CITY OF ALBUQUERQUE

Planning Department
David S. Campbell, Director

Timothy M. Keller, Mayor

September 17, 2018

Diane Hoelzer, PE
Mark Goodwin & Associates, PA.
PO Box 90606
Albuquerque, NM 87199

Re: Shops @ the 24s
2424 Louisiana Blvd NE
Grading and Drainage Plan
Engineer's Stamp dated: 9/11/2018 (H19D001)

Dear Mr. Goodwin,

Based upon the information provided in the submittal received on 9/11/2018 and the $1,160 fee paid in lieu of constructing a portion of the required first flush (6,714 sf redevelopment @ 0.26" = 145 cf) the above-referenced plan is approved for Building Permit and/or Grading Permit. Please inform the architect/owner to attach a copy of this approved plan and this letter to the Building Permit plan sets.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Prior to Hydrology release for Certificate of Occupancy (C.O.)

1. An Engineer's Certification per the DPM checklist will be required.
2. A Drainage Covenant is required for the detention/retention ponds and private storm drains on this lot. Add the "Hydrology Notes" from sheets C2 and C3to the exhibit. The original notarized covenant, pond exhibits (legible on 8.5x11 paper), and recording fee ($25, payable to City of Albuquerque) must be turned into DRC (4th, Plaza del Sol) for routing. Please contact Charlotte LaBadie (clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants.

If you have any questions, please contact me at 924-3986 or e-mail at jhughes@cabq.gov .

Sincerely,

James D. Hughes, P.E.
Principal Engineer, Hydrology
Planning Department

TREASURY DIVISION DAILY DEPOSIT

Transmittals for:
PROJECTS Only

City of Albuquerque Treasury
J-24 Deposit
Date: 9/17/2018 Office: ANNEX
Station ID Cashier: E39083
Batch: 9614 Trans: 3
Fund: 305 Activity ID7547210
Account: 461615 Project ID24_MS4
Dept ID: Bus.Unit: PCDMD
Alloc Amt: $1,160.00
Trans Amt: $1,160.00
Check Tendered : $1,160.00

Payment-in-Lieu for Storm Water Quality Volume Requirement

CASH COUNT	AMOUNT	ACCOUNT NUMBER	FUND NUMBER	BUSINESS UNIT	PROJECT ID	ACTIVITY ID	AMOUNT
TOTAL CHECKS	$ 1,160.00	461615	305	PCDMD	24_MS4	7547210	$ 1,160.00
TOTAL AMOUNT						TOTAL DEPOSIT	**$1,160.00**

Hydrology#: Shops @ The 24s H19D001 Name: Sun Vista Enterprises
Payment In-Lieu For Storm Water Quality Volume Requirement

Address/Legal Description: 2424 Louisiana Blvd. NE

DEPARTMENT NAME: Planning Department/Development Review Services, Hydrology

PREPARED BY James D. Hughes PHONE 505-924-3986

BUSINESS DATE 9/14/2018

DUAL VERIFICATION OF DEPOSIT _____
EMPLOYEE SIGNATURE

AND BY _____
EMPLOYEE SIGNATURE

REMITTER: _____
AMOUNT: _____
BANK: _____
CHECK #: _____ DATE ON CHECK: _____

The Payment-in-Lieu can be paid at the Plaza del Sol Treasury, 600 2nd St. NW. **Bring three copies of this invoice to the Treasury** and provide a copy of the receipt to Hydrology, Suite 201, 600 2nd St. NW, or e-mail with the Hydrology submittal to PLNDRS@cabq.gov.

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: Shops @ The 24s **Building Permit #:** _____ **Hydrology File #:** H19D001

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

Legal Description: Lot 3-A-1, Block C

City Address: 2424 Louisiana BLVD N.E.

Applicant: Sun Vista **Contact:** Irwin Harms

Address: 6801 Jefferson, Ste 100, Albuquerque, NM 87109

Phone#: (505) 798-9800 **Fax#:** _____ **E-mail:** irwin@sunvista.net

Other Contact: Mark Goodwin + Associates, PA **Contact:** Cory Pierce

Address: P.O. Box 90606, Albuquerque, NM 87199

Phone#: 828-2200 **Fax#:** _____ **E-mail:** cory@goodmanengineers.com

TYPE OF DEVELOPMENT: _____ PLAT (# of lots) _____ RESIDENCE _____ DRB SITE ✓ ADMIN SITE

IS THIS A RESUBMITTAL? ✓ Yes _____ No

DEPARTMENT _____ TRANSPORTATION ✓ HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

- ____ ENGINEER/ARCHITECT CERTIFICATION
- ____ PAD CERTIFICATION
- ____ CONCEPTUAL G & D PLAN
- ✓ 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?

RECEIVED
SEP 11 2018
LAND DEVELOPMENT SECTION

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ✓ 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: 9-11-18 **By:** Cory Pierce

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

City of Albuquerque Planning Department

One Stop Shop – Development and Building Services

09/11/2018 Issued By: E08375 364040

Permit Number: **2018 060 358** **Category Code 970**

Application Number: **18REV-60358**, Review:Drain Plan-Lomr-Traffic Impact

Address:

Location Description: SHOPS @ THE 24S

Project Number: null

Applicant
MARK GOODWIN AND ASSOCIATES, P.A.

P.O. BOX 90606
ALBUQUERQUE NM 87199

Agent / Contact

Application Fees

REV Actions	$150.00
TOTAL:	**$150.00**

City of Albuquerque Treasury
Date:9/11/2018 Office:ANNEX
Stat ID: Cashier:TRSRMS
Batch: 9597 Trans #:32
Permit: 20180600358
Receipt Num 00519136
Payment Total:$150.00
0909 REV Actions $150.00
Check Tendered : $150.00

The Shops @ the 24's
Drainage Analysis Report

Prepared For:

Sun Vista
6801 Jefferson
Suite 100
Albuquerque, NM 87109
(505) 798-9800

Prepared By:

Mark Goodwin & Associates, PA
PO BOX 90606
Albuquerque, NM 87199
(505) 828-2200

Table of Contents

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

~ 2012 ACEC/NM Award Winner for Engineering Excellence ~
~ 2008 ACEC/NM Award Winner for Engineering Excellence ~
~ 2017 ENR Landscape/Urban Development Award of Merit~

Sept 10, 2018

James D. Hughes, PE
City of Albuquerque
600 2nd Street SW
Albuquerque, NM 87102

RE: Shops @ the 24s
2424 Louisiana Blvd NE
Grading and Drainage Plan
Engineers Stamp Dated 8/14/2018 (H19D001)

Dear Mr. Hughes,

In response to correspondence dated August 20, 2018, please find enclosed submittal. Since the prior submittal, the project site was changed to shift the building west to a maximum 15' set back from the property line. Basin areas have been changed accordingly. Also, the submittal is revised per comments as follows:

1. A general statement of the Drainage History is added to the Drainage Plan.
2. The Drainage Management Plan says that this project reduces flow from existing discharge rates by ponding water shed of the basins affected with replacement of the inlets with inlets similar to the existing inlets to the south of the existing building. It indicates that the new construction will reduce discharge and restore the original intent of the design and mitigate the developed discharge to an assumed undeveloped discharge with 50%A and 50%B land treatment (Basins 300 and 301).
3. A Drainage Covenant will be submitted for the detention/ retention ponds and private storm drains on the lot with the management plan and history included on 8.5x11 format.
4. The contours and spots from a different datum are deleted from the plan. The new building drains to the detention pond.
5. Each first flush pond is designed to match the volume from each respective contributing basin area multiplied by 0.26" First Flush depth (COA First Flush for redevelopment). An additional sheet is included to depict the First Flush basins and present First Flush accounting. The First Flush information is also provided on 8.5x11 format to be included in the drainage covenant.
6. The orifices are analyzed utilizing the lesser of the weir equation and orifice equation and, as a result, discharge in a lower elevation was lowered in the pond discharge table which was included in a revised AHYMO run.
7. The grading plan is revised to remove tree drip lines and now references the Architects demolition plan.
8. Wall and Storm Drain line types are included in the legend and incorporated in the drawing. The west side of the building shifted and elevations changed. Spot elevations were added.

9. Additional pond grading information is included in the grading plan along with flow arrows from the south side of the parking lot to the inlet and from the northwest side to the east. The drainage from the north will be diverted to the east to the new inlet being constructed.
10. The finish contours used in the AYHMO pond routing input are now included in the proposed drainage basins map up to contour 5223.
11. The ponds were revised and bottom of ponds 1&2 is now elevation 5222.55 which is shown on the grading plan. The first flush elevation of 5222.75 is at or near the back of curb in ponds 1&2. Contour 5223 and 5222.35 is shown in the parking lot to define the pond. A separate sheet is now included to depict First Flush basins of each first flush pond. Pond #2 (and #1)is a First Flush pond that also contributes to the parking lot detention pond. The pond retains water to elevation 5222.75 (the First Flush elevation) then is submerged by the detention pond up to elevation 5222.91 during the passage of the 100 yr storm. Pond #3 also provides upper elevation storage for the detention pond. The outlet weir for First Flush pond #4 was evaluated for the passage of the 100 yr storm and a 100 yr elevation was included on the Drainage Plan (Sheet C2) and included on the drainage covenant exhibit.
12. An additional sheet is included that shows the first flush basins.

Please review and approve the submittal for grading permit and construction permit for the new building.

Sincerely,
MARK GOODWIN & ASSOCIATES, PA

Cory D Pierce, PE
Cory D. Pierce, PE
Staff Engineer

CITY OF ALBUQUERQUE

Planning Department
David S. Campbell, Director

Timothy M. Keller, Mayor

August 20, 2018

Diane Hoelzer, PE
Mark Goodwin & Associates, PA.
PO Box 90606
Albuquerque, NM 87199

Re: Shops @ the 24s
32424 Louisiana Blvd NE
Grading and Drainage Plan
Engineer's Stamp dated: 8/14/2018 (H19D001)

Dear Mr. Goodwin,

Based upon the information provided in the submittal received on 8/15/2018 the above-referenced plan can't be approved for Building Permit and/or Grading Permit until the following comments are addressed.

1. Add a general statement of the Drainage History to the G&D Plan. The history should mention that this 3.05 acre site was approved in about 1978 for one building with runoff detained on the roof, and asphalt parking lots on the west, south, and east sides of the building also used to detain runoff. Recently the parking lot on the east side of the existing building was converted into an underground parking lot and the detention there was replaced by retention. Two existing parking lot ponds on the south side of the existing building drain to sump inlets with 6" diameter orifice plates located 2" below the surface of the grates. The three existing parking lot ponds on the west side of the building have fallen into a state of disrepair the east inlet orifice plate has become loose inside the inlet, the middle inlet has been modified and the orifice plate is missing, and the west inlet orifice plate rusted through. The three inlets on the west side of the building are of a different type than the two on the south but they seem to have about the same capacity.
2. The Drainage Management Plan should say that this project will repair/replace the ponds on the west side of the existing building so that the detained volume will be equal to or greater than that originally planned and the runoff rate will be equal to or less than that originally planned. The Management Plan and History should show up on both the G&D Plan and on the Maintenance Covenant.
3. A Drainage Covenant is required for the detention/retention ponds and private storm drains on this lot. The original notarized covenant, pond exhibits (legible on 8.5x11 paper), and recording fee ($25, payable to City of Albuquerque) must be turned into DRC (4th, Plaza del Sol) for routing. Please contact Charlotte LaBadie

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

(clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants.

4. The contours and spot elevations do not agree, for example the existing 5292 contour goes thru the existing 5222.91 spot elevation. The topography must be fixed before an estimate of the parking lot detention volume can be made. The new detention volume should be equal to or greater than the originally designed volume and there should not be any bypass flows from areas that previously flowed to detention ponds, so the new building must drain to a detention pond.

5. Additionally each first flush pond must be designed for the required volume of the area draining to it. The area draining to each first flush pond must be identified on the basin map. Calculations of the required volume and the provided volume must be presented on the plan and on the exhibits to be recorded with the maintenance covenant (multiple pages may be needed for clarity).

6. The hydraulic calculations of the drainage structures are incomplete. The capacity of the inlets & orifice plates must be checked using both the orifice equation and the weir equation and the more limiting of the two should be used. The overflow spillway of each pond must be identified on a cross section detail on the plans and the 100 year elevation determined by the weir equation. The first flush elevation and 100 year elevation of each pond must be shown on the plan and on the exhibits to be recorded with the maintenance covenant.

7. The grading plan is still difficult to read. It is cluttered with unnecessary lines such as the outline of the tree drip lines. Please delete unnecessary lines and hatch patterns. Consider adding a separate demolition plan to show all of the existing improvements, trees, signs, light poles, curbs, asphalt, inlets, and storm drains be removed, or include removal notes on the Grading Plan.

8. Please add the line type that looks like a wall to the legend and add more spot elevations along the west side of the new building. Show the wall or whatever it is in a typical section showing existing and proposed grades and dimensions on the west from the curb on Louisiana to the building including the wall. The line type appears on the west side of the building and around two planters on the east side of the building. The spots next the patio in the northwest corner of the building indicate a 2' plus retaining wall but the limits of the wall are not clear.

9. A valley gutter is recommended in the swale on the east side of the new building to get drainage from the south side of the new parking lot to the inlet. The swale must be shown with flow arrows and as a grade hinge line if not shown as a valley gutter. Similarly show the flow path from the northwest corner of the site to the inlet. An additional inlet may be needed to drain the northwest corner which currently drains to the inlet under the building.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

10. Provide a detail showing finished contours in the proposed parking lot pond at the same elevations that are used in the AHYMO pond routing input file up to elevation 5223.0

11. Show contours inside pond #2 and provide volume calculations separate from pond #1. Is the line inside the pond supposed to be indicating a flat bottom at elevation 5222.37? If so, the line is not clearly identified as such and it is too close to the curb, particularly at the south end where the TC is 20" above the pond invert. Similarly show the contour at the first flush elevation 5222.75. Show additional finished contours at 5223.0 and 5223.5 in the parking lot around the pond. Show a section through the edge of pond 2 with dimensions. Add a section through the overflow spillway for pond 2 with weir calculation to determine 100 year elevation, unless it is a retention pond that spreads out into the parking lot. Provide a separate basin on the basin map for pond 2. If pond 2 is a retention pond, the 10 year volume should be contained in the pond and the limits of the 100 year 6 hour storm should be shown on the plan.

12. Clearly identify the area draining into first flush ponds 1, 3, & 4. What portion of the roof drains into each? Show contours and sections thru the edge of each pond and a section thru the spillway of each pond with weir calculations of 100 year elevation on the G&D Plan. Label both the 100 year and first flush elevation of each pond on the G&D Plan and on the Maintenance Covenant.

For Information. Hydrology and Transportation files are available online through the City's GIS Viewer 2.0: https://www.cabq.gov/gis/advanced-map-viewer. Turn on the *HydroTrans* layer: *Operational Layers* > *Albuquerque Layers* > *Sites* > *HydroTrans*. Select the desired polygon from the map and click *Link to Project Documents*.

If you have any questions, please contact me at 924-3986 or e-mail at jhughes@cabq.gov .

Sincerely,

James D. Hughes, P.E.
Principal Engineer, Hydrology
Planning Department

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

~ 2012 ACEC/NM Award Winner for Engineering Excellence ~
~ 2008 ACEC/NM Award Winner for Engineering Excellence ~
~ 2017 ENR Landscape/Urban Development Award of Merit~

August 14, 2018

James A. Hughes, PE
City of Albuquerque
600 2nd Street SW
Albuquerque, NM 87102

RE: Shops @ the 24s
2424 Louisiana Blvd NE
Grading and Drainage Plan
Engineers Stamp Dated 7/23/2018 (H19D001)

Dear Mr. Hughes,

In response to correspondence dated July 27, 2018, please find enclosed submittal. The submittal is revised per comments as follows:

1. The calculations are bound in report with engineer's stamp. The report includes AHYMO input and output files, along with the source precipitation used (NOAA Atlas 14).
2. Drainage basin maps are included and show all offsite basins surface flowing into the area of construction.
3. A drainage covenant is included for the detention pond and storm drain in the parking lot constructed with this construction project.
4. The grading plan legibility is changed with revised proposed pavement hatching.
5. A detention pond is proposed with this project that detains 6 inches of water within the parking lot from the 100 yr. storm. Detention is created from two inlets equipped with orifice plates. Additionally, separate first flush capture ponds are included to meet City of Albuquerque requirements for reconstruction development. The first flush ponds and inlets are detailed.
6. More detail is included for the first flush ponds, and detail is included for the detention pond in the bound report along with calculations.
7. Thank you for the instruction to the internet access of the Hydrology and Transportation files. The hydrology files were accessed for the design. The hydrology file of the 2002 drainage report, by Larry Read and Associates, and the conceptual drainage plan prepared by Bohannan Huston, Inc. are additionally included in the appendices of the bound report.

Please review and approve the submittal for grading permit and construction permit for the new building.

Sincerely,
MARK GOODWIN & ASSOCIATES, PA

Cory D. Pierce, PE

Cory D. Pierce, PE
Staff Engineer

F:\1-Projects\2018\A18018 - Shops @ The 24's\Outgoing\2018-08-13 Grading to COA_2\Response Ltr_J_Hughes.docx

CITY OF ALBUQUERQUE

Planning Department
David S. Campbell, Director

Timothy M. Keller, Mayor

July 27, 2018

Mark Goodwin, PE
Mark Goodwin & Associates, PA.
PO Box 90606
Albuquerque, NM 87199

Re: Shops @ the 24s
32424 Louisiana Blvd NE
Grading and Drainage Plan
Engineer's Stamp dated: 7/23/2018 (H19D001)

Dear Mr. Goodwin,

Based upon the information provided in the submittal received on 7/16/2018 the above-referenced plan can't be approved for Building Permit and/or Grading Permit until the following comments are addressed.

1. All calculations must be in a bound report with an Engineer's stamp and signature on it. Input, output and summary output from AHYMO are required. Identify the source of precipitation values used.
2. A drainage basin map is required and must show this entire lot and all upstream off site basins draining into this lot if any.
3. A Drainage Covenant is required for the detention/retention ponds and private storm drains on this lot. The original notarized form, pond exhibits (legible on 8.5x11 paper), and recording fee ($25, payable to City of Albuquerque) must be turned into DRC (4th, Plaza del Sol) for routing. Please contact Charlotte LaBadie (clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants.
4. Drainage Covenants are required for the detention/retention ponds and private storm drains on this lot.
5. The grading plan is not legible. The proposed pavement hatching obscures existing topography, storm drains, and drainage basin boundaries.
6. Both detention and first flush retention are required. The capacity of the existing storm drain in Louisiana Blvd has been exceeded so the allowable 100-year discharge is 0.1 cfs/acre. The outlet structures on the existing parking lot ponds must be repaired and/or replaced as part of this permit. Include details and construction notes.
7. More detail is needed for all of the ponds including grading details, typical sections, volume calculations, and hydraulic structure details with calculations.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

CITY OF ALBUQUERQUE

Planning Department
David S. Campbell, Director

Timothy M. Keller, Mayor

8. For Information. Hydrology and Transportation files are available online through the City's GIS Viewer 2.0: https://www.cabq.gov/gis/advanced-map-viewer. Turn on the *HydroTrans* layer: *Operational Layers* > *Albuquerque Layers* > *Sites* > *HydroTrans*. Select the desired polygon from the map and click *Link to Project Documents*.

If you have any questions, please contact me at 924-3986 or e-mail at jhughes@cabq.gov .

Sincerely,

James D. Hughes, P.E.
Principal Engineer, Hydrology
Planning Department

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

The Shops @ The 24s

Supplemental Information

I. Project Description:

The Shops @ the 24s involves the construction of a new building in an existing parking lot. The building footprint is over an existing storm drain. The storm drain is to be reconstructed to the north and west of the building. The proposed impervious area to the existing is essentially the same. The area of construction is approximately 20085 SF (0.46 AC).

II. Design Criteria:

The design criteria used in this report is in accordance with Section 22.2, Hydrology of the Development Process Manual, Volume 2. The 100 year 6-hour storm event is analyzed with AHYMO to determine discharge into an existing storm drain system.

III. Drainage conditions:

Existing site runoff is not changed significantly from existing conditions to proposed. Discharge is reduced by the new inlets equipped with 6" orifice plates and detention of the 100 yr storm. The roof Basin 101 drains into parking lot Basin 100 to the new inlets for the combined flow to be limited to less than undeveloped discharge congruent with the intent of the original approved construction from the 1970's. The orifice plates are set at elevation 5222.13 and a discharge rating curve was assembled from elevation 5222.35 to 5223.50 with discharge points evaluated as the lesser value from the orifice equation and the weir equation. The discharge was doubled for two inlets as the orifice plates are set at the same elevation. This is an approximate approach as the north inlet chamber will fill to a higher elevation before the south orifice basin, thereby discharging at a higher rate than the south orifice before the peak of the 100 yr discharge hydrograph. The 100 yr storm fills the retention ponds before formation of the detention pond. Due to this reason, rain fall was reduced by the volume of first flush spread onto the total area contributing to the detention pond (area of basin 100 and 101).

IV. First flush

The new grades will capture first flush runoff from the new construction area and existing offsite paved area. First flush ponds 1+2 will capture from the east side of basin 100, first flush pond 3 will capture from a downspout from the building roof, and first flush pond 4 will capture from the south downspout from the roof. The required first flush volume generated by the new construction area is calculated at 362 cf (0.26" first flush depth). Collecting first flush from offsite areas is not required, however, because the offsite basins are available from existing elevations, offsite basin discharge is collected and credited towards the construction area required first flush volume. The first flush ponds #1 and #2 collect flow thru curb openings at upstream sides and release volume in excess of first flush thru downstream curb openings that are lower in elevation. First flush ponds #3 and #4 collect from sidewalk culvert inverts and release excess volume to the parking lot through curb openings.

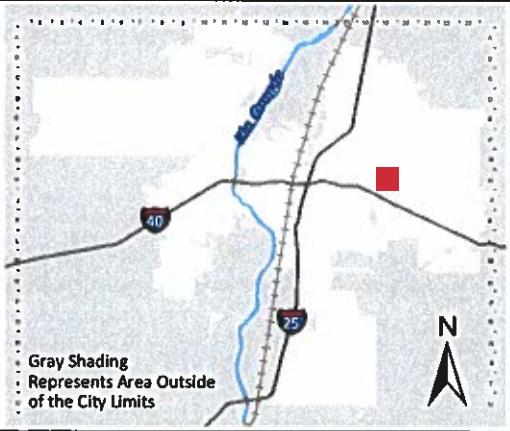
For more details about the Integrated Development Ordinance visit: http://www.cabq.gov/planning/codes-policies-regulations/integrated-development-ordinance

IDO Zone Atlas
May 2018

AGIS
Albuquerque Geographic Information System

IDO Zoning information as of May 17, 2018

The Zone Districts and Overlay Zones are established by the Integrated Development Ordinance (IDO).



