.32	3184.28	41.92
40	2.08	0.69	70.77	1.38	15.85	88.01	3096.96	41.83
39	2.11	0.71	71.67	1.41	15.57	88.66	3008.96	41.75
38	2.13	0.72	72.55	1.45	15.30	89.30	2920.29	41.67
37	2.16	0.74	73.40	1.48	15.04	89.91	2830.99	41.58
36	2.18	0.76	74.21	1.51	14.78	90.50	2741.08	41.50
35	2.21	0.77	74.99	1.54	14.54	91.07	2650.58	41.42
34	2.23	0.79	75.74	1.57	14.31	91.62	2559.51	41.33
33	2.25	0.80	76.46	1.60	14.08	92.15	2467.89	41.25
32	2.27	0.82	77.16	1.64	13.86	92.66	2375.74	41.17
31	2.29	0.84	77.83	1.68	13.65	93.15	2283.08	41.08
30	2.31	0.85	78.47	1.69	13.45	93.61	2189.93	41.00
29	2.33	0.86	79.08	1.72	13.26	94.06	2096.32	40.92
28	2.34	0.87	79.67	1.74	13.08	94.49	2002.26	40.83
27	2.36	0.89	80.24	1.77	12.90	94.90	1907.77	40.75
26	2.38	0.90	80.78	1.80	12.73	95.30	1812.86	40.67
25	2.39	0.91	81.29	1.82	12.57	95.68	1717.56	40.58
24	2.41	0.92	81.79	1.84	12.41	96.04	1621.88	40.50
23	2.42	0.93	82.25	1.87	12.26	96.39	1525.84	40.42
22	2.43	0.95	82.70	1.89	12.12	96.71	1429.45	40.33
21	2.44	0.96	83.12	1.91	11.99	97.03	1332.74	40.25
20	2.46	0.97	83.53	1.93	11.86	97.32	1235.71	40.17
19	2.47	0.98	83.90	1.96	11.74	97.60	1138.39	40.08

Tank 1

Project: _____

Chamber Model -
Units -
Number of Chambers -
Number of End Caps -
Voids in the stone (porosity) -
Base of Stone Elevation -
Amount of Stone Above Chambers -
Amount of Stone Below Chambers -
Area of system -

