CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director

Mayor Timothy M. Keller

September 28, 2018

David Soule, P.E.
Rio Grande Engineering
PO Box 93924
Albuquerque, NM 87199

RE: **Kidz Academy**
McMahon and Fineland NW
Grading Plan Stamp Date: 9/25/18
Drainage Report Stamp Date: 2/20/18
Hydrology File: A11D016

Dear Mr. Soule,

Based on the submittal received on 9/28/18, the Grading Plan and Drainage Report are approved for Building Permit.

Prior to Certificate of Occupancy (For Information):

1. Engineer's Certification, per the DPM Chapter 22.7: *Engineer's Certification Checklist For Non-Subdivision* is required.
2. The new ponds will need to be certified (along with the rest of the site). Once certified, the City can release the previous covenant on the temporary retention pond (not constructed).
3. City acceptance and close-out of the public Work Order will be required, unless financial guarantee has been posted.

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: kidz academy Building Permit #:_____ Hydrology File #: A11D16

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

Legal Description: lot A1A AND A1B FINELAND SUBDIVISION

City Address: NORTHWEST CORNER OF MCMAHON AND FINELAND

Applicant: KEITH GRIEGO Contact: _____

Address: _____

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

Other Contact: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924 ALB NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: david@riograndeengineering.com

TYPE OF DEVELOPMENT: ___ PLAT ___ RESIDENCE ___ DRB SITE X ADMIN SITE

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

___ TRAFFIC/ TRANSPORTATION

TYPE OF SUBMITTAL:

___ ENGINEER/ARCHITECT CERTIFICATION

___ PAD CERTIFICATION

___ CONCEPTUAL G & D PLAN

X GRADING PLAN

___ DRAINAGE REPORT

___ DRAINAGE MASTER PLAN

___ FLOODPLAIN DEVELOPMENT PERMIT APPLIC

___ ELEVATION CERTIFICATE

___ CLOMR/LOMR

___ TRAFFIC CIRCULATION LAYOUT (TCL)

___ TRAFFIC IMPACT STUDY (TIS)

___ STREET LIGHT LAYOUT

___ OTHER (SPECIFY) _____

___ PRE-DESIGN MEETING?

IS THIS A RESUBMITTAL?: X Yes ___ No

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY

___ PRELIMINARY PLAT APPROVAL

___ SITE PLAN FOR SUB'D APPROVAL

___ SITE PLAN FOR BLDG. PERMIT APPROVAL

___ FINAL PLAT APPROVAL

___ SIA/ RELEASE OF FINANCIAL GUARANTEE

___ FOUNDATION PERMIT APPROVAL

___ GRADING PERMIT APPROVAL

___ SO-19 APPROVAL

___ PAVING PERMIT APPROVAL

___ GRADING/ PAD CERTIFICATION

___ WORK ORDER APPROVAL

___ CLOMR/LOMR

___ FLOODPLAIN DEVELOPMENT PERMIT

___ OTHER (SPECIFY) _____

DATE SUBMITTED: _____ By: _____

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED:_____

FEE PAID:_____

EROSION CONTROL NOTES:

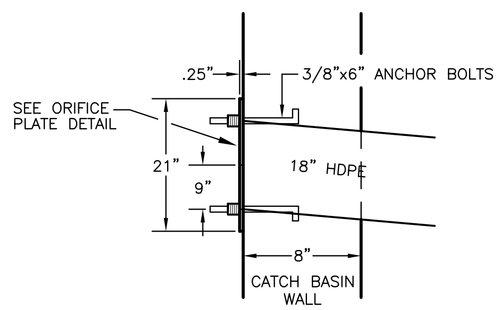
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.

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.

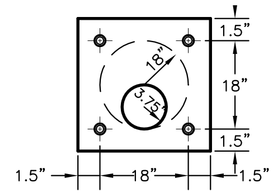
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