Zone Atlas Page:
H-19-Z

- Easement
- Escarpment
- Petroglyph National Monument
- Areas Outside of City Limits
- Airport Protection Overlay (APO) Zone
- Character Protection Overlay (CPO) Zone
- Historic Protection Overlay (HPO) Zone
- View Protection Overlay (VPO) Zone

Feet
0 250 500 1,000


PROJECT SITE
LOUISIANA BLVD.
Cutler Ave NE

The Shops @ 24s

Existing Conditions:

Basin 200:

	SF	AC	SQ MI
Total Basin Area:	26594	0.6105	0.000954
Non-Impervious	2251	0.0517	
Impervious	24343	0.5588	

A	B	C	D
	4%	4%	92%

Basin 201:

	SF	AC	SQ MI
Total Basin Area:	8069	0.1852	0.000289
Non-Impervious	677	0.0155	
Impervious	7392	0.1697	

A	B	C	D
	4%	4%	92%

Proposed Conditions:

Basin 100:

	SF	AC	SQ MI
Total Basin Area:	30164	0.6925	0.001082
Non-Impervious	2355	0.0541	
Impervious	27809	0.6384	

A	B	C	D
	4%	4%	92%

Basin 101:

	SF	AC	SQ MI
Total Basin Area:	5578	0.1281	0.000200
Non-Impervious	0	0.0000	
Impervious	5578	0.1281	

A	B	C	D
	0%	0%	100%

Parking Lot Pond Volume Rating Table:

Orfice Dia (in)	6			Circumferance	1.5708
Orifice Invert	5222.13	C=	0.6	Weir Coeff	2.6

Elevation	Area	Incriment Depth	Incriment Volume	Cumulative Volume	Cumulative Volume (AF)	Head	Orifice Discharge (Both Inlets)	Weir Discharge (Both Inlets)
5222.3	0							
5,222.35	214	0.05	5.35	5.35	0.0001	0.22	0.89	0.84
5,222.55	550	0.20	76.43	81.77	0.0019	0.42	1.23	2.22
5,222.80	4323	0.25	609.21	690.98	0.0159	0.67	1.55	4.48
5,223.00	9259	0.20	1358.20	2049.18	0.0470	0.87	1.76	6.63
5,223.25	12700	0.25	2744.82	4794.01	0.1101	1.12	2.00	9.68
5,223.50	12700	0.25	3174.96	7968.96	0.1829	1.37	2.21	13.10

Basin 102:

	SF	AC	SQ MI
Total Basin Area:	1149	0.0264	0.000041
Non-Impervious	179	0.0041	
Impervious	970	0.0223	

A	B	C	D
	8%	8%	84%

Rainfall deduction:

Rainfall (Inches):	Type 1	0.00	1.84	2.38	2.77
First Flush Retention:		219			
	Basin 100 Area:	30164			
	Basin 101 Area:	5578			
	Total:	35742			
	Reduction (IN)	0.07			
Reduced Rainfall due to First Flush Retention:		0.00	1.77	2.31	2.70

Pond #4 Wier

First Flush Basin Pond	1872 (SF)		
Basin 101	5578 (SF)		
Flow by Proportion	0.20 (CFS)	Wier Depth (FT)	0.071

Width	2
Weir Coeff	2.6
Wier Discharge	0.20 (CFS)

Shops at the 24s

First Flush Pond Design Details

Area of Construction:	SF
	20085

Proposed (SF)

Impervious	Landscape
16709	3376

First Flush depth: (inches)	0.26
Required First Flush Volume based on Design: (CF)	362

Proposed Design First Flush Capacity		**Available First Flush**	
PONDS 1 & 2			
Depth (FT):	0.20	First Flush Basin to Ponds #1 & 2	
Bottom (SF)	295	Area	6266
		Available First	
Top (SF)	390	Flush	**136**
Volume (CF)	68.5		
Two Ponds (1&2)	137		
POND 3			
Depth (FT):	0.31	First Flush Basin to Pond #3	
Bottom (SF)	107	Area	1857
		Available First	
Top (SF)	156	Flush	**40**
Volume (CF)	41		
POND 4			
Depth (FT):	0.39	First Flush Basin to Pond #4	
Bottom (SF)	81	Area	1872
		Available First	
Top (SF)	128	Flush	**41**
Volume (CF)	41		
First Flush Credited Volume (CF)=			**217**

APPENDIX A

AHYMO Input, Summary, Output, and Rainfall

```
START          0.0 HOURS   PC=0  PL=-1
LOCATION            ALBUQUERQUE
*S SHOPS AT 24S-18018
*S ONSITE AND OFFSITE PROPERTY RUNOFF for 6" ORFICE PLATE
*S By Cory Pierce
RAINFALL            TYPE=1  0.0  1.75  2.29  2.68    DT=0.01
SEDIMENT BULK         CODE=1   BULK FACTOR = 1.06
*Basin to Reconstructed Inlet
COMPUTE NM HYD        ID=1  HYD=100 AREA=0.00108 SQ MI
                A B C D 0 4 4 92
                TP=0.13333  MASSRAIN=-1
PRINT HYD             ID=1  CODE=1
*Roof Drain Basin
COMPUTE NM HYD        ID=2  HYD=101 AREA=0.0002 SQ MI
                A B C D 0 0 0 100
                TP=0.13333  MASSRAIN=-1
PRINT HYD             ID=2  CODE=1
ADD HYD               ID=3 HYD=201 I=1   I=2
PRINT HYD             ID=3 CODE=1
*sPARKING LOT POND DESIGN WITH 100-YR DEVELOPED FLOWS TO DISCHARGE ORFICES AT ELEVATION
ROUTE RESERVOIR       ID=5  HYD NO=POND.OT  INFLOW=3 CODE=24
                                    OUTFLOW (CFS)    STORAGE(AF)    ELEV(FT)
                              0.84                0.0001              5222.35
                                    1.23                0.0019              5222.55
                                    1.55                0.0159              5222.80
                                    1.76                0.0470              5223.00
                                    2.00                0.1101              5223.25
                                    2.21                0.1829              5223.5
PRINT HYD                   ID=5 CODE 1
RAINFALL            TYPE=1  0.0  1.84  2.38  2.77    DT=0.01
*Existing Basin to Inlet
COMPUTE NM HYD        ID=10  HYD=200 AREA=0.00095 SQ MI
                A B C D 0 4 4 92
                TP=0.13333  MASSRAIN=-1
PRINT HYD             ID=10  CODE=1
*Existing Basin to inlet removed at building
COMPUTE NM HYD        ID=11  HYD=201 AREA=0.000289 SQ MI
                A B C D 0 4 4 92
                TP=0.13333  MASSRAIN=-1
PRINT HYD             ID=11  CODE=1
ADD HYD               ID=12 HYD=201 I=10   I=11
PRINT HYD             ID=12 CODE=1
*Basin to Reconstructed Inlet Assumed Undeveloped conditions
COMPUTE NM HYD        ID=13  HYD=300 AREA=0.00108 SQ MI
                A B C D 50 50 0 0
                TP=0.13333  MASSRAIN=-1
PRINT HYD             ID=13  CODE=1
*Roof Drain Basin Assumed Undeveloped conditions
COMPUTE NM HYD        ID=14  HYD=301 AREA=0.0002 SQ MI
                A B C D 50 50 0 0
                TP=0.13333  MASSRAIN=-1
```

```
PRINT HYD       ID=14  CODE=1
ADD HYD         ID=15 HYD=301 I=13   I=14
PRINT HYD       ID=15 CODE=1
FINISH
```

```
←(s16.66H
   AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                    - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR) =09/07/2018
   INPUT FILE = \2018\A18018 - Shops @ The 24's\Drainage\ahymo_Shops_at_24s_IN_6_6DPTH_D.txt USER NO.= M-GoodwinNMSiteA90075759

                                FROM  TO                    PEAK        RUNOFF              TIME TO    CFS      PAGE =    1
                        HYDROGRAPH   ID   ID        AREA    DISCHARGE    VOLUME     RUNOFF     PEAK     PER
   COMMAND          IDENTIFICATION   NO.  NO.     (SQ MI)    (CFS)      (AC-FT)   (INCHES)   (HOURS)   ACRE     NOTATION

   START                                                                                                    TIME=      0.00
   LOCATION                        ALBUQUERQUE
   *S SHOPS AT 24S -18018
   *S ONSITE AND OFFSITE PROPERTY RUNOFF for 6" ORFICE PLATE
   *S By Cory Pierce
   RAINFALL  TYPE= 1 NOAA 14                                                                                RAIN6=     2.290
   SEDIMENT BULK                                                                                            PK BF =     1.06
   COMPUTE NM HYD        100.00   -     1      0.00108      3.04       0.119      2.05994    1.530    4.402 PER IMP=   92.00
   COMPUTE NM HYD        101.00   -     2      0.00020      0.59       0.023      2.15739    1.520    4.587 PER IMP=  100.00
   ADD HYD               201.00  1& 2   3      0.00128      3.63       0.142      2.07479    1.530    4.431
   *sPARKING LOT POND DESIGN WITH 100-YR DEVELOPED FLOWS TO DISCHARGE ORFICES AT EL
   ROUTE RESERVOIR      POND.OT    3     5      0.00128      1.67       2.823     41.35085    1.720    2.038 AC-FT=     0.034
   RAINFALL  TYPE= 1 NOAA 14                                                                                RAIN6=     2.380
   COMPUTE NM HYD        200.00   -    10      0.00095      2.82       0.109      2.15400    1.530    4.640 PER IMP=   92.00
   COMPUTE NM HYD        201.00   -    11      0.00029      0.87       0.033      2.15400    1.530    4.695 PER IMP=   92.00
   ADD HYD               201.00 10&11  12      0.00124      3.69       0.142      2.15359    1.530    4.653
   COMPUTE NM HYD        300.00   -    13      0.00108      1.57       0.046      0.79588    1.540    2.274 PER IMP=    0.00
   COMPUTE NM HYD        301.00   -    14      0.00020      0.30       0.008      0.79588    1.540    2.338 PER IMP=    0.00
   ADD HYD               301.00 13&14  15      0.00128      1.87       0.054      0.79579    1.540    2.284
   FINISH
←(s10H
```

```
←(s16.66H

      AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
           RUN DATE (MON/DAY/YR) = 09/07/2018
           START TIME (HR:MIN:SEC) = 14:34:27     USER NO.= M-GoodwinNMSiteA90075759
           INPUT FILE = ects\2018\A18018 - Shops @ The 24's\Drainage\ahymo_Shops_at_24s_IN_6_6DPTH_D.txt

   START              0.0 HOURS    PC=0  PL=-1
   LOCATION              ALBUQUERQUE
        City of Albuquerque soil infiltration values (LAND FACTORS) used for computations.
        Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
              A            0.65                  1.67
              B            0.50                  1.25
              C            0.35                  0.83
              D            0.10                  0.04

   *S SHOPS AT 24S -18018
   *S ONSITE AND OFFSITE PROPERTY RUNOFF for 6" ORFICE PLATE
   *S By Cory Pierce
   RAINFALL              TYPE=1  0.0  1.75  2.29  2.68    DT=0.01

               6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
               DT =   0.010000 HOURS       END TIME =     6.000000 HOURS
                 0.0000  0.0007  0.0014  0.0022  0.0029  0.0036  0.0043
                 0.0050  0.0057  0.0065  0.0073  0.0081  0.0089  0.0097
                 0.0105  0.0113  0.0121  0.0129  0.0138  0.0147  0.0155
                 0.0164  0.0173  0.0182  0.0191  0.0200  0.0210  0.0220
                 0.0230  0.0240  0.0250  0.0260  0.0270  0.0280  0.0298
                 0.0321  0.0343  0.0366  0.0388  0.0411  0.0433  0.0455
                 0.0479  0.0504  0.0529  0.0554  0.0579  0.0604  0.0629
                 0.0654  0.0679  0.0706  0.0733  0.0760  0.0787  0.0815
                 0.0842  0.0869  0.0896  0.0924  0.0952  0.0980  0.1009
                 0.1037  0.1065  0.1094  0.1122  0.1151  0.1180  0.1210
                 0.1240  0.1269  0.1299  0.1329  0.1358  0.1388  0.1421
                 0.1454  0.1486  0.1519  0.1552  0.1585  0.1618  0.1651
                 0.1686  0.1723  0.1760  0.1797  0.1834  0.1870  0.1907
                 0.1944  0.1986  0.2036  0.2087  0.2137  0.2188  0.2238
                 0.2289  0.2340  0.2390  0.2458  0.2526  0.2594  0.2662
                 0.2729  0.2797  0.2865  0.2933  0.3019  0.3114  0.3209
                 0.3303  0.3398  0.3493  0.3588  0.3683  0.3794  0.3936
                 0.4079  0.4221  0.4364  0.4506  0.4649  0.4791  0.4934
                 0.5180  0.5426  0.5672  0.5918  0.6164  0.6410  0.6656
                 0.6902  0.7420  0.8076  0.8731  0.9386  1.0042  1.0697
                 1.1352  1.2007  1.2565  1.2929  1.3292  1.3655  1.4018
                 1.4382  1.4745  1.5108  1.5471  1.5654  1.5836  1.6019
                 1.6201  1.6384  1.6566  1.6749  1.6931  1.7069  1.7184
                 1.7299  1.7414  1.7529  1.7644  1.7759  1.7874  1.7977
                 1.8056  1.8136  1.8216  1.8296  1.8375  1.8455  1.8535
                 1.8614  1.8673  1.8731  1.8789  1.8848  1.8906  1.8964
```

1.9023	1.9081	1.9130	1.9174	1.9218	1.9262	1.9307
1.9351	1.9395	1.9439	1.9480	1.9515	1.9550	1.9584
1.9619	1.9654	1.9688	1.9723	1.9758	1.9789	1.9820
1.9851	1.9882	1.9914	1.9945	1.9976	2.0007	2.0035
2.0061	2.0087	2.0113	2.0139	2.0165	2.0191	2.0217
2.0242	2.0266	2.0290	2.0315	2.0339	2.0363	2.0387
2.0411	2.0435	2.0458	2.0482	2.0505	2.0528	2.0551
2.0575	2.0598	2.0621	2.0636	2.0647	2.0658	2.0668
2.0679	2.0690	2.0701	2.0711	2.0722	2.0732	2.0743
2.0753	2.0763	2.0774	2.0784	2.0795	2.0805	2.0815
2.0824	2.0834	2.0844	2.0853	2.0863	2.0873	2.0883
2.0892	2.0901	2.0911	2.0920	2.0930	2.0939	2.0948
2.0958	2.0967	2.0976	2.0985	2.0994	2.1004	2.1013
2.1022	2.1031	2.1040	2.1049	2.1057	2.1066	2.1074
2.1083	2.1092	2.1100	2.1109	2.1117	2.1126	2.1134
2.1142	2.1151	2.1159	2.1167	2.1176	2.1184	2.1192
2.1200	2.1208	2.1216	2.1225	2.1233	2.1241	2.1249
2.1257	2.1264	2.1272	2.1280	2.1288	2.1295	2.1303
2.1311	2.1318	2.1326	2.1333	2.1341	2.1349	2.1356
2.1364	2.1371	2.1379	2.1386	2.1393	2.1401	2.1408
2.1415	2.1423	2.1430	2.1437	2.1444	2.1451	2.1458
2.1465	2.1473	2.1480	2.1487	2.1494	2.1500	2.1507
2.1514	2.1521	2.1528	2.1535	2.1542	2.1549	2.1555
2.1562	2.1569	2.1576	2.1582	2.1589	2.1596	2.1602
2.1609	2.1616	2.1622	2.1629	2.1635	2.1642	2.1649
2.1655	2.1662	2.1668	2.1675	2.1681	2.1688	2.1694
2.1700	2.1707	2.1713	2.1720	2.1726	2.1732	2.1739
2.1745	2.1751	2.1758	2.1764	2.1770	2.1776	2.1783
2.1789	2.1795	2.1801	2.1807	2.1814	2.1820	2.1826
2.1832	2.1838	2.1844	2.1850	2.1856	2.1862	2.1868
2.1874	2.1880	2.1886	2.1892	2.1898	2.1904	2.1910
2.1916	2.1922	2.1928	2.1934	2.1940	2.1945	2.1951
2.1957	2.1963	2.1969	2.1975	2.1980	2.1986	2.1992
2.1997	2.2003	2.2009	2.2015	2.2020	2.2026	2.2032
2.2037	2.2043	2.2049	2.2054	2.2060	2.2065	2.2071
2.2077	2.2082	2.2088	2.2093	2.2099	2.2104	2.2110
2.2115	2.2121	2.2126	2.2132	2.2137	2.2143	2.2148
2.2153	2.2159	2.2164	2.2170	2.2175	2.2180	2.2186
2.2191	2.2196	2.2202	2.2207	2.2212	2.2217	2.2223
2.2228	2.2233	2.2239	2.2244	2.2249	2.2254	2.2259
2.2265	2.2270	2.2275	2.2280	2.2285	2.2290	2.2296
2.2301	2.2306	2.2311	2.2316	2.2321	2.2326	2.2331
2.2336	2.2341	2.2346	2.2351	2.2356	2.2361	2.2366
2.2371	2.2376	2.2381	2.2386	2.2391	2.2396	2.2401
2.2406	2.2411	2.2416	2.2421	2.2426	2.2431	2.2435
2.2440	2.2445	2.2450	2.2455	2.2460	2.2465	2.2469
2.2474	2.2479	2.2484	2.2489	2.2493	2.2498	2.2503
2.2508	2.2512	2.2517	2.2522	2.2526	2.2531	2.2536
2.2541	2.2545	2.2550	2.2555	2.2559	2.2564	2.2569
2.2573	2.2578	2.2582	2.2587	2.2592	2.2596	2.2601

```
                2.2605  2.2610  2.2615  2.2619  2.2624  2.2628  2.2633
                2.2637  2.2642  2.2646  2.2651  2.2655  2.2660  2.2664
                2.2669  2.2673  2.2678  2.2682  2.2686  2.2691  2.2695
                2.2700  2.2704  2.2709  2.2713  2.2717  2.2722  2.2726
                2.2731  2.2735  2.2739  2.2744  2.2748  2.2752  2.2757
                2.2761  2.2765  2.2770  2.2774  2.2778  2.2782  2.2787
                2.2791  2.2795  2.2800  2.2804  2.2808  2.2812  2.2817
                2.2821  2.2825  2.2829  2.2833  2.2838  2.2842  2.2846
                2.2850  2.2854  2.2859  2.2863  2.2867  2.2871  2.2875
                2.2879  2.2883  2.2888  2.2892  2.2896  2.2900

SEDIMENT BULK           CODE=1   BULK FACTOR = 1.06
*Basin to Reconstructed Inlet
COMPUTE NM HYD          ID=1  HYD=100 AREA=0.00108 SQ MI
                        A B C D 0 4 4 92
                        TP=0.13333  MASSRAIN=-1

     K =  0.072665HR    TP =  0.133330HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.9219    CFS   UNIT VOLUME =   0.9968       B =   526.28      P60 = 1.7500
     AREA =     0.000994 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000


     K =  0.118835HR    TP =  0.133330HR    K/TP RATIO =  0.891285     SHAPE CONSTANT, N =  3.978739
     UNIT PEAK =  0.22924    CFS   UNIT VOLUME =   0.9384       B =   353.75      P60 = 1.7500
     AREA =     0.000086 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=1  CODE=1

                                PARTIAL HYDROGRAPH   100.00


    RUNOFF VOLUME =     2.05994 INCHES     =       0.1187 ACRE-FEET
    PEAK DISCHARGE RATE =       3.04 CFS  AT   1.530 HOURS   BASIN AREA =  0.0011 SQ. MI.



*Roof Drain Basin
COMPUTE NM HYD          ID=2  HYD=101 AREA=0.0002 SQ MI
                        A B C D 0 0 0 100
                        TP=0.13333  MASSRAIN=-1

     K =  0.072665HR    TP =  0.133330HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =  0.78943    CFS   UNIT VOLUME =   0.9841       B =   526.28      P60 = 1.7500
     AREA =     0.000200 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000
```

```
    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=2  CODE=1

                                  PARTIAL HYDROGRAPH   101.00


    RUNOFF VOLUME =     2.15739 INCHES     =       0.0230 ACRE-FEET
    PEAK DISCHARGE RATE =       0.59 CFS  AT   1.520 HOURS   BASIN AREA =  0.0002 SQ. MI.


ADD HYD                 ID=3 HYD=201 I=1   I=2
PRINT HYD               ID=3 CODE=1

                                  PARTIAL HYDROGRAPH   201.00


    RUNOFF VOLUME =     2.07479 INCHES     =       0.1416 ACRE-FEET
    PEAK DISCHARGE RATE =       3.63 CFS  AT   1.530 HOURS   BASIN AREA =  0.0013 SQ. MI.


*sPARKING LOT POND DESIGN WITH 100-YR DEVELOPED FLOWS TO DISCHARGE ORFICES AT EL
ROUTE RESERVOIR         ID=5  HYD NO=POND.OT  INFLOW=3 CODE=24
                                  OUTFLOW (CFS)     STORAGE(AF)     ELEV(FT)
                                  0.84                  0.0001                5222.35
                                  1.23          0.0019                5222.55
                                  1.55          0.0159          5222.80
                                  1.76          0.0470          5223.00
                                  2.00          0.1101          5223.25
                                  2.21          0.1829          5223.5

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

    TIME      INFLOW    ELEV      VOLUME    OUTFLOW
    (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

     0.00       0.00   5221.92     -0.004      0.00
     0.24       0.00   5222.35      0.000      0.84
     0.48       0.00   5222.35      0.000      0.84
     0.72       0.04   5222.35      0.000      0.84
     0.96       0.22   5222.35      0.000      0.84
     1.20       0.51   5222.35      0.000      0.84
     1.44       2.36   5222.58      0.004      1.27
     1.68       2.01   5222.91      0.033      1.67
     1.92       0.74   5222.86      0.025      1.61
     2.16       0.34   5222.61      0.005      1.30
     2.40       0.20   5222.35      0.000      0.84
     2.64       0.07   5222.35      0.000      0.84
```

2.88	0.05	5222.35	0.000	0.84
3.12	0.04	5222.35	0.000	0.84
3.36	0.03	5222.35	0.000	0.84
3.60	0.03	5222.35	0.000	0.84
3.84	0.03	5222.35	0.000	0.84
4.08	0.03	5222.35	0.000	0.84
4.32	0.03	5222.35	0.000	0.84
4.56	0.03	5222.35	0.000	0.84
4.80	0.03	5222.35	0.000	0.84
5.04	0.03	5222.35	0.000	0.84
5.28	0.03	5222.35	0.000	0.84
5.52	0.03	5222.35	0.000	0.84
5.76	0.03	5222.35	0.000	0.84
6.00	0.03	5222.35	0.000	0.84
6.24	0.01	5222.35	0.000	0.84
6.48	0.00	5222.35	0.000	0.84
6.72	0.00	5222.35	0.000	0.84
6.96	0.00	5222.35	0.000	0.84
7.20	0.00	5222.35	0.000	0.84
7.44	0.00	5222.35	0.000	0.84
7.68	0.00	5222.35	0.000	0.84
7.92	0.00	5222.35	0.000	0.84
8.16	0.00	5222.35	0.000	0.84
8.40	0.00	5222.35	0.000	0.84
8.64	0.00	5222.35	0.000	0.84
8.88	0.00	5222.35	0.000	0.84
9.12	0.00	5222.35	0.000	0.84
9.36	0.00	5222.35	0.000	0.84
9.60	0.00	5222.35	0.000	0.84
9.84	0.00	5222.35	0.000	0.84
10.08	0.00	5222.35	0.000	0.84
10.32	0.00	5222.35	0.000	0.84
10.56	0.00	5222.35	0.000	0.84
10.80	0.00	5222.35	0.000	0.84
11.04	0.00	5222.35	0.000	0.84
11.28	0.00	5222.35	0.000	0.84
11.52	0.00	5222.35	0.000	0.84
11.76	0.00	5222.35	0.000	0.84
12.00	0.00	5222.35	0.000	0.84
12.24	0.00	5222.35	0.000	0.84
12.48	0.00	5222.35	0.000	0.84
12.72	0.00	5222.35	0.000	0.84
12.96	0.00	5222.35	0.000	0.84
13.20	0.00	5222.35	0.000	0.84

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
13.44	0.00	5222.35	0.000	0.84
13.68	0.00	5222.35	0.000	0.84

