CITY OF ALBUQUERQUE

January 11, 2018

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

RE: **2100 Osuna NE**
Grading Plan Engineer's Stamp Date: 1/2/18
Drainage Report Engineer's Stamp Date: 12/28/17
Drainage File: E16D001

Dear Mr. Soule:

Based on the information provided in your submittal received 1/2/18, the Grading Plan and Drainage Report are approved for Grading, Paving and Building Permit.

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 09/2015)

Project Title: 2100 Osuna NE Building Permit #: _____ City Drainage #: E16d001

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

Legal Description: lot 1a lands of lively equipment Co, and a portion of lot 4B lands of lively equipment co.

City Address: 2100 Osuna NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

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

Owner: E2 Properties Contact: _____

Address: 2100 Osuna NE, Alb, NM 87107

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

Architect: none Contact: _____

Address: _____

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

Other Contact: _____ Contact: _____

Address: _____

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

Check all that Apply:

DEPARTMENT:

x HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN

x GRADING PLAN

_____ DRAINAGE MASTER PLAN

_____ DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: x Yes _____ No

CHECK 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

x GRADING PERMIT APPROVAL

_____ SO-19 APPROVAL

x PAVING PERMIT APPROVAL

_____ GRADING/ PAD CERTIFICATION

_____ WORK ORDER APPROVAL

_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

DATE SUBMITTED: 12/28/17 By: _____

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

CITY OF ALBUQUERQUE

November 20, 2017

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

RE: **2100 Osuna NE**
Grading Plan Engineer's Stamp Date 11/15/17
Drainage Report Engineer's Stamp Date: missing
Drainage File: E16D001

Dear Mr. Soule:

Based on the information provided in your submittal received 11/16/17, the Grading Plan and Drainage Report cannot be approved for Grading, Paving or Building Permit until the following are addressed:

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

General.

1. The complete package needs to be resubmitted, both paper and electronic.
We have resubmitted the entire updated package
2. Provide an agreement, signed by the 2 lot owners, showing that Lot 1A is allowed cross-lot drainage and ponding onto lot 4B. The Intent to Lease makes no mention of drainage.
Attached revised agreement
3. A Bernalillo County Recorded Private Facility Drainage Covenant, signed by the owner of Lot 4A, is required for the portion of the ponds located on lot 4A. The original notarized form, pond exhibit, and recording fee ($25 payable to City of Albuquerque) must be turned into DRC (4th, Plaza del Sol) for routing.
Submitted
4. A Bernalillo County Recorded Private Facility Drainage Covenant, signed by the owner of Lot 1A, is required for the portion of the ponds located on lot 1A. The original notarized form, pond exhibit, and recording fee ($25 payable to City of Albuquerque) must be turned into DRC (4th, Plaza del Sol) for routing.
Submitted
5. The provided draft is an outdated version and separate covenants are required. Additionally, exhibits with 0.10" font (minimum) are required. Please contact Charlotte LaBadie (clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants.
Submitted updated covenent

Drainage Report.

1. How does Lot 1B (to the south of this site) drain? It appears to drain to its NE corner and onto the SW corner of your site. Provide additional discussion regarding this. If there are

CITY OF ALBUQUERQUE

off-site flows, these will need to be routed across your site as well. Include the topo figure in the Drainage Report to support this discussion.

We have added map and updated report

Grading Plan.

1. Provide a section view though the retaining wall (including dimensions, lease line, and basis of establishing the lease line).

We have added the section and basis of leasehold line

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

Chappell Road Partners, LLC
6221 Chappell Rd NE
Albuquerque NM 87113

November 1, 2017

Patrick Lashinski, C.O.O.
E2 Properties
2100 Osuna Rd, NE 87113

RE: Letter of Intent: Land located at 1500 Osuna Road NE Albuquerque NM 87113; NE Corner

Dear Mr. Lashinski:

This letter of intent is for the above referenced property in Albuquerque, NM. Following are the terms and conditions that are proposed for the lease of the above-referenced property.

Property:	.17 acres located at 1500 Osuna Road NE as shown on Attachment A
Lessor:	Chappell Road Partners, LLC, or assignee
Lessee:	E2 Properties
Terms:	.17 acres shall be leased for $8400/year N.N.N. The initial term will be for Ten (10) years with two five (5) year options to extend. Rent will increase at the commencement each extension as agreed to by both parties. All improvements shall be the responsibility of the Lessee. Cross lot drainage from tract 1A lands of Lively will be accepted by the leaseholder portion of tract 4B lands of Lively and managed in accordance with current City of Albuquerque drainage ordinance. A drainage covenant for said improvements shall be executed.

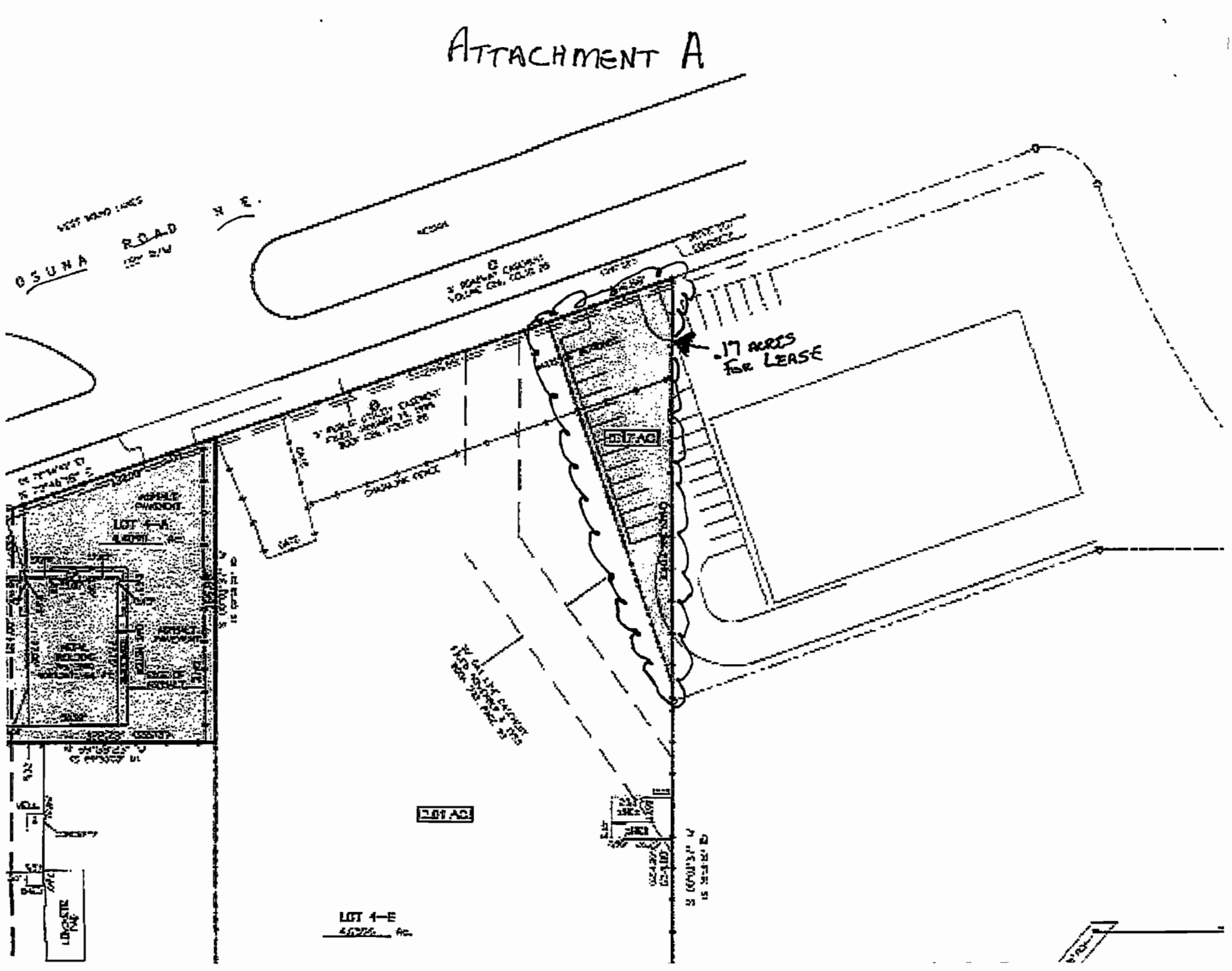
Sincerely,

Chappell Road Partners LLC
Dub Girand, Managing Member

REVIEWED AND ACCEPTED
Lessee:

By: Virginia Buckmelter 12/18/17
Date

ATTACHMENT A



REVISED
DRAINAGE REPORT

For

2100 Osuna NE

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

DECEMBER 2017

12/28/17

David Soule P.E. No. 14522

TABLE OF CONTENTS

Appendix

Map

PURPOSE

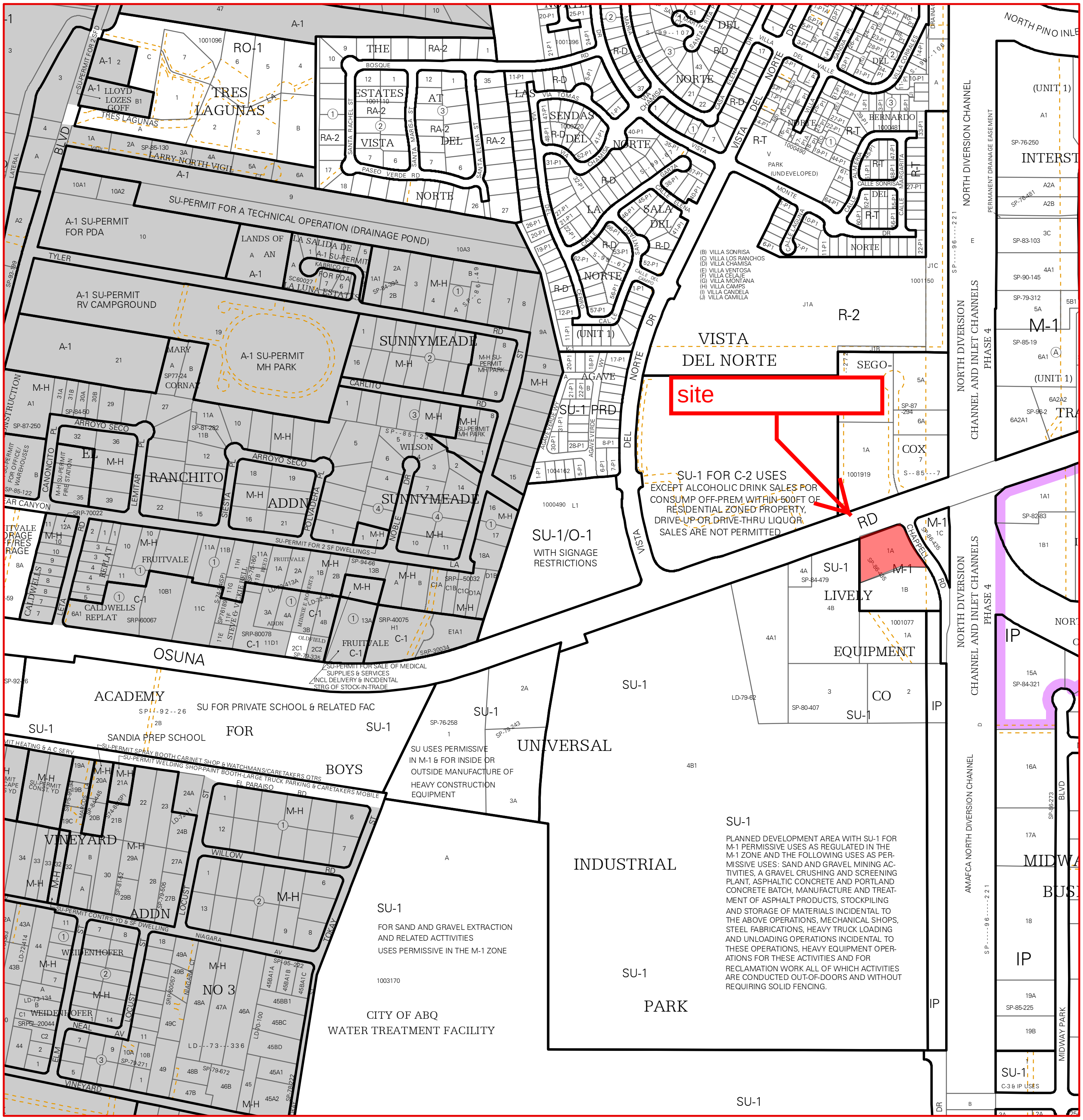
The purpose of this report is to provide the Drainage Management Plan for the addition of parking areas to an existing 1.7 acre parcel. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. 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 1.7 -acre parcel of land located on the southwest corner of Chappell and Osuna. The legal description of this site is tract 1A Lands of Lively Equipment Company and leasehold interest in portion of lot 4B Lands of Lively Equipment Company. As shown on FIRM map35001C0138H, the entire site is located within Flood Zone X. The AMAFCA North Diversion Channel is 200' upstream of property; the site is not impacted by upland flow. The site is a completely developed site. The entire parking area is paved, the surrounding landscape is completed and the entire supporting drainage infrastructure is completed. The site free discharges to Osuna, a drainage file for this development does not exist. The proposed improvements include the construction of additional parking on leased portion of the adjoining tract. Since this site is a redevelopment, the grading plan must conform to the existing conditions and reduce flow to less than existing while capturing the first flush.

EXISTING CONDITIONS

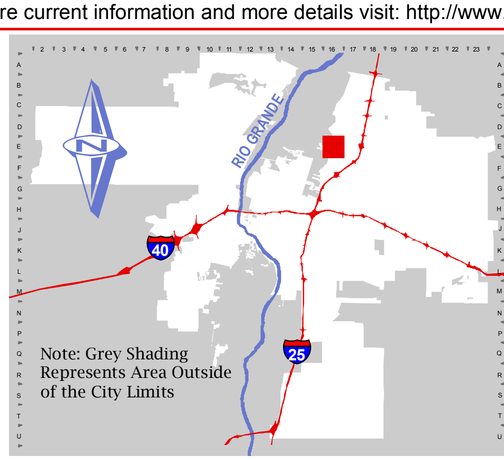
The site is currently a developed. The site currently discharges 7.37 cfs to the Osuna. The site is not impacted by upland flows. The curb and gutter and waterblock maintains flow in Chappell. The adjacent site to the east has an inlet that collects a portion of their flow and the north side of the property has a 6" curb and landscape berm that prevents flow from entering the subject property. The adjacent site flows to the site to the west, which is owned by the same lot owner. The south west corner has a small pond that overflows to Osuna. All downstream improvements are in place and maintained by the city of Albuquerque.



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:

E-16-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

Feet 0 750 1,500

EXHIBIT A

PROPOSED CONDITIONS

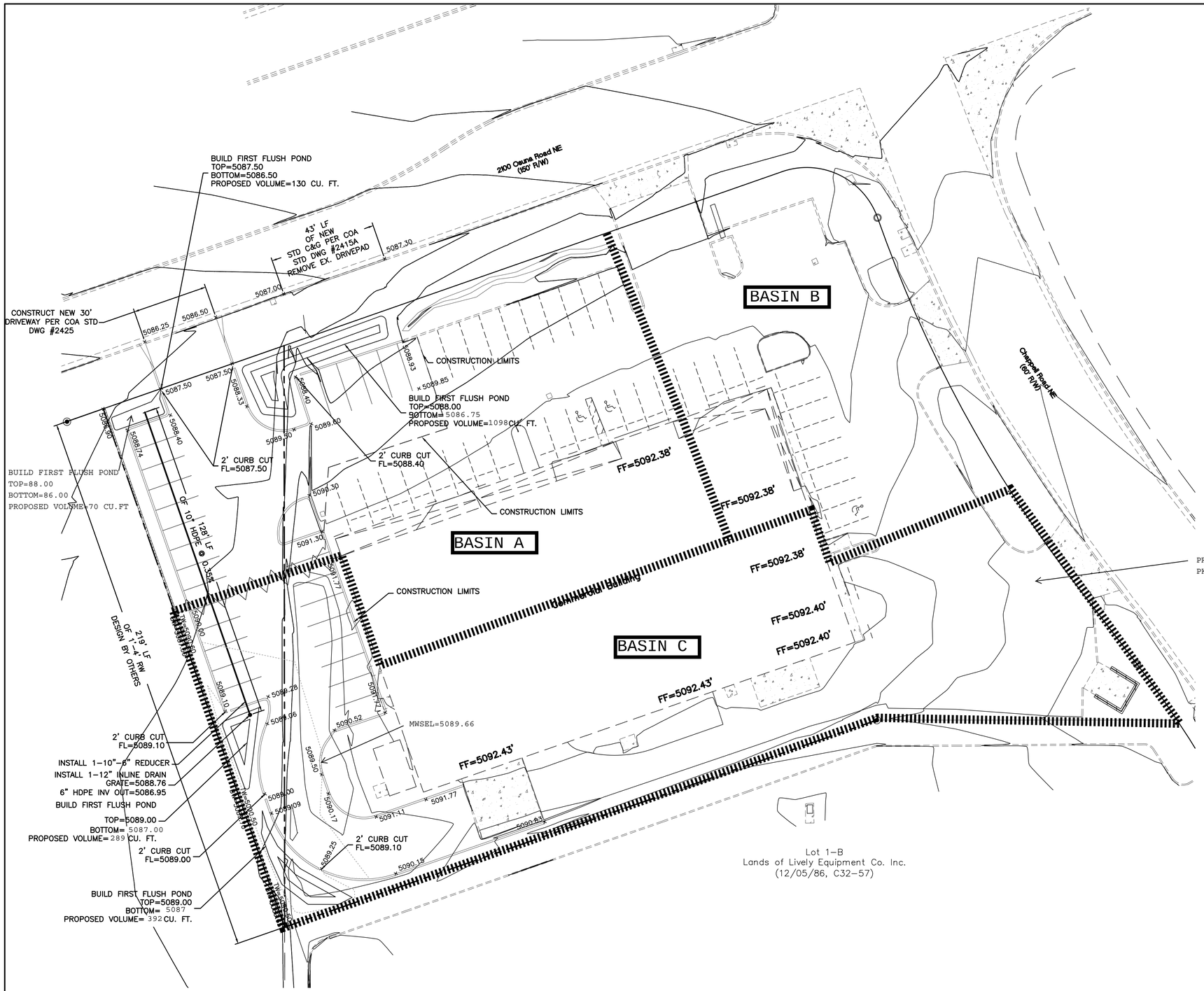
The proposed improvements consist of new parking area for the existing building. The affected area is a leasehold portion of the adjacent tract of land. The proposed site development will maintain existing patterns. The site contains 3 drain basins. Basin A contains the front portion of the lot and the improvements will increase the discharge from 2.55 cfs to 2.61 cfs. This basin discharges out an existing driveway to Osuna. Basin B contains the northern portion of the site and will not be modified, therefore the peak discharge of 1.55 cfs will remain to drain out the driveway to Osuna. The rear and southern portion of the lot will generate 3.51 cfs, compared to 3.27 cfs in existing condition. The total site discharge will be reduced by draining basin C to an inlet with a 6" outlet that will throttle the flow. As shown in appendix B, the pond was modeled using AHYMO. The peak discharge is reduced to 1.53 cfs and the max water surface is 5089.66 cfs. This area will overflow to basin A in a clogging event and continue to drain to Osuna. The combination of the three developed basins will be 5.69 cfs which is 1.68 cfs less than existing. The required first flush volume of 1,829 CF is retained onsite.