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

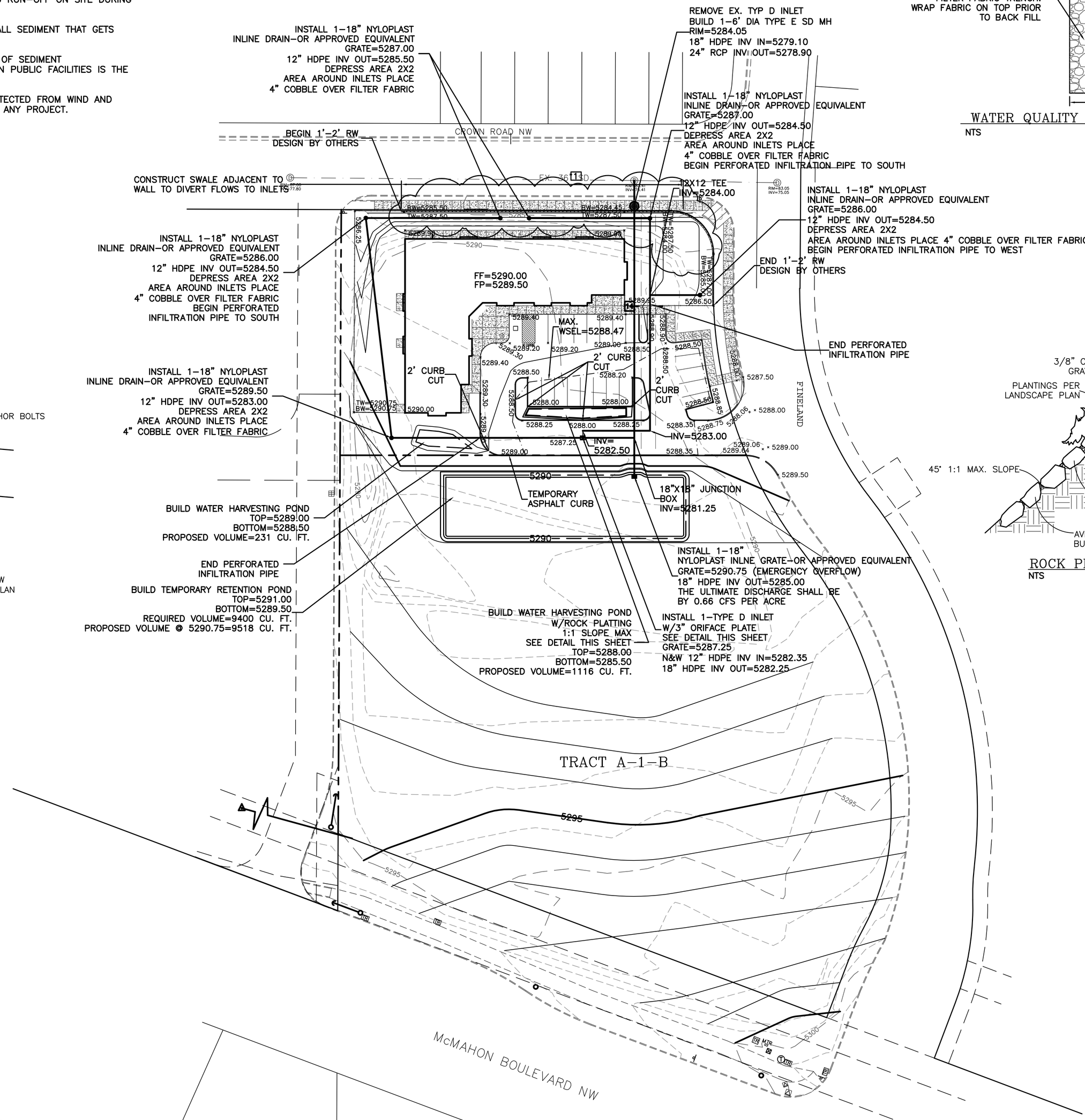


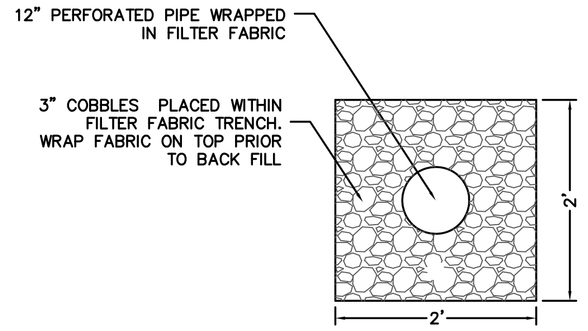
DETAIL A

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

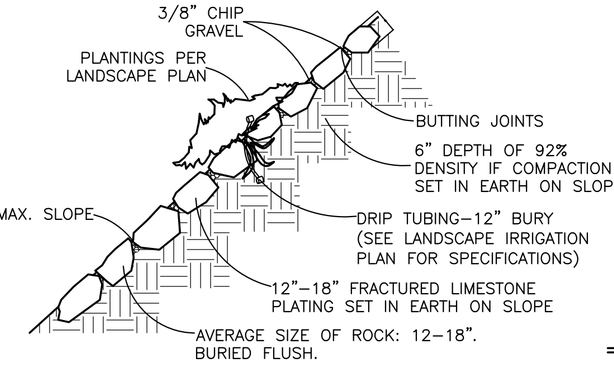


TYP. ORIFICE PLATE DETAIL
N.T.S.

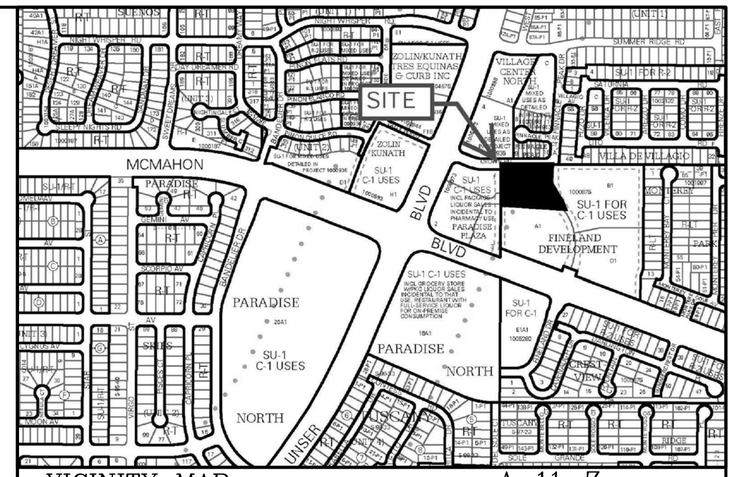




WATER QUALITY INFILTRATION PIPE DETAIL
NTS



ROCK PLATING DETAIL
NTS



VICINITY MAP: A-11-Z

FIRM MAP: FM35001C0104H

LEGAL DESCRIPTION:

PARCEL A-1, FINELAND DEVELOPMENT

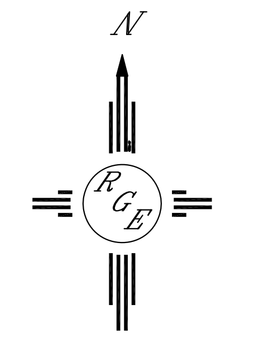
NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL CURB AND GUTTER TO 6" HEADER UNLESS OTHERWISE NOTED.
3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.
4. ANY CURBS OR PAVEMENT NEGATIVELY IMPACTED BY CONSTRUCTION ACTIVITY SHALL BE REPLACED TO MATCH EXISTING CONDITIONS.
5. ALL SITE WORK SHALL CONFORM TO CITY OF ALBUQUERQUE STANDARDS FOR PUBLIC WORKS CONSTRUCTION EDITION 9

LEGEND

- EXISTING CONTOUR (5414)
- EXISTING INDEX CONTOUR (5415)
- PROPOSED CONTOUR (5414)
- PROPOSED INDEX CONTOUR (5415)
- SLOPE TIE
- EXISTING SPOT ELEVATION (× 4048.25)
- PROPOSED SPOT ELEVATION (× 4048.25)
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- PROPOSED RETAINING WALL (SEE STRUCTURAL DRAWINGS)
- 6" CONCRETE OVER 4" AGGREGATE BASE COURSE, WITH 12" SUBGRADE PREP
- REMOVE AND REPLACE EX.SW PER COA STD DWG #2430

FOR REFERENCE ONLY



GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

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.

NO.	DATE	DESCRIPTION	BY
1	9-11-18	TOP OF WALL ADJUSTMENT	WJ

ENGINEER'S SEAL

DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER

9/25/18

DAVID SOULE P.E. #14522

KIDZ ACADEMY

GRADING AND DRAINAGE PLAN

Rio Grande Engineering
1606 CENTRAL AVENUE SE SUITE 201
ALBUQUERQUE, NM 87106
(505) 872-0999

DRAWN BY WCWJ

DATE 2-20-18

21801-LAYOUT-9-25-17

SHEET #

JOB # 21801

uquerque Planning Department

p – Development and Building Services

9/20/2018 Issued By: E08375 364065

383 **Category Code 970**

83, Review:Drain Plan-Lomr-Traffic Impact

EMY

Agent / Contact
RIO GRANDE ENGINEERING
DAVID SOULE
PO BOX 93924
ALBUQUERQUE NM 87199

DAVID@RIOGRANDEENGINEERING.COM

$160.00

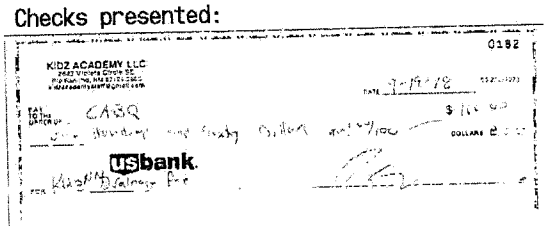
AL: $160.00

Date: 9/20/2018
Office: ANNEX Cashier:TRSMAB
Batch: 9628 Tran #: 19

REV
12:36 PM Station ID
Office ANNEX
Receipt #: 00520967
Permit: 2018060383
Trans Amt: $160.00

0909 REV Actions	$160.00
Payment Total:	$160.00
Transaction Total:	$160.00
Check Tendered :	$160.00

Checks presented:



Thank you for your payment.
Have a nice day!