13.92	0.00	5222.35	0.000	0.84
14.16	0.00	5222.35	0.000	0.84
14.40	0.00	5222.35	0.000	0.84
14.64	0.00	5222.35	0.000	0.84
14.88	0.00	5222.35	0.000	0.84
15.12	0.00	5222.35	0.000	0.84
15.36	0.00	5222.35	0.000	0.84
15.60	0.00	5222.35	0.000	0.84
15.84	0.00	5222.35	0.000	0.84
16.08	0.00	5222.35	0.000	0.84
16.32	0.00	5222.35	0.000	0.84
16.56	0.00	5222.35	0.000	0.84
16.80	0.00	5222.35	0.000	0.84
17.04	0.00	5222.35	0.000	0.84
17.28	0.00	5222.35	0.000	0.84
17.52	0.00	5222.35	0.000	0.84
17.76	0.00	5222.35	0.000	0.84
18.00	0.00	5222.35	0.000	0.84
18.24	0.00	5222.35	0.000	0.84
18.48	0.00	5222.35	0.000	0.84
18.72	0.00	5222.35	0.000	0.84
18.96	0.00	5222.35	0.000	0.84
19.20	0.00	5222.35	0.000	0.84
19.44	0.00	5222.35	0.000	0.84
19.68	0.00	5222.35	0.000	0.84
19.92	0.00	5222.35	0.000	0.84
20.16	0.00	5222.35	0.000	0.84
20.40	0.00	5222.35	0.000	0.84
20.64	0.00	5222.35	0.000	0.84
20.88	0.00	5222.35	0.000	0.84
21.12	0.00	5222.35	0.000	0.84
21.36	0.00	5222.35	0.000	0.84
21.60	0.00	5222.35	0.000	0.84
21.84	0.00	5222.35	0.000	0.84
22.08	0.00	5222.35	0.000	0.84
22.32	0.00	5222.35	0.000	0.84
22.56	0.00	5222.35	0.000	0.84
22.80	0.00	5222.35	0.000	0.84
23.04	0.00	5222.35	0.000	0.84
23.28	0.00	5222.35	0.000	0.84
23.52	0.00	5222.35	0.000	0.84
23.76	0.00	5222.35	0.000	0.84
24.00	0.00	5222.35	0.000	0.84
24.24	0.00	5222.35	0.000	0.84
24.48	0.00	5222.35	0.000	0.84
24.72	0.00	5222.35	0.000	0.84
24.96	0.00	5222.35	0.000	0.84
25.20	0.00	5222.35	0.000	0.84
25.44	0.00	5222.35	0.000	0.84
25.68	0.00	5222.35	0.000	0.84

25.92	0.00	5222.35	0.000	0.84
26.16	0.00	5222.35	0.000	0.84
26.40	0.00	5222.35	0.000	0.84
26.64	0.00	5222.35	0.000	0.84

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
26.88	0.00	5222.35	0.000	0.84
27.12	0.00	5222.35	0.000	0.84
27.36	0.00	5222.35	0.000	0.84
27.60	0.00	5222.35	0.000	0.84
27.84	0.00	5222.35	0.000	0.84
28.08	0.00	5222.35	0.000	0.84
28.32	0.00	5222.35	0.000	0.84
28.56	0.00	5222.35	0.000	0.84
28.80	0.00	5222.35	0.000	0.84
29.04	0.00	5222.35	0.000	0.84
29.28	0.00	5222.35	0.000	0.84
29.52	0.00	5222.35	0.000	0.84
29.76	0.00	5222.35	0.000	0.84
30.00	0.00	5222.35	0.000	0.84
30.24	0.00	5222.35	0.000	0.84
30.48	0.00	5222.35	0.000	0.84
30.72	0.00	5222.35	0.000	0.84
30.96	0.00	5222.35	0.000	0.84
31.20	0.00	5222.35	0.000	0.84
31.44	0.00	5222.35	0.000	0.84
31.68	0.00	5222.35	0.000	0.84
31.92	0.00	5222.35	0.000	0.84
32.16	0.00	5222.35	0.000	0.84
32.40	0.00	5222.35	0.000	0.84
32.64	0.00	5222.35	0.000	0.84
32.88	0.00	5222.35	0.000	0.84
33.12	0.00	5222.35	0.000	0.84
33.36	0.00	5222.35	0.000	0.84
33.60	0.00	5222.35	0.000	0.84
33.84	0.00	5222.35	0.000	0.84
34.08	0.00	5222.35	0.000	0.84
34.32	0.00	5222.35	0.000	0.84
34.56	0.00	5222.35	0.000	0.84
34.80	0.00	5222.35	0.000	0.84
35.04	0.00	5222.35	0.000	0.84
35.28	0.00	5222.35	0.000	0.84
35.52	0.00	5222.35	0.000	0.84
35.76	0.00	5222.35	0.000	0.84
36.00	0.00	5222.35	0.000	0.84
36.24	0.00	5222.35	0.000	0.84
36.48	0.00	5222.35	0.000	0.84
36.72	0.00	5222.35	0.000	0.84

```
    36.96       0.00   5222.35       0.000       0.84
    37.20       0.00   5222.35       0.000       0.84
    37.44       0.00   5222.35       0.000       0.84
    37.68       0.00   5222.35       0.000       0.84
    37.92       0.00   5222.35       0.000       0.84
    38.16       0.00   5222.35       0.000       0.84
    38.40       0.00   5222.35       0.000       0.84
    38.64       0.00   5222.35       0.000       0.84
    38.88       0.00   5222.35       0.000       0.84
    39.12       0.00   5222.35       0.000       0.84
    39.36       0.00   5222.35       0.000       0.84
    39.60       0.00   5222.35       0.000       0.84
    39.84       0.00   5222.35       0.000       0.84
 PEAK DISCHARGE =         1.669 CFS - PEAK OCCURS AT HOUR    1.72
 MAXIMUM WATER SURFACE ELEVATION =     5222.914
 MAXIMUM STORAGE =         0.0336 AC-FT      INCREMENTAL TIME=    0.010000HRS

PRINT HYD                      ID=5 CODE 1

                                        HYDROGRAPH FROM AREA POND.OT


    RUNOFF VOLUME =    41.35085 INCHES     =       2.8229 ACRE-FEET
    PEAK DISCHARGE RATE =       1.67 CFS  AT   1.720 HOURS   BASIN AREA =  0.0013 SQ. MI.


RAINFALL               TYPE=1  0.0  1.84  2.38  2.77    DT=0.01

              6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
              DT =   0.010000 HOURS       END TIME =     6.000000 HOURS
                0.0000  0.0007  0.0014  0.0022  0.0029  0.0036  0.0043
                0.0050  0.0057  0.0065  0.0073  0.0081  0.0089  0.0097
                0.0105  0.0113  0.0121  0.0129  0.0138  0.0147  0.0155
                0.0164  0.0173  0.0182  0.0191  0.0200  0.0210  0.0220
                0.0230  0.0240  0.0250  0.0260  0.0270  0.0280  0.0298
                0.0321  0.0343  0.0366  0.0388  0.0410  0.0433  0.0455
                0.0479  0.0504  0.0529  0.0553  0.0578  0.0603  0.0628
                0.0653  0.0678  0.0705  0.0733  0.0760  0.0787  0.0814
                0.0841  0.0868  0.0895  0.0923  0.0951  0.0980  0.1008
                0.1036  0.1065  0.1093  0.1121  0.1150  0.1180  0.1209
                0.1239  0.1269  0.1298  0.1328  0.1358  0.1387  0.1420
                0.1453  0.1486  0.1519  0.1552  0.1585  0.1617  0.1650
                0.1686  0.1723  0.1760  0.1797  0.1834  0.1871  0.1908
                0.1945  0.1987  0.2040  0.2093  0.2147  0.2200  0.2253
                0.2306  0.2359  0.2413  0.2484  0.2555  0.2627  0.2698
                0.2769  0.2841  0.2912  0.2983  0.3073  0.3173  0.3273
                0.3373  0.3473  0.3572  0.3672  0.3772  0.3888  0.4038
                0.4188  0.4338  0.4488  0.4637  0.4787  0.4937  0.5087
                0.5346  0.5604  0.5863  0.6121  0.6380  0.6639  0.6897
```

0.7156	0.7701	0.8390	0.9079	0.9768	1.0457	1.1146
1.1835	1.2524	1.3111	1.3493	1.3875	1.4257	1.4639
1.5021	1.5402	1.5784	1.6166	1.6358	1.6550	1.6742
1.6934	1.7126	1.7318	1.7510	1.7702	1.7846	1.7967
1.8088	1.8209	1.8330	1.8450	1.8571	1.8692	1.8801
1.8884	1.8968	1.9052	1.9136	1.9220	1.9303	1.9387
1.9471	1.9532	1.9594	1.9655	1.9716	1.9778	1.9839
1.9900	1.9962	2.0013	2.0060	2.0106	2.0153	2.0199
2.0245	2.0292	2.0338	2.0381	2.0416	2.0450	2.0485
2.0520	2.0555	2.0590	2.0624	2.0659	2.0690	2.0722
2.0753	2.0784	2.0815	2.0846	2.0877	2.0909	2.0936
2.0962	2.0988	2.1014	2.1040	2.1066	2.1092	2.1118
2.1144	2.1168	2.1192	2.1216	2.1240	2.1264	2.1288
2.1312	2.1336	2.1359	2.1382	2.1406	2.1429	2.1452
2.1475	2.1498	2.1522	2.1536	2.1547	2.1558	2.1569
2.1580	2.1590	2.1601	2.1612	2.1623	2.1633	2.1643
2.1654	2.1664	2.1675	2.1685	2.1695	2.1706	2.1715
2.1725	2.1735	2.1745	2.1754	2.1764	2.1774	2.1783
2.1793	2.1802	2.1812	2.1821	2.1831	2.1840	2.1849
2.1859	2.1868	2.1877	2.1886	2.1896	2.1905	2.1914
2.1923	2.1932	2.1941	2.1950	2.1958	2.1967	2.1976
2.1984	2.1993	2.2001	2.2010	2.2018	2.2027	2.2035
2.2044	2.2052	2.2060	2.2069	2.2077	2.2085	2.2093
2.2102	2.2110	2.2118	2.2126	2.2134	2.2142	2.2150
2.2158	2.2166	2.2174	2.2181	2.2189	2.2197	2.2204
2.2212	2.2220	2.2227	2.2235	2.2242	2.2250	2.2257
2.2265	2.2273	2.2280	2.2287	2.2295	2.2302	2.2309
2.2317	2.2324	2.2332	2.2339	2.2346	2.2353	2.2360
2.2367	2.2374	2.2381	2.2388	2.2395	2.2402	2.2409
2.2416	2.2423	2.2429	2.2436	2.2443	2.2450	2.2457
2.2464	2.2470	2.2477	2.2484	2.2490	2.2497	2.2504
2.2511	2.2517	2.2524	2.2530	2.2537	2.2544	2.2550
2.2557	2.2563	2.2570	2.2576	2.2583	2.2589	2.2595
2.2602	2.2608	2.2615	2.2621	2.2628	2.2634	2.2640
2.2646	2.2653	2.2659	2.2665	2.2672	2.2678	2.2684
2.2690	2.2696	2.2703	2.2709	2.2715	2.2721	2.2727
2.2733	2.2739	2.2745	2.2752	2.2758	2.2764	2.2770
2.2776	2.2782	2.2788	2.2794	2.2800	2.2806	2.2811
2.2817	2.2823	2.2829	2.2835	2.2841	2.2847	2.2853
2.2858	2.2864	2.2870	2.2876	2.2882	2.2887	2.2893
2.2899	2.2905	2.2910	2.2916	2.2922	2.2927	2.2933
2.2939	2.2944	2.2950	2.2956	2.2961	2.2967	2.2972
2.2978	2.2983	2.2989	2.2995	2.3000	2.3006	2.3011
2.3017	2.3022	2.3027	2.3033	2.3038	2.3044	2.3049
2.3055	2.3060	2.3065	2.3071	2.3076	2.3081	2.3087
2.3092	2.3098	2.3103	2.3108	2.3113	2.3119	2.3124
2.3129	2.3134	2.3140	2.3145	2.3150	2.3155	2.3161
2.3166	2.3171	2.3176	2.3181	2.3186	2.3192	2.3197
2.3202	2.3207	2.3212	2.3217	2.3222	2.3227	2.3232
2.3237	2.3242	2.3247	2.3252	2.3257	2.3262	2.3267

```
                2.3272  2.3277  2.3282  2.3287  2.3292  2.3297  2.3302
                2.3307  2.3312  2.3317  2.3322  2.3327  2.3331  2.3336
                2.3341  2.3346  2.3351  2.3356  2.3361  2.3365  2.3370
                2.3375  2.3380  2.3385  2.3389  2.3394  2.3399  2.3404
                2.3408  2.3413  2.3418  2.3422  2.3427  2.3432  2.3437
                2.3441  2.3446  2.3451  2.3455  2.3460  2.3465  2.3469
                2.3474  2.3478  2.3483  2.3488  2.3492  2.3497  2.3501
                2.3506  2.3511  2.3515  2.3520  2.3524  2.3529  2.3533
                2.3538  2.3542  2.3547  2.3551  2.3556  2.3560  2.3565
                2.3569  2.3574  2.3578  2.3582  2.3587  2.3591  2.3596
                2.3600  2.3605  2.3609  2.3613  2.3618  2.3622  2.3627
                2.3631  2.3635  2.3640  2.3644  2.3648  2.3653  2.3657
                2.3661  2.3666  2.3670  2.3674  2.3678  2.3683  2.3687
                2.3691  2.3696  2.3700  2.3704  2.3708  2.3712  2.3717
                2.3721  2.3725  2.3729  2.3734  2.3738  2.3742  2.3746
                2.3750  2.3754  2.3759  2.3763  2.3767  2.3771  2.3775
                2.3779  2.3783  2.3788  2.3792  2.3796  2.3800

*Existing Basin to Inlet
COMPUTE NM HYD          ID=10  HYD=200 AREA=0.00095 SQ MI
                        A B C D 0 4 4 92
                        TP=0.13333  MASSRAIN=-1

     K =  0.072665HR    TP =  0.133330HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.4498    CFS   UNIT VOLUME =   0.9963       B =   526.28      P60 = 1.8400
     AREA =     0.000874 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000


     K =  0.118551HR    TP =  0.133330HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.20203    CFS   UNIT VOLUME =   0.9294       B =   354.44      P60 = 1.8400
     AREA =     0.000076 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=10  CODE=1

                                PARTIAL HYDROGRAPH   200.00


    RUNOFF VOLUME =     2.15400 INCHES     =       0.1091 ACRE-FEET
    PEAK DISCHARGE RATE =       2.82 CFS  AT   1.530 HOURS   BASIN AREA =  0.0010 SQ. MI.



*Existing Basin to inlet removed at building
COMPUTE NM HYD          ID=11  HYD=201 AREA=0.000289 SQ MI
                        A B C D 0 4 4 92
                        TP=0.13333  MASSRAIN=-1
```

```
     K =  0.072665HR    TP =  0.133330HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.0495    CFS   UNIT VOLUME =   0.9879       B =   526.28      P60 = 1.8400
     AREA =     0.000266 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000


     K =  0.118551HR    TP =  0.133330HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.61461E-01CFS   UNIT VOLUME =   0.8652       B =   354.44      P60 = 1.8400
     AREA =     0.000023 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD              ID=11  CODE=1

                                PARTIAL HYDROGRAPH   201.00


    RUNOFF VOLUME =     2.15400 INCHES     =       0.0332 ACRE-FEET
    PEAK DISCHARGE RATE =       0.87 CFS  AT   1.530 HOURS   BASIN AREA =  0.0003 SQ. MI.


ADD HYD                ID=12 HYD=201 I=10   I=11
PRINT HYD              ID=12 CODE=1

                                PARTIAL HYDROGRAPH   201.00


    RUNOFF VOLUME =     2.15359 INCHES     =       0.1423 ACRE-FEET
    PEAK DISCHARGE RATE =       3.69 CFS  AT   1.530 HOURS   BASIN AREA =  0.0012 SQ. MI.


*Basin to Reconstructed Inlet Assumed Undeveloped conditions
COMPUTE NM HYD         ID=13  HYD=300 AREA=0.00108 SQ MI
                       A B C D 50 50 0 0
                       TP=0.13333  MASSRAIN=-1

     K =  0.148013HR    TP =  0.133330HR    K/TP RATIO =  1.110127     SHAPE CONSTANT, N =  3.185207
     UNIT PEAK =   2.4025    CFS   UNIT VOLUME =   0.9938       B =   296.60      P60 = 1.8400
     AREA =     0.001080 SQ MI    IA =   0.57500 INCHES    INF =   1.46000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD              ID=13  CODE=1

                                HYDROGRAPH FROM AREA   300.00
```

```
    RUNOFF VOLUME =      0.79588 INCHES      =        0.0458 ACRE-FEET
    PEAK DISCHARGE RATE =        1.57 CFS  AT    1.540 HOURS    BASIN AREA =  0.0011 SQ. MI.


*Roof Drain Basin Assumed Undeveloped conditions
COMPUTE NM HYD          ID=14  HYD=301 AREA=0.0002 SQ MI
                        A B C D 50 50 0 0
                        TP=0.13333  MASSRAIN=-1

     K =  0.148013HR    TP =  0.133330HR    K/TP RATIO =  1.110127     SHAPE CONSTANT, N =  3.185207
     UNIT PEAK =  0.44491    CFS   UNIT VOLUME =    0.9666       B =   296.60      P60 = 1.8400
     AREA =     0.000200 SQ MI    IA =   0.57500 INCHES    INF =   1.46000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.010000

    BULKING FACTOR APPLIED TO HYDROGRAPH.  FACTOR =  1.06000 AT PEAK FLOW.

PRINT HYD               ID=14  CODE=1

                                        HYDROGRAPH FROM AREA   301.00


    RUNOFF VOLUME =      0.79588 INCHES      =        0.0085 ACRE-FEET
    PEAK DISCHARGE RATE =        0.30 CFS  AT    1.540 HOURS    BASIN AREA =  0.0002 SQ. MI.


ADD HYD                 ID=15 HYD=301 I=13   I=14
PRINT HYD               ID=15 CODE=1

                                        HYDROGRAPH FROM AREA   301.00


    RUNOFF VOLUME =      0.79579 INCHES      =        0.0543 ACRE-FEET
    PEAK DISCHARGE RATE =        1.87 CFS  AT    1.540 HOURS    BASIN AREA =  0.0013 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 14:34:27
-(s10H
```

18018 Shops at 245

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, USA*
Latitude: 35.1032°, Longitude: -106.5662°
Elevation: 5291.66 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.177 (0.151-0.209)	0.229 (0.194-0.270)	0.308 (0.260-0.363)	0.368 (0.311-0.432)	0.451 (0.379-0.529)	0.515 (0.432-0.605)	0.584 (0.485-0.684)	0.655 (0.541-0.767)	0.752 (0.615-0.881)	0.829 (0.674-0.971)
10-min	0.270 (0.230-0.318)	0.349 (0.296-0.411)	0.468 (0.396-0.552)	0.560 (0.472-0.658)	0.686 (0.577-0.805)	0.785 (0.656-0.921)	0.889 (0.737-1.04)	0.998 (0.823-1.17)	1.14 (0.935-1.34)	1.26 (1.03-1.48)
15-min	0.334 (0.285-0.393)	0.432 (0.367-0.509)	0.580 (0.492-0.684)	0.694 (0.586-0.816)	0.851 (0.715-0.998)	0.973 (0.814-1.14)	1.10 (0.914-1.29)	1.24 (1.02-1.45)	1.42 (1.16-1.66)	1.56 (1.27-1.83)
30-min	0.450 (0.383-0.529)	0.582 (0.494-0.686)	0.782 (0.662-0.921)	0.935 (0.789-1.10)	1.15 (0.963-1.34)	1.31 (1.10-1.54)	1.48 (1.23-1.74)	1.67 (1.37-1.95)	1.91 (1.56-2.24)	2.11 (1.71-2.47)
60-min	0.557 (0.475-0.655)	0.720 (0.611-0.849)	0.967 (0.819-1.14)	1.16 (0.976-1.36)	1.42 (1.19-1.66)	1.62 (1.36-1.90)	1.84 (1.52-2.15)	2.06 (1.70-2.41)	2.36 (1.93-2.77)	2.61 (2.12-3.05)
2-hr	0.653 (0.547-0.791)	0.836 (0.702-1.02)	1.11 (0.926-1.34)	1.32 (1.10-1.59)	1.62 (1.34-1.95)	1.87 (1.54-2.24)	2.12 (1.73-2.55)	2.39 (1.94-2.86)	2.77 (2.22-3.31)	3.07 (2.44-3.68)
3-hr	0.696 (0.587-0.838)	0.884 (0.745-1.07)	1.16 (0.976-1.39)	1.38 (1.15-1.65)	1.68 (1.40-2.01)	1.93 (1.60-2.30)	2.19 (1.80-2.61)	2.46 (2.01-2.94)	2.84 (2.30-3.39)	3.16 (2.53-3.77)
6-hr	0.810 (0.689-0.970)	1.02 (0.869-1.23)	1.32 (1.12-1.57)	1.55 (1.31-1.85)	1.87 (1.57-2.22)	2.12 (1.77-2.52)	2.38 (1.99-2.83)	2.66 (2.20-3.15)	3.03 (2.49-3.59)	3.34 (2.72-3.96)
12-hr	0.895 (0.770-1.04)	1.13 (0.971-1.32)	1.43 (1.23-1.67)	1.67 (1.43-1.94)	1.99 (1.70-2.31)	2.24 (1.90-2.60)	2.51 (2.11-2.90)	2.77 (2.32-3.21)	3.13 (2.60-3.64)	3.43 (2.83-3.98)
24-hr	1.02 (0.895-1.18)	1.28 (1.12-1.48)	1.61 (1.40-1.85)	1.87 (1.63-2.15)	2.22 (1.92-2.55)	2.49 (2.15-2.85)	2.77 (2.39-3.17)	3.06 (2.62-3.50)	3.44 (2.93-3.94)	3.75 (3.17-4.29)
2-day	1.08 (0.942-1.23)	1.35 (1.18-1.54)	1.70 (1.48-1.93)	1.97 (1.72-2.24)	2.33 (2.03-2.65)	2.61 (2.26-2.97)	2.91 (2.51-3.31)	3.21 (2.75-3.65)	3.61 (3.08-4.12)	3.92 (3.33-4.48)
3-day	1.18 (1.05-1.31)	1.47 (1.31-1.64)	1.82 (1.63-2.03)	2.10 (1.87-2.34)	2.47 (2.20-2.76)	2.76 (2.45-3.08)	3.06 (2.70-3.41)	3.36 (2.95-3.74)	3.75 (3.29-4.19)	4.06 (3.54-4.54)
4-day	1.27 (1.16-1.40)	1.58 (1.44-1.73)	1.94 (1.77-2.13)	2.23 (2.03-2.44)	2.62 (2.37-2.86)	2.91 (2.63-3.18)	3.21 (2.89-3.51)	3.51 (3.15-3.84)	3.90 (3.49-4.27)	4.20 (3.74-4.61)
7-day	1.45 (1.33-1.59)	1.81 (1.65-1.97)	2.20 (2.01-2.40)	2.51 (2.29-2.73)	2.92 (2.66-3.17)	3.22 (2.93-3.51)	3.53 (3.20-3.84)	3.82 (3.47-4.16)	4.21 (3.81-4.59)	4.50 (4.05-4.91)
10-day	1.61 (1.48-1.76)	2.00 (1.83-2.17)	2.45 (2.25-2.66)	2.81 (2.58-3.04)	3.28 (3.00-3.55)	3.63 (3.31-3.93)	3.99 (3.63-4.32)	4.34 (3.94-4.70)	4.80 (4.33-5.20)	5.14 (4.62-5.58)
20-day	2.03 (1.86-2.22)	2.52 (2.31-2.76)	3.07 (2.81-3.35)	3.48 (3.18-3.79)	4.00 (3.65-4.36)	4.38 (3.99-4.77)	4.76 (4.32-5.17)	5.10 (4.63-5.55)	5.55 (5.02-6.04)	5.86 (5.29-6.39)
30-day	2.44 (2.23-2.65)	3.03 (2.77-3.28)	3.65 (3.34-3.95)	4.11 (3.75-4.45)	4.68 (4.28-5.06)	5.10 (4.64-5.51)	5.49 (5.00-5.94)	5.86 (5.33-6.34)	6.31 (5.72-6.83)	6.63 (6.00-7.18)
45-day	2.98 (2.74-3.24)	3.70 (3.40-4.01)	4.41 (4.06-4.78)	4.92 (4.52-5.33)	5.55 (5.10-6.01)	5.98 (5.49-6.47)	6.37 (5.85-6.89)	6.72 (6.16-7.28)	7.13 (6.53-7.73)	7.39 (6.77-8.00)
60-day	3.43 (3.16-3.73)	4.25 (3.92-4.62)	5.08 (4.68-5.50)	5.67 (5.22-6.14)	6.38 (5.87-6.91)	6.87 (6.32-7.44)	7.32 (6.74-7.94)	7.72 (7.11-8.39)	8.19 (7.54-8.91)	8.50 (7.82-9.24)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