MC-4500
Imperial
14
2
30 %
37.00 ft
12 in
12 in
692 sf

Min. Area - 576 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)
84	0.00	0.00	0.00	0.00	17.30	17.30	2546.96	44.00
83	0.00	0.00	0.00	0.00	17.30	17.30	2529.66	43.92
82	0.00	0.00	0.00	0.00	17.30	17.30	2512.36	43.83
81	0.00	0.00	0.00	0.00	17.30	17.30	2495.06	43.75
80	0.00	0.00	0.00	0.00	17.30	17.30	2477.76	43.67
79	0.00	0.00	0.00	0.00	17.30	17.30	2460.46	43.58
78	0.00	0.00	0.00	0.00	17.30	17.30	2443.16	43.50
77	0.00	0.00	0.00	0.00	17.30	17.30	2425.86	43.42
76	0.00	0.00	0.00	0.00	17.30	17.30	2408.56	43.33
75	0.00	0.00	0.00	0.00	17.30	17.30	2391.26	43.25
74	0.00	0.00	0.00	0.00	17.30	17.30	2373.96	43.17
73	0.00	0.00	0.00	0.00	17.30	17.30	2356.66	43.08
72	0.04	0.00	0.57	0.00	17.13	17.70	2339.36	43.00
71	0.12	0.01	1.63	0.02	16.81	18.45	2321.66	42.92
70	0.16	0.03	2.31	0.05	16.59	18.95	2303.20	42.83
69	0.21	0.05	2.92	0.10	16.39	19.41	2284.25	42.75
68	0.27	0.07	3.76	0.14	16.13	20.02	2264.84	42.67
67	0.45	0.09	6.34	0.18	15.35	21.86	2244.82	42.58
66	0.67	0.11	9.31	0.23	14.44	23.98	2222.96	42.50
65	0.80	0.14	11.19	0.28	13.86	25.33	2198.98	42.42
64	0.91	0.17	12.71	0.34	13.39	26.43	2173.65	42.33
63	1.00	0.19	14.04	0.38	12.97	27.40	2147.22	42.25
62	1.09	0.22	15.22	0.43	12.60	28.26	2119.82	42.17
61	1.16	0.24	16.29	0.48	12.27	29.04	2091.56	42.08
60	1.23	0.27	17.28	0.54	11.96	29.77	2062.52	42.00
59	1.30	0.30	18.20	0.60	11.66	30.45	2032.75	41.92
58	1.36	0.32	19.05	0.65	11.39	31.09	2002.30	41.83
57	1.42	0.35	19.86	0.70	11.13	31.69	1971.21	41.75
56	1.47	0.37	20.63	0.74	10.89	32.26	1939.51	41.67
55	1.53	0.39	21.35	0.79	10.66	32.80	1907.26	41.58
54	1.57	0.42	22.04	0.83	10.44	33.31	1874.46	41.50
53	1.62	0.44	22.70	0.88	10.23	33.81	1841.14	41.42
52	1.67	0.46	23.33	0.93	10.02	34.28	1807.34	41.33
51	1.71	0.48	23.93	0.97	9.83	34.73	1773.06	41.25
50	1.75	0.50	24.50	1.01	9.65	35.16	1738.33	41.17
49	1.79	0.53	25.05	1.05	9.47	35.57	1703.18	41.08
48	1.83	0.55	25.58	1.09	9.30	35.97	1667.61	41.00
47	1.86	0.56	26.09	1.13	9.13	36.35	1631.64	40.92
46	1.90	0.58	26.58	1.17	8.98	36.72	1595.28	40.83
45	1.93	0.60	27.05	1.20	8.83	37.07	1558.56	40.75
44	1.96	0.62	27.50	1.24	8.68	37.42	1521.49	40.67
43	2.00	0.64	27.93	1.28	8.54	37.75	1484.07	40.58
42	2.03	0.66	28.35	1.31	8.40	38.06	1446.33	40.50
41	2.05	0.67	28.75	1.35	8.27	38.37	1408.27	40.42
40	2.08	0.69	29.14	1.38	8.14	38.67	1369.90	40.33
39	2.11	0.71	29.51	1.41	8.02	38.95	1331.23	40.25
38	2.13	0.72	29.87	1.45	7.90	39.23	1292.28	40.17
37	2.16	0.74	30.22	1.48	7.79	39.49	1253.06	40.08
36	2.18	0.76	30.56	1.51	7.68	39.75	1213.57	40.00
35	2.21	0.77	30.88	1.54	7.57	39.99	1173.82	39.92
34	2.23	0.79	31.19	1.57	7.47	40.23	1133.82	39.83
33	2.25	0.80	31.48	1.60	7.37	40.46	1093.59	39.75
32	2.27	0.82	31.77	1.64	7.28	40.69	1053.13	39.67
31	2.29	0.84	32.05	1.68	7.18	40.91	1012.44	39.58
30	2.31	0.85	32.31	1.69	7.10	41.10	971.53	39.50
29	2.33	0.86	32.56	1.72	7.02	41.30	930.43	39.42
28	2.34	0.87	32.81	1.74	6.93	41.49	889.13	39.33
27	2.36	0.89	33.04	1.77	6.86	41.67	847.65	39.25
26	2.38	0.90	33.26	1.80	6.78	41.84	805.98	39.17
25	2.39	0.91	33.47	1.82	6.71	42.01	764.14	39.08
24	2.41	0.92	33.68	1.84	6.64	42.16	722.14	39.00
23	2.42	0.93	33.87	1.87	6.58	42.32	679.97	38.92
22	2.43	0.95	34.05	1.89	6.52	42.46	637.66	38.83
21	2.44	0.96	34.23	1.91	6.46	42.60	595.19	38.75
20	2.46	0.97	34.39	1.93	6.40	42.73	552.60	38.67
19	2.47	0.98	34.55	1.96	6.35	42.85	509.87	38.58