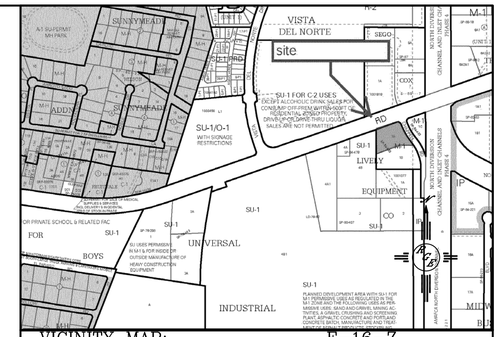
SUMMARY AND RECOMMENDATIONS

This project is an addition of parking to an existing building on a free discharging site. The parking area is to be located on a leased portion of an adjacent lot. There are no drainage files for the existing building. The drainage patterns will remain, the peak flow is being reduced by 1.53 cfs and the required first flush volume is being retained onsite. The onsite storm drain was designed to convey the flow. The ponds will overflow in an emergency or clogging situation via the parking lot discharging to Osuna. The development of this site will not negatively impact the upstream nor down stream facilities. Since the work area does not exceed 1 acre, erosion and sediment Control Plan should not be required prior to any construction activity.

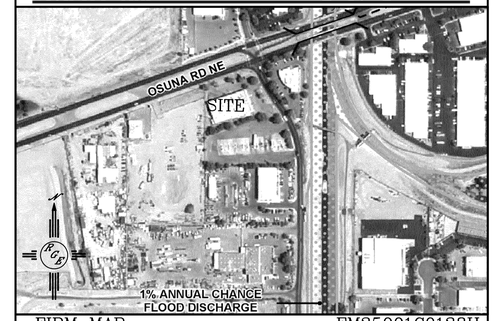
APPENDIX A

SITE HYDROLOGY





VICINITY MAP: E-16-Z



FIRM MAP: FM35001C0138H

LEGAL DESCRIPTION:

LOT 1A, 4B, LIVELY EQUIPMENT

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. ALL NEW PAVING SHALL BE 6" PCC OVER 8" SUBGRADE PREPARATION IN CONFORMANCE TO ACI 330R-08. UNLESS OTHERWISE NOTED.
5. ANY CURBS OR PAVEMENT NEGATIVELY IMPACTED BY CONSTRUCTION ACTIVITY SHALL BE REPLACED TO MATCH EXISTING CONDITIONS.
6. 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 (DESIGN BY OTHERS)

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.

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.

N

GRAPHIC SCALE

20 10 0 10 20

SCALE: 1"=20'

ENGINEER'S SEAL

DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER

8/1/17

DAVID SOULE
P.E. #14522

2100 OSUNA

GRADING AND DRAINAGE PLAN

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

DRAWN BY WCWJ

DATE 8-07-17

21724-LAYOUT-3-24-17

SHEET # —

JOB # 21724

Weighted E Method

2100 osuna

Existing Developed Basins

											100-Year, 6-hr.		
Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
			%	(acres)	%	(acres)	%	(acres)	%	(acres)			
EXISTING A	25233	0.579	0%	0	0.0%	0.000	19.0%	0.11006	81%	0.469	1.932	0.093	2.55
EXISTING B	15415	0.354	0%	0	0.0%	0.000	20.0%	0.07078	80%	0.283	1.922	0.057	1.55
EXISTING C	33657	0.773	0%	0	0.0%	0.000	30.0%	0.2318	70%	0.541	1.823	0.117	3.27
TOTAL EXISTING	74305	1.706	0%	0	0.0%	0.000	24.2%	0.41263	77%	1.293		0.267	7.37
PROPOSED A	25233	0.579	0%	0	0.0%	0.000	13.0%	0.07531	87%	0.504	1.991	0.096	2.61
PROPOSED B	15415	0.354	0%	0	0.0%	0.000	20.0%	0.07078	80%	0.283	1.922	0.057	1.55
PROPOSED C	33657	0.773	0%	0	0.0%	0.000	10.0%	0.07727	90%	0.695	2.021	0.130	3.51
TOTAL PROPOSED	74305	1.706	0%	0		0.000	13.1%	0.223	87%	1.482		0.283	7.669

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

Where for 100-year, 6-hour storm (zone 3)

Ea= 0.53 Qa= 1.57

Eb= 0.78 Qb= 2.28 water quality requirement 1829.65362

Ec= 1.13 Qc= 3.14

Ed= 2.12 Qd= 4.7

discharge leaving sige	exisitng	generated	routed
basin a	2.55	2.61	2.61
basin b	1.55	1.55	1.55
basin c	3.27	3.51	1.53
TOTAL	7.37	7.67	5.69

APPENDIX B

HYDRAULIC MODELING AND CALCULATIONS

```
*S     AHYMO - BASIN C
*S             POND ROUTING

START               TIME=0.0  PUNCH CODE=0


RAINFALL            TYPE=2
                    QUARTER=0.0    ONE= 2.01 IN
                    SIX= 2.35 IN   DAY= 2.75 IN   DT = 0.05 HR



COMPUTE NM HYD      ID=1  HYD NO=101  DA= .0012078 SQ MI
                    PER A=0  PER B=0.0  PER C=10.0  PER D=90.00

                    TP=-.135  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             0.014         88.50
                       1.16             0.017         88.76
                       1.34             0.021         89.00

                       1.49             0.042         89.50
                       1.64             0.075         90.00




PRINT HYD           ID=2   CODE=3


FINISH
```

```
       AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
            RUN DATE (MON/DAY/YR) = 09/07/2017
            START TIME (HR:MIN:SEC) = 14:02:12     USER NO.=
RioGrandeSingleA41963517
            INPUT FILE = C:\Documents and Settings\Owner\Desktop\2017
jobs\1734-2100osuna\POND.txt


    *S     AHYMO - BASIN C
    *S             POND ROUTING

    START              TIME=0.0  PUNCH CODE=0


    RAINFALL           TYPE=2
                       QUARTER=0.0    ONE= 2.01 IN
                       SIX= 2.35 IN   DAY= 2.75 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  0.0023  0.0046  0.0071  0.0099  0.0127  0.0159
                    0.0203  0.0272  0.0347  0.0424  0.0509  0.0595  0.0684
                    0.0776  0.0870  0.0974  0.1084  0.1204  0.1437  0.1728
                    0.2117  0.2559  0.3104  0.3831  0.4649  0.6062  0.8258
                    1.2021  1.4666  1.6752  1.7800  1.8719  1.9379  1.9905
                    2.0362  2.0697  2.1005  2.1259  2.1418  2.1530  2.1629
                    2.1722  2.1803  2.1879  2.1953  2.2025  2.2084  2.2118
                    2.2152  2.2186  2.2217  2.2247  2.2278  2.2307  2.2336
                    2.2363  2.2391  2.2417  2.2443  2.2469  2.2494  2.2518
                    2.2542  2.2565  2.2588  2.2611  2.2633  2.2654  2.2676
                    2.2697  2.2717  2.2738  2.2758  2.2778  2.2798  2.2817
                    2.2837  2.2856  2.2874  2.2893  2.2911  2.2930  2.2948
                    2.2965  2.2983  2.3000  2.3017  2.3034  2.3051  2.3068
                    2.3084  2.3100  2.3117  2.3133  2.3148  2.3164  2.3180
                    2.3195  2.3210  2.3225  2.3240  2.3255  2.3269  2.3284
                    2.3298  2.3313  2.3327  2.3341  2.3355  2.3368  2.3382
                    2.3396  2.3409  2.3422  2.3436  2.3449  2.3462  2.3474
                    2.3487  2.3500  2.3513  2.3525  2.3538  2.3551  2.3563
                    2.3576  2.3589  2.3601  2.3614  2.3627  2.3639  2.3652
                    2.3665  2.3677  2.3690  2.3702  2.3715  2.3728  2.3740
                    2.3753  2.3765  2.3778  2.3790  2.3803  2.3815  2.3828
                    2.3840  2.3853  2.3865  2.3878  2.3890  2.3903  2.3915
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                    2.4940  2.4951  2.4963  2.4975  2.4986  2.4998  2.5010
                    2.5021  2.5033  2.5044  2.5056  2.5068  2.5079  2.5091
                    2.5102  2.5114  2.5125  2.5137  2.5148  2.5160  2.5171
```