City of Albuquerque Treasury
Date:9/20/2018 Office:ANNEX
Stat ID: Cashier:TRSMAB
Batch: 9628 Trans #:19
Permit: 2018060383
Receipt Num 00520967
Payment Total:$160.00
0909 REV Actions $160.00
Check Tendered : $160.00

David Soule

From: Keith Griego [kidzacademystaff@gmail.com]
Sent: Tuesday, February 20, 2018 11:39 AM
To: David Soule
Cc: Jack Clifford; Phil Ward
Subject: Re: Permission to grade on Pacel A-1-A and A-1-B Fineland Development

David,

Keith Griego owner of Kidz Academy gives permission for grading on the city approved plan per file A11D016.

Thanks,

Keith

On Tue, Feb 20, 2018 at 7:09 AM, David Soule <david@riograndeengineering.com> wrote:

> The purpose of this email is to confirm the owners of Parcel A-1-A(Keith Griego) and Parcel A-1-B(Jack Clifford and Phil Ward) allow grading to be performed on their respective lots based upon the city approved grading plan
>
> as shown in drainage file A11D016. A response back with affirmation is requested and will be included within the city drainage file.

David Soule

From: Jack Clifford [jackc3909@gmail.com]
Sent: Tuesday, February 20, 2018 12:01 PM
To: David Soule; Keith Griego; Phil Ward
Subject: Re: Permission to grade on Pacel A-1-A and A-1-B Fineland Development

Hi David, McMahon Tenancy in Common gives permission for the grading of our property per the attached grading plan sent to us.

Jack

On Tue, Feb 20, 2018 at 10:41 AM, David Soule <david@riograndeengineering.com> wrote:

Academy please plot one out. Jack Clifford will pick up
Jack Academy is located on San Mateo north of Alameda
David

From: Jack Clifford [mailto:jackc3909@gmail.com]
Sent: Tuesday, February 20, 2018 10:31 AM
To: David Soule
Subject: Re: Permission to grade on Pacel A-1-A and A-1-B Fineland Development

Hi David, could print me a copy of the grading plan, and I can come by to pick it up. Let know where your office is located..I'm just waiting for Phil to consent to this action, as a soon as he responds, I will let you know.

Jack

On Tue, Feb 20, 2018 at 7:09 AM, David Soule <david@riograndeengineering.com> wrote:

The purpose of this email is to confirm the owners of Parcel A-1-A(Keith Griego) and Parcel A-1-B(Jack Clifford and Phil Ward) allow grading to be performed on their respective lots based upon the city approved grading plan

as shown in drainage file A11D016. A response back with affirmation is requested and will be included within the city drainage file.

--
Jack J. Clifford
The Grayland Corporation
9004 Menaul Blvd NE, Ste 20
Albuquerque NM 87112
505-881-0900 phone
505-292-7695 fax

--
Jack J. Clifford
The Grayland Corporation
9004 Menaul Blvd NE, Ste 20
Albuquerque NM 87112
505-881-0900 phone
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2/20/2018

REVISED
DRAINAGE REPORT

For

KIDZ ACADEMY
Parcel A1A and A1B Fineland Subdivision

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

FEBRUARY 2018

David Soule P.E. No. 14522

TABLE OF CONTENTS

Appendix

Map

Site Grading and Drainage Plan

PURPOSE

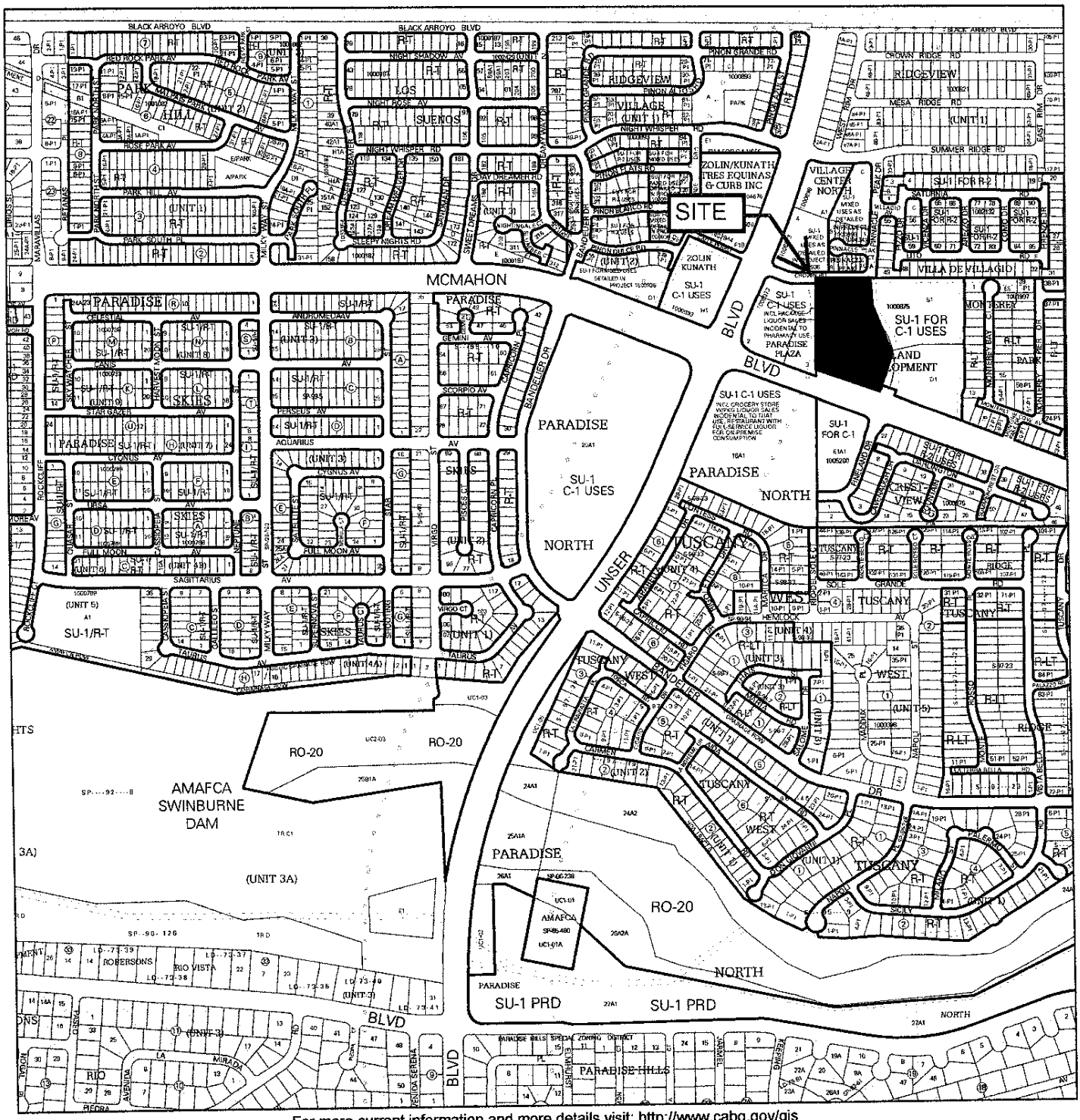
The purpose of this report is to provide the Drainage Management Plan for the subdivision of a 4.33 acre tract and the construction of a Kidz Daycare building with associated parking lot and playground on the northern 1.03 acres. The southern portion will be mass graded to balance the site and allow for future development. 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 4.33 -acre parcel of land located on the west side of Fineland drive between McMahon and Crown road. The legal description of this site is tract A1A and A1B Fineland Subdivision. As shown on FIRM map35001C0104H, the entire site is located within Flood Zone X. The site is bound on all sides by roadways and not impacted by upland flows. The site is an undeveloped site. The site free discharges 5.63 cfs to the intersection of Crown road and Fineland. The site is located within basin O as shown in the area drainage plan (A11D009). The proposed improvements include the construction of a day care with parking and play ground areas on tract A1A. The remaining A1B will not be developed at this time. This site must conform to the 1.3 cfs per acre assigned within the master drainage plan and discharge to the existing storm drain system within Crown. The site must manage the first flush volume onsite.