Summary Volume

tank 3		tank 2		tank 1		cumulative	
5734.85	45.50	4149.90		2600.96		12485.71	45.5
5697.35	45.42	4144.90		2597.96		12440.21	
5659.85	45.33	4139.90		2594.96		12394.71	
5622.35	45.25	4134.90		2591.96		12349.21	
5584.85	45.17	4129.90		2588.96		12303.71	
5547.35	45.08	4124.90		2585.96		12258.21	
5509.85	45.00	4119.90	45.00	2582.96		12212.71	45
5472.35	44.92	4092.75	44.92	2579.96		12145.06	
5434.85	44.83	4065.60	44.83	2576.96		12077.41	
5397.35	44.75	4038.45	44.75	2573.96		12009.76	
5359.85	44.67	4011.30	44.67	2570.96		11942.11	
5322.35	44.58	3984.15	44.58	2567.96		11874.46	
5284.85	44.50	3957.00	44.50	2564.96		11806.81	44.5
5246.37	44.42	3929.85	44.42	2561.96		11738.18	
5206.10	44.33	3902.70	44.33	2558.96		11667.76	
5164.64	44.25	3875.55	44.25	2555.96		11596.15	
5122.11	44.17	3848.40	44.17	2552.96		11523.46	
5078.12	44.08	3821.25	44.08	2549.96		11449.33	
5029.72	44.00	3794.10	44.00	2546.96	44.00	11370.78	44
4976.23	43.92	3766.26	43.92	2529.66	43.92	11272.15	
4919.52	43.83	3737.15	43.83	2512.36	43.83	11169.03	
4860.17	43.75	3707.20	43.75	2495.06	43.75	11062.42	
4798.53	43.67	3676.47	43.67	2477.76	43.67	10952.76	
4734.85	43.58	3644.72	43.58	2460.46	43.58	10840.03	
4669.32	43.50	3609.84	43.50	2443.16	43.50	10722.32	43.5
4602.08	43.42	3571.36	43.42	2425.86	43.42	10599.29	
4533.23	43.33	3530.58	43.33	2408.56	43.33	10472.37	
4462.88	43.25	3487.94	43.25	2391.26	43.25	10342.08	
4391.13	43.17	3443.68	43.17	2373.96	43.17	10208.76	
4318.05	43.08	3397.96	43.08	2356.66	43.08	10072.66	
4243.70	43.00	3350.92	43.00	2339.36	43.00	9933.97	43
4168.14	42.92	3302.66	42.92	2321.66	42.92	9792.46	
4091.43	42.83	3253.26	42.83	2303.20	42.83	9647.90	
4013.63	42.75	3202.79	42.75	2284.25	42.75	9500.67	
3934.77	42.67	3151.32	42.67	2264.84	42.67	9350.94	
3854.92	42.58	3098.90	42.58	2244.82	42.58	9198.63	
3774.09	42.50	3045.58	42.50	2222.96	42.50	9042.63	42.5
3692.34	42.42	2991.39	42.42	2198.98	42.42	8882.71	
3609.70	42.33	2936.39	42.33	2173.65	42.33	8719.74	
3526.21	42.25	2880.60	42.25	2147.22	42.25	8554.02	
3441.89	42.17	2824.05	42.17	2119.82	42.17	8385.76	
3356.77	42.08	2766.80	42.08	2091.56	42.08	8215.13	
3270.90	42.00	2708.85	42.00	2062.52	42.00	8042.27	42
3184.28	41.92	2650.24	41.92	2032.75	41.92	7867.27	
3096.96	41.83	2590.99	41.83	2002.30	41.83	7690.25	
3008.96	41.75	2531.14	41.75	1971.21	41.75	7511.30	
2920.29	41.67	2470.69	41.67	1939.51	41.67	7330.50	
2830.99	41.58	2409.67	41.58	1907.26	41.58	7147.93	
2741.08	41.50	2348.11	41.50	1874.46	41.50	6963.65	41.5
2650.58	41.42	2286.03	41.42	1841.14	41.42	6777.75	
2559.51	41.33	2223.43	41.33	1807.34	41.33	6590.27	
2467.89	41.25	2160.34	41.25	1773.06	41.25	6401.29	
2375.74	41.17	2096.79	41.17	1738.33	41.17	6210.86	
2283.08	41.08	2032.78	41.08	1703.18	41.08	6019.03	
2189.93	41.00	1968.32	41.00	1667.61	41.00	5825.86	41
2096.32	40.92	1903.45	40.92	1631.64	40.92	5631.40	
2002.26	40.83	1838.17	40.83	1595.28	40.83	5435.71	
1907.77	40.75	1772.49	40.75	1558.56	40.75	5238.82	