2.5183	2.5194	2.5206	2.5217	2.5229	2.5240	2.5252
2.5263	2.5274	2.5286	2.5297	2.5309	2.5320	2.5331
2.5343	2.5354	2.5365	2.5377	2.5388	2.5399	2.5411
2.5422	2.5433	2.5445	2.5456	2.5467	2.5478	2.5490
2.5501	2.5512	2.5523	2.5535	2.5546	2.5557	2.5568
2.5579	2.5590	2.5602	2.5613	2.5624	2.5635	2.5646
2.5657	2.5668	2.5679	2.5691	2.5702	2.5713	2.5724
2.5735	2.5746	2.5757	2.5768	2.5779	2.5790	2.5801
2.5812	2.5823	2.5834	2.5845	2.5856	2.5867	2.5878
2.5889	2.5899	2.5910	2.5921	2.5932	2.5943	2.5954
2.5965	2.5976	2.5986	2.5997	2.6008	2.6019	2.6030
2.6040	2.6051	2.6062	2.6073	2.6084	2.6094	2.6105
2.6116	2.6126	2.6137	2.6148	2.6159	2.6169	2.6180
2.6191	2.6201	2.6212	2.6223	2.6233	2.6244	2.6254
2.6265	2.6276	2.6286	2.6297	2.6307	2.6318	2.6328
2.6339	2.6350	2.6360	2.6371	2.6381	2.6392	2.6402
2.6413	2.6423	2.6433	2.6444	2.6454	2.6465	2.6475
2.6486	2.6496	2.6506	2.6517	2.6527	2.6538	2.6548
2.6558	2.6569	2.6579	2.6589	2.6600	2.6610	2.6620
2.6630	2.6641	2.6651	2.6661	2.6672	2.6682	2.6692
2.6702	2.6712	2.6723	2.6733	2.6743	2.6753	2.6763
2.6774	2.6784	2.6794	2.6804	2.6814	2.6824	2.6834
2.6844	2.6854	2.6865	2.6875	2.6885	2.6895	2.6905
2.6915	2.6925	2.6935	2.6945	2.6955	2.6965	2.6975
2.6985	2.6995	2.7005	2.7015	2.7025	2.7034	2.7044
2.7054	2.7064	2.7074	2.7084	2.7094	2.7104	2.7114
2.7123	2.7133	2.7143	2.7153	2.7163	2.7172	2.7182
2.7192	2.7202	2.7211	2.7221	2.7231	2.7241	2.7250
2.7260	2.7270	2.7280	2.7289	2.7299	2.7309	2.7318
2.7328	2.7338	2.7347	2.7357	2.7366	2.7376	2.7386
2.7395	2.7405	2.7414	2.7424	2.7433	2.7443	2.7452
2.7462	2.7472	2.7481	2.7491	2.7500		

```
    COMPUTE NM HYD      ID=1  HYD NO=101  DA= .0012078 SQ MI
                        PER A=0  PER B=0.0  PER C=10.0  PER D=90.00
                        TP=-.135  MASSRAIN=-1


         K =  0.073575HR    TP =  0.135000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   4.2376    CFS   UNIT VOLUME =   0.9962       B =   526.28
 P60 = 2.0100
         AREA =     0.001087 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


         K =  0.108816HR    TP =  0.135000HR    K/TP RATIO =  0.806046     SHAPE
CONSTANT, N =  4.440407
         UNIT PEAK =  0.34314    CFS   UNIT VOLUME =   0.9680       B =   383.54
 P60 = 2.0100
         AREA =     0.000121 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=1  CODE=3

                                      PARTIAL HYDROGRAPH   101.00

         TIME      FLOW           TIME      FLOW           TIME      FLOW
```

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	HRS	CFS
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.150	0.0	5.100	0.0	10.050	0.0
15.000	0.0	19.950	0.0		
0.300	0.0	5.250	0.0	10.200	0.0
15.150	0.0	20.100	0.0		
0.450	0.0	5.400	0.0	10.350	0.0
15.300	0.0	20.250	0.0		
0.600	0.0	5.550	0.0	10.500	0.0
15.450	0.0	20.400	0.0		
0.750	0.0	5.700	0.0	10.650	0.0
15.600	0.0	20.550	0.0		
0.900	0.0	5.850	0.0	10.800	0.0
15.750	0.0	20.700	0.0		
1.050	0.2	6.000	0.0	10.950	0.0
15.900	0.0	20.850	0.0		
1.200	0.5	6.150	0.0	11.100	0.0
16.050	0.0	21.000	0.0		
1.350	1.3	6.300	0.0	11.250	0.0
16.200	0.0	21.150	0.0		
1.500	3.6	6.450	0.0	11.400	0.0
16.350	0.0	21.300	0.0		
1.650	2.2	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.800	1.1	6.750	0.0	11.700	0.0
16.650	0.0	21.600	0.0		
1.950	0.6	6.900	0.0	11.850	0.0
16.800	0.0	21.750	0.0		
2.100	0.3	7.050	0.0	12.000	0.0
16.950	0.0	21.900	0.0		
2.250	0.2	7.200	0.0	12.150	0.0
17.100	0.0	22.050	0.0		
2.400	0.1	7.350	0.0	12.300	0.0
17.250	0.0	22.200	0.0		
2.550	0.1	7.500	0.0	12.450	0.0
17.400	0.0	22.350	0.0		
2.700	0.0	7.650	0.0	12.600	0.0
17.550	0.0	22.500	0.0		
2.850	0.0	7.800	0.0	12.750	0.0
17.700	0.0	22.650	0.0		
3.000	0.0	7.950	0.0	12.900	0.0
17.850	0.0	22.800	0.0		
3.150	0.0	8.100	0.0	13.050	0.0
18.000	0.0	22.950	0.0		
3.300	0.0	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.450	0.0	8.400	0.0	13.350	0.0
18.300	0.0	23.250	0.0		
3.600	0.0	8.550	0.0	13.500	0.0
18.450	0.0	23.400	0.0		
3.750	0.0	8.700	0.0	13.650	0.0
18.600	0.0	23.550	0.0		
3.900	0.0	8.850	0.0	13.800	0.0
18.750	0.0	23.700	0.0		
4.050	0.0	9.000	0.0	13.950	0.0
18.900	0.0	23.850	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
        4.800       0.0          9.750       0.0         14.700       0.0
19.650       0.0