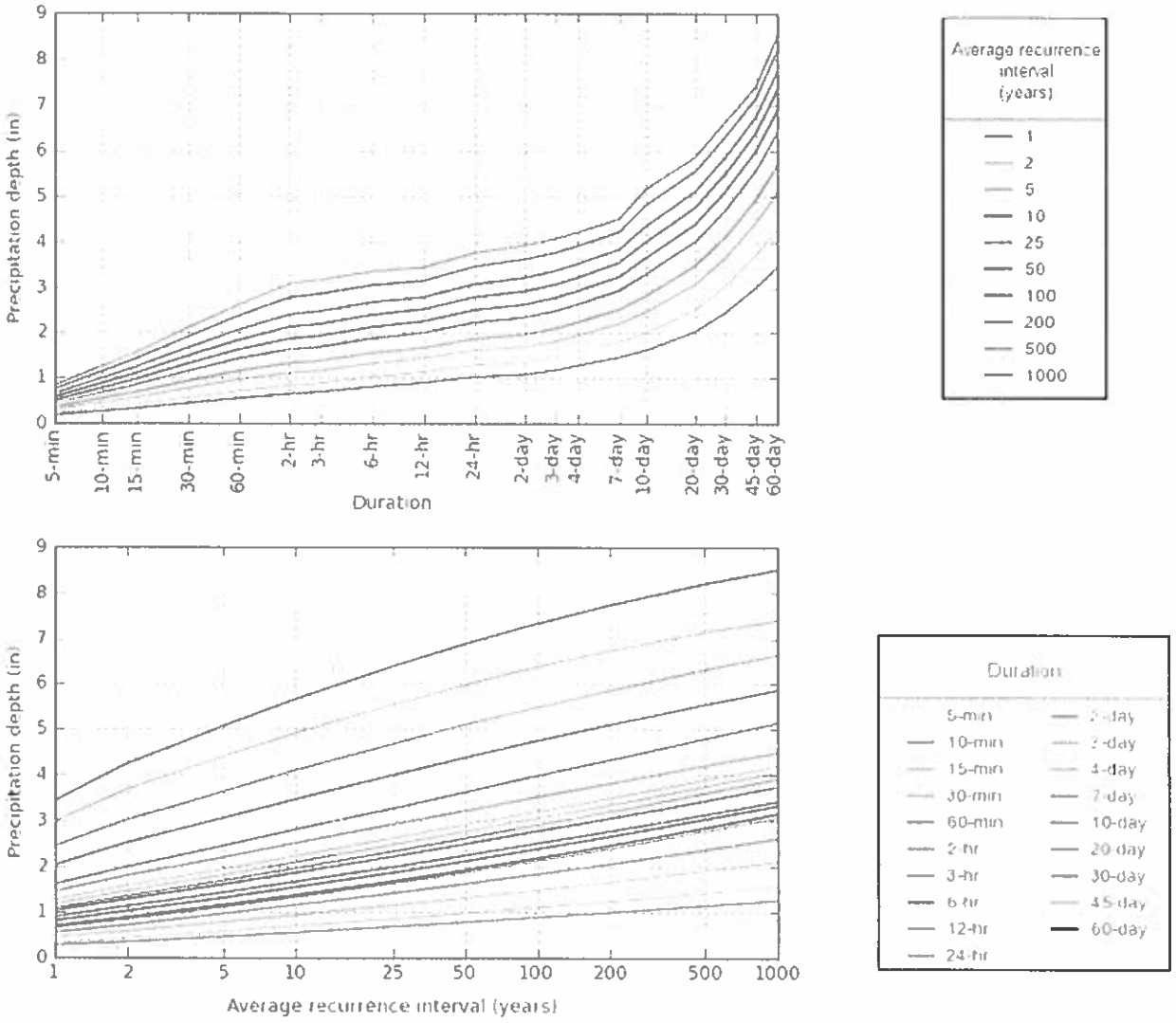
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 35.1032°, Longitude: -106.5662°

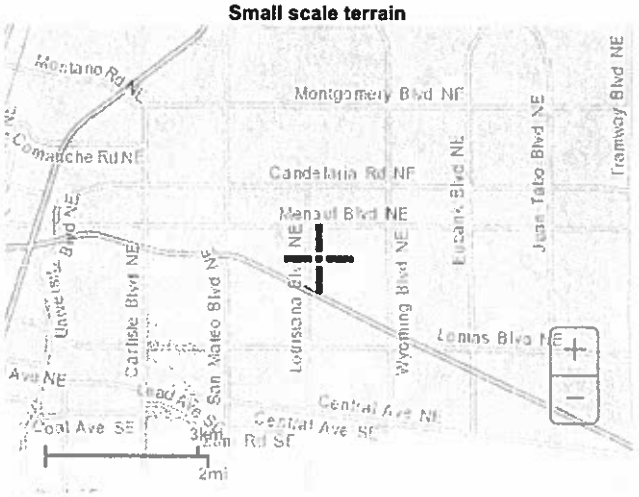


NOAA Atlas 14, Volume 1, Version 5 Created (GMT): Thu Jul 19 00:27:26 2018

Back to Top

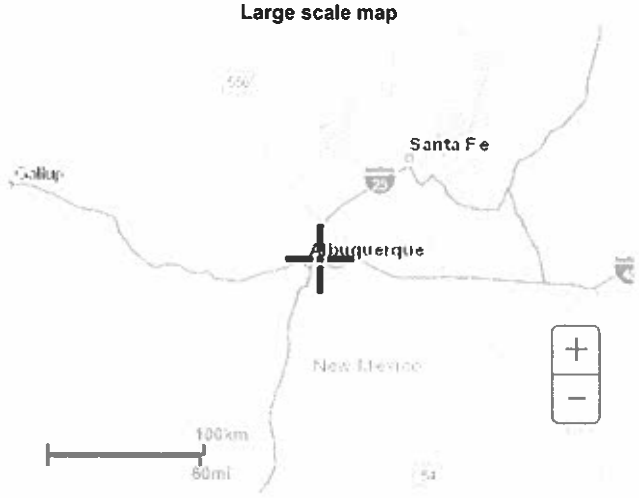
Maps & aerials

Small scale terrain

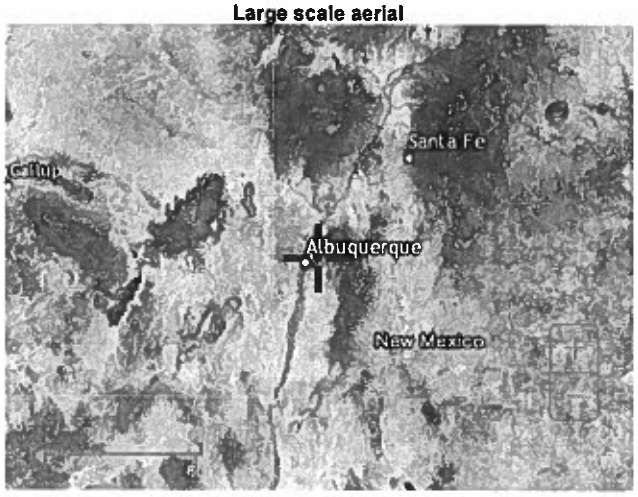


Large scale terrain

Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions? HDSC.Questions@noaa.gov

APPENDIX B

Drainage Covenant

#2
(NO PUBLIC EASEMENT)

DRAINAGE COVENANT

This Drainage Covenant ("Covenant"), between _____ ("Owner"), whose address is _____ and whose telephone number is (___) _____ and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner signs this Covenant.

1. Recital. Owner is the current owner of certain real property described as:

_____

_____

_____

in Bernalillo County, New Mexico (the "Property"). (Give legal description and filing information).

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain drainage facilities ("Drainage Facility") on the Property, and the parties wish to enter into this Covenant to establish the obligations and responsibilities of the parties.

2. Description and Construction of Drainage Facilities. Owner shall construct the following "Drainage Facility" within the Property at Owner's sole expense in accordance with the standard plans and specifications approved by the City pursuant to Drainage File No. _____

_____

_____.

The Drainage Facility is more particularly described in the attached Exhibit A. The Owner will not permit the Drainage Facility to constitute a hazard to the health or safety of the general public.

3. Maintenance of Drainage Facility. The Owner will maintain the Drainage Facility at the Owner's cost in accordance with the approved Drainage Report and plans.

4. City's Right of Entry. The City has the right to enter upon the Property at any time and perform whatever inspection, maintenance or repair of the Drainage Facility it deems appropriate, without liability to the Owner.

5. Demand for Construction or Repair. The City may send written notice ("Notice") to the Owner requiring the Owner to construct or repair the Drainage Facility within thirty (30) days ("Deadline") of receipt of the Notice, as provided in Section 11, and the Owner will comply promptly with the requirements of the Notice. The Owner will perform all required work by the Deadline, at Owner's sole expense.

6. Failure to Perform by Owner and Emergency Work by City. If the Owner fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the City may perform the work itself. The City may assess the Owner for the cost of the work and for any other expenses or damages, which result from Owner's failure to perform. The Owner agrees promptly to pay the City the amount assessed. If the Owner fails to pay the City within thirty (30) days after the City gives the Owner written notice of the amount due, the City may impose a lien against Owner's Property for the total resulting amount.

7. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Owner for any damages resulting from the City's maintenance or repair following Notice to the Owner as required in this Covenant or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City

8. Indemnification. The Owner agrees to indemnify and save the City, its officials, agents and employees harmless from all claims, actions, suits and proceedings arising out of, or resulting from the Owner's negligent maintenance, construction, repair or use of the Drainage Facility. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Covenant, this Covenant to indemnify will not extend to liability, claims, damages, losses or expenses, including attorneys' fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the Owner or its agents or employees; or (2) the giving of or the failure to give directions or instructions by the Owner, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

9. Cancellation of Agreement and Release of Covenant. This Covenant may be released if the Drainage Facility is no longer required for the protection of the public health, safety and welfare by the City filing a "Notice of Release" with the Bernalillo County Clerk. The Notice of Release must be signed by the City's Chief Administrative Officer or his designee, and the approval of the City Hydrologist must be endorsed thereon.

10. Assessment. Nothing in this Covenant shall be construed to relieve the Owner, its heirs, assigns and successors from an assessment against the Owner's Property for improvements to the Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facility will not reduce the amount assessed by the City.

11. Notice. For purposes of giving formal written notice to the Owner, Owner's address is:

_____

_____

_____

Notice may be given to the Owner either in person or by mailing the Notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the Owner within three (3) days after the Notice is mailed if there is no actual evidence of receipt. The Owner may change Owner's address by giving written notice of the change by Certified Mail-Return Receipt Requested,

to City Hydrologist, P.O. Box 1293, Albuquerque, New Mexico 87103.

12. Term. This Covenant shall continue until terminated by the City pursuant to Section 9 above.

13. Binding on Owner's Property. The covenants and obligations of the Owner set forth herein shall be binding on Owner, its heirs, personal representatives, assigns and successors and on Owner's Property and shall constitute covenants running with the Owner's Property until released by the City.

14. Entire Agreement. This Covenant contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith regarding this subject matter.

15. Changes to Agreement. Changes to this Covenant are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Covenant is held to be invalid or unenforceable, the remainder of the Covenant will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Covenant are not part of this Covenant and will not affect the meaning of construction of any of its provisions.

OWNER:

By [signature]: _____

Name [print]: _____

Title: _____

Dated: _____

CITY OF ALBUQUERQUE:

By: _____

Shahab Biazar, P.E., City engineer

Dated: _____

OWNER'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
)ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on this _____ day of _____, 20___, by _____ (name of person signing permit), _____(title of person signing permit) of _____ (Owner).

(SEAL)

_____
Notary Public
My Commission Expires: _____

CITY'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
)ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on this _____ day of _____20__, by Shahab Biazar, P.E., City Engineer, of the City of Albuquerque, a municipal corporation, on behalf of said corporation.

(SEAL)

_____
Notary Public
My Commission Expires: _____

(EXHIBIT A ATTACHED)

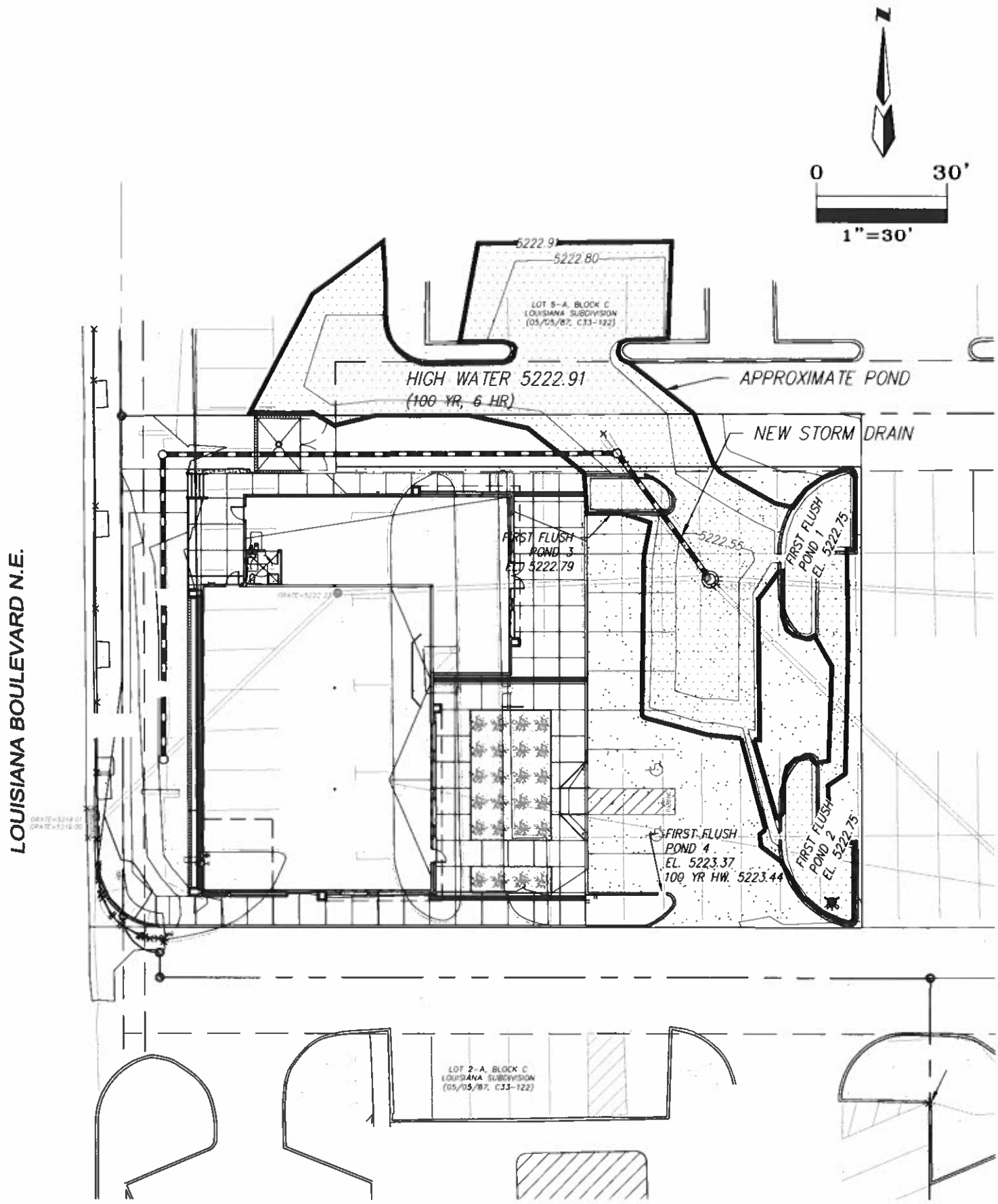


EXHIBIT A
DETENTION POND & STORM DRAIN
2424 LOUISIANA BLVD
LOT 3-A-1, BLOCK C

F:\A18JOBS\A18018 Shops at The 24's\GRADE & DRAIN\A1808_G&D PLAN.dwg, 9/10/2018 9:44:25 AM, cory

Shops at the 24s

First Flush Pond Design Details

Area of Construction:	SF 20085

Proposed (SF)

Impervious	Landscape
16709	3376

First Flush depth: (inches)	0.26
Required First Flush Volume based on Design: (CF)	362

Proposed Design First Flush Capacity		**Available First Flush**	
PONDS 1 & 2			
Depth (FT):	0.20	First Flush Basin to Ponds #1 & 2	
Bottom (SF)	295	Area	6266
		Available First	
Top (SF)	390	Flush	**136**
Volume (CF)	68.5		
Two Ponds (1&2)	137		
POND 3			
Depth (FT):	0.31	First Flush Basin to Pond #3	
Bottom (SF)	107	Area	1857
		Available First	
Top (SF)	156	Flush	**40**
Volume (CF)	41		
POND 4			
Depth (FT):	0.39	First Flush Basin to Pond #4	
Bottom (SF)	81	Area	1872
		Available First	
Top (SF)	128	Flush	**41**
Volume (CF)	41		
First Flush Credited Volume (CF)=			**217**


Cutler Ave NE

APPENDIX C

Past Reports

DRAINAGE REPORT
FOR
AMERICAN FINANCIAL CENTER
(FORMERLY AMERICAN PLAZA)

Zone Atlas Sheet H–19

PREPARED BY

Bohannan–Huston, Inc.
4125 Carlisle Blvd., N.E.
Albuquerque, New Mexico 87107

Michael J. Irwin, P.E.
N.M.P.E. No. 7498

Job No. 0 133 1

H19D1

TABLE OF CONTENTS
AMERICAN FINANCIAL CENTER

APPENDIX

COMPUTATIONS

PLATES

DRAINAGE REPORT
FOR
AMERICAN FINANCIAL CENTER
(FORMERLY AMERICAN PLAZA)

INTRODUCTION

The purpose of this report is to determine the undeveloped and developed runoff from American Financial Center. Recommendations for development to ensure compliance with city guidelines are presented.

PROJECT LOCATION AND DESCRIPTION

American Financial Center lies approximately 500 feet south of Menaul Boulevard on the east side of Louisiana Boulevard. The site is bordered by Louisiana Boulevard, Cutler Avenue, and Prospect Place.

The site contains approximately six acres that are to be developed as a two, four, and twelve story office complex. Since the property is expensive and small, none of it is used for a detention area without other functions, therefore retention is impractical.

HYDROLOGY

Peak runoff rates were determined using the Rational Formula for a 100-year, 6-hour storm. Rainfall intensities were computed from curves presented in the AMAFCA Resolution 1980–15, Apprndix A. The 5-year storm intensity curves were computed using rainfall records for the Albuquerque area. Detention basin volume requirements were based on the modified rational method analysis, as presented in ***Practices in Detention of Urban Storm Water Runoff,*** prepared by the American Public Works Association. Computations are provided in the Appendix.

EXISTING DRAINAGE

The site slopes from east to west basically but it has been modified by previous on-site grading. Existing runoff discharges to the southwest into the existing development and eventually to Louisiana Boulevard and Cutler Avenue. No upland drainage is anticipated to impact the site. The five year undeveloped flow rate for the site is 4.58 CFS.

HISTORY

The project has been divided into four phases for development. The two phases addressed in this report are the third and last portions of the development. The previous two phases were developed under a different basic drainage criteria. The basic assumption of this criteria was that runoff flow rates after development must be controlled to the 100-year undeveloped runoff flow rates (AMAFCA Resolution 1972–2). These last two phases have been designed to control the 100-year developed runoff flow rates to the 5 year undeveloped runoff flow rates (Interim Drainage Guidelines).

DRAINAGE AFTER DEVELOPMENT

The third and fourth phases have been divided into six internal basins for development of a drainage control plan. Three of the basins have detention with a controlled discharge, one basin has complete retention, and two of the basins have uncontrolled discharge. The following is a description of each basin's drainage control plan.

Basin A–1

Basin A–1 contains approximately 1.36 acres of parking, roof and landscaped areas. The basin will contain an inlet in the center of the parking area which will have an orifice to control the maximum discharge to 2.00 CFS. The excess runoff will pond in the parking area until the storm recedes, reaching a maximum depth of 6 inches. The inlet will drain to a manhole and then to an existing double "C" drop inlet in Louisiana Boulevard by way of a 12 inch CMP. The 12 inch CMP will be inserted directly in the back of the existing drop inlet. Computations are provided in the appendix for basin detention storage requirements.

Basin A–2

Basin A–2 contains approximately 0.09 acres of sidewalks and landscaped areas which borders the existing system developed under phase one. This basin has an uncontrolled flow rate of 0.48 CFS which discharges into Louisiana Boulevard. Computations are provided in the Appendix.

Basin A–3

Basin A–3 contains approximately 3.65 acres of parking, roofs, and landscaped areas. The basin will have a ponding area between the four and twelve story buildings. The eastern portion of the basin will contain a two story parking structure. To facilitate drainage of the roadway leading to the bottom deck of the parking structure, the bottom of the pond will be set such that gravity outflow from the pond is impossible. This necessitates the use of a pump to drain the pond since storage of the 100-year runoff volume is impractical. The pump station should have a duplex pump system with each pump capable of the design 500 GPM constant flow rate. To further safeguard the system, it is recommended that an emergency power source be furnished. The pump station would discharge through a 6 inch discharge line. The discharge line should be connected to the back of the Double "C" drop inlet, as shown on Plate 1. The discharge pipe should be directly opposite the outflow line for the inlet and at the invert for the drop inlet. The pond is in such close proximity to the two buildings that infiltration could adversely affect the foundation. Therefore, lining of the pond should be considered as a solution to the problem. Computations and a sketch of the proposed pond are provided in the appendix.

Basin A–4

Basin A–4 contains approximately 0.29 acres of landscaped area. The basin will have permanent retention with all runoff being ponded in the center of the basin. The southern portion, approximately one-third of the basin, is part of the existing system developed under phase one. Computations are provided in the appendix for basin retention storage requirements.

Basin A–5

Basin A–5 contains approximately 0.53 acres of parking and landscaped areas. The basin will have an inlet in the center of the parking area which will have an orifice to control the maximum discharge to 0.60 CFS. The excess runoff will pond in the parking area until the storm recedes, reaching a maximum depth of 6 inches. The inlet will drain to an existing inlet approximately 170' south of the proposed inlet by way of a 12 inch CMP. The basin boundary for this basin has encroached on the existing basin boundary to the south. This will reduce the area draining to the existing inlet, and the total volume of ponded water, but will not significantly reduce its outflow rate. Computations are provided in the appendix for basin detention storage requirements.

Basin A–6

Basin A–6 contains approximately 0.07 acres of landscaped area. This basin has an uncontrolled flow rate of 0.37 CFS which discharges south into the existing system developed under phase one. This added discharge combined with the reduction in discharge retained in Basin A–4 net a reduction in the total area drainaing to Phase 1. Computations are provided in the Appendix.

RECOMMENDATIONS

In summary, the proposed drainage solutions are listed below:

Basin A–1: Pond the excess runoff in the parking area with a controlled discharge to the existing drop inlet in Louisiana Boulevard.

Basin A–2: Allow the uncontrolled discharge to flow into Louisiana Boulevard.