EXISTING CONDITIONS

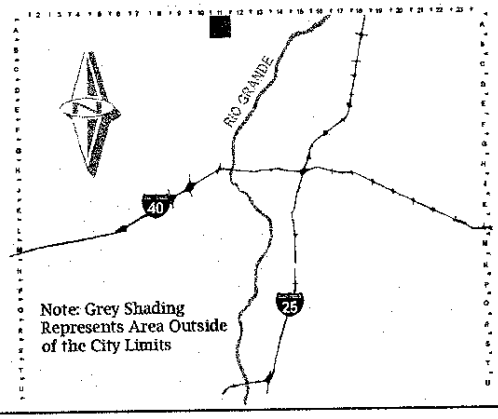
The site is currently undeveloped. The site currently discharges native flow of 5.63 or 1.3 cfs per acre to the intersection of crown and Fineland. The flows are captured by inlets north of the intersection and conveyed north to the Black Arroyo. Due to being higher than the surrounding roadways, the site is not impacted by upland flows.



For more current information and more details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System

Map amended through: 2/4/2010



Note: Grey Shading Represents Area Outside of the City Limits

Zone Atlas Page:

A-11-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 750 1,500 Feet

PROPOSED CONDITIONS

The proposed improvements consist of new building with exterior sand playgrounds with a parking area within tract A1A. The southerly tract A1B will not be developed at this time, but allowance for its future development is provided and it will be mass graded with this project. The proposed site development will contain 4 basins. Basin A contains the playground areas around the building. This basin generates 0.69 cfs, which is captured by area drains within the play ground area. The inlets are conveyed to a single D inlet located within the parking lot by a private 12" storm drain. Basin B contains the building and parking lot. This basin is collected by a single type D inlet located within the parking lot. This basin discharges 3.00 cfs. The parking area will sheet flow to the Single D inlet. The north and west portion of the roof is directed to this inlet via an underground storm drain shared with basin A. The outlet flow for basins A and B are metered by the introduction of an orifice plate with a 3.75" opening placed at the outlet of the D inlet. The parking area acts as the detention basin. As shown in appendix B, this pond was modeled using AHYMO and the resultant peak out fall will be.64 cfs with a maximum water surface elevation of 5288.48. In the event of clogging the driveway to Fineland serves as the emergency overflow. The inlet is connected to an 18" storm drain which will be connected to an existing manhole at Crown. Basin C contains the undeveloped tract A1B. This basin generates 7.49 cfs and 9,365.4 CF. The undeveloped flow from this basin is captured by an interim retention pond that will retain the 100-year 10-day volume. The onsite storm drain extends to this pond and acts as an emergency overflow and will be utilized for the metered developed flow upon development of the lot. The future development must maintain a peak discharge of 2.15 cfs. Basin D contains the existing surrounding road way This basin generated 2.67 cfs which drains to the intersection of Fineland and Crown were he sheet flows north and is captured by city maintained inlets. The combined flow leaving this site is 3.31 in the proposed conditions and 5.46 cfs in the ultimate condition which is less than the allowed rate of 5.63 cfs or 1.3 cfs per acre. The developed portion will retain 1116 cf within the parking lot landscape pond and the onsite storm drain will

provide infiltration volume of 248 cf within the system, which is greater than the 776 cubic feet required for the first flush requirement. A portion of the parking driveway will discharge 114 cf to the roadways without being treated.

SUMMARY AND RECOMMENDATIONS

This project is located within basin O of the area drainage plan (A11D009). The site has a total peak discharge to the city maintained facilities of 5.46 cfs (1.26 cfs per acre). This is less than the allowed discharge rate of 5.63 cfs (1.3 cfs per acre). The first flush volume of 776 cubic feet is retained onsite. The plan allows for the future development of the parcel A1B. The onsite storm drain was designed to convey the current and ultimate flow. The ponds will overflow in an emergency or clogging situation via the parking lot discharging to Fineland. The development of this site will not negatively impact the upstream nor down stream facilities. Since the work area does exceed 1 acre, erosion and sediment Control Plan shall be required prior to any construction activity.

APPENDIX A

SITE HYDROLOGY

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.

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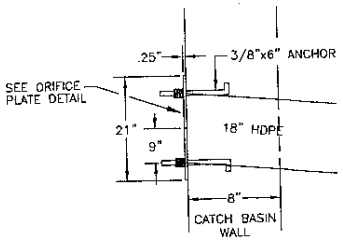

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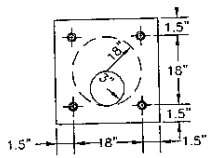
TO BE INSTALLED @ THE OUTFLOW OF THE CATCH BASINS (SEE THIS PLAN FOR ORIFICE PLATE SIZES)



TYP. ORIFICE PLATE DETAIL

N.T.S.