1812.86	40.67	1706.44	40.67	1521.49	40.67	5040.79	
1717.56	40.58	1640.01	40.58	1484.07	40.58	4841.65	
1621.88	40.50	1573.23	40.50	1446.33	40.50	4641.44	40.5
1525.84	40.42	1506.12	40.42	1408.27	40.42	4440.23	
1429.45	40.33	1438.70	40.33	1369.90	40.33	4238.04	
1332.74	40.25	1370.96	40.25	1331.23	40.25	4034.93	
1235.71	40.17	1302.92	40.17	1292.28	40.17	3830.91	
1138.39	40.08	1234.60	40.08	1253.06	40.08	3626.05	
1040.79	40.00	1166.01	40.00	1213.57	40.00	3420.36	40
942.92	39.92	1097.15	39.92	1173.82	39.92	3213.89	
844.80	39.83	1028.05	39.83	1133.82	39.83	3006.68	
746.45	39.75	958.72	39.75	1093.59	39.75	2798.76	
647.87	39.67	889.15	39.67	1053.13	39.67	2590.15	
549.09	39.58	819.38	39.58	1012.44	39.58	2380.90	
450.00	39.50	749.40	39.50	971.53	39.50	2170.93	39.5
412.50	39.42	679.23	39.42	930.43	39.42	2022.16	
375.00	39.33	608.88	39.33	889.13	39.33	1873.02	
337.50	39.25	538.36	39.25	847.65	39.25	1723.51	
300.00	39.17	467.68	39.17	805.98	39.17	1573.66	
262.50	39.08	396.85	39.08	764.14	39.08	1423.49	
225.00	39.00	325.80	39.00	722.14	39.00	1272.94	39
187.50	38.92	298.65	38.92	679.97	38.92	1166.12	
150.00	38.83	271.50	38.83	637.66	38.83	1059.16	
112.50	38.75	244.35	38.75	595.19	38.75	952.04	
75.00	38.67	217.20	38.67	552.60	38.67	844.80	
37.50	38.58	190.05	38.58	509.87	38.58	737.42	
		162.90	38.50	467.01	38.50	629.91	38.5
		135.75	38.42	424.04	38.42	559.79	
		108.60	38.33	380.96	38.33	489.56	
		81.45	38.25	337.77	38.25	419.22	
		54.30	38.17	294.49	38.17	348.79	
		27.15	38.08	251.11	38.08	278.26	
				207.60	38.00	207.60	38
				190.30	37.92	190.30	
				173.00	37.83	173.00	
				155.70	37.75	155.70	
				138.40	37.67	138.40	
				121.10	37.58	121.10	
				103.80	37.50	103.80	37.5
				86.50	37.42	86.50	
				69.20	37.33	69.20	
				51.90	37.25	51.90	
				34.60	37.17	34.60	
				17.30	37.08	17.30	

VOLUME CALCULATIONS

for Pond Retig

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
39	0	0.030	0.01
40	0.75	0.080	1.30
40.5	1.25	0.108	1.99
41	1.75	0.135	2.49
41.5	2.25	0.161	2.91
42	2.75	0.186	3.28
42.5	3.25	0.209	3.61
43	3.75	0.230	3.91
43.5	4.25	0.248	4.19
44	4.75	0.262	4.45
44.5	5.25	0.273	4.70
45	5.75	0.282	4.93
45.5	6.25	0.288	5.16
46	6.75	0.296	5.37

Orifice Equation

$$Q = CA \text{ SQRT}(2gH)$$

$$C = 0.6$$

$$\text{Diameter (in)} = 9$$

$$\text{Area (ft}^2\text{)} = 0.44178647$$

$$g = 32.2$$

$$H \text{ (Ft)} = \text{Depth of water above center of orifice}$$

$$Q \text{ (CFS)} = \text{Flow}$$

APPENDIX D

ADS INFILTRATOR SPECIFICATIONS

PROJECT INFORMATION	
ENGINEERED	PEGGY GRAHAM
PRODUCT	720-982-4900
MANAGER	PEGGY GRAHAM@ADS-PIPE.COM
ADS SALES REP	PETER NICHOLS
	505-301-5804
	PETER.NICHOLS@ADS-PIPE.COM
PROJECT NO	04281



SAFCU 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 LRD 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 F2416, "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 1.55 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 LRD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2416 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE
 - c. A 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 REPRESENTATIVE 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:
 - a. STONESHOOTER LOCATED OFF THE CHAMBER BED
 - b. BACKFILL AIR ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE
 - c. BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM WOE OR EXCAVATOR
4. THE FOUNDATION STONE SHALL BE LEVELLED AND COMPACTED PRIOR TO PLACING CHAMBERS
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE
6. MAINTAIN MINIMUM 6" (150 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" (19-50 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 "FLEX STORM 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:
 - a. NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS
 - b. NO RUBBER TIED LOADER, DUMP TRUCK OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE"
 - c. WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE"
 3. FILL 30" (800 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 1-888-822-2604 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS / OR CONSTRUCTION EQUIPMENT

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

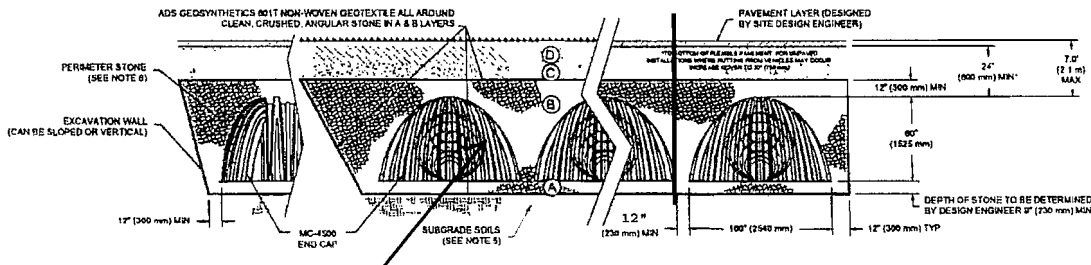
MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	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.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 2, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	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 93% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43 ¹ 2, 4	NO COMPACTION REQUIRED
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43 ¹ 2, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. **

PLEASE NOTE

- 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 #4) STONE".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAX. LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR. 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.