Basin A–3: Pond all excess runoff in the ponding area between the two buildings. Pump ponded runoff to the existing inlet in Lousiiana Boulevard through a 6 inch discharge line. The pump station should have a duplex pump system with each pump capable of the design 500 GPM constant flow rate. An emergency power supply should be furnished. The building foundation should be protected from infiltration with a pond liner or alternate measures.

Basin A–4: Retain all runoff in the landscaped area in the center of the basin.

Basin A–5: Pond the excess runoff in the parking area with a controlled discharge to the existing inlet south of the basin.

Basin A–6: Allow the uncontrolled discharge to flow south into Phase I.

CONCLUSIONS

Summing up the discharge flow rates from the ponds, the runoff after development is 4.48 CFS, compared to 4.58 CFS for the 5-year undeveloped flow rate. The storage volumes provide for retention and detention and satisfy those specified in the interim drainage guidelines.

The drainage control plan for this parcel has reduced the 100-year developed runoff rate to the five year undeveloped runoff rate. With this minimal discharge, additional volume should not adversely affect the downstream system.

APPENDIX

RATIONAL FORMULA
A–1

Analysis Assumptions

Rational Formula

$Q = CIA$

Where

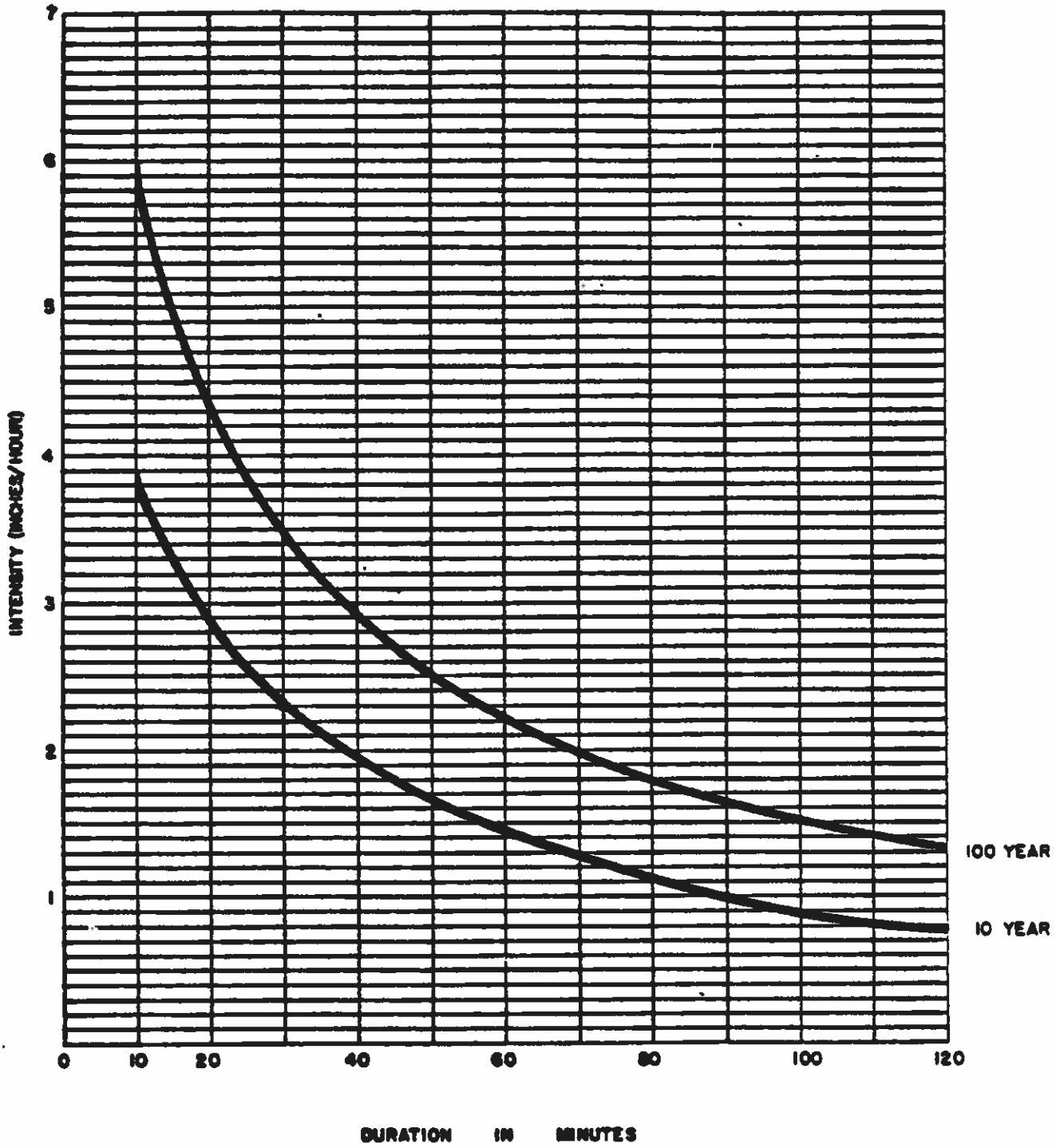
Q = Flow Rate in CFS
C = Runoff Coefficient (See A-2)
I = Rainfall Intensity (See A-3)
A = Area in Acres (By planimeter, Plate 1)

RATIONAL COEFFICIENTS FOR URBAN AREAS

A–2

AREA DESCRIPTION	RUNOFF COEFFICIENT, C
Streets	
Asphaltic	0.70 - 0.95
Concrete	0.80 - 0.95
Gravel roadways & shoulders	0.40 - 0.60
Industrial Areas	
Flat commercial - about 90% of area impervious	0.80
Heavy areas	0.60 - 0.90
Light areas	0.50 - 0.80
Business Areas	
Downtown areas	0.70 - 0.95
Neighborhood areas	0.50 - 0.70
Residential Areas	
Lawns - flat	0.05 - 0.15
- steep	0.15 - 0.35
Suburban areas	0.25 - 0.40
Single family areas	0.30 - 0.50
Multi-unit areas	0.40 - 0.60
Apartment areas	0.50 - 0.70
Parks, Cemeteries	0.10 - 0.25
Playgrounds	0.20 - 0.35

Source. New Mexico State Highway Department Drainage Manual
Rational Coefficients for Urban Areas, Table 7



NOTE:
CURVE IS BASED ON DATA CONTAINED IN NOAA ATLAS 2, DATED 1973.

A-3

INTENSITY/DURATION FREQUENCY CURVE ALBUQUERQUE, N.M.

APPENDIX "A"

TIME OF CONCENTRATION t_c
A–4

$t_c = \text{Log}^{-1} [.3641(B) + .3854 \text{ Log } (L) - .197 \text{ Log } (S) - .3613]$ *

Where:

B = Ground Factor
L = Length to Farthest Point
S = Slope in Percent

* Adapted from nomograph from Data Book for Civil Engineers, design by Elwyn E. Seelye.

PG. 18-01 Fig H. – Overland Flow Time

B = .77	Paved
B = 1.52	Bare Soil
B = 1.84	Poor Grass
B = 2.16	Average Grass
B = 2.57	Dense Grass

Combinations of these may be used to compute combinations of surfaces.

t_c = 10 minutes (minimum)

Information for drainage flows was supplied by Drainage Reports, Field Surveys and the AMAFCA Topo Sheets

COMPUTATIONS

American Financial Center

Computations

Existing Flow Rates (5 yr)

$B = 1.52$

$L = 930'$

$S = 1.34\%$

$t_c = \log^{-1}[.364(1.52) + .3854(\log 930) - .197(\log 1.34) - .3613]$

$= 20.5$ min

$I = \frac{68}{t_c + 24}$ *

$= \frac{68}{20.5 + 24}$

$= 1.53$

$C = .50$

$A = 5.99$

$Q = (.50)(1.53)(5.99)$

$Q = 4.58$ CFS

* From Rainfall Records for City of Mesa.

PROJECT NAME American Financial Ctr. SHEET 1 OF 11

PROJECT NO. 01331 BY CBM DATE 1/15/01

SUBJECT Drainage CH'D _____ DATE _____

BASIN A-1

A = 1.36 ACRES

C = 0.90

I = FROM RMWFCA RESOLUTION 1900.15

Q = CIA

Q_{OUT} = 2.60 CFS PEAK

Q_{OUT} = 1.60 CFS AVE.

USE

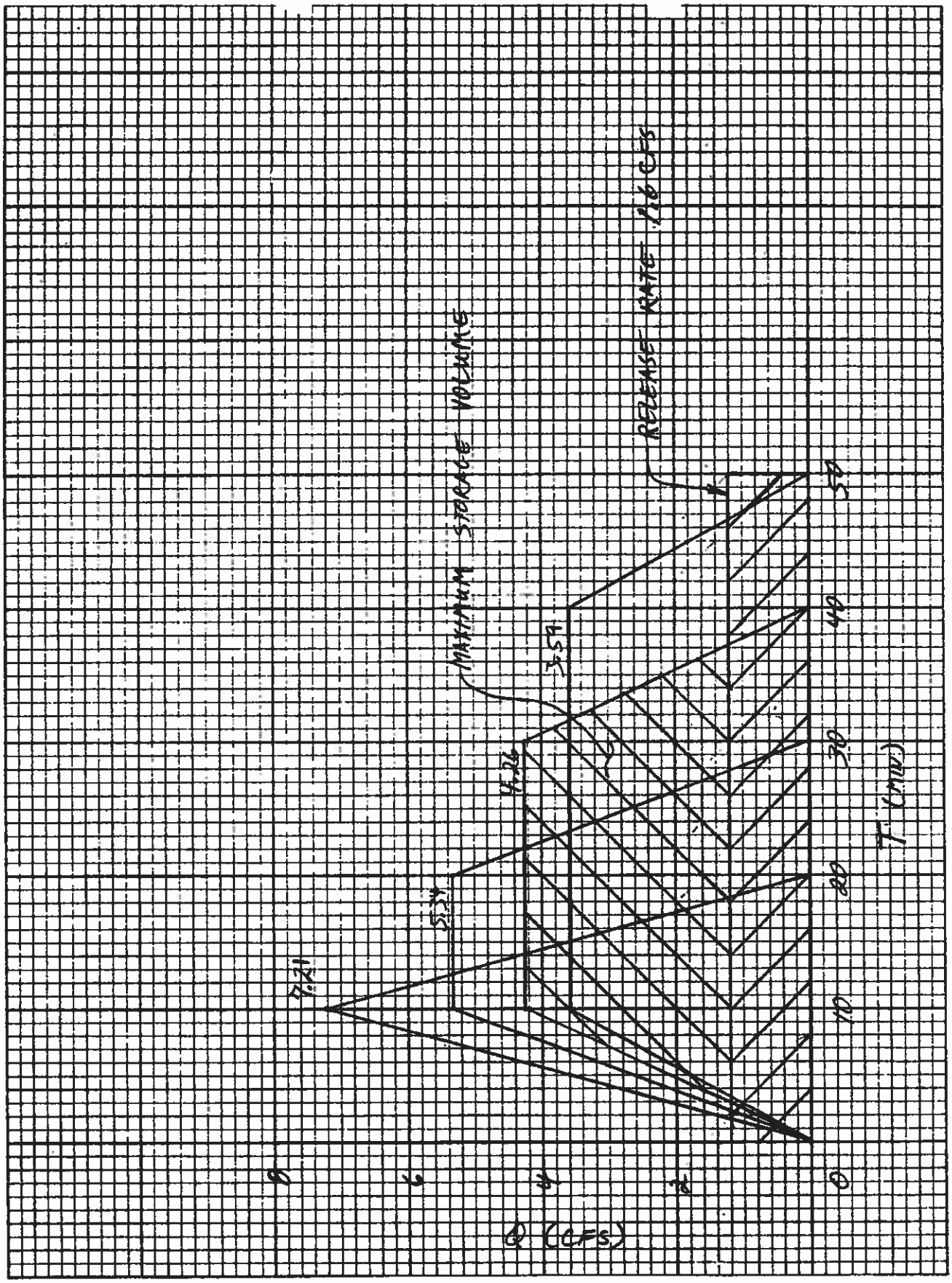
Q_{OUT} = 1.60 CFS FOR COMPUTATIONS

STORM DURATION (min)	I (in/hr)	Q (CFS)	RUN OFF VOLUME (CF)	RELEASE VOLUME (CF)	REQUIRED STORAGE VOLUME (CF)
10	5.89	7.21	4326	960	3366
20	4.36	5.34	6404	1920	4484
30	3.48	4.26	7669	2880	→ 4789 ←
40	2.93	3.59	8607	3840	4767

PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 2 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

SUBJECT DRAINAGE CHKD [illegible] DATE 1/15/81



PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 3 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

SUBJECT DRAINAGE CH'D [illegible] DATE 1/15/81

BASIN A-2

AREA = 0.09 ACRES

C = 0.90

I = FROM AMAFCA RESOLUTION 1980-15

Q = CIA

FOR 100-YEAR STORM, T = 10 MIN

Q = 0.9 (5.89) (0.09) = 0.48 CFS

PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 4 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

SUBJECT DRAINAGE CH'D [illegible] DATE 1/15/81

BASIN A-3

A = 3.65 ACRES

C = 0.90

I = FROM APWA RESOLUTION 1980.15

Q = CIA

Q_{OUT} = 1.1 CFS AVE

USE

Q_{OUT} = 1.1 CFS

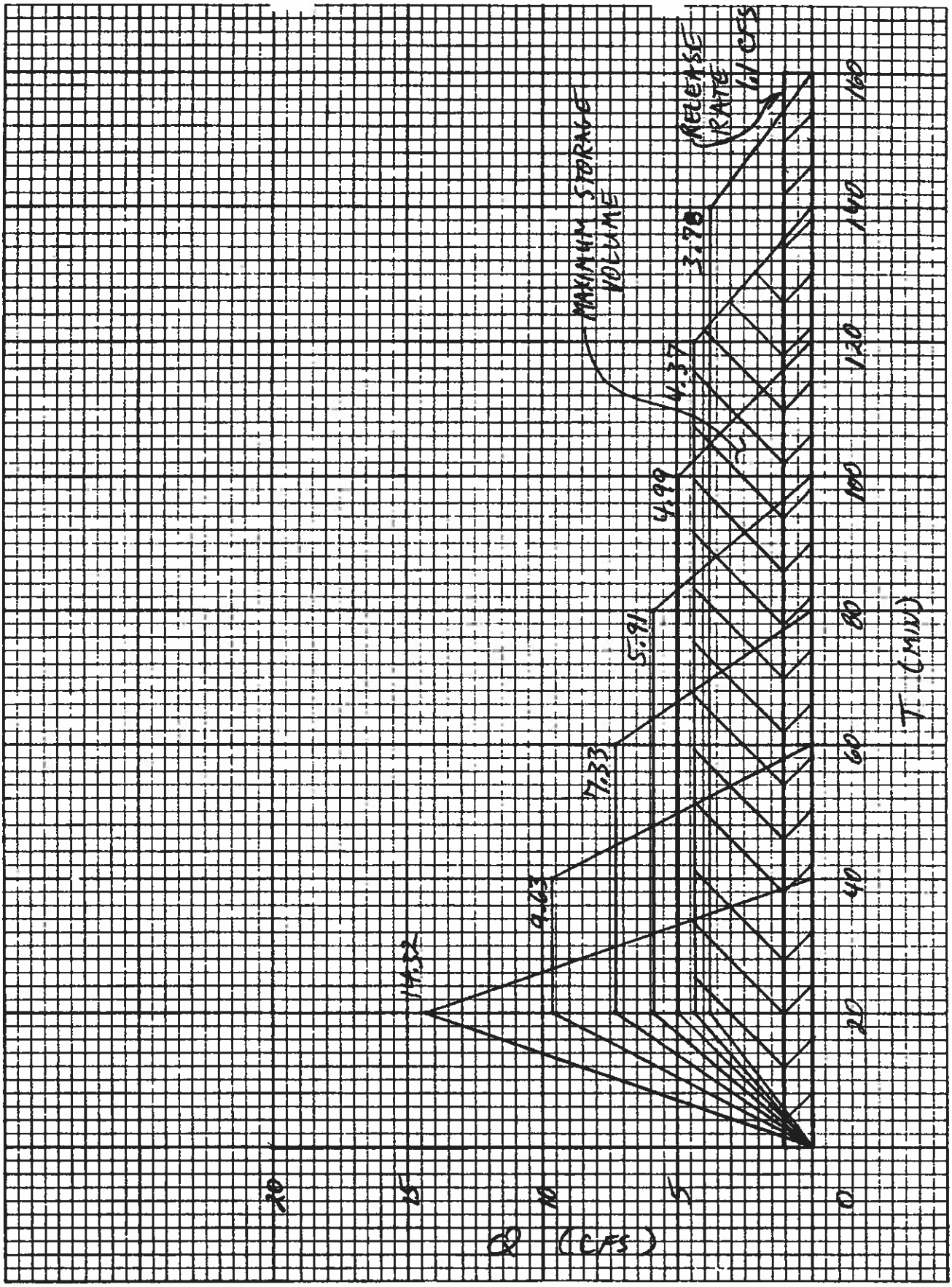
FOR COMPUTATIONS

STORM DURATION (MIN)	I (in/hr)	Q (CFS)	RUNOFF VOLUME (CF)	RELEASE VOLUME (CF)	REQUIRED STORAGE VOLUME (CF)
20	4.36	14.32	17,187	1320	15,867
40	2.93	9.63	23,100	2640	20,460
60	2.23	7.33	26,372	3960	22,412
80	1.80	5.91	28,382	5280	23,102
100	1.52	4.99	29,959	6600	23,359
120	1.33	4.37	31,467	7920	→ 23,537 ←
140	1.15	3.78	31,933	9240	22,693

PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 5 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

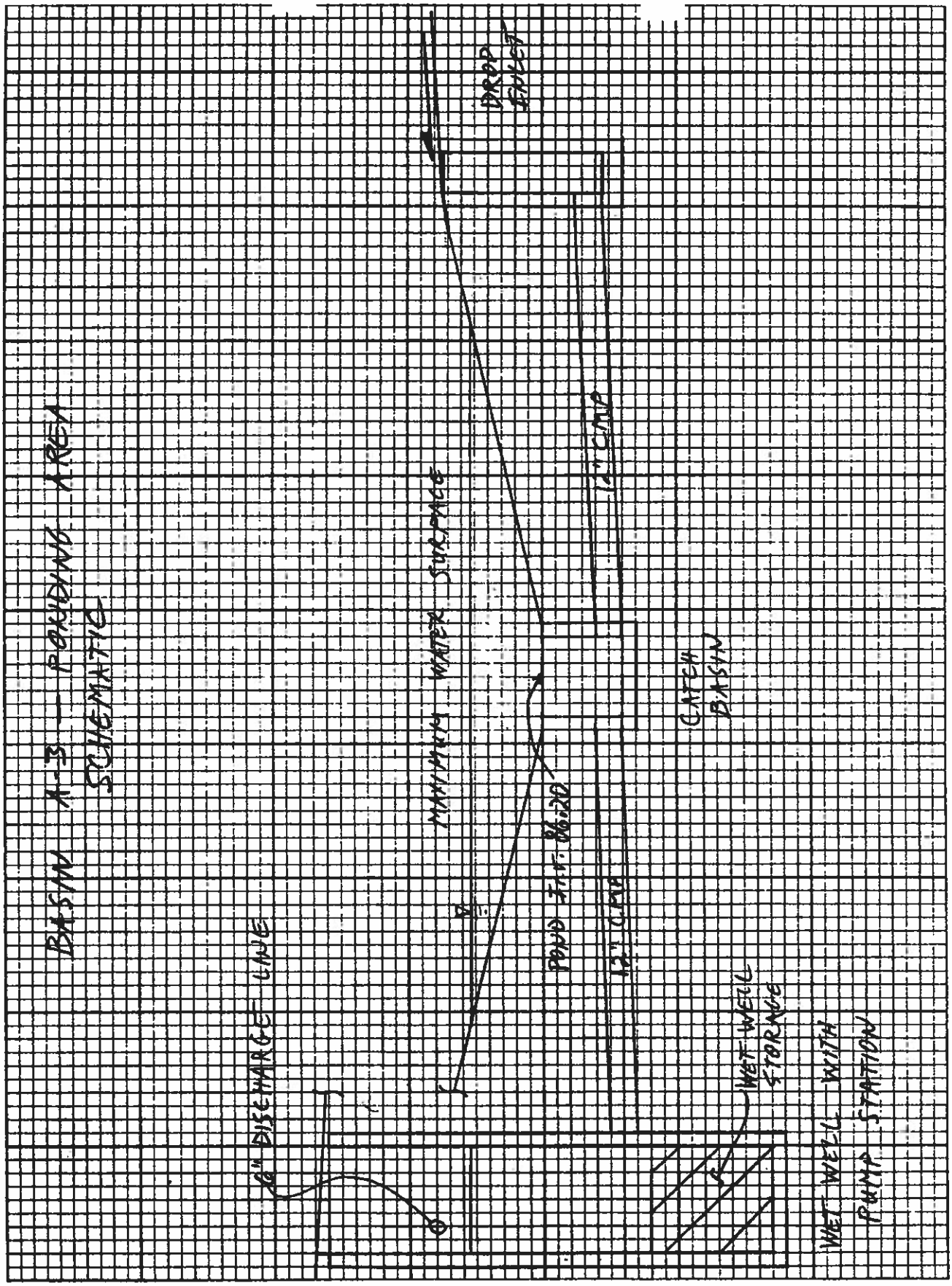
SUBJECT DRAINAGE CHK'D [illegible] DATE 1/15/81



PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 6 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

SUBJECT DRAINAGE CH'D [illegible] DATE 1/15/81



PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 7 OF 11

PROJECT NO. 01331 BY JKA DATE 1/15/81

SUBJECT DRAINAGE CH'D [illegible] DATE 1/15/81

BASIN A-4

AREA = 0.29 ACRES

C = 0.90

I - FROM AMAFCA RESOLUTION 1980.15

$Q = C I A$

$= 0.9(5.89)(0.29)$

$Q = 1.54$ CFS

VOLUME = $P(\text{IN INCHES})^{*}(\text{AREA})(C)$

$= 3.0(.29)(43560)(1/12)(.9)$

$= 2842$ CF

* 100 YR 6 HR STORM P = 3" APPROX.

PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 8 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

SUBJECT DRAINAGE CH'D JAA DATE 1/15/81

BASIN A-5

A = 6.53 ACRES

C = 0.60

I - FROM AMAFCA RESOLUTION 1980.16

Q = CIA

Q_{out} = 2.60 CFS PEAK

Q_{out} = 0.50 CFS AVG.