        RUNOFF VOLUME =     2.37568 INCHES     =       0.1530 ACRE-FEET
        PEAK DISCHARGE RATE =       3.61 CFS  AT   1.500 HOURS   BASIN AREA =
0.0012 SQ. MI.
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    * 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             0.014         88.50
                           1.16             0.017         88.76
                           1.34             0.021         89.00
                           1.49             0.042         89.50
                           1.64             0.075         90.00
```

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  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	88.50	0.014	0.00
0.15	0.00	88.50	0.014	0.00
0.30	0.00	88.50	0.014	0.00
0.45	0.00	88.50	0.014	0.00
0.60	0.00	88.50	0.014	0.00
0.75	0.00	88.50	0.014	0.00
0.90	0.03	88.50	0.014	0.01
1.05	0.23	88.54	0.014	0.18
1.20	0.53	88.60	0.015	0.46
1.35	1.25	88.73	0.017	1.03
1.50	3.61	89.25	0.032	1.42
1.65	2.18	89.64	0.051	1.53
1.80	1.10	89.64	0.051	1.53
1.95	0.63	89.51	0.043	1.49
2.10	0.32	89.23	0.031	1.41
2.25	0.18	88.77	0.017	1.17
2.40	0.12	88.53	0.014	0.13
2.55	0.05	88.51	0.014	0.06
2.70	0.03	88.51	0.014	0.03
2.85	0.02	88.50	0.014	0.02
3.00	0.01	88.50	0.014	0.01
3.15	0.01	88.50	0.014	0.01
3.30	0.01	88.50	0.014	0.01
3.45	0.01	88.50	0.014	0.01
3.60	0.01	88.50	0.014	0.01
3.75	0.01	88.50	0.014	0.01
3.90	0.01	88.50	0.014	0.01
4.05	0.01	88.50	0.014	0.01
4.20	0.01	88.50	0.014	0.01
4.35	0.01	88.50	0.014	0.01

4.50	0.01	88.50	0.014	0.01
4.65	0.01	88.50	0.014	0.01
4.80	0.01	88.50	0.014	0.01
4.95	0.01	88.50	0.014	0.01
5.10	0.01	88.50	0.014	0.01
5.25	0.01	88.50	0.014	0.01
5.40	0.01	88.50	0.014	0.01
5.55	0.01	88.50	0.014	0.01
5.70	0.02	88.50	0.014	0.02
5.85	0.02	88.50	0.014	0.02
6.00	0.02	88.50	0.014	0.02
6.15	0.02	88.50	0.014	0.02
6.30	0.02	88.50	0.014	0.02
6.45	0.02	88.50	0.014	0.02
6.60	0.02	88.50	0.014	0.02
6.75	0.02	88.50	0.014	0.02
6.90	0.02	88.50	0.014	0.02
7.05	0.02	88.50	0.014	0.02
7.20	0.02	88.50	0.014	0.02
7.35	0.02	88.50	0.014	0.02
7.50	0.02	88.50	0.014	0.02
7.65	0.02	88.50	0.014	0.02
7.80	0.02	88.50	0.014	0.02
7.95	0.02	88.50	0.014	0.02
8.10	0.02	88.50	0.014	0.02
8.25	0.02	88.50	0.014	0.02

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
8.40	0.02	88.50	0.014	0.02
8.55	0.02	88.50	0.014	0.02
8.70	0.02	88.50	0.014	0.02
8.85	0.02	88.50	0.014	0.02
9.00	0.02	88.50	0.014	0.02
9.15	0.02	88.50	0.014	0.02
9.30	0.02	88.50	0.014	0.02
9.45	0.02	88.50	0.014	0.02
9.60	0.02	88.50	0.014	0.02
9.75	0.02	88.50	0.014	0.02
9.90	0.02	88.50	0.014	0.02
10.05	0.02	88.50	0.014	0.02
10.20	0.02	88.50	0.014	0.02
10.35	0.02	88.50	0.014	0.02
10.50	0.02	88.50	0.014	0.02
10.65	0.02	88.50	0.014	0.02
10.80	0.02	88.50	0.014	0.02
10.95	0.02	88.50	0.014	0.02
11.10	0.02	88.50	0.014	0.02
11.25	0.02	88.50	0.014	0.02
11.40	0.02	88.50	0.014	0.02
11.55	0.02	88.50	0.014	0.02
11.70	0.02	88.50	0.014	0.02
11.85	0.02	88.50	0.014	0.02
12.00	0.02	88.50	0.014	0.02
12.15	0.02	88.50	0.014	0.02
12.30	0.02	88.50	0.014	0.02
12.45	0.02	88.50	0.014	0.02
12.60	0.02	88.50	0.014	0.02
12.75	0.02	88.50	0.014	0.02
12.90	0.02	88.50	0.014	0.02
13.05	0.02	88.50	0.014	0.02
13.20	0.02	88.50	0.014	0.02

13.35	0.02	88.50	0.014	0.02
13.50	0.02	88.50	0.014	0.02
13.65	0.02	88.50	0.014	0.02
13.80	0.02	88.50	0.014	0.02
13.95	0.02	88.50	0.014	0.02
14.10	0.02	88.50	0.014	0.02
14.25	0.02	88.50	0.014	0.02
14.40	0.02	88.50	0.014	0.02
14.55	0.02	88.50	0.014	0.02
14.70	0.02	88.50	0.014	0.02
14.85	0.02	88.50	0.014	0.02
15.00	0.02	88.50	0.014	0.02
15.15	0.02	88.50	0.014	0.02
15.30	0.02	88.50	0.014	0.02
15.45	0.02	88.50	0.014	0.02
15.60	0.02	88.50	0.014	0.02
15.75	0.02	88.50	0.014	0.02
15.90	0.02	88.50	0.014	0.02
16.05	0.02	88.50	0.014	0.02
16.20	0.02	88.50	0.014	0.02
16.35	0.02	88.50	0.014	0.02
16.50	0.02	88.50	0.014	0.02
16.65	0.01	88.50	0.014	0.02

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