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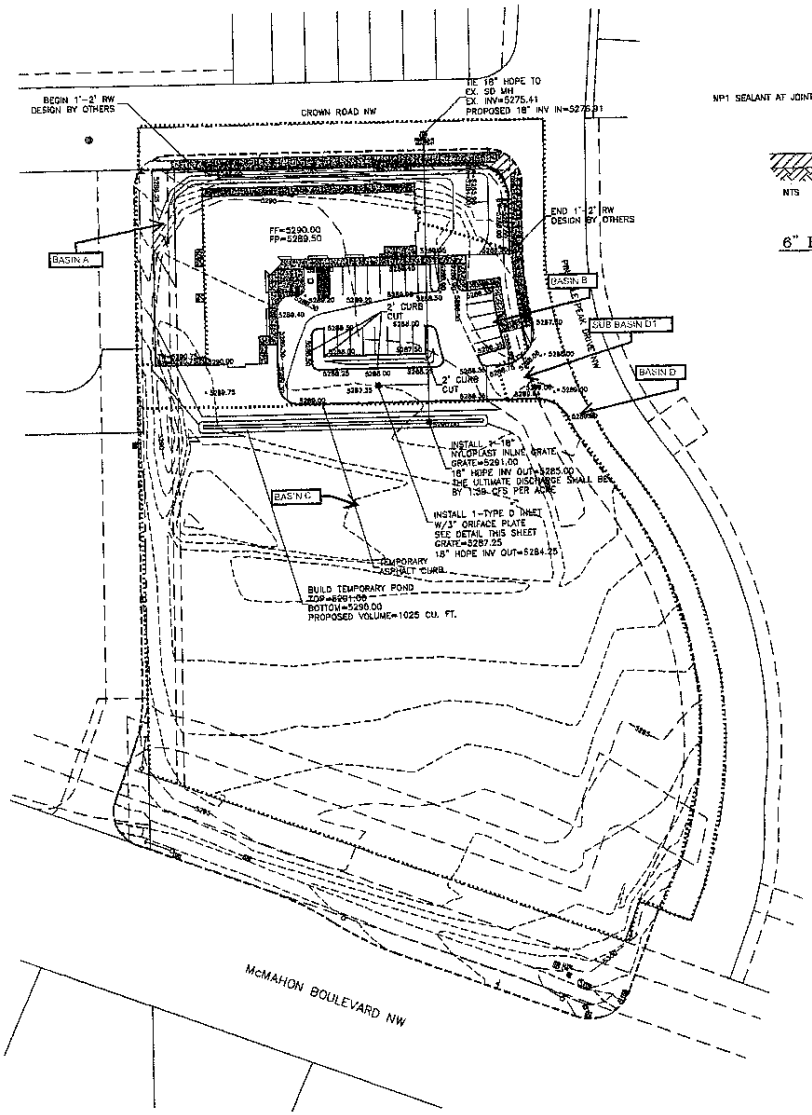
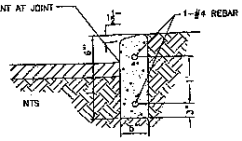
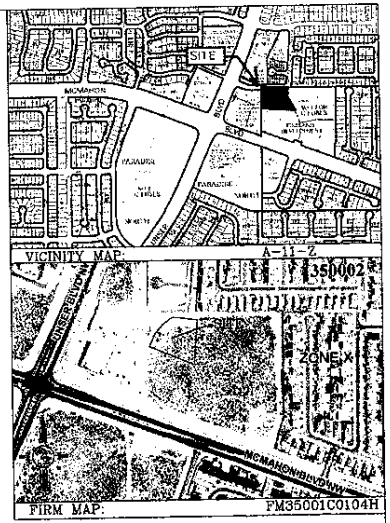
DRAINAGE NARRATIVE

THIS SITE IS LOCATED WITHIN DRAINAGE BASIN G, WITHIN THE GOVERNING DRAINAGE PLAN (ALID009). THIS SITE WILL RESTRICT THE FLOW BY THE USE OF A PARKING LOT DETENTION POND. THE OUTFALL IS RESTRICTED BY THE USE OF AN ORIFICE PLATE. THE FIRST FLUSH VOLUME WILL BE RETAINED ONSITE WITHIN THE LANDSCAPE ISLAND. FUTURE DEVELOPMENT SHALL DRAIN TO THE PROPOSED 18" STORM DRAIN AND WILL BE RESTRICTED TO 1.3 CFS PER ACRE





6" HEADER CURB DETAIL



LEGAL DESCRIPTION:

PARCEL A-1, FINELAND DEVELOPMENT

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
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5. ALL SITE WORK SHALL CONFORM TO CITY OF ALBUQUERQUE STANDARDS FOR PUBLIC WORKS CONSTRUCTION EDITION 9

LEGEND

- EXISTING CONTOUR
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- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
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- 6" CONCRETE OVER 4" AGGREGATE BASE COURSE, WITH 12" SUBGRADE PREP
- REMOVE AND REPLACE EXI.SW PER COA STD DWG #2430

N

GRAPHIC SCALE

40 20 0 20 40

SCALE: 1"=40'

ENGINEER'S SEAL

DAVID SOULE P.E. #14522

10/20/17

DAVID SOULE P.E. #14522

KIDZ ACADEMY

GRADING AND DRAINAGE PLAN

Rio Grande Engineering

1606 CENTRAL AVENUE SE SUITE 201 ALBUQUERQUE, NM 87106 (505) 573-0989

DRAWN BY WDKJ

DATE 9-25-17

SHEET #

JOB # 21801

Weighted E Method

Existing Developed Basins

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)	100-Year, 6-hr. Weighted E (ac-ft)	100-Year, 6-hr. Volume (ac-ft)	100-Year, 6-hr. Flow cfs	10-day Volume (ac-ft)
BASIN D	26615	0.611	0%	0	0.0%	0.000	0.0%	0	100%	0.611	1.970	0.100	2.67	0.182
SUBBASIN D1	692	0.016	0%	0	0.0%	0.000	0.0%	0	100%	0.016	1.970	0.003	0.07	0.005
BASIN A	12131	0.278	0%	0	64.0%	0.178	18.0%	0.05013	15%	0.042	0.903	0.021	0.69	0.027
BASIN B	32801	0.753	0%	0	7.0%	0.053	15.0%	0.11295	78%	0.587	1.732	0.109	3.00	0.187
BASIN C	117128	2.689	0%	0	10.0%	0.269	90.0%	2.42	0%	0.000	0.958	0.215	7.49	0.215
	44932.00	1.03			22%	0.23	16%	0.16	61%	0.63				

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

FIRST FLUSH 776 CF

DRIVEWAY NOT CAPTURED SUB BASIN D1 114 CF

Where for 100-year, 6-hour storm (zone 1)

Ea= 0.44
Eb= 0.67
Ec= 0.99
Ed= 1.97

Qa= 1.29
Qb= 2.03
Qc= 2.87
Qd= 4.37

ALLOWED DISCHARGE=5.63 CFS
DISCHARGE FROM STREET/DRIVE=2.67
REMAINING ALLOWED=2.96 CFS
ONSITE ALLOWABLE DISCHARGE=.79 CFS PER ACRE
TRACT A1A=.81 CFS
TRACT A1B=2.15 CFS

APPENDIX B

HYDRAULIC MODELING AND CALCULATIONS

DROP INLET CALCULATIONS

INLET	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
INLET A	SINGLE	3.84	2.88	0.0243	1.5

ORIFICE EQUATION

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
18HDPE	18	4	1.77	0.375	18.26	4.18	2.37
12HDPE	12	0.7	0.79	0.25	2.59	1.32	1.68

Manning's Equation:

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

A = Area
R = D/4
S = Slope
n = 0.015

VOLUME CALCULATIONS

PARKING LOT POND

		ACTUAL ELEV.	DEPTH (FT)	AREA SF	VOLUME PER UNIT	VOLUME CUMULATIVE	VOLUME AC-FT	Q (CFS)
	inlet bottim	84.25	0	4	4	4	0.000	
OUTLET	outfall	85.50	0.00	4.00	5	9	0.000	0.00
		86.50	1.00	4.00	4.0000	13	0.001	0.37
		87.50	2.00	332.00	168.0000	181	0.004	0.52
	POND OVERFLOW	88.00	2.50	2346.00	669.5000	850.5	0.020	0.58
		88.50	3.00	8462.00	2702.0000	3552.5	0.082	0.64
		88.75	3.25	9785.00	2280.8750	5833.375	0.134	0.67

outlet at 87.25

Orifice Equation

Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	3.75
Area (ft^2)=	0.076699039
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

```
*S      AHYMO -  DETENTION-KIDZ ACADEMY
*S             POND ROUTING

START                TIME=0.0  PUNCH CODE=0

RAINFALL             TYPE=2
                     QUARTER=0.0    ONE= 1.87 IN
                     SIX=2.20 IN   DAY= 2.66 IN   DT = 0.05 HR



COMPUTE NM HYD       ID=1  HYD NO=101  DA= .0016094 SQ MI
                     PER A=0  PER B=22 PER C=16  PER D=61
                     TP=-.142  MASSRAIN=-1

PRINT HYD            ID=1  CODE=3

* 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             0.000          85.50
                        0.37             0.001          86.50

                        0.52             0.004          87.50
                        0.58             0.020          88.00
                        0.64             0.082          88.50
                        0.67             0.134          88.75



FINISH
```

AHYMO.OUT

```
       AHYMO PROGRAM (AHYMO-S4)                        - Version: S4.01a - Rel: 01a
            RUN DATE (MON/DAY/YR) = 02/08/2018
            START TIME (HR:MIN:SEC) = 08:59:24      USER NO.=
RioGrandeSingleA41963517
            INPUT FILE = ents and Settings\Owner\Desktop\2017
jobs\17187-kidz\drainage\pondrout011718.txt


    *S      AHYMO -  DETENTION-KIDZ ACADEMY
    *S              POND ROUTING

    START                TIME=0.0   PUNCH CODE=0


    RAINFALL             TYPE=2
                         QUARTER=0.0     ONE= 1.87 IN
                         SIX=2.20 IN    DAY= 2.66 IN    DT = 0.05 HR



                  24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
                  DT =   0.050000 HOURS        END TIME =    24.000002 HOURS
                    0.0000  0.0022  0.0045  0.0069  0.0096  0.0123  0.0154
                    0.0197  0.0264  0.0336  0.0412  0.0494  0.0578  0.0664
                    0.0753  0.0844  0.0946  0.1052  0.1168  0.1387  0.1657
                    0.2020  0.2430  0.2937  0.3614  0.4375  0.5689  0.7733
                    1.1234  1.3695  1.5635  1.6610  1.7465  1.8079  1.8568
                    1.8994  1.9306  1.9592  1.9828  1.9979  2.0087  2.0183
                    2.0273  2.0352  2.0426  2.0499  2.0568  2.0625  2.0659
                    2.0692  2.0724  2.0754  2.0784  2.0813  2.0842  2.0870
                    2.0896  2.0923  2.0949  2.0974  2.0999  2.1023  2.1046
                    2.1069  2.1092  2.1115  2.1136  2.1158  2.1179  2.1199
                    2.1220  2.1240  2.1260  2.1280  2.1299  2.1318  2.1337
                    2.1356  2.1374  2.1392  2.1411  2.1428  2.1446  2.1463
                    2.1481  2.1498  2.1514  2.1531  2.1548  2.1564  2.1580
                    2.1596  2.1612  2.1628  2.1643  2.1658  2.1674  2.1689
                    2.1704  2.1718  2.1733  2.1747  2.1762  2.1776  2.1790
                    2.1804  2.1818  2.1832  2.1845  2.1859  2.1872  2.1885
                    2.1899  2.1912  2.1924  2.1937  2.1950  2.1963  2.1975
                    2.1988  2.2000  2.2013  2.2026  2.2038  2.2051  2.2064
                    2.2077  2.2089  2.2102  2.2115  2.2128  2.2141  2.2153
                    2.2166  2.2179  2.2192  2.2204  2.2217  2.2230  2.2243
                    2.2256  2.2268  2.2281  2.2294  2.2307  2.2319  2.2332
                    2.2345  2.2358  2.2371  2.2383  2.2396  2.2409  2.2422
                    2.2434  2.2447  2.2460  2.2473  2.2486  2.2498  2.2511
                    2.2524  2.2537  2.2549  2.2562  2.2575  2.2588  2.2601
                    2.2613  2.2626  2.2639  2.2652  2.2664  2.2677  2.2690
                    2.2703  2.2716  2.2728  2.2741  2.2754  2.2767  2.2779
                    2.2792  2.2805  2.2818  2.2831  2.2843  2.2856  2.2869
                    2.2882  2.2894  2.2907  2.2920  2.2933  2.2946  2.2958
                    2.2971  2.2984  2.2997  2.3009  2.3022  2.3035  2.3048
                    2.3061  2.3073  2.3086  2.3099  2.3112  2.3124  2.3137
                    2.3150  2.3163  2.3176  2.3188  2.3201  2.3214  2.3227
                    2.3239  2.3252  2.3265  2.3278  2.3291  2.3303  2.3316
                    2.3329  2.3342  2.3354  2.3367  2.3380  2.3393  2.3406
                    2.3418  2.3431  2.3444  2.3457  2.3469  2.3482  2.3495
                    2.3508  2.3521  2.3533  2.3546  2.3559  2.3572  2.3584
                    2.3597  2.3610  2.3623  2.3636  2.3648  2.3661  2.3674
                    2.3687  2.3699  2.3712  2.3725  2.3738  2.3750  2.3763
```