USE

Q_{out} = 0.50 CFS

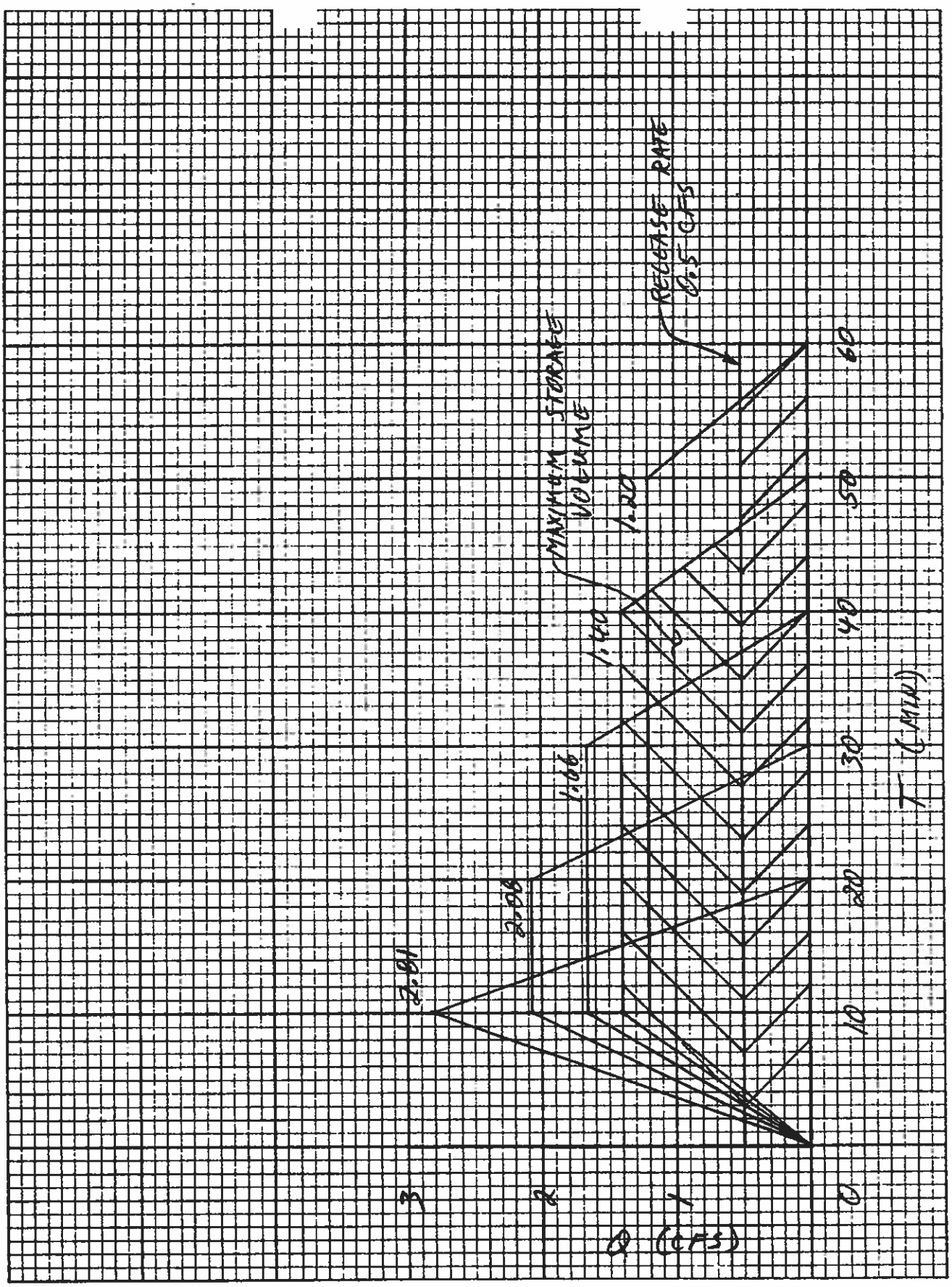
FOR COMPUTATIONS

STORM DURATION (MIN)	I (in/hr)	Q (CFS)	RUNOFF VOLUME (CF)	RELEASE VOLUME (CF)	REQUIRED STORAGE VOLUME (CF)
10	5.89	2.81	1686	300	1386
20	4.56	2.08	2496	600	1896
30	3.46	1.66	2988	900	2088
40	2.93	1.40	3384	1200	→ 2184 ←
50	2.52	1.20	3600	1500	2100

PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 9 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

SUBJECT DRAINAGE CHKD [illegible] DATE 1/15/81



PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 10 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

SUBJECT DRAINAGE CH'D [illegible] DATE 1/15/81

BASIN A-6

AREA = 0.07 ACRES

C = 0.90

I - FROM AMAFCA RESOLUTION 1980.15

$Q = CIA$

FOR 100-YEAR STORM, T = 10 MIN

$Q = 0.9(5.89)(0.07) = 0.37$ CFS

PROJECT NAME AMERICAN FINANCIAL CENTER SHEET 11 OF 11

PROJECT NO. 01331 BY JAA DATE 1/14/81

SUBJECT DRAINAGE CH'D [illegible] DATE 1/15/81

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 16, 2002

Larry D. Read, PE
Larry Read & Associates
12836-B Lomas NE
Albuquerque, NM 87112

Re: AFC – 5 Parking Lot Drainage Report
Engineer's Stamp dated 1-10-02, (H19/D1)

Dear Mr. Read,

Based upon the information provided in your submittal dated 1-11-02, the above referenced plan is approved for Paving Permit and Site Plan for Building Permit action by the DRB.

Upon completion of the project, please submit a certified as-built for our files. If I can be of further assistance, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Hydrology, PWD
Development and Building Services

C: file

DRAINAGE INFORMATION SHEET
(REV. 11/01/2001)

H-19/D1

PROJECT TITLE: AFC-5 Additional Parking ZONE MAP/DRG. FILE #: H-19
DRB #: 1001636 EPC#: WORK ORDER#:
LEGAL DESCRIPTION: Lot 6A1C1
CITY ADDRESS: 2400 Louisiana BLVD. NE, Albq. NM 87110

ENGINEERING FIRM: Larry Read & Assoc., Inc.
ADDRESS: 4800 San Pedro Blvd. Suite C
CITY, STATE: Albq. NM
CONTACT: Larry Read
PHONE: 237-8721
ZIP CODE: 87111

OWNER: AFC Partners Limited Partnership
ADDRESS: 2400 Louisiana BLVD NE Bldg 3
CITY, STATE: Albq. NM
CONTACT: William J. Bailey
PHONE: 998-1958
ZIP CODE: 87110

ARCHITECT: N/A
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

SURVEYOR: Cartesian Surveys
ADDRESS P.O. Box 44414
CITY, STATE: Rio Rancho, NM
CONTACT: Will Ploehner
PHONE: 350-5148
ZIP CODE: 87174

CONTRACTOR: N/A
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

CHECK TYPE OF SUBMITTAL:
- ___ DRAINAGE REPORT
- ✓ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:
- ___ SIA / FINANCIAL GUARANTEE RELEASE
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ✓ SECTOR PLAN APPROVAL
- ✓ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM.)
- ✓ CERTIFICATE OF OCCUPANCY (TEMP.)
- ✓ GRADING PERMIT APPROVAL
- ✓ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:
- ✓ YES
- ___ NO
- ___ COPY PROVIDED

RECEIVED
JAN 11 2002
HYDROLOGY SECTION

DATE SUBMITTED: 1/8/2002 BY: Larry Read

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot 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
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5)
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or

DRAINAGE REPORT

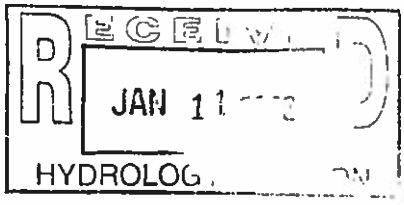
for

PROPOSED NEW PARKING for AFC-5

Albuquerque, New Mexico

January 11, 2002

11/10/02



PREPARED BY
LARRY D. READ, PE
4800 Juan Tabo Blvd., NE Suite C
Albuquerque, New Mexico 87111
(505) 237-8421

TABLE OF CONTENTS

DRAINAGE REPORT

for

PROPOSED NEW PARKING for AFC-5

Albuquerque, New Mexico

January 11, 2002

PURPOSE

Most of the American Financial Center Site was developed between the early 1980's and the mid 1990's. Some renovations to existing buildings occurred as late as 1999. However, this central area of the site, although many previous plans have been developed, has never developed.

The owners of American Financial Center Building 5 have historically been short of parking area. They are proposing to develop this remaining central area as additional parking. The proposed parking will help bring AFC-5 into the range of parking normally accepted in the real estate market and, due to it's location, will help alleviate the parking problems throughout the American Financial Center.

This project will add approximately 2.1 acres of asphalt paved parking and associated landscaping in the central site area.

EXISTING DRAINAGE CONDITIONS

The existing developed areas of the site were guided by a Master Drainage Plan prepared by Bohannan Huston in 1984. Per the Master Drainage Plan, the runoff from each basin is limited by the installation of a 4" orifice plate.

This site includes Basin 1, Basin 3C, and Basin 3B from the Master Drainage Plan. This is true of all existing development except Master Drainage Plan Basin 2 (Basin 1 in this report) which attempted to control the discharge using 4" PVC discharge pipes.

One significant deviation from the MDP noted during the survey of this site is the discharge from the parking area south of AFC-1. The MDP indicated this discharge was directed to the existing inlet in Basin 5. However the topographic survey found that the most likely route for this discharge is west into the system that connects directly into the 60" storm drain in Louisiana Blvd. This is evidenced in the fact that the discharge invert of the existing inlet in Basin 5 is above the inverts of the inlets in the AFC-1 parking lot and the fact that there are no connections to the existing inlet in Basin 5 from the west.

OFFSITE DRAINAGE

As shown in the Master Drainage Plan (MDP), this site accepts runoff from MDP Basin 2. Although the existing development slightly modified the basin boundaries, this is true as can be seen on the Drainage Basin Map in the pocket of this report as Basins 1 and Basin 2.

FLOOD PLAIN STATUS

As shown on FIRM Panels 350001C0352 D, effective September 20, 1996, no portion of the existing building or site is included in a 100-year floodplain. And excerpt from this map is included with the site located.

METHODOLOGY

The hydrology for this project was analyzed using the 1997 version of AHYMO and the June 1997 release of the City of Albuquerque Development Process Manual, Section 22.2.

This site is within Precipitation Zone 3.

FULLY DEVELOPED CONDITION

The proposed development follows the 1984 Master Drainage Plan by limiting the discharge from each Basin using a 4" diameter orifice plate and the storm inlet. The proposed drainage basins, including offsite basins, very closely match the MDP basin areas as discussed above. The proposed additional paved area is divided into 2 basins (Basin 3 and Basin 4) as shown on the Drainage Basin Map in the pocket of this report. The total peak discharge from new Basin 3 and 4 plus the existing drainage from Basin 5 will be slightly less than 2cfs, significantly below the capacity of the existing 12" storm drain and 48" sidewalk culvert on Cutler Ave.

As a result of this development, the 100-year storm event runoff will not be increased and may have a minor decrease to Culter Ave. Therefore, there is no adverse downstream effect due to this development.

GRAPHIC SCALE IN FEET

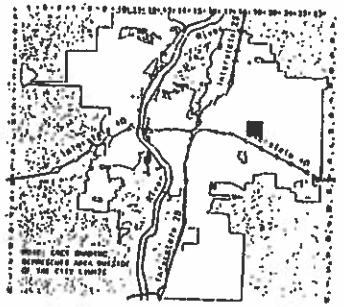
250 0 500 1000

CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

Map Amended through February 20, 1996



LEGAL DESCRIPTION

TION

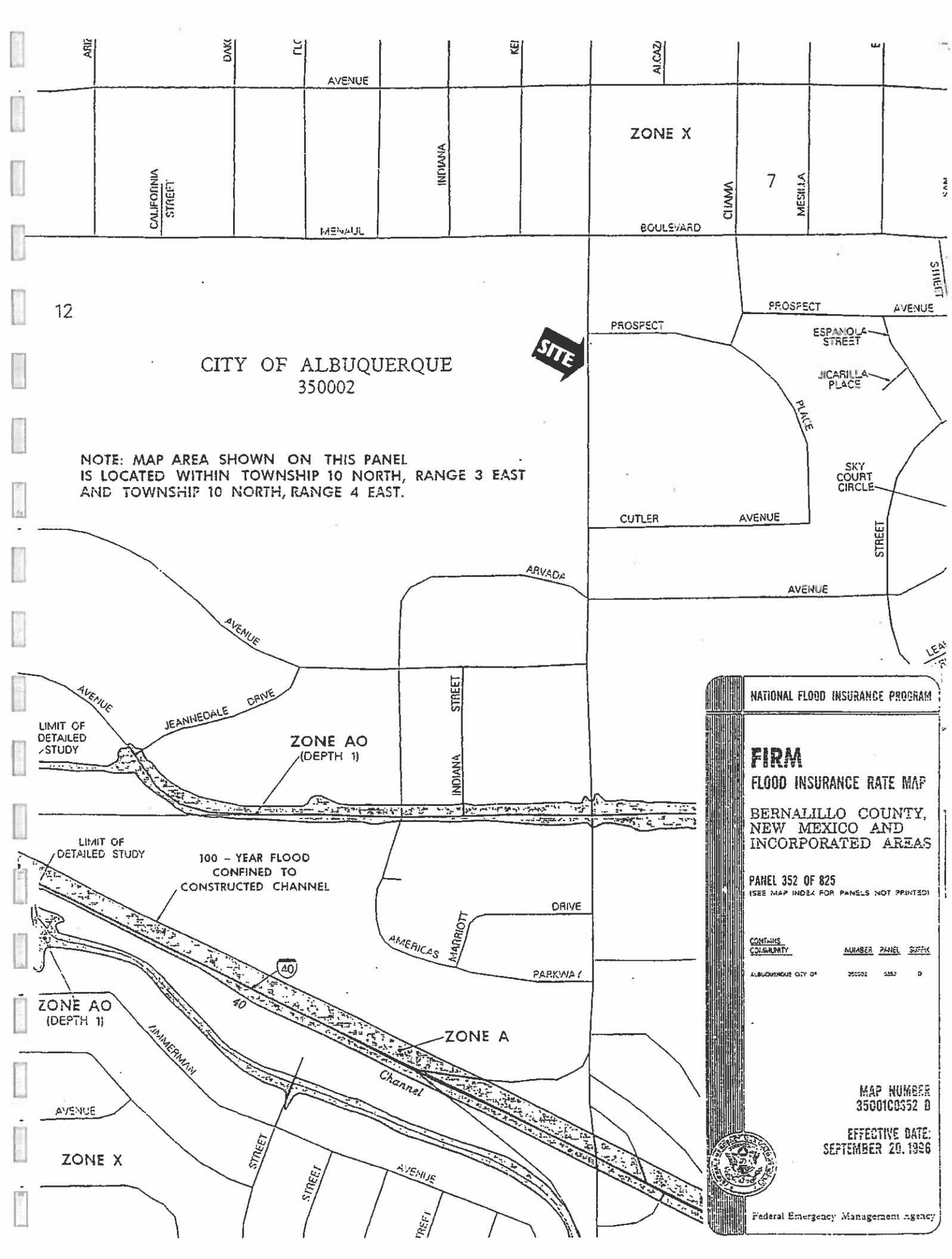
AGE

REC 7

UNIFORM PROPERTY CODE

1 010 050

H-19-Z


AVENUE
ZONE X
CALIFORNIA STREET
INDIANA
MENAUL
BOULEVARD
CHAMA
MESILLA
7
12
CITY OF ALBUQUERQUE
350002
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 10 NORTH, RANGE 3 EAST AND TOWNSHIP 10 NORTH, RANGE 4 EAST.
SITE
PROSPECT
AVENUE
ESPANOLA STREET
JICARILLA PLACE
SKY COURT CIRCLE
CUTLER
ARVADA
JEANNEDALE DRIVE
LIMIT OF DETAILED STUDY
ZONE AO
(DEPTH 1)
100 – YEAR FLOOD CONFINED TO CONSTRUCTED CHANNEL
AMERICAS MARRIOTT
DRIVE
PARKWAY
40
ZONE A
ZIMMERMAN
Channel
ZONE X
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS
PANEL 352 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS COMMUNITY
NUMBER PANEL SUFFIX
ALBUQUERQUE CITY OF 350002 0352 D
MAP NUMBER 35001C0352 D
EFFECTIVE DATE: SEPTEMBER 20, 1996
Federal Emergency Management Agency

APPENDIX A

DRAINAGE CALCULATIONS

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =01/11/2002
INPUT FILE = C:\ACADFI~1\ACADPR~1\AFC\AFC-8\FINALD~1\AHYMOI~2.TXT USER NO.= AHYMO-I-9702a0100001A-SH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
*S PROPOSED CONDITIONS											
*S******* 100 YEAR, 6-HOUR STORM (Section 22.2 Hydrology)											
START										TIME=	.00
LOCATION		DEFAULT									
RAINFALL TYPE= 1										RAIN6=	2.600
*S											
*S BASIN AFC6/AFC7 (BASIN 1)											
COMPUTE NM HYD	A.0	-	1	.00154	4.74	.184	2.24528	1.518	4.814	PER IMP=	91.50
*S											
ROUTE RESERVOIR	POND.1	1	11	.00154	2.26	.184	2.24914	1.683	2.302	AC-FT=	.036
*S											
*S											
*S BASIN AFC7/AFC7 (BASIN 2)											
COMPUTE NM HYD	A.0	-	2	.00037	1.17	.045	2.28551	1.518	4.925	PER IMP=	94.30
*S											
*S											
*S BASIN AFC-5 NORTH PARKING LOT (BASIN 3)											
COMPUTE NM HYD	A.0	-	3	.00206	6.30	.245	2.22431	1.518	4.775	PER IMP=	89.90
*S											
*S											
ADD HYD	31.00 11& 3		31	.00360	8.47	.429	2.23484	1.518	3.677		
*S											
*S											
ROUTE RESERVOIR	POND.1	31	32	.00360	.63	.430	2.23764	2.343	.273	AC-FT=	.331
*S											
*S											
*S BASIN AFC-4 PARKING LOT (BASIN 4)											
*S											
COMPUTE NM HYD	A.0	-	4	.00105	3.29	.128	2.29761	1.518	4.913	PER IMP=	94.60
*S											
*S											
*S											
ROUTE RESERVOIR	POND.1	4	41	.00105	.63	.129	2.30296	2.079	.938	AC-FT=	.068
*S											
FINISH											

```
AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02c
RUN DATE (MON/DAY/YR) = 01/11/2002
START TIME (HR:MIN:SEC) = 10:54:23     USER NO.= AHYMO-I-9702a0100001A-SH
INPUT FILE = C:\ACADFI~1\ACADPR~1\AFC\AFC-8\FINALD~1\AHYMOI~2.TXT

     *S  PROPOSED CONDITIONS
     *S******* 100 YEAR, 6-HOUR STORM (Section 22.2 Hydrology)
     START               0.00
     LOCATION            ALBUQUERQUE ZONE 3
          Soil infiltration values (LAND FACTORS) for this location are not available.
          The following default values were used.
          Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
                A            0.65                  1.67
                B            0.50                  1.25
                C            0.35                  0.83
                D            0.10                  0.04

     RAINFALL            TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.14
                         RAIN SIX=2.60IN DAY=3.1 DT=0.033

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                    DT =     .033000 HOURS       END TIME =     5.973000 HOURS
                       .0000   .0027   .0055   .0083   .0112   .0141   .0171
                       .0202   .0234   .0266   .0299   .0333   .0368   .0403
                       .0440   .0478   .0517   .0557   .0598   .0641   .0685
                       .0731   .0778   .0828   .0879   .0933   .0988   .1047
                       .1108   .1173   .1241   .1303   .1364   .1430   .1520
                       .1792   .2221   .2848   .3717   .4870   .6353   .8211
                     1.0492  1.3244  1.4475  1.5337  1.6092  1.6774  1.7399
                     1.7978  1.8518  1.9024  1.9499  1.9947  2.0370  2.0771
                     2.1150  2.1510  2.1851  2.2176  2.2484  2.2692  2.2764
                     2.2833  2.2899  2.2961  2.3022  2.3080  2.3136  2.3190
                     2.3242  2.3292  2.3342  2.3389  2.3436  2.3481  2.3525
                     2.3568  2.3610  2.3652  2.3692  2.3731  2.3770  2.3807
                     2.3844  2.3881  2.3916  2.3952  2.3986  2.4020  2.4053
                     2.4086  2.4118  2.4150  2.4181  2.4212  2.4242  2.4272
                     2.4302  2.4331  2.4360  2.4388  2.4416  2.4444  2.4471
                     2.4498  2.4525  2.4551  2.4577  2.4603  2.4628  2.4654
                     2.4679  2.4703  2.4728  2.4752  2.4776  2.4799  2.4823
                     2.4846  2.4869  2.4892  2.4914  2.4937  2.4959  2.4981
                     2.5003  2.5024  2.5046  2.5067  2.5088  2.5109  2.5130
                     2.5150  2.5171  2.5191  2.5211  2.5231  2.5250  2.5270
                     2.5290  2.5309  2.5328  2.5347  2.5366  2.5385  2.5403
                     2.5422  2.5440  2.5459  2.5477  2.5495  2.5513  2.5530
                     2.5548  2.5566  2.5583  2.5600  2.5618  2.5635  2.5652
                     2.5669  2.5686  2.5702  2.5719  2.5735  2.5752  2.5768
                     2.5784  2.5801  2.5817  2.5833  2.5848  2.5864  2.5880
                     2.5896  2.5911  2.5927  2.5942  2.5957  2.5973  2.5988
```

```
*s
*S BASIN AFC6/AFC7 (BASIN 1)
COMPUTE NM HYD       ID=1 HYD=A.0 DA=0.001537 SQ MI
                     %A= 0.00 %B= 4.9 %C= 3.6 %D= 91.50
                     TP=0.1333 RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   5.5524    CFS   UNIT VOLUME =    .9972       B =   526.28      P60 = 2.1400
     AREA =      .001406 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033000


     K =   .123176HR    TP =   .133300HR    K/TP RATIO =   .924053     SHAPE CONSTANT, N =  3.829633
     UNIT PEAK =   .33680    CFS   UNIT VOLUME =    .9589       B =   343.65      P60 = 2.1400
     AREA =      .000131 SQ MI    IA =    .43647 INCHES    INF =   1.07212 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033000

PRINT HYD            ID=1 CODE=1

                                        HYDROGRAPH FROM AREA A.0


    RUNOFF VOLUME =     2.24528 INCHES     =        .1841 ACRE-FEET
    PEAK DISCHARGE RATE =       4.74 CFS  AT   1.518 HOURS   BASIN AREA =   .0015 SQ. MI.


*S
ROUTE RESERVOIR      ID=11  HYD=POND.1  INFLOW ID=1  CODE=10
                     OUTFLOW (CFS)     STORAGE (AC_FT)      ELEVATION
                          0.00             0.0000              0.00
                          2.04             0.000064            2.83
                          2.58             0.0865              4.40

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

    TIME       INFLOW    ELEV      VOLUME    OUTFLOW
    (HRS)      (CFS)     (FEET)    (AC-FT)   (CFS)

      .00        .00       .00       .000       .00
      .33        .00       .00       .000       .00
      .66        .00       .00       .000       .00
      .99        .05       .07       .000       .05
     1.32       1.25      1.73       .000      1.25
     1.65       2.59      3.47       .036      2.26
     1.98       1.20      3.22       .021      2.17
     2.31        .27       .79       .000       .57
     2.64        .11       .32       .000       .23
     2.97        .07       .19       .000       .14
```

```
     3.30        .05        .13        .000        .09
     3.63        .04        .10        .000        .07
     3.96        .04        .08        .000        .06
     4.29        .04        .07        .000        .05
     4.62        .04        .06        .000        .04
     4.95        .04        .06        .000        .04
     5.28        .04        .06        .000        .04
     5.61        .04        .06        .000        .04
     5.94        .04        .06        .000        .04
     6.27        .01        .01        .000        .01
     6.60        .00        .00        .000        .00
 PEAK DISCHARGE =         2.265 CFS - PEAK OCCURS AT HOUR    1.68
 MAXIMUM WATER SURFACE ELEVATION =         3.483
 MAXIMUM STORAGE =          .0360 AC-FT      INCREMENTAL TIME=     .033000HRS

*S
PRINT HYD           ID=11  CODE=1

                                        HYDROGRAPH FROM AREA POND.1


    RUNOFF VOLUME =      2.24914 INCHES      =         .1844 ACRE-FEET
    PEAK DISCHARGE RATE =        2.26 CFS  AT   1.683 HOURS   BASIN AREA =    .0015 SQ. MI.



*s
*S BASIN AFC7/AFC7 (BASIN 2)
COMPUTE NM HYD      ID=2 HYD=A.0 DA=0.000370 SQ MI
                    %A= 0.00 %B= 2.2 %C= 3.5 %D= 94.30
                    TP=0.1333 RAINFALL=-1

     K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =    1.3775     CFS    UNIT VOLUME =     .9908       B =    526.28       P60 = 2.1400
     AREA =       .000349 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033000


     K =    .118463HR     TP =    .133300HR     K/TP RATIO =    .888691      SHAPE CONSTANT, N =  3.991280
     UNIT PEAK =    .56101E-01CFS    UNIT VOLUME =     .8744       B =    354.59       P60 = 2.1400
     AREA =       .000021 SQ MI     IA =     .40789 INCHES     INF =     .99211 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033000

*S
PRINT HYD           ID=2 CODE=1

                                        HYDROGRAPH FROM AREA A.0
```

```
    RUNOFF VOLUME =     2.28551 INCHES     =        .0451 ACRE-FEET
    PEAK DISCHARGE RATE =       1.17 CFS  AT   1.518 HOURS   BASIN AREA =   .0004 SQ. MI.


*S
*S BASIN AFC-5 NORTH PARKING LOT (BASIN 3)
COMPUTE NM HYD      ID=3 HYD=A.0 DA=0.002063 SQ MI
                    %A= 0.00 %B= 5.9 %C= 4.2 %D= 89.9
                    TP=0.1333 RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   7.3222    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 2.1400
     AREA =      .001855 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033000


     K =   .123367HR    TP =   .133300HR    K/TP RATIO =   .925480     SHAPE CONSTANT, N =  3.823434
     UNIT PEAK =   .53649    CFS   UNIT VOLUME =    .9759       B =   343.22      P60 = 2.1400
     AREA =      .000208 SQ MI    IA =    .43762 INCHES    INF =   1.07535 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033000

*S
PRINT HYD           ID=3 CODE=1

                                    HYDROGRAPH FROM AREA A.0

    RUNOFF VOLUME =     2.22431 INCHES     =        .2447 ACRE-FEET
    PEAK DISCHARGE RATE =       6.30 CFS  AT   1.518 HOURS   BASIN AREA =   .0021 SQ. MI.


*S
ADD HYD             ID=31 HYD 31  ID I=11  ID II=3
*S
PRINT HYD           ID=31  CODE=1

                                  OUTFLOW HYDROGRAPH REACH    31.00

    RUNOFF VOLUME =     2.23484 INCHES     =        .4291 ACRE-FEET
    PEAK DISCHARGE RATE =       8.47 CFS  AT   1.518 HOURS   BASIN AREA =   .0036 SQ. MI.


*S
ROUTE RESERVOIR     ID=32  HYD=POND.1  INFLOW ID=31  CODE=10
                    OUTFLOW (CFS)     STORAGE (AC_FT)      ELEVATION
```