WHEN MULTIPLE CHAMBERS

WHEN SINGLE CHAMBER



MULTIPLE CHAMBERS NOT USED FOR THIS APPLICATION

NOTES:

- MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2191 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2191 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
- 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.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- 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

DATE: 3/11/15
PROJECT # 1041
DRAWN: MCA
CHECKED: MGP

DESCRIPTION

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CHKD

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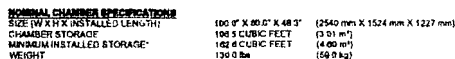
APP'D

DATE

BY

CHKD

NTS



SIZE (W X H X INSTALL LENGTH)	90"2" X 50"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*	106.7 CUBIC FEET	(3.06 m³)
WEIGHT	135.0 lbs	(61.2 kg)

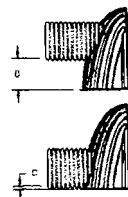
*ASSUMES 12" (305 mm) STONE ABOVE & (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS
12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

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

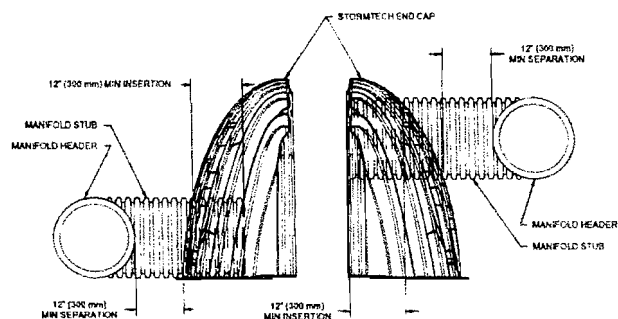
STUB END FOR PARTS NUMBERED ENDING IN "A"			
PART #	STUB	B	C
MC4500REP080T	0" (150 mm)	43.82" (1,091 mm)	—
MC4500REP080B	—	—	0.80" (20 mm)
MC4500REP080T	8" (203 mm)	42.82" (1,092 mm)	—
MC4500REP080B	—	—	1.57" (40 mm)
MC4500REP080T	10" (254 mm)	38.37" (975 mm)	—
MC4500REP080B	—	—	1.37" (34 mm)
MC4500REP012T	12" (305 mm)	35.96" (912 mm)	—
MC4500REP012B	—	—	1.52" (39 mm)
MC4500REP015T	15" (375 mm)	32.72" (833 mm)	—
MC4500REP015B	—	—	1.72" (44 mm)
MC4500REP018T	18" (450 mm)	29.35" (740 mm)	—
MC4500REP018B	—	—	1.89" (48 mm)
MC4500REP024T	24" (600 mm)	23.05" (585 mm)	—
MC4500REP024B	—	—	2.25" (57 mm)
MC4500REP030B	30" (750 mm)	22" (559 mm)	2.95" (75 mm)
MC4500REP030T	30" (750 mm)	22" (559 mm)	3.25" (83 mm)
MC4500REP036B	36" (900 mm)	20" (508 mm)	3.50" (90 mm)

NOTE ALL DIMENSIONS ARE NOMINAL

CUSTOM PRECURED 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 16" (250 mm). THE INVERT LOCATION IN COLUMBIA ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