16.80	0.02	88.50	0.014	0.02
16.95	0.02	88.50	0.014	0.02
17.10	0.02	88.50	0.014	0.02
17.25	0.01	88.50	0.014	0.02
17.40	0.02	88.50	0.014	0.02
17.55	0.02	88.50	0.014	0.02
17.70	0.02	88.50	0.014	0.01
17.85	0.01	88.50	0.014	0.01
18.00	0.01	88.50	0.014	0.01
18.15	0.01	88.50	0.014	0.01
18.30	0.01	88.50	0.014	0.01
18.45	0.01	88.50	0.014	0.01
18.60	0.01	88.50	0.014	0.01
18.75	0.01	88.50	0.014	0.01
18.90	0.01	88.50	0.014	0.01
19.05	0.01	88.50	0.014	0.01
19.20	0.01	88.50	0.014	0.01
19.35	0.01	88.50	0.014	0.01
19.50	0.01	88.50	0.014	0.01
19.65	0.01	88.50	0.014	0.01
19.80	0.01	88.50	0.014	0.01
19.95	0.01	88.50	0.014	0.01
20.10	0.01	88.50	0.014	0.01
20.25	0.01	88.50	0.014	0.01
20.40	0.01	88.50	0.014	0.01
20.55	0.01	88.50	0.014	0.01
20.70	0.01	88.50	0.014	0.01
20.85	0.01	88.50	0.014	0.01
21.00	0.01	88.50	0.014	0.01
21.15	0.01	88.50	0.014	0.01
21.30	0.01	88.50	0.014	0.01
21.45	0.01	88.50	0.014	0.01
21.60	0.01	88.50	0.014	0.01
21.75	0.01	88.50	0.014	0.01
21.90	0.01	88.50	0.014	0.01
22.05	0.01	88.50	0.014	0.01

22.20	0.01	88.50	0.014	0.01
22.35	0.01	88.50	0.014	0.01
22.50	0.01	88.50	0.014	0.01
22.65	0.01	88.50	0.014	0.01
22.80	0.01	88.50	0.014	0.01
22.95	0.01	88.50	0.014	0.01
23.10	0.01	88.50	0.014	0.01
23.25	0.01	88.50	0.014	0.01
23.40	0.01	88.50	0.014	0.01
23.55	0.01	88.50	0.014	0.01
23.70	0.01	88.50	0.014	0.01
23.85	0.01	88.50	0.014	0.01
24.00	0.01	88.50	0.014	0.01
24.15	0.01	88.50	0.014	0.01
24.30	0.00	88.50	0.014	0.00

PEAK DISCHARGE = 1.538 CFS - PEAK OCCURS AT HOUR 1.70
MAXIMUM WATER SURFACE ELEVATION = 89.662
MAXIMUM STORAGE = 0.0527 AC-FT INCREMENTAL TIME= 0.050000HRS

PRINT HYD ID=2 CODE=3

PARTIAL HYDROGRAPH 102.00

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	19.800	0.0		
0.150	0.0	5.100	0.0	10.050	0.0
15.000	0.0	19.950	0.0		
0.300	0.0	5.250	0.0	10.200	0.0
15.150	0.0	20.100	0.0		
0.450	0.0	5.400	0.0	10.350	0.0
15.300	0.0	20.250	0.0		
0.600	0.0	5.550	0.0	10.500	0.0
15.450	0.0	20.400	0.0		
0.750	0.0	5.700	0.0	10.650	0.0
15.600	0.0	20.550	0.0		
0.900	0.0	5.850	0.0	10.800	0.0
15.750	0.0	20.700	0.0		
1.050	0.2	6.000	0.0	10.950	0.0
15.900	0.0	20.850	0.0		
1.200	0.5	6.150	0.0	11.100	0.0
16.050	0.0	21.000	0.0		
1.350	1.0	6.300	0.0	11.250	0.0
16.200	0.0	21.150	0.0		
1.500	1.4	6.450	0.0	11.400	0.0
16.350	0.0	21.300	0.0		
1.650	1.5	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.800	1.5	6.750	0.0	11.700	0.0
16.650	0.0	21.600	0.0		
1.950	1.5	6.900	0.0	11.850	0.0
16.800	0.0	21.750	0.0		
2.100	1.4	7.050	0.0	12.000	0.0
16.950	0.0	21.900	0.0		
2.250	1.2	7.200	0.0	12.150	0.0
17.100	0.0	22.050	0.0		
2.400	0.1	7.350	0.0	12.300	0.0
17.250	0.0	22.200	0.0		
2.550	0.1	7.500	0.0	12.450	0.0
17.400	0.0	22.350	0.0		

	2.700	0.0		7.650	0.0		12.600	0.0	
17.550	0.0		22.500	0.0					
	2.850	0.0		7.800	0.0		12.750	0.0	
17.700	0.0		22.650	0.0					
	3.000	0.0		7.950	0.0		12.900	0.0	
17.850	0.0		22.800	0.0					
	3.150	0.0		8.100	0.0		13.050	0.0	
18.000	0.0		22.950	0.0					
	3.300	0.0		8.250	0.0		13.200	0.0	
18.150	0.0		23.100	0.0					
	3.450	0.0		8.400	0.0		13.350	0.0	
18.300	0.0		23.250	0.0					
	3.600	0.0		8.550	0.0		13.500	0.0	
18.450	0.0		23.400	0.0					
	3.750	0.0		8.700	0.0		13.650	0.0	
18.600	0.0		23.550	0.0					
	3.900	0.0		8.850	0.0		13.800	0.0	
18.750	0.0		23.700	0.0					
	4.050	0.0		9.000	0.0		13.950	0.0	
18.900	0.0		23.850	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								
	4.800	0.0		9.750	0.0		14.700	0.0	
19.650	0.0								

RUNOFF VOLUME = 2.37545 INCHES = 0.1530 ACRE-FEET
PEAK DISCHARGE RATE = 1.54 CFS AT 1.700 HOURS BASIN AREA = 0.0012 SQ. MI.

FINISH

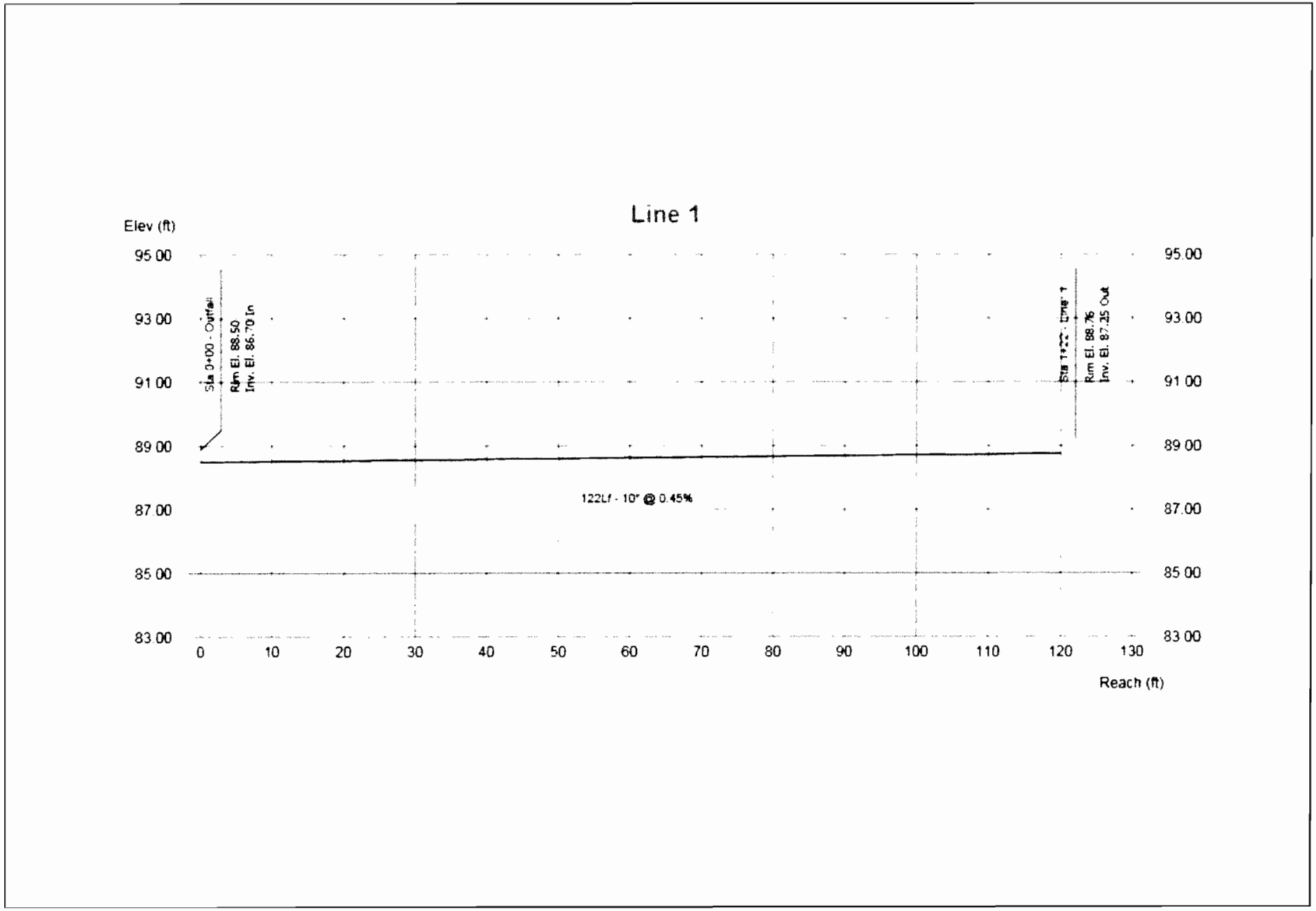
NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:02:12

Profile View

Stormwater Studio v 1.0.1.12

Project Name: Enter Project Name...

12-28-2017

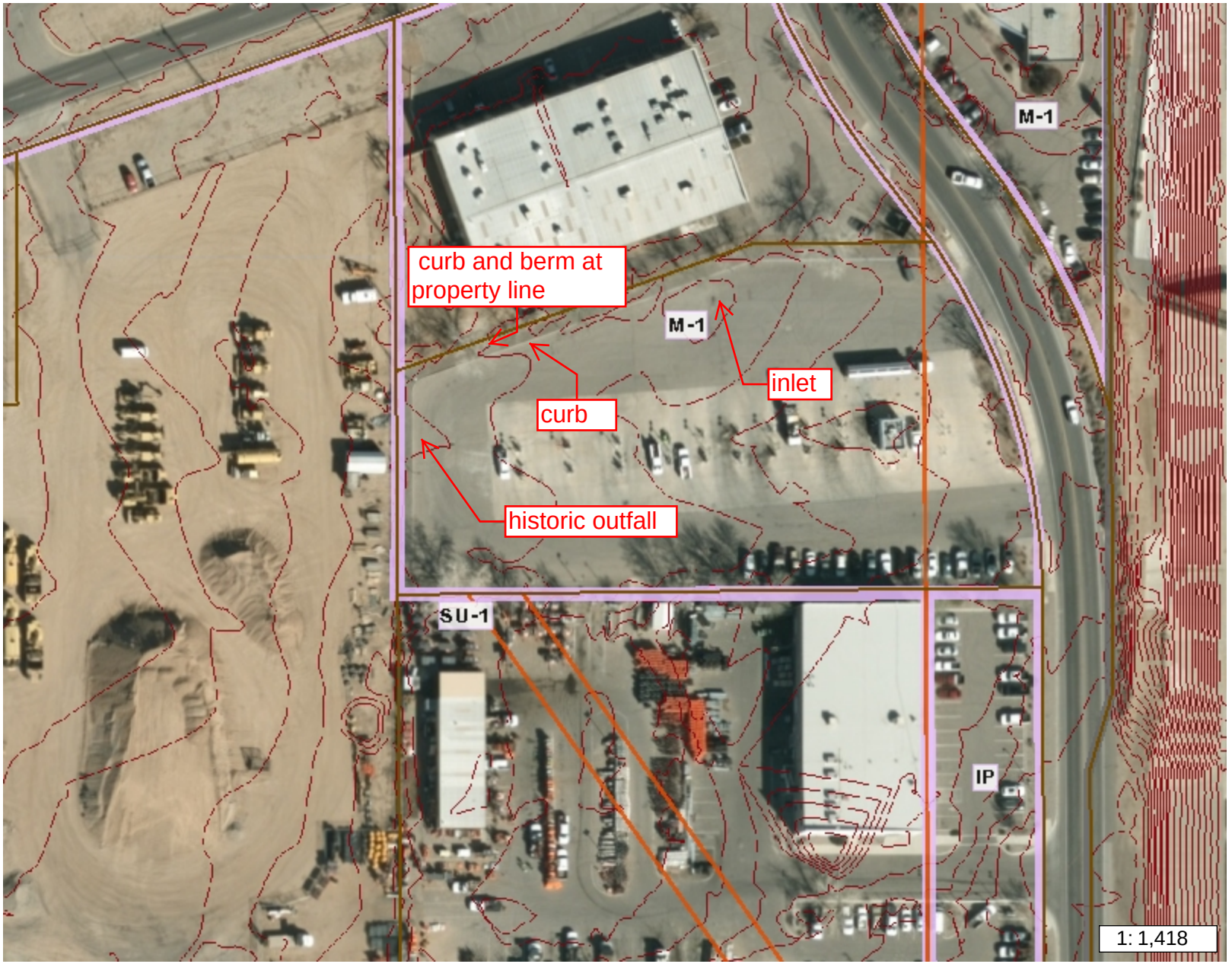


Project File: pipe flow.sws

APPENDIX C

UPLAND FLOW MAP