2.3776	2.3789	2.3802	2.3814	2.3827	2.3840	2.3853
2.3865	2.3878	2.3891	2.3904	2.3917	2.3929	2.3942
2.3955	2.3968	2.3980	2.3993	2.4006	2.4019	2.4032
2.4044	2.4057	2.4070	2.4083	2.4095	2.4108	2.4121
2.4134	2.4147	2.4159	2.4172	2.4185	2.4198	2.4210
2.4223	2.4236	2.4249	2.4262	2.4274	2.4287	2.4300
2.4313	2.4325	2.4338	2.4351	2.4364	2.4377	2.4389
2.4402	2.4415	2.4428	2.4440	2.4453	2.4466	2.4479
2.4492	2.4504	2.4517	2.4530	2.4543	2.4555	2.4568
2.4581	2.4594	2.4607	2.4619	2.4632	2.4645	2.4658
2.4670	2.4683	2.4696	2.4709	2.4722	2.4734	2.4747
2.4760	2.4773	2.4785	2.4798	2.4811	2.4824	2.4837
2.4849	2.4862	2.4875	2.4888	2.4900	2.4913	2.4926
2.4939	2.4952	2.4964	2.4977	2.4990	2.5003	2.5015
2.5028	2.5041	2.5054	2.5067	2.5079	2.5092	2.5105
2.5118	2.5130	2.5143	2.5156	2.5169	2.5182	2.5194
2.5207	2.5220	2.5233	2.5245	2.5258	2.5271	2.5284
2.5297	2.5309	2.5322	2.5335	2.5348	2.5360	2.5373
2.5386	2.5399	2.5412	2.5424	2.5437	2.5450	2.5463
2.5475	2.5488	2.5501	2.5514	2.5527	2.5539	2.5552
2.5565	2.5578	2.5590	2.5603	2.5616	2.5629	2.5642
2.5654	2.5667	2.5680	2.5693	2.5705	2.5718	2.5731
2.5744	2.5757	2.5769	2.5782	2.5795	2.5808	2.5820
2.5833	2.5846	2.5859	2.5872	2.5884	2.5897	2.5910
2.5923	2.5935	2.5948	2.5961	2.5974	2.5987	2.5999
2.6012	2.6025	2.6038	2.6050	2.6063	2.6076	2.6089
2.6102	2.6114	2.6127	2.6140	2.6153	2.6165	2.6178
2.6191	2.6204	2.6217	2.6229	2.6242	2.6255	2.6268
2.6280	2.6293	2.6306	2.6319	2.6332	2.6344	2.6357
2.6370	2.6383	2.6395	2.6408	2.6421	2.6434	2.6447
2.6459	2.6472	2.6485	2.6498	2.6510	2.6523	2.6536
2.6549	2.6562	2.6574	2.6587	2.6600		

COMPUTE NM HYD ID=1 HYD NO=101 DA= .0016094 SQ MI
PER A=0 PER B=22 PER C=16 PER D=61
TP=-.142 MASSRAIN=-1

*****WARNING***** SUM OF TREATMENT TYPES DOES NOT EQUAL 100 PERCENT OR TOTAL AREA

K = 0.077390HR TP = 0.142000HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 3.6752 CFS UNIT VOLUME = 0.9962 B = 526.28 P60 = 1.8700
AREA = 0.000992 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.128272HR TP = 0.142000HR K/TP RATIO = 0.903323 SHAPE CONSTANT, N = 3.922324
UNIT PEAK = 1.5225 CFS UNIT VOLUME = 0.9931 B = 349.96 P60 = 1.8700
AREA = 0.000618 SQ MI IA = 0.43684 INCHES INF = 1.07316 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=1 CODE=3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	4.950	0.0	9.900	0.0	14.850	0.0
0.150	0.0	5.100	0.0	10.050	0.0	15.000	0.0
0.300	0.0	5.250	0.0	10.200	0.0	15.150	0.0
0.450	0.0	5.400	0.0	10.350	0.0	15.300	0.0
0.600	0.0	5.550	0.0	10.500	0.0	15.450	0.0
0.750	0.0	5.700	0.0	10.650	0.0	15.600	0.0
0.900	0.0	5.850	0.0	10.800	0.0	15.750	0.0
1.050	0.2	6.000	0.0	10.950	0.0	15.900	0.0
1.200	0.4	6.150	0.0	11.100	0.0	16.050	0.0
1.350	1.1	6.300	0.0	11.250	0.0	16.200	0.0
1.500	3.8	6.450	0.0	11.400	0.0	16.350	0.0
1.650	2.5	6.600	0.0	11.550	0.0	16.500	0.0
1.800	1.2	6.750	0.0	11.700	0.0	16.650	0.0
1.950	0.6	6.900	0.0	11.850	0.0	16.800	0.0
2.100	0.4	7.050	0.0	12.000	0.0	16.950	0.0
2.250	0.2	7.200	0.0	12.150	0.0	17.100	0.0
2.400	0.1	7.350	0.0	12.300	0.0	17.250	0.0
2.550	0.1	7.500	0.0	12.450	0.0	17.400	0.0
2.700	0.0	7.650	0.0	12.600	0.0	17.550	0.0
2.850	0.0	7.800	0.0	12.750	0.0	17.700	0.0
3.000	0.0	7.950	0.0	12.900	0.0	17.850	0.0
3.150	0.0	8.100	0.0	13.050	0.0	18.000	0.0
3.300	0.0	8.250	0.0	13.200	0.0	18.150	0.0
3.450	0.0	8.400	0.0	13.350	0.0	18.300	0.0
3.600	0.0	8.550	0.0	13.500	0.0	18.450	0.0
3.750	0.0	8.700	0.0	13.650	0.0	18.600	0.0
3.900	0.0	8.850	0.0	13.800	0.0	18.750	0.0
4.050	0.0	9.000	0.0	13.950	0.0	18.900	0.0
4.200	0.0	9.150	0.0	14.100	0.0		

19.050	0.0	24.000	0.0				
	4.350	0.0	9.300	0.0	14.250	0.0	
19.200	0.0	24.150	0.0				
	4.500	0.0	9.450	0.0	14.400	0.0	
19.350	0.0	24.300	0.0				
	4.650	0.0	9.600	0.0	14.550	0.0	
19.500	0.0	24.450	0.0				
	4.800	0.0	9.750	0.0	14.700	0.0	
19.650	0.0						

RUNOFF VOLUME = 1.84975 INCHES = 0.1588 ACRE-FEET
PEAK DISCHARGE RATE = 3.78 CFS AT 1.500 HOURS BASIN AREA = 0.0016 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	0.000	85.50	
0.37	0.001	86.50	
0.52	0.004	87.50	
0.58	0.020		88.00
0.64	0.082	88.50	
0.67	0.134		88.75

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	85.50	0.000	0.00
0.15	0.00	85.50	0.000	0.00
0.30	0.00	85.50	0.000	0.00
0.45	0.00	85.50	0.000	0.00
0.60	0.00	85.50	0.000	0.00
0.75	0.00	85.50	0.000	0.00
0.90	0.01	85.52	0.000	0.01
1.05	0.18	85.86	0.000	0.13
1.20	0.43	86.50	0.001	0.37
1.35	1.13	87.51	0.004	0.52
1.50	3.78	88.06	0.028	0.59
1.65	2.48	88.34	0.062	0.62
1.80	1.16	88.45	0.076	0.63
1.95	0.65	88.47	0.079	0.64
2.10	0.35	88.46	0.077	0.64
2.25	0.21	88.42	0.072	0.63
2.40	0.14	88.38	0.067	0.63
2.55	0.07	88.33	0.060	0.62
2.70	0.04	88.27	0.053	0.61
2.85	0.03	88.21	0.046	0.61
3.00	0.01	88.15	0.039	0.60