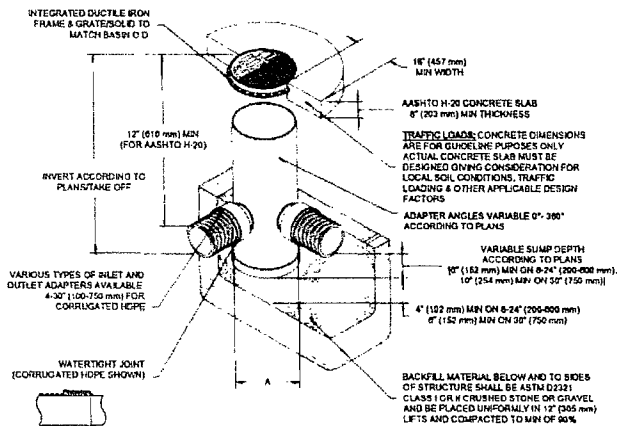


N75



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

NYLOPLAST DRAIN BASIN NTS

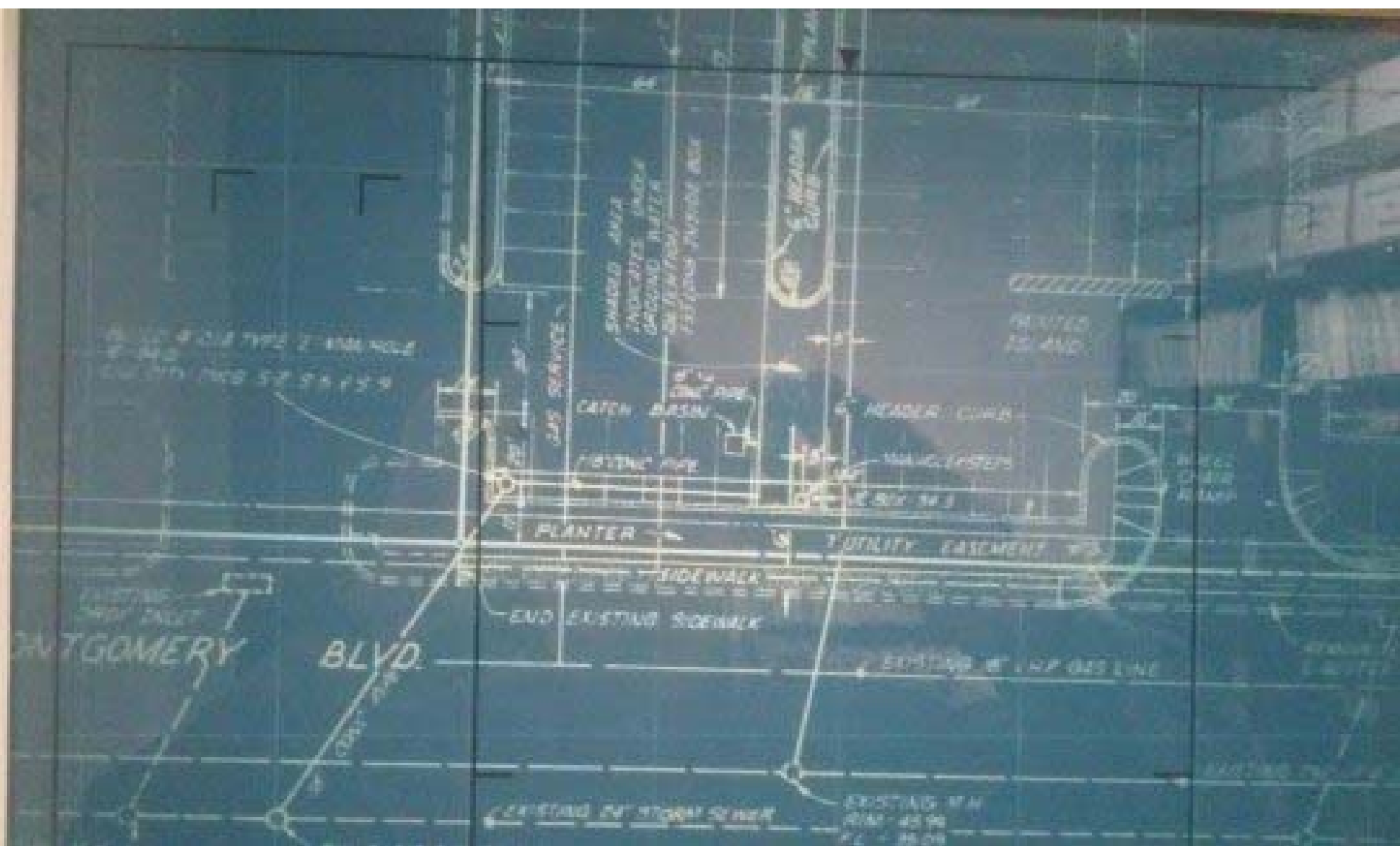


NOTES

1. 6-32\"/>

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (203 mm)	2080AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (254 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (305 mm)	2612AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2915AG	PEDESTRIAN AASHTO H-16	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (457 mm)	2618AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (609 mm)	2624AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (762 mm)	2030AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

SAFCA & STARBUCKS		ALBUQUERQUE, NM	
DATE: 3/31/15	DRAWN: MCM	PROJECT # 84381	CHECKED: KAP
4440 TRULAN BLVD ALBUQUERQUE, NM 87113 (505) 263-1111 www.nyloplast-us.com			
4440 TRULAN BLVD ALBUQUERQUE, NM 87113 (505) 263-1111 www.ads-us.com			
SHEET 6 OF 6			



ANNUAL REPORT

1999

THOMAS CHRISTIAN

LEADER & PRESIDENT

1999-2000

RECEIVED

APR 23 1999

OFFICE OF THE SECRETARY

FORWARDED BY:

THE SECRETARY OF THE
UNITED STATES OF AMERICA
WASHINGTON, D.C. 20540

RECEIVED BY:

THE SECRETARY OF THE
UNITED STATES OF AMERICA
WASHINGTON, D.C. 20540



THOMAS CHRISTIAN
LEADER & PRESIDENT
1999-2000

DEVELOPED CONDITIONDetained Runoff

8 max. depth = 8 ft / 6 yr. undev.
 10 yr. dev. direct

Q max. allowable = 5.5 - 0.8 = 4.7 cfs

Orifice $4.7 = A(0.6)\sqrt{2gd}$

$A = 0.35 \text{ ft}^2$

dia = 8" max.