City of Albuquerque



Legend

- Bernalillo County Parcels
- Easements

Zoning

- <all other values>
- RESIDENTIAL
- COMMERCIAL
- OFFICE
- INDUSTRIAL / WHOLESALE / MANU
- INSTITUTIONAL / GOVERNMENT
- UTILITIES / TRANSPORTATION
- OPEN SPACE / RECREATION / AG
- RESIDENTIAL / AGRICULTURAL
- MESA DEL SOL MIXED USE
- NOT CLASSIFIED

Municipal Limits

- Corrales
- Edgewood
- Los Ranchos
- Rio Rancho
- Tijeras
- UNINCORPORATED

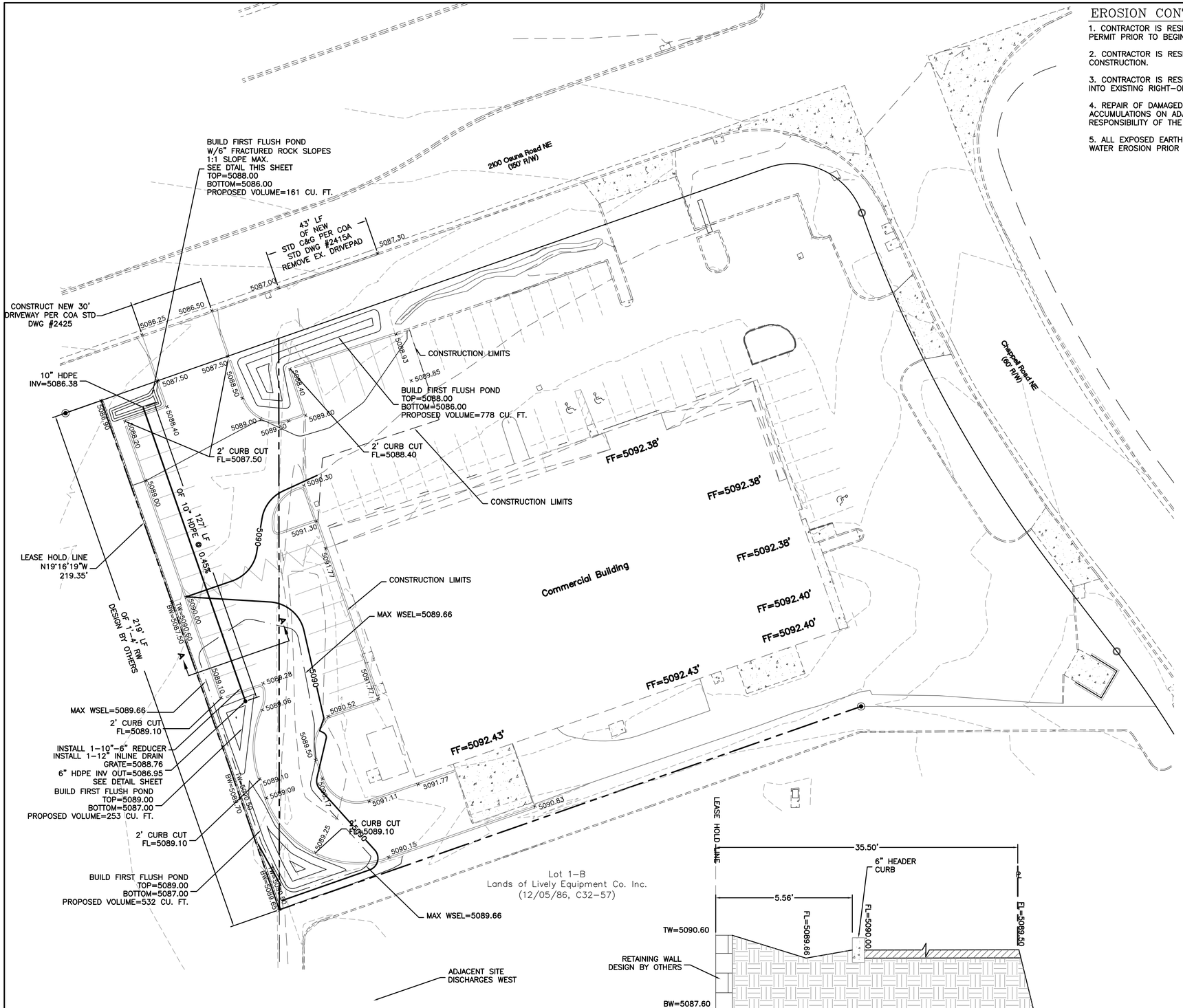
World Street Map

Notes

0.0 0 0.02 0.0 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

11/14/2017



EROSION CONTROL NOTES:

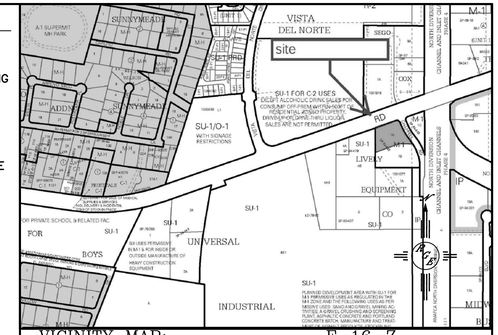
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.

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: E-16-Z

FIRM MAP: FM35001C0138H

LEGAL DESCRIPTION:

LOT 1A, 4B, LIVELY EQUIPMENT

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.

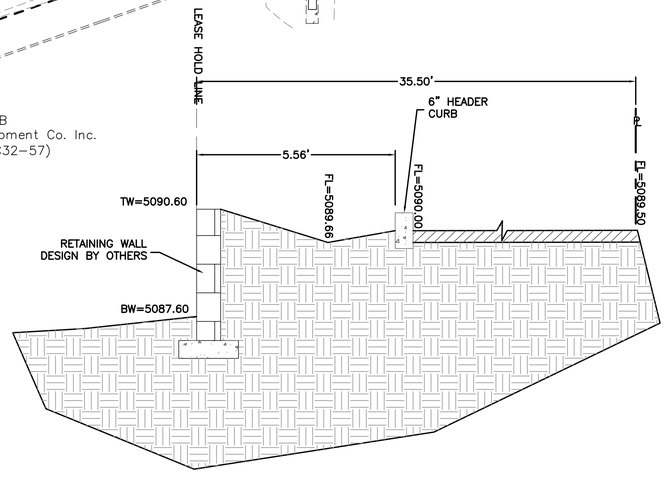
4. ALL NEW PAVING SHALL BE 6" PCC OVER 8" SUBGRADE PREPARATION IN CONFORMANCE TO ACI 330R-08. UNLESS OTHERWISE NOTED.

5. ANY CURBS OR PAVEMENT NEGATIVELY IMPACTED BY CONSTRUCTION ACTIVITY SHALL BE REPLACED TO MATCH EXISTING CONDITIONS.

6. ALL SITE WORK SHALL CONFORM TO CITY OF ALBUQUERQUE STANDARDS FOR PUBLIC WORKS CONSTRUCTION EDITION 9

LEGEND

5414	EXISTING CONTOUR
5415	EXISTING INDEX CONTOUR
5414	PROPOSED CONTOUR
5415	PROPOSED INDEX CONTOUR
	SLOPE TIE
× 4048.25	EXISTING SPOT ELEVATION
× 4048.25	PROPOSED SPOT ELEVATION
	BOUNDARY
	CENTERLINE
	RIGHT-OF-WAY
	PROPOSED CURB
	EXISTING CURB AND GUTTER
	PROPOSED SIDEWALK
	EXISTING SIDEWALK
	PROPOSED RETAINING WALL (DESIGN BY OTHERS)



SECTION A-A
NTS

CAUTION:

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

N

GRAPHIC SCALE

20 10 0 10 20

SCALE: 1"=20'

ENGINEER'S SEAL

DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER

1/2/18

DAVID SOULE
P.E. #14522

2100 OSUNA

GRADING AND DRAINAGE PLAN

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

DRAWN BY WCWJ

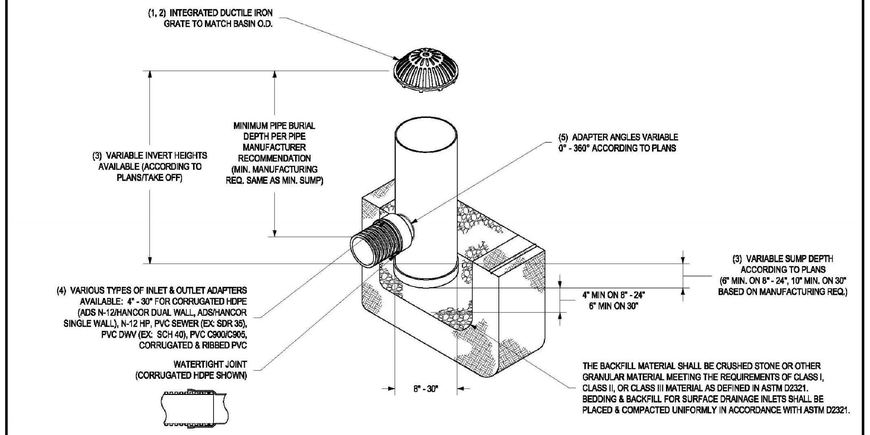
DATE 1-02-17

21724-LAYOUT-3-24-17

SHEET # —

JOB # 21724

NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-085.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

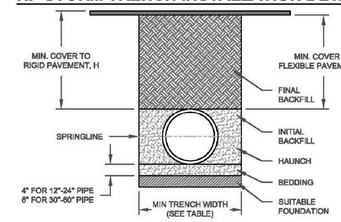
DRAWN BY	EBC	MATERIAL	
DATE	03-25-16		
REVISED BY	MNH	PROJECT NO./NAME	
DATE	03-11-16		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

Nyloplast
3126 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2480
www.nyloplast-usa.com

TITLE: DRAIN BASIN WITH DOME GRATE
QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-307 REV D

HP STORM TRENCH INSTALLATION DETAIL



NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION, WITH THE EXCEPTION THAT THE INITIAL BACKFILL MAY EXTEND TO THE CROWN OF THE PIPE. SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION OF ASTM D2321. CLASS IVB MATERIALS (MH, CH) AS DEFINED IN PREVIOUS VERSIONS OF ASTM D2321 ARE NOT APPROPRIATE BACKFILL MATERIALS.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, III, OR IV. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 12"-24" (300mm-600mm) DIAMETER PIPE, 6" (150mm) FOR 30"-60" (750mm-1500mm) DIAMETER PIPE. THE MIDDLE 1/3 BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, III, OR IV IN THE PIPE ZONE EXTENDING TO THE CROWN OF THE PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (300mm) FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS; CLASS I OR II MATERIAL COMPACTED TO 90% SPD AND CLASS III COMPACTED TO 95% SPD IS REQUIRED. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" (300mm) UP TO 48" (1200mm) DIAMETER PIPE AND 24" (600mm) OF COVER FOR 60" (1500mm) DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.
7. FOR ADDITIONAL INFORMATION SEE TECHNICAL NOTE 2.04.

TABLE 1, RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM	MIN. TRENCH WIDTH
12" (300mm)	30" (762mm)