0.00	0.0000	90.26
0.45	0.000030	91.50
0.69	0.443371	93.00

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	90.26	.000	.00
.33	.00	90.26	.000	.00
.66	.00	90.26	.000	.00
.99	.12	90.58	.000	.11
1.32	2.90	91.53	.010	.46
1.65	5.71	92.09	.175	.54
1.98	3.76	92.46	.283	.60
2.31	.94	92.62	.331	.63
2.64	.38	92.60	.325	.63
2.97	.23	92.56	.314	.62
3.30	.16	92.52	.301	.61
3.63	.13	92.47	.287	.61
3.96	.11	92.43	.273	.60
4.29	.10	92.38	.260	.59
4.62	.09	92.33	.246	.58
4.95	.09	92.29	.233	.58
5.28	.09	92.24	.219	.57
5.61	.09	92.20	.206	.56
5.94	.10	92.16	.194	.55
6.27	.01	92.11	.180	.55
6.60	.00	92.06	.166	.54
6.93	.00	92.01	.151	.53
7.26	.00	91.96	.137	.52
7.59	.00	91.91	.122	.52
7.92	.00	91.87	.108	.51
8.25	.00	91.82	.095	.50
8.58	.00	91.77	.081	.49
8.91	.00	91.73	.068	.49
9.24	.00	91.68	.055	.48
9.57	.00	91.64	.042	.47
9.90	.00	91.60	.029	.47
10.23	.00	91.55	.016	.46
10.56	.00	91.51	.004	.45

PEAK DISCHARGE = .629 CFS - PEAK OCCURS AT HOUR 2.34
MAXIMUM WATER SURFACE ELEVATION = 92.619
MAXIMUM STORAGE = .3309 AC-FT INCREMENTAL TIME= .033000HRS

*S
PRINT HYD ID=32 CODE=1

HYDROGRAPH FROM AREA POND.1

RUNOFF VOLUME = 2.23764 INCHES = .4296 ACRE-FEET
PEAK DISCHARGE RATE = .63 CFS AT 2.343 HOURS BASIN AREA = .0036 SQ. MI.

```
*S
*S BASIN AFC-4 PARKING LOT (BASIN 4)
*S
COMPUTE NM HYD      ID=4 HYD=A.0 DA=0.001047 SQ MI
                    %A= 0.00 %B= 0.00 %C= 5.40 %D= 94.6
                    TP=0.1333 RAINFALL=-1
```

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.9104 CFS UNIT VOLUME = .9965 B = 526.28 P60 = 2.1400
AREA = .000990 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .108912HR TP = .133300HR K/TP RATIO = .817047 SHAPE CONSTANT, N = 4.373949
UNIT PEAK = .16091 CFS UNIT VOLUME = .9162 B = 379.38 P60 = 2.1400
AREA = .000057 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

```
*S
PRINT HYD           ID=4 CODE=1
```

HYDROGRAPH FROM AREA A.0

RUNOFF VOLUME = 2.29761 INCHES = .1283 ACRE-FEET
PEAK DISCHARGE RATE = 3.29 CFS AT 1.518 HOURS BASIN AREA = .0010 SQ. MI.

```
*S
*S
ROUTE RESERVOIR     ID=41  HYD=POND.1  INFLOW ID=4  CODE=10
                    OUTFLOW (CFS)     STORAGE (AC_FT)      ELEVATION
                         0.00              0.0000             89.46
                         0.45              0.000030           91.14
                         0.69              0.091400           92.08

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

    TIME       INFLOW     ELEV       VOLUME     OUTFLOW
    (HRS)      (CFS)      (FEET)     (AC-FT)    (CFS)
```

LOT 1
BLOCK C, LOUISIANA SUB.
FILED 4/14/67
VOL.C6,FOLIO 166

POST HYDRANT

AFC-6
SINGLE STORY
OFFICE BLDG.
FF ELEV 5299.51

BASIN 1

AFC-5
SEVEN STORY
OFFICE BLDG.
FF ELEV 5293.50

BASIN 3

AFC-7
SINGLE STORY W/ BSMT
OFFICE BLDG.
FF ELEV 5301.84

PROSPECT PLACE N.E.
(64' ROW 44' F-F)

LOT 4-A
BLOCK C, LOUISIANA SUB.
FILED 5/05/87
VOL.C33,FOLIO 122

AFC-1
FOUR-STORY
OFFICE BLDG.
FF ELEV 5291.52

BASIN 4

BASIN 2

AFC-4
TWO STORY
OFFICE BLDG.
FF ELEV 5292.68

AFC-3
TWO STORY
OFFICE BLDG.
FF ELEV 5292.68

LOUISIANA BOULEVARD, N.E.

EXISTING 60" SD

LOT 2-A
BLOCK C, LOUISIANA SUB.
FILED 5/05/87
VOL.C33,FOLIO 122

AFC-2
FOUR-STORY
OFFICE BLDG.
FF ELEV 5289.37

CUTLER AVENUE N.E. 60'R\W

S 00°48'25" E

GRAPHIC SCALE (1 INCH = 40 FEET)

DRAINAGE BASIN MAP

AMERICAN FINANCIAL CENTER (AFC-5)

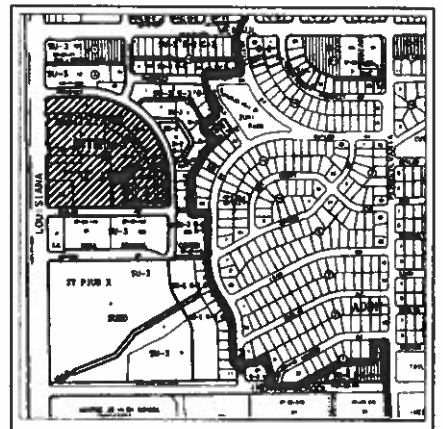
ALBUQUERQUE, NEW MEXICO

LARRY READ & ASSOCIATES, Inc.
Civil Engineers
4800-C Juan Tabo, NE
Albuquerque, New Mexico 87111
(505) 237-8421

FILE NAME: PARK_8.DWG 10/02/01

SHEET C1

GRAPHIC SCALE (1 INCH = 40 FEET)



VICINITY MAP H-19

LOT 1
BLOCK C, LOUISIANA SUB.
FILED: 4/14/67
VOL.C6,FOLIO 166

LOT 4-A
BLOCK C, LOUISIANA SUB
FILED: 5/05/87
VOL.C33,FOLIO 122

LOUISIANA BOULEVARD, N.E.

EXISTING 60" SD

PROSPECT PLACE N.E.
(64' ROW 44' F-F)

CUTLER AVENUE N.E. 60'R\W

AFC-1
FOUR-STORY
OFFICE BLDG.
FF ELEV 5291.52

AFC-2
FOUR-STORY
OFFICE BLDG.
FF ELEV 5289.37

AFC-3
TWO STORY
OFFICE BLDG.
FF ELEV 5292.68

AFC-4
TWO STORY
OFFICE BLDG.
FF ELEV 5292.68

AFC-5
SEVEN STORY
OFFICE BLDG.
FF ELEV 5293.50

AFC-6
SINGLE STORY
OFFICE BLDG.
FF ELEV 5299.51

AFC-7
SINGLE STORY W/ BSMT.
OFFICE BLDG.
FF ELEV 5301.94

EXIST TEMPORARY RETENTION POND TO BE FILLED

EXISTING FIRE HYDRANT TO REMAIN

POST HYDRANT

EXISTING SD INLET

EXIST SD INLET

EXISTING SD MANHOLE

EXISTING 48" SIDEWALK CULVERT

2 DUMPSTERS

DRAIN VAULT

GRADING AND DRAINAGE PLAN

AMERICAN FINANCIAL CENTER (AFC-5)

ALBUQUERQUE, NEW MEXICO

LARRY READ & ASSOCIATES, Inc.
Civil Engineers
4800-C Juan Tabo, NE
Albuquerque, New Mexico 87111
(505) 237-8421

FILE NAME: PARK_5.DWG 10/02/01

SHEET C2

CITIZEN'S BANK

1" = 50'

N

PROSPECT PLACE

BOULEVARD N.E.

LOUISIANA

CUTLER AVENUE N.E.

1-Double 'C' Inlet

27" RCP

24" RCP

2-Double 'C' Inlets

SS

60" RCP

Flow to Street

FF 5296.54
Runoff Detained on Roof
EXISTING BUILDING

Construct Retaining Wall

BASIN 4

BASIN 5

100 Year Ponding Limit

NEW 7-STORY BUILDING
FF 5293.50
Runoff Detained on Roof
BASIN 3a

LANDSCAPED AREA
Provide small depressed area to capture irrigation flows

NEW 2-STORY PARKING AREA
Elevations represent bottom story of Parking Structure

BASIN 2

Tie 8" SS to back of existing inlet

Install Type 'D' inlet w/4" orifice plate Rim Elev. 90.0 Inv Elev. 87.6

WATER SCULPTURE

COURT YARD AREA
BASIN 3b

Plaza Area - Grades should be established for positive drainage to street or grass surfaces.

NEW 10-STORY BUILDING
FF 5294.00
BASIN 3c
Runoff Detained on Roof

Extend Retaining Wall

BASIN 1

Install Sidewalk Culvert

Grade parking area to drain to inlet

Install Type 'D' inlet, w/4 orifice plate Rim Elev.= 91.5 Inv. Elev.= 89.5

PROJECT TBM
FF 5291.60
Runoff Detained on Roof
EXISTING BUILDING

FF 5292.50
EXISTING BUILDING
Runoff Detained on Roof

FF 5292.50
Runoff Detained on Roof
EXISTING BUILDING

FF 5289.37
EXISTING BUILDING

Project TBM Chiseled Square 1.328 E 6.6

Tie new SS Line to existing MH

Existing Expansion Chamber & Sidewalk Culvert

Top of Fire Plug 5295 OG

Existing Expansion Chamber & Sidewalk Culvert

LEGEND

- SPOT ELEVATION
- STORM DRAIN LINE
- STORM INLET
- RETAINING WALL
- NEW DEVELOPMENT
- BASIN BOUNDARY

PLATE 4
PROPOSED CONDITIONS

AMERICAN FINANCIAL CENTER

DRAINAGE PLAN

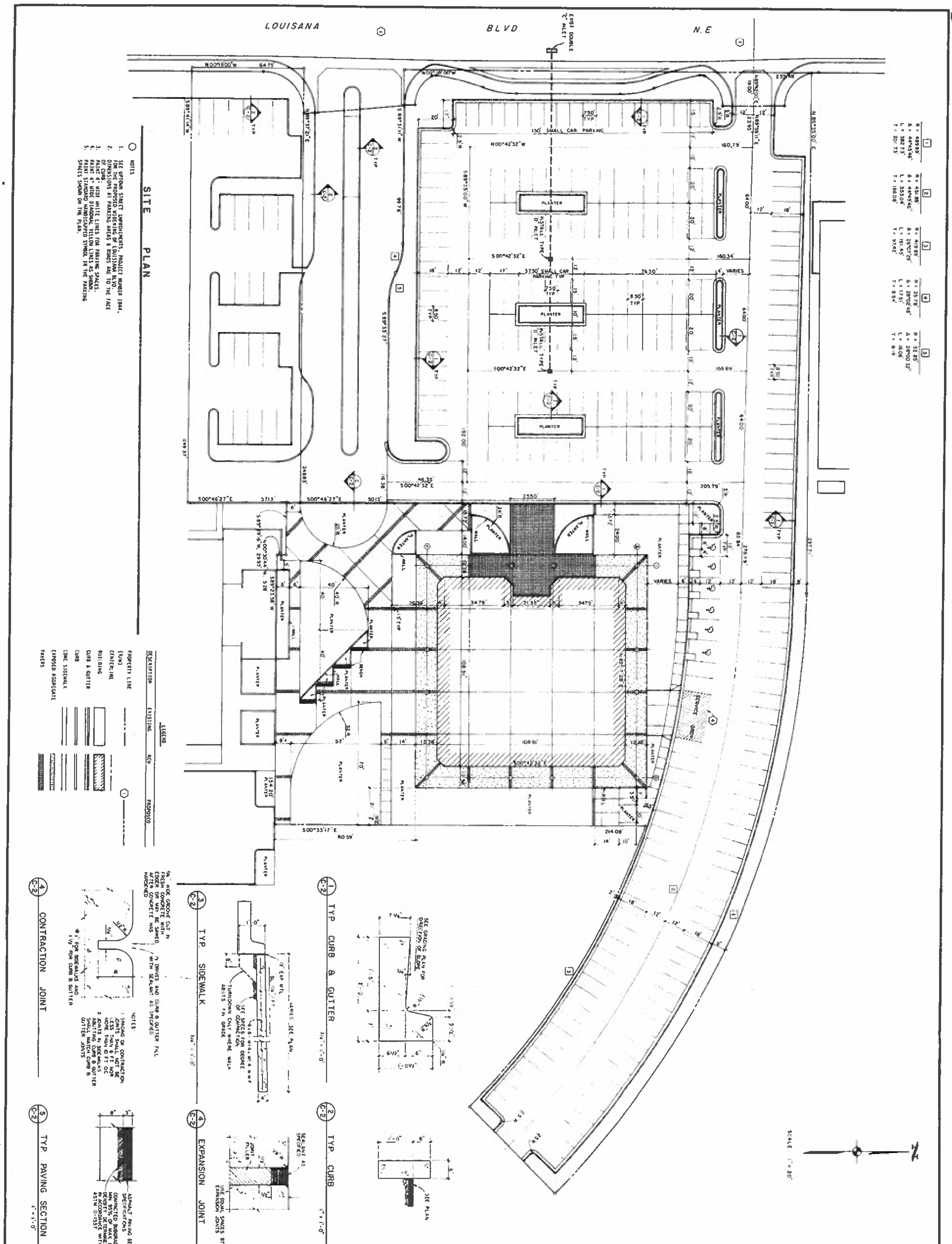
Job No. 32140 | Sheet 1 of 2

Drawn By P.E. | Date JAN. 84

Checked By B.G.B | Scale 1"=50'

1-17-84

15761H



C-2

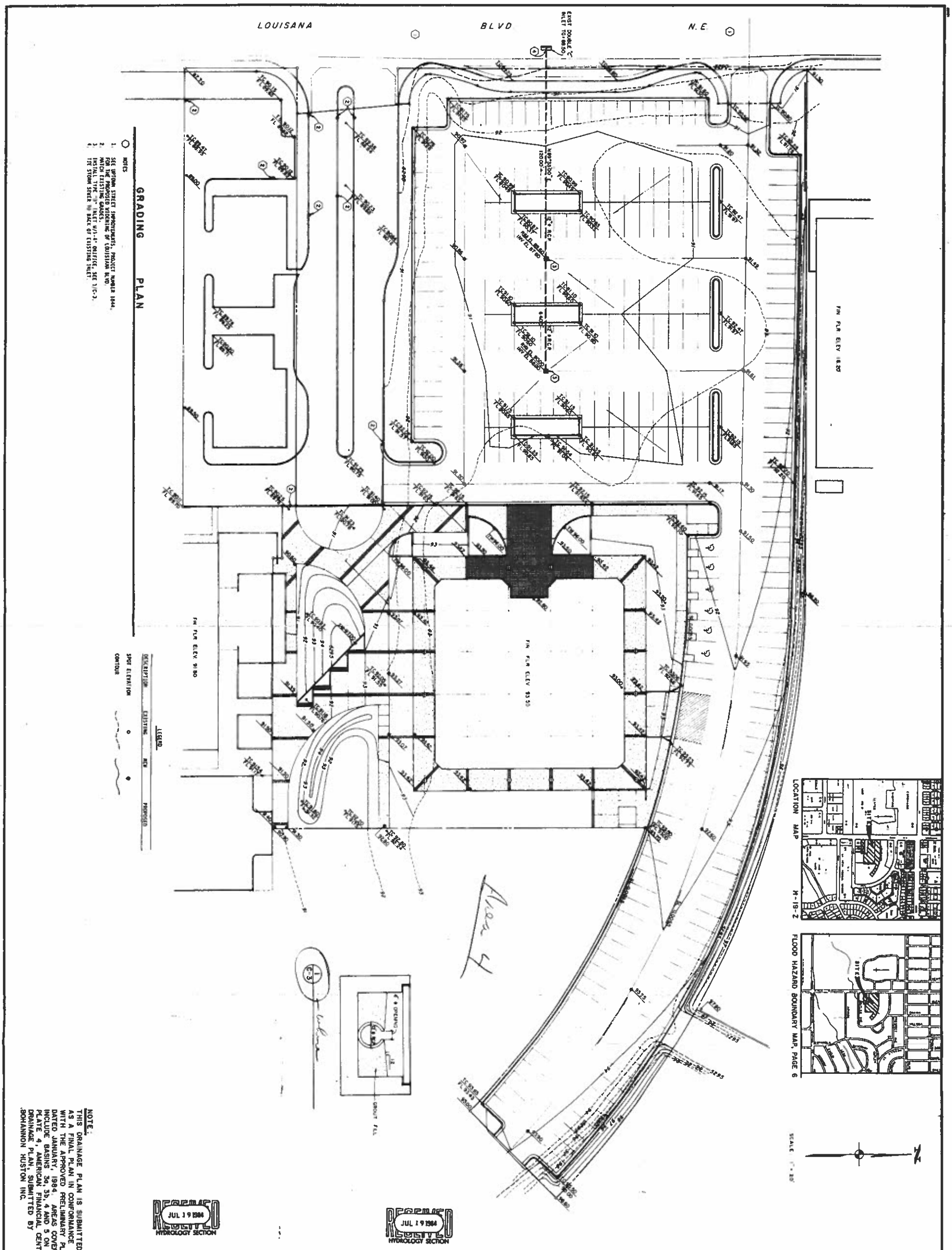
SITE PLAN AND DETAILS

AMERICAN FINANCIAL CENTER

BUILDING NO. 5

ALBUQUERQUE, NEW MEXICO

GRADING PLAN



NOTES

1. SEE UPTOWN STREET IMPROVEMENTS, PROJECT NUMBER 1844.
2. MATCH EXISTING GRADES.
3. INSTALL TYPE "D" INLET W/1-4" ORIFICE, SEE 1/C-3.
4. TIE STORM SEWER TO BACK OF EXISTING INLET.

DESCRIPTION	EXISTING	PROPOSED
SPOT ELEVATION		
CONTOUR		

LOCATION MAP

M-19-Z

FLOOD HAZARD BOUNDARY MAP, PAGE 6

SCALE 1" = 20'

RECEIVED
JUL 19 1984
HYDROLOGY SECTION

RECEIVED
JUL 19 1984
HYDROLOGY SECTION

NOTE:
THIS DRAINAGE PLAN IS SUBMITTED AS A FINAL PLAN IN CONFORMANCE WITH THE APPROVED PRELIMINARY PLAN DATED JANUARY, 1984. AREAS COVERED INCLUDE BASINS 3a, 3b, 4 AND 5 ON PLATE 4, AMERICAN FINANCIAL CENTER, DRAINAGE PLAN, SUBMITTED BY BOHANNON HUSTON INC.

GRADING PLAN

C-3

AMERICAN FINANCIAL CENTER
BUILDING NO. 5
ALBUQUERQUE, NEW MEXICO

CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

June 21, 2016

Mike Balaskovits, P.E.
Bohannan Huston, Inc.
7500 Jefferson St NE Courtyard 1
Albuquerque, NM, 87109

RE: **2440 Louisiana Lots**
Conceptual Grading and Drainage Plan
Submittal Date 5-17-2016 (File: H19D084)

Dear Mr. Balaskovits:

Based upon the information provided in your submittal received 5-17-16, and as discussed at a previous DRB Hearing (6-15-2016) the above referenced Grading and Drainage Plan is approved for Site Plan for Subdivision (#1010042).

Please make sure to be aware that if the final grading and drainage plan needs cross-lot drainage easements they will be required for final sign off.