Size Orifice to make max. use of basin.

Runoff to Basin

$= (121,713) (\text{Rainfall}/12) = 10,143 \text{ Rainfall}$

Incremental Outflow

$= (0.6 A \sqrt{2gd}) t$ where A = orifice x-sectional area, ft^2
 d = head on orifice, ft
 t = time, sec.

Use 5 3/4" Ø Orifice

Time	Rainfall	Runoff Volume	Storage Depth	Incram. Outflow	Accum. Outflow	Storage
------	----------	---------------	---------------	-----------------	----------------	---------

existing shopping center and all minor flows will be allowed to flow directly to Montgomery Boulevard. Parking lot swales will direct the flow to a catch basin and underground detention basin before entering (through a controlled outlet) the City storm sewer system. The detention basin is sized for the difference in volume between the 100 year, 6 hour, natural and developed conditions. The controlled outlet is sized such that the peak outflow rate is less than the 5 year natural runoff rate.

CONCLUSION

existing shopping center and all other flows will be allowed to flow directly to Montgomery Boulevard. Parking lot swales will direct the flow to a catch basin and underground detention basin before entering (through a controlled outlet) the City storm sewer system. The detention basin is sized for the difference in volume between the 100 year 5 hour natural and developed conditions. The controlled outlet is sized such that the peak outflow rate is less than the 5 year natural runoff rate.

CONCLUSION

Development of the site will significantly reduce present runoff rates from the tract. Peak outflow after development for the 100 year storm will be less than one-half the peak outflow from the 5 year storm prior to development. This is accomplished through siting of the controlled outlet to make maximum use of the regulated volume provided.



F22/D2

TWO PLANS

NO DOCUMENTS

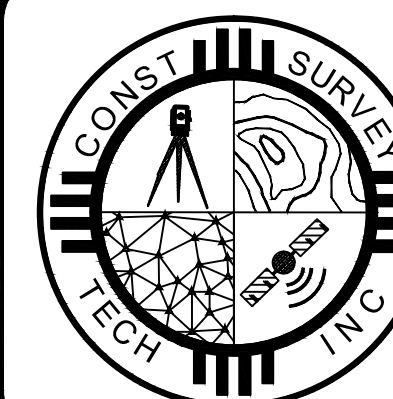
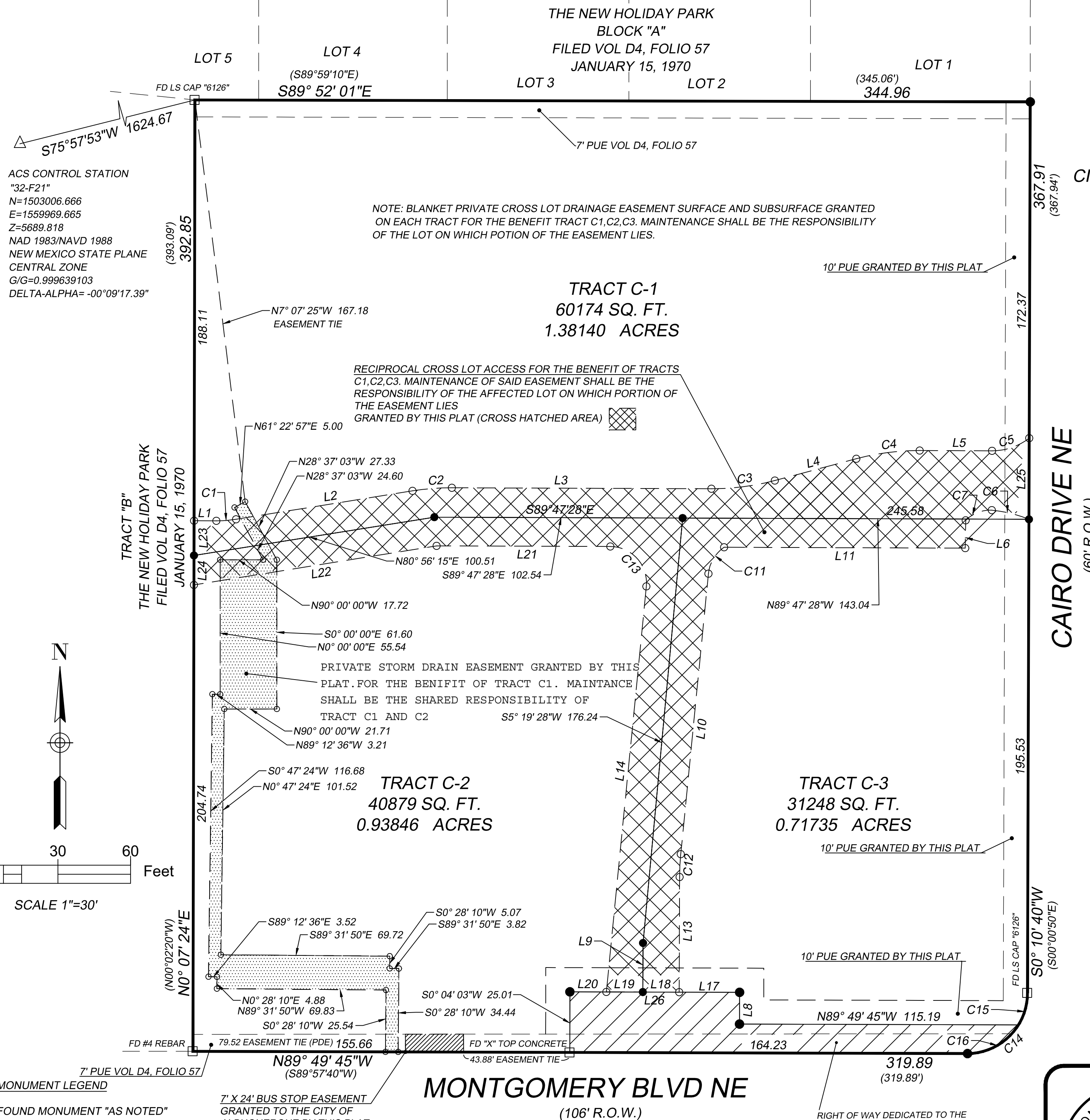
SUBDIVISION PLAT OF TRACTS C-1, C-2 AND C-3 THE NEW HOLIDAY PARK