3.15	0.01	88.10	0.032	0.59
3.30	0.01	88.04	0.025	0.58
3.45	0.01	87.92	0.017	0.57
3.60	0.01	87.71	0.011	0.54
3.75	0.01	87.50	0.004	0.52
3.90	0.01	85.61	0.000	0.04
4.05	0.01	85.52	0.000	0.01
4.20	0.01	85.52	0.000	0.01
4.35	0.01	85.52	0.000	0.01
4.50	0.01	85.52	0.000	0.01
4.65	0.01	85.52	0.000	0.01
4.80	0.01	85.52	0.000	0.01
4.95	0.01	85.53	0.000	0.01
5.10	0.01	85.53	0.000	0.01
5.25	0.01	85.53	0.000	0.01
5.40	0.01	85.53	0.000	0.01
5.55	0.01	85.53	0.000	0.01
5.70	0.01	85.54	0.000	0.01
5.85	0.01	85.54	0.000	0.01
6.00	0.02	85.54	0.000	0.02
6.15	0.02	85.54	0.000	0.02
6.30	0.02	85.54	0.000	0.02
6.45	0.02	85.54	0.000	0.02
6.60	0.02	85.54	0.000	0.02
6.75	0.02	85.54	0.000	0.02
6.90	0.02	85.54	0.000	0.02
7.05	0.02	85.54	0.000	0.02
7.20	0.02	85.54	0.000	0.02
7.35	0.02	85.54	0.000	0.02
7.50	0.02	85.54	0.000	0.02
7.65	0.02	85.54	0.000	0.02
7.80	0.02	85.54	0.000	0.02
7.95	0.02	85.54	0.000	0.02
8.10	0.02	85.54	0.000	0.02
8.25	0.02	85.54	0.000	0.02

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
8.40	0.02	85.54	0.000	0.02
8.55	0.02	85.54	0.000	0.02
8.70	0.02	85.54	0.000	0.02
8.85	0.02	85.54	0.000	0.02
9.00	0.02	85.54	0.000	0.02
9.15	0.02	85.54	0.000	0.02
9.30	0.02	85.54	0.000	0.02
9.45	0.02	85.54	0.000	0.02
9.60	0.02	85.54	0.000	0.02
9.75	0.02	85.54	0.000	0.02
9.90	0.02	85.54	0.000	0.02
10.05	0.02	85.54	0.000	0.02
10.20	0.02	85.54	0.000	0.02
10.35	0.02	85.54	0.000	0.02
10.50	0.02	85.54	0.000	0.02
10.65	0.02	85.54	0.000	0.02
10.80	0.02	85.54	0.000	0.02
10.95	0.02	85.54	0.000	0.02
11.10	0.02	85.54	0.000	0.02
11.25	0.02	85.54	0.000	0.02
11.40	0.02	85.54	0.000	0.02
11.55	0.02	85.54	0.000	0.02
11.70	0.02	85.54	0.000	0.02
11.85	0.02	85.54	0.000	0.02

12.00	0.02	85.54	0.000	0.02
12.15	0.02	85.54	0.000	0.02
12.30	0.02	85.54	0.000	0.02
12.45	0.02	85.54	0.000	0.02
12.60	0.02	85.54	0.000	0.02
12.75	0.02	85.54	0.000	0.02
12.90	0.02	85.54	0.000	0.02
13.05	0.02	85.54	0.000	0.02
13.20	0.02	85.54	0.000	0.02
13.35	0.02	85.54	0.000	0.02
13.50	0.02	85.54	0.000	0.02
13.65	0.02	85.54	0.000	0.02
13.80	0.02	85.54	0.000	0.02
13.95	0.02	85.54	0.000	0.02
14.10	0.02	85.54	0.000	0.02
14.25	0.02	85.54	0.000	0.02
14.40	0.02	85.54	0.000	0.02
14.55	0.02	85.54	0.000	0.02
14.70	0.02	85.54	0.000	0.02
14.85	0.02	85.54	0.000	0.02
15.00	0.02	85.54	0.000	0.02
15.15	0.02	85.54	0.000	0.02
15.30	0.02	85.54	0.000	0.02
15.45	0.02	85.54	0.000	0.02
15.60	0.02	85.54	0.000	0.02
15.75	0.02	85.54	0.000	0.02
15.90	0.02	85.54	0.000	0.02
16.05	0.02	85.54	0.000	0.02
16.20	0.02	85.54	0.000	0.02
16.35	0.02	85.54	0.000	0.02
16.50	0.02	85.54	0.000	0.02
16.65	0.02	85.54	0.000	0.02

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
16.80	0.02	85.54	0.000	0.02
16.95	0.02	85.54	0.000	0.02
17.10	0.02	85.54	0.000	0.02
17.25	0.02	85.54	0.000	0.02
17.40	0.02	85.54	0.000	0.02
17.55	0.02	85.54	0.000	0.02
17.70	0.02	85.54	0.000	0.02
17.85	0.02	85.54	0.000	0.02
18.00	0.02	85.54	0.000	0.02
18.15	0.02	85.54	0.000	0.02
18.30	0.02	85.54	0.000	0.02
18.45	0.02	85.54	0.000	0.02
18.60	0.02	85.54	0.000	0.02
18.75	0.02	85.54	0.000	0.02
18.90	0.02	85.54	0.000	0.02
19.05	0.02	85.54	0.000	0.02
19.20	0.02	85.54	0.000	0.02
19.35	0.02	85.54	0.000	0.02
19.50	0.02	85.54	0.000	0.02
19.65	0.02	85.54	0.000	0.02
19.80	0.02	85.54	0.000	0.02
19.95	0.02	85.54	0.000	0.02
20.10	0.02	85.54	0.000	0.02
20.25	0.02	85.54	0.000	0.02
20.40	0.02	85.54	0.000	0.02
20.55	0.02	85.54	0.000	0.02
20.70	0.02	85.54	0.000	0.02

20.85	0.02	85.54	0.000	0.02
21.00	0.02	85.54	0.000	0.02
21.15	0.02	85.54	0.000	0.02
21.30	0.02	85.54	0.000	0.02
21.45	0.02	85.54	0.000	0.02
21.60	0.02	85.54	0.000	0.02
21.75	0.02	85.54	0.000	0.02
21.90	0.02	85.54	0.000	0.02
22.05	0.02	85.54	0.000	0.02
22.20	0.02	85.54	0.000	0.02
22.35	0.02	85.54	0.000	0.02
22.50	0.02	85.54	0.000	0.02
22.65	0.02	85.54	0.000	0.02
22.80	0.02	85.54	0.000	0.02
22.95	0.02	85.54	0.000	0.02
23.10	0.02	85.54	0.000	0.02
23.25	0.02	85.54	0.000	0.02
23.40	0.02	85.54	0.000	0.02
23.55	0.02	85.54	0.000	0.02
23.70	0.02	85.54	0.000	0.02
23.85	0.02	85.54	0.000	0.02
24.00	0.02	85.54	0.000	0.02
24.15	0.01	85.53	0.000	0.01
24.30	0.00	85.51	0.000	0.00

PEAK DISCHARGE = 0.637 CFS - PEAK OCCURS AT HOUR 1.95
MAXIMUM WATER SURFACE ELEVATION = 88.473
MAXIMUM STORAGE = 0.0787 AC-FT INCREMENTAL TIME= 0.050000HRS

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:59:24