15" (375mm)	34" (864mm)
18" (450mm)	39" (991mm)
24" (600mm)	48" (1219mm)
30" (750mm)	56" (1422mm)
36" (900mm)	64" (1626mm)
42" (1050mm)	72" (1829mm)
48" (1200mm)	80" (2032mm)
60" (1500mm)	96" (2438mm)

TABLE 2, MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION: H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48" (300mm - 1200mm)	12" (305mm)	48" (1219mm)
60" (1500mm)	24" (610mm)	60" (1524mm)

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER.

TABLE 3, MAXIMUM COVER FOR ADS HP STORM PIPE, ft

	CLASS I	CLASS II		CLASS III		CLASS IV
PIPE DIA	COMPACTED	95%	90%	85%	95%	90%	95%
12" (300mm)	41 (12.5m)	28 (8.5m)	21 (6.4m)	16 (4.9m)	20 (6.1m)	16 (4.9m)	16 (4.9m)
15" (375mm)	42 (12.8m)	29 (8.8m)	21 (6.4m)	16 (4.9m)	21 (6.4m)	16 (4.9m)	16 (4.9m)
18" (450mm)	44 (13.4m)	30 (9.1m)	21 (6.4m)	16 (4.9m)	22 (6.7m)	17 (5.2m)	16 (4.9m)
24" (600mm)	37 (11.3m)	26 (7.9m)	18 (5.5m)	14 (4.3m)	19 (5.8m)	14 (4.3m)	14 (4.3m)
30" (750mm)	39 (11.9m)	27 (8.2m)	19 (5.8m)	14 (4.3m)	19 (5.8m)	15 (4.6m)	14 (4.3m)
36" (900mm)	28 (8.5m)	20 (6.1m)	14 (4.3m)	10 (3.0m)	14 (4.3m)	11 (3.4m)	10 (3.0m)
42" (1050mm)	30 (9.1m)	21 (6.4m)	14 (4.3m)	10 (3.0m)	15 (4.6m)	11 (3.4m)	10 (3.0m)
48" (1200mm)	29 (8.8m)	20 (6.1m)	14 (4.3m)	9 (2.7m)	14 (4.3m)	10 (3.0m)	10 (3.0m)
60" (1500mm)	29 (8.8m)	20 (6.1m)	14 (4.3m)	9 (2.7m)	14 (4.3m)	10 (3.0m)	9 (2.7m)

FILL HEIGHT TABLE GENERATED USING AASHTO SECTION 12, LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS:
NO HYDROSTATIC PRESSURE
UNIT WEIGHT OF SOIL (γ_s) = 120 PCF

6	REV. MAXIMUM COVER HEIGHTS	RWD	01/11/17	
REV.	DESCRIPTION	BY	MM/DD/YY	CHKD

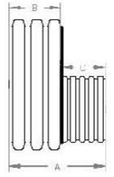
TRENCH INSTALLATION DETAIL (HP STORM)
DRAWING NUMBER: STD-101D

ADS
ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

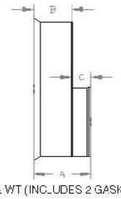
DRAWN	JAB
DATE	01/29/09
REVISED	
SCALE	NTS
SHEET	1 OF 1

DUAL WALL FABRICATED REDUCERS
6"x4" - 12"x10" DIAMETER

	PART #	PIPE SIZE	A	B	C	JOINT
**	C670AN	6 x 4 in (150 x 100 mm)	11.4 in (291 mm)	6.2 in (157 mm)	5.3 in (133 mm)	*
**	C870AN	8 x 4 in (200 x 100 mm)	12.0 in (304 mm)	6.7 in (171 mm)	5.3 in (135 mm)	*
**	C871AN	8 x 6 in (200 x 150 mm)	12.9 in (328 mm)	6.7 in (171 mm)	6.2 in (157 mm)	*
**	1070AN	10 x 4 in (250 x 100 mm)	12.8 in (325 mm)	7.6 in (192 mm)	5.3 in (133 mm)	*
**	1071AN	10 x 6 in (250 x 150 mm)	13.8 in (349 mm)	7.6 in (192 mm)	6.2 in (157 mm)	*
**	1072AN	10 x 8 in (250 x 200 mm)	14.3 in (363 mm)	7.6 in (192 mm)	6.7 in (171 mm)	*
	1270AN	12 x 4 in (300 x 100 mm)	11.0 in (280 mm)	5.8 in (146 mm)	5.3 in (133 mm)	*
	1270AN65B	12 x 4 in (300 x 100 mm)	8.9 in (226 mm)	6.5 in (165 mm)	2.4 in (60 mm)	WT
	1271AN	12 x 6 in (300 x 150 mm)	12.0 in (304 mm)	5.8 in (146 mm)	6.2 in (157 mm)	*
	1271AN65B	12 x 6 in (300 x 150 mm)	10.0 in (254 mm)	6.5 in (165 mm)	3.5 in (89 mm)	WT
	1272AN	12 x 8 in (300 x 200 mm)	12.5 in (317 mm)	5.8 in (146 mm)	6.7 in (171 mm)	*
	1272AN65B	12 x 8 in (300 x 200 mm)	10.8 in (273 mm)	6.5 in (165 mm)	4.3 in (108 mm)	WT
	1273AN	12 x 10 in (300 x 250 mm)	14.9 in (378 mm)	5.8 in (146 mm)	7.6 in (192 mm)	*
	1273AN65B	12 x 10 in (300 x 250 mm)	11.8 in (298 mm)	6.5 in (165 mm)	5.3 in (133 mm)	WT



PLAIN END

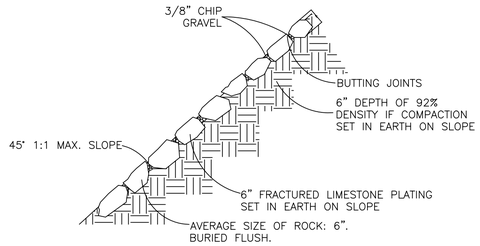


ST & WT (INCLUDES 2 GASKETS)

* = PLAIN END
WT = WATER TIGHT
** LIMITED AVAILABILITY. PLEASE SEE INJECTION MOLDED FITTING SECTION FOR OTHER AVAILABLE FITTINGS

NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY

DRAWING #	2600	
DRAWN BY:	JCB	06.05.06
APPROVED BY:	JCB	06.26.07
REVISIONS:	TJR	12/28/20 0



ROCK PLATING DETAIL
NTS

ENGINEER'S SEAL	2100 OSUNA	DRAWN BY WCWJ
DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER		DATE 11-14-17
	GRADING DETAIL SHEET	21724-LAYOUT-3-24-17
1/2/18	Rio Grande Engineering 1606 CENTRAL AVENUE SE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999	SHEET # —
DAVID SOULE P.E. #14522		JOB # 21724