BEING A RE-PLAT OF
TRACT "C"
THE NEW HOLIDAY PARK
PROJECTED SECTION 34, T 11 N, R 4 E, N.M.P.M.
ELENA GALLEGOS LAND GRANT
CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO
JANUARY 2015

LINE TABLE		
Line #	Length	Direction
L1	9.21	N89° 47' 28"W
L2	73.81	S80° 51' 07"W
L3	107.19	N89° 47' 28"W
L4	34.82	S75° 02' 24"W
L5	29.89	N89° 47' 28"W
L6	11.50	S0° 53' 18"W
L8	13.10	S0° 05' 09"W
L9	20.26	S0° 12' 32"W
L10	116.38	S5° 38' 08"W
L11	99.60	S89° 47' 28"E
L13	47.54	S0° 12' 32"W
L14	168.29	N5° 38' 08"E
L17	24.94	N89° 49' 45"W
L18	15.01	N89° 49' 45"W
L19	15.07	N89° 49' 45"W

LINE TABLE		
Line #	Length	Direction
L20	15.04	S89° 49' 45"E
L21	71.75	S89° 47' 28"E
L22	101.52	S80° 51' 07"W
L23	14.37	S3° 03' 21"E
L24	12.16	S0° 07' 24"W
L25	33.52	S0° 10' 40"W
L26	70.07	N89° 49' 45"W

CURVE TABLE					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	8.17	50.00	9°21'24"	N85° 31' 49"E	8.16
C2	16.33	100.00	9°21'24"	S85° 31' 49"W	16.31
C3	26.47	100.00	15°10'08"	N82° 37' 28"E	26.40
C4	26.47	100.00	15°10'08"	S82° 37' 28"W	26.40
C5	16.52	25.06	37°46'27"	N71° 10' 46"E	16.23
C6	15.87	55.34	16°26'01"	N76° 08' 39"W	15.82
C7	11.90	14.56	46°50'27"	S68° 45' 13"W	11.57
C11	13.09	15.00	49°58'52"	S30° 37' 34"W	12.67
C12	9.47	100.00	5°25'37"	S2° 55' 20"W	9.47
C13	24.98	15.00	95°25'37"	N42° 04' 40"W	22.19
C14	39.15	25.00	89°42'50"	S44° 38' 08"W	35.27
C15	13.94	25.00	31°57'05"	N15° 45' 16"E	13.76
C16	25.20	25.00	57°45'44"	N60° 36' 41"E	24.15



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