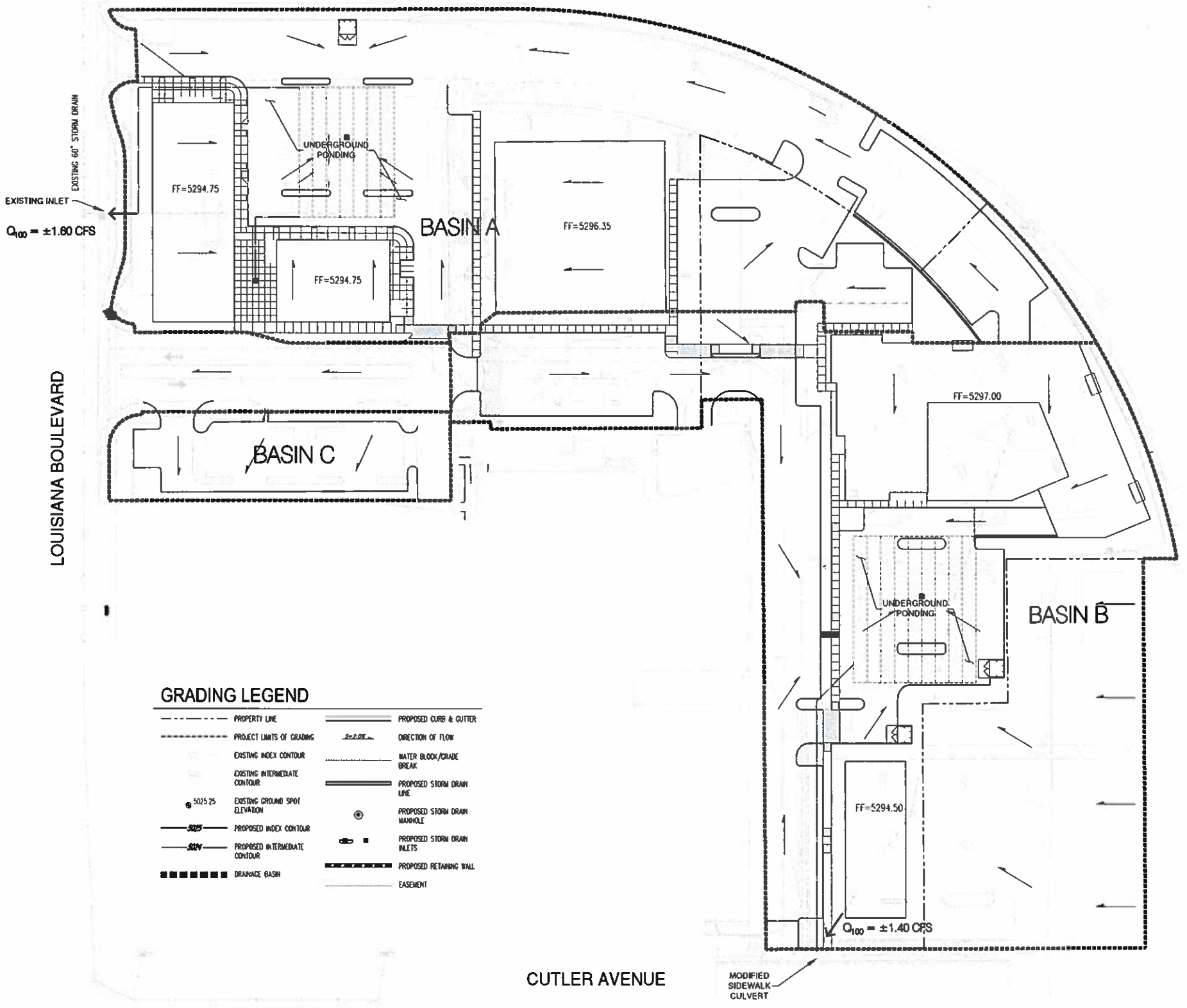
If you have any questions, you can contact me at 924-3986.

Sincerely,

Abiel Carrillo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

Orig: Drainage file

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov



GRADING LEGEND

- PROPERTY LINE
- PROJECT LIMITS OF GRADING
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- 5025.25 EXISTING GROUND SPOT ELEVATION
- 5025 PROPOSED INDEX CONTOUR
- 5024 PROPOSED INTERMEDIATE CONTOUR
- DRAINAGE BASIN
- PROPOSED CURB & GUTTER
- DIRECTION OF FLOW
- WATER BLOCK/GRADE BREAK
- PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED STORM DRAIN INLETS
- PROPOSED RETAINING WALL
- EASEMENT

FEMA FLOODPLAIN MAP: 35001C0352H

DRAINAGE NARRATIVE

EXISTING CONDITIONS:

THE SITE IS LOCATED NEAR THE INTERSECTION OF LOUISIANA BLVD AND CUTLER AVE. EAST OF CORONADO MALL. THE APPROXIMATELY 5.8 ACRES OF THE ENTIRE DEVELOPMENT IS CURRENTLY SUBDIVIDED INTO 2 TRACTS, WHICH ARE FULLY DEVELOPED. THE SITE CONSISTS OF EXISTING PARKING LOTS AND COVERED PARKING AREAS BUILT AROUND AN EXISTING 7 STORY BUILDING. THE CURRENT CONDITIONS OF THE SITE ARE FAIRLY FLAT.

REVIEW OF THE CITY HYDROLOGY FILES (COA HYDROLOGY FILE #H19-D1) AND THE EXISTING TOPOGRAPHIC SURVEY SHOWS THERE ARE SEVERAL EXISTING INLETS LOCATED AROUND THE SITE WHICH DISCHARGE INTO THE PUBLIC RIGHT OF WAY. ALL THE DRAINAGE FROM THE SITE APPEARS TO ENTER THE EXISTING 60" STORM DRAIN LOCATED WITHIN LOUISIANA BLVD VIA A DIRECT STORM DRAIN CONNECTION (BASIN A) OR VIA SURFACE FLOW WHICH IS PICKED UP IN CURB INLETS AT THE INTERSECTION OF CUTLER AND LOUISIANA (BASIN B). THE NORTHERN AND WESTERN PORTION OF THE SITE (BASIN A) CURRENTLY DRAIN TO A SERIES OF EXISTING INLETS ONSITE WHICH TIE TO AN AREA DRAIN WITHIN LOUISIANA BLVD. THE SOUTHERN PORTION OF THE SITE DRAINS TO A SERIES OF SHALLOW ONSITE INLETS THAT EVENTUALLY DISCHARGES INTO CUTLER AVE VIA A MODIFIED SIDEWALK CULVERT. THIS IS CONSISTENT WITH THE APPROVED DRAINAGE REPORT FOR AMERICAN FINANCIAL CENTER (HYDROLOGY FILE H19-D1) DATED JANUARY 17, 1984. ACCORDING TO THIS REPORT, THE ALLOWABLE DISCHARGE FROM THE SITE IS DETAINED VIA 4" ORIFICE PLATES ON ALL OUTFLOW PIPES. EXISTING SURFACE PARKING PONDS HELP TO MITIGATE THESE FLOWS AS NECESSARY. THIS REPORT ANALYZED THE SITE BASED ON A MODIFIED SITE LAYOUT THAT WAS NEVER FULLY CONSTRUCTED.

A MORE RECENT GRADING AND DRAINAGE PLAN PREPARED BY LARRY READ AND APPROVED ON JANUARY 11, 2002 FOR PAVING PERMIT AND SITE PLAN FOR BUILDING PERMIT, CONSTRUCTED ADDITIONAL ONSITE PARKING. ACCORDING TO THIS PLAN, THE SITE UTILIZES THE PARKING LOTS AS DETENTION PONDS DURING LARGER STORM EVENTS. THESE PONDS AND OTHER ONSITE DRAINAGE IMPROVEMENTS WERE VERIFIED BY THE TOPOGRAPHIC SURVEY.

PER FEMA MAP PANEL #35001C0352H (SEE ABOVE), THE SITE IS NOT LOCATED WITHIN A KNOWN FLOOD ZONE.

PROPOSED CONDITIONS:

THE DEVELOPED FLOWS FOR THE SITE WILL MAINTAIN THE REDUCED DISCHARGE TO THE SURROUNDING RIGHT OF WAY. THE SITE WILL NOT DEVIATE SIGNIFICANTLY FROM HISTORIC FLOW PATHS. DUE TO THE PROPOSED BUILDINGS AND THE SITE SLOPE CONSTRAINTS, UNDERGROUND PONDING WILL BE REQUIRED TO ASSIST IN THE FIRST FLUSH REQUIREMENTS AS WELL AS HELP TO DETAIN THE PEAK DISCHARGE TO MEET THE ALLOWABLE DISCHARGE RATES.

THE NORTHERN PORTION OF THE SITE (BASIN A), ALONG LOUISIANA BOULEVARD INCLUDING THE EXISTING LEWIS UNIVERSITY BUILDING, WILL CONTINUE TO DISCHARGE TO THE 60" STORM DRAIN IN LOUISIANA. UNDERGROUND PONDING WITH BE REQUIRED TO MAINTAIN THE ALLOWABLE DISCHARGE (±1.6CFS) AND TO RETAIN THE FIRST FLUSH VOLUME.

THE SOUTHERN PORTION OF THE SITE (BASIN B) THAT IS ADJACENT TO CUTLER AVENUE WILL MAINTAIN THE ALLOWABLE DISCHARGE (±1.4CFS) AND CONTINUE TO DISCHARGE DIRECTLY TO CUTLER VIA SURFACE FLOW. THE EXISTING STORM DRAINAGE WILL HAVE TO BE REROUTED AROUND THE PROPOSED BUILDINGS AS NECESSARY AND UNDERGROUND PONDING WILL ALSO BE REQUIRED TO RETAIN THE FIRST FLUSH AND MAINTAIN THE ALLOWABLE DISCHARGE.

GIVEN THE ABOVE INFORMATION, THE SITE WILL MAINTAIN HISTORICAL FLOWPATHS AND FLOWS VIA ONSITE STORM DRAIN SYSTEMS AND UNDERGROUND PONDING. WITH THIS SUBMITTAL, WE ARE SEEKING SITE PLAN FOR SUBDIVISION APPROVAL.

ARCHITECTURE / DESIGN / INSPIRATION

DEKKER PERICH SABATINI

7601 JEFFERSON NE, SUITE 100
ALBUQUERQUE, NM 87109

505.761.9700 / DPSDESIGN.ORG

ISSUED FOR
DRB/URT
Site Plan for Subdivision

SEAL

PROJECT

2440 LOUISIANA LOTS
Albuquerque, New Mexico
SITE PLAN FOR SUBDIVISION
DRB SUBMITTAL

REVISIONS

DRAWN BY	MHS
REVIEWED BY	MJB
DATE	5.18.16
PROJECT NO	20160384

DRAWING NAME

CONCEPTUAL GRADING PLAN

SHEET NO
2 OF 2

P:\20160384\CDP\Plans\General\20160384_GP02.dwg, Layout1
May 16, 2016 - 6:33pm
Plotted by: MSATCHES

Bohannan Huston
www.bhinc.com 800.877.5332

LOUISIANA BOULEVARD N.E.

LOT 5-A, BLOCK C
LOUISIANA SUBDIVISION
(05/05/87, C33-122)

EXISTING 5' P.U.E. (07/13/62, D3-40)

SAW CUT AND REMOVE EXISTING PAVEMENT AS REQUIRED

NEW 2' DIA INLET
GRATE= 22.65
6" DIA ORFICE=22.13'
INVIN=19.64
INVOUT=19.54

EXISTING ASPHALT PAVEMENT TO REMAIN

EXISTING 25.38' INGRESS & EGRESS EASEMENT (02/09/84, C23-46)

NEW JUNCTION
INVIN=17.96'
INVOUT=17.86'

12" C-900 PVC

EX SLOT DRAIN (TO BE REMOVED)

POND #3 BOT 22.48

POND #1 BOT 22.55

POND #2 BOT 22.55

POND #4 BOT 22.98

ABANDON AND REMOVE EXISTING STORM DRAIN AS REQUIRED

NEW 2.5' DIA
23.00'
GRATE=22.29
6" DIA ORFICE=22.13'
INVIN=20.37'
INVOUT=20.27'

NEW ASPHALT PAVEMENT

SAW CUT AND REMOVE EXISTING PAVEMENT AS REQUIRED

EXISTING INGRESS & EGRESS EASEMENT (02/09/84, C23-46)

EXISTING ASPHALT PAVEMENT TO REMAIN

2' SIDEWALK EXTENSTION

8' SIDEWALK

NEW BUILDING
FF 24.57

NEW JUNCTION
INV=5216.76
(VERIFY, NOTE A)

GRATE=5222.37
INV=-2.60'
(5218.77)

GRATE=5219.01
GRATE=5219.00
INV=5215.84
(VERIFY)

REMOVE CONCRETE AS REQUIRED

(EX. STREET)

SAW CUT AND REMOVE EXISTING PAVEMENT AS REQUIRED

EXISTING INGRESS & EGRESS EASEMENT (02/09/84, C23-46)

EXISTING ASPHALT PAVEMENT TO REMAIN

EXISTING INGRESS & EGRESS EASEMENT (02/09/84, C23-46)

MATCH EX

12.38'

12.00'

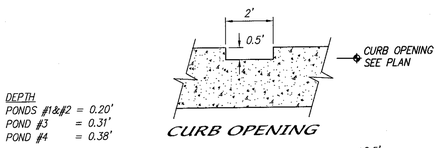
24.54'

11.62'

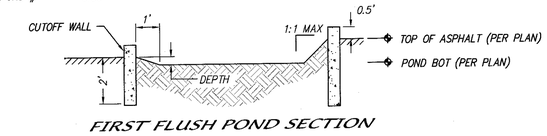
12.92'

10' 5' 0 10' 20'
SCALE: 1" = 10'

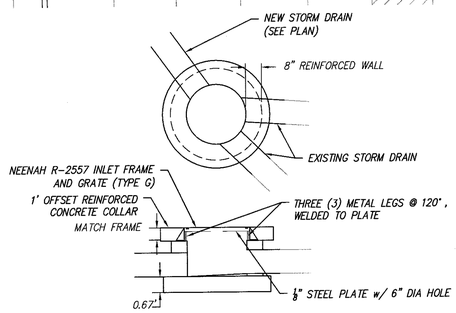
DEPTH
PONDS #1&#2 = 0.20'
POND #3 = 0.31'
POND #4 = 0.38'



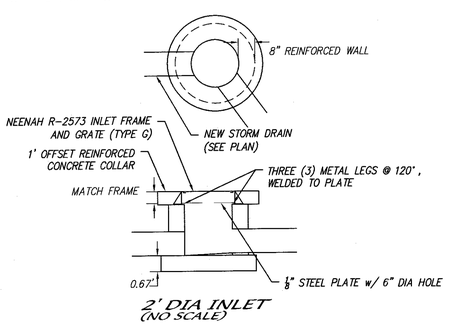
CURB OPENING



FIRST FLUSH POND SECTION



2.5' DIA INLET (NO SCALE)



2' DIA INLET (NO SCALE)

LEGAL DESCRIPTION

LOT NUMBERED THREE-A-ONE (3-A-1) IN BLOCK LETTERED "C", OF LOUISIANA SUBDIVISION, CITY OF ALBUQUERQUE, NEW MEXICO, AS THE SAME IS SHOWN AND DESIGNATED ON THE SECOND CORRECTION PLAT OF LOT 3-A-1, BLOCK "C" OF SAID SUBDIVISION, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO, ON JULY 1, 1996, IN PLAT BOOK 96C, PAGE 290.

ACS BENCHMARK

BENCHMARK FOR THIS SITE IS BASED ON ELEVATION DATUM NAVD 1988 FROM AGRS MONUMENT "15-H18", PUBLISHED ELEVATION(FEET) = 5303.391 (DATE OF RETRIVAL: JULY 2007 FOR NON AGRS MONUMENTS)

ELEVATIONS ARE SHIFTED VERTICALLY 69.07' FROM THIS DATUM

LEGEND

- FOUND AND USED MONUMENT AS DESIGNATED
- DENOTES NO. 4 REBAR WITH YELLOW PLASTIC CAP "PS 11993" SET THIS SURVEY
- FOUND ALUMINUM AGRS MONUMENT AS DESIGNATED
- SET OP AS DESIGNATED
- EXISTING SERVICE/DROP POLE AS DESIGNATED
- EXISTING UTILITY POLE
- EXISTING ELECTRIC BOX
- EXISTING LIGHT POLE
- EXISTING TRANSFORMER
- EXISTING PULLBOX
- EXISTING TELEPHONE PEDESTAL
- EXISTING IRRIGATION CONTROL VALVE
- EXISTING WATER METER
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING PIV
- EXISTING SPIGOT
- EXISTING SANITARY SEWER MANHOLE
- EXISTING CLEANOUT
- EXISTING UNKNOWN MANOLE
- EXISTING GAS VALVE
- EXISTING SIGN
- EXISTING GAS METER
- EXISTING POND INLET
- EXISTING MEDIAN INLET
- EXISTING CURB INLET
- EXISTING GUARD POST
- EXISTING HANDICAP PARKING SPACE
- EXISTING CURB AND GUTTER
- EXISTING OVERHEAD UTILITY LINE
- EXISTING GAS LINE
- EXISTING TELEPHONE LINE
- •81.77 NEW SPOT ELEVATION
- 81.77TW NEW TOP OF WALL ELEVATION
- 81.77BW NEW BOTTOM OF WALL ELEVATION
- 81.77TC NEW TOP OF CURB
- 81.77TA NEW TOP OF ASPHALT
- NEW FLOW DIRECTION
- NEW ASPHALT PAVEMENT
- NEW STORM DRAIN
- NEW WALL
- NEW SIDEWALK CULVERT (COA DETAIL 2236)
- PROPOSED CONTOUR LINE

GENERAL NOTES:

1. CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION.
2. CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION SHALL GOVERN ALL WORK.
3. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.
4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE LOTS INTO PUBLIC RIGHT-OF-WAY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
5. NO WORK ALLOWED IN THE PUBLIC RIGHT OF WAY WITHOUT AN APPROVED WORK ORDER.

NOTE:

A. CONTRACTOR TO CONFIRM STORM DRAIN CONNECTION INVERT PRIOR TO STORM DRAIN CONSTRUCTION AND NOTIFY ENGINEER. STORM DRAIN LAYOUT IS ASSUMED. STORM DRAIN LAYOUT IS PER LARRY READ & ASSOCIATES 2002 DRAINAGE BASIN MAP.

B. BUILDING ROOF TO DRAIN TO THE NORTH AND EAST SIDES.

C. SEE SHEET ASD 101 FOR ITEMS TO BE REMOVED.

DANE HOELZER
NEW MEXICO
11987
REGISTERED PROFESSIONAL ENGINEER
9-11-18

UNDERGROUND UTILITIES CAUTION:

NOTE THAT ALL EXISTING UTILITIES MAY NOT BE SHOWN. ALL EXISTING SERVICE CONNECTIONS ARE NOT SHOWN. ANY EXISTING UTILITIES THAT ARE SHOWN ARE APPROXIMATE LOCATION ONLY. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT ALL THE UTILITY OWNERS AND TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATIONS TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS.

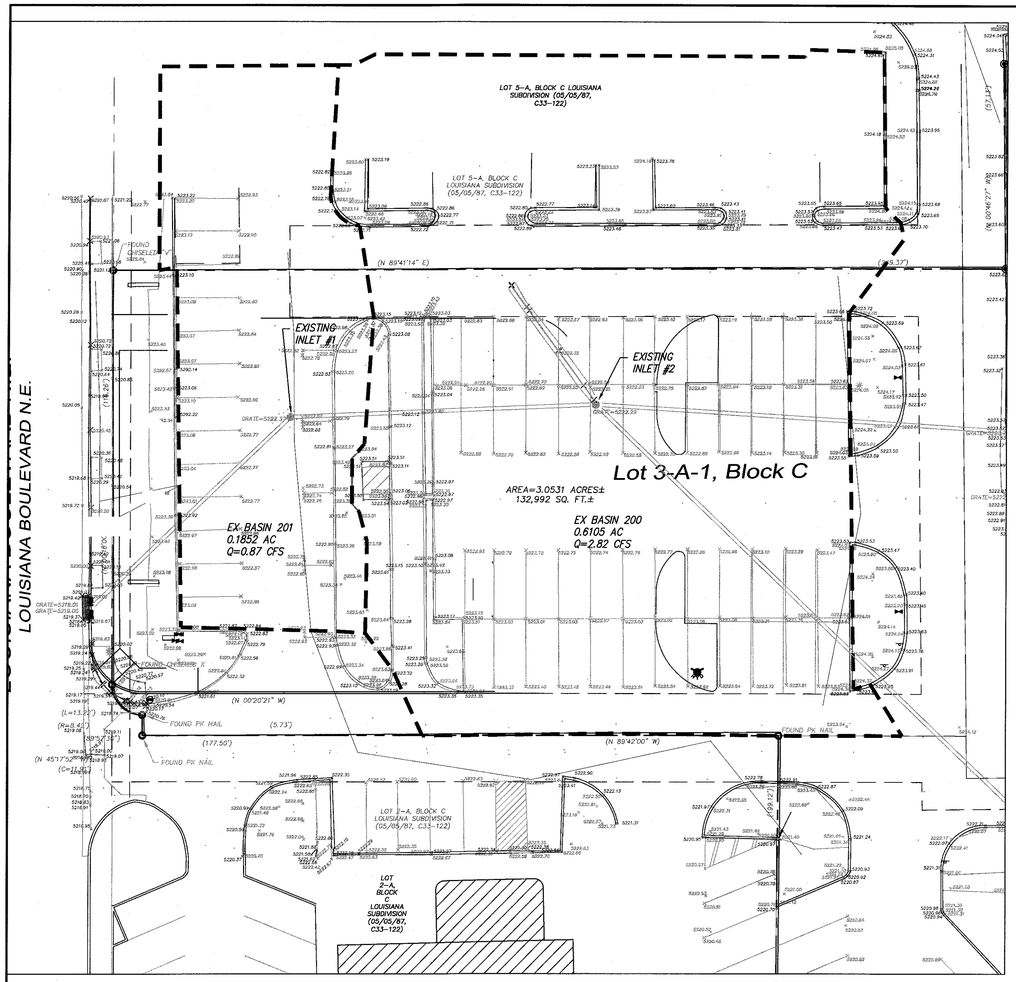
SHOPS @ THE 24s

GRADING & DRAINAGE PLAN

MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

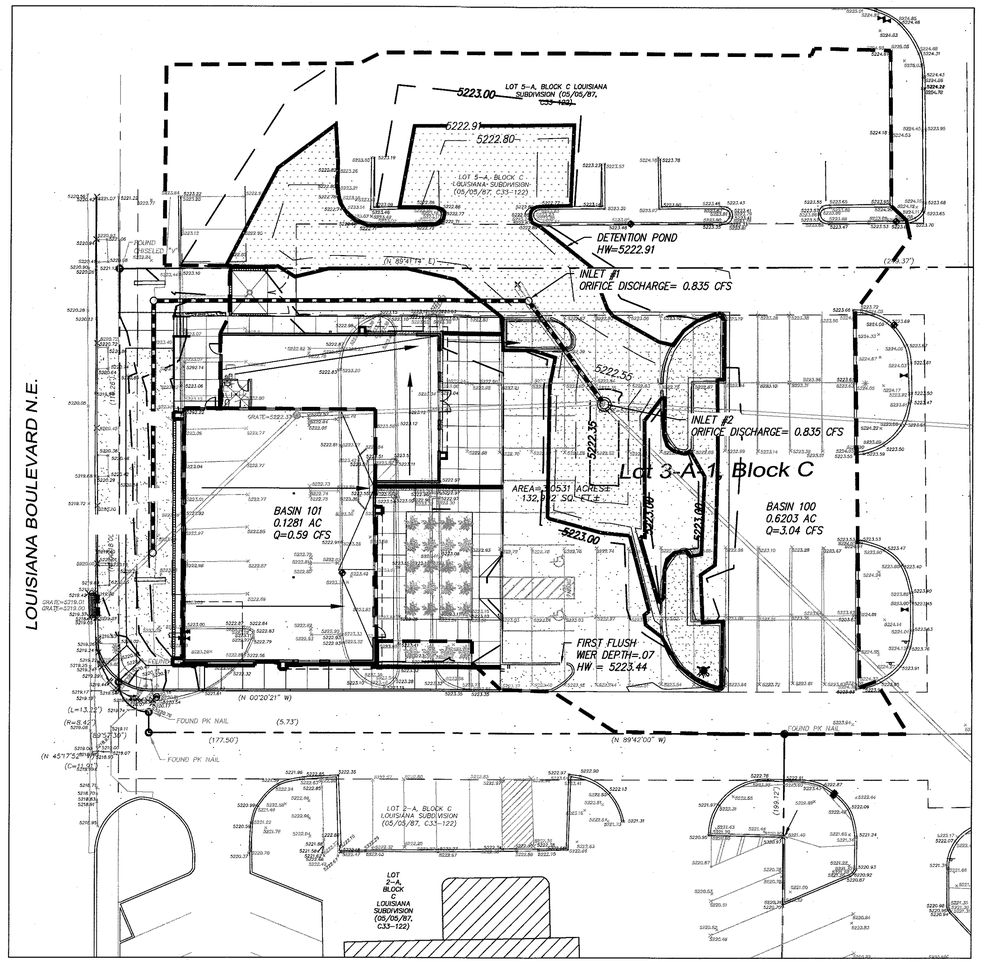
Designed: CP/DH	Drawn: DER, CP	Checked: DMG	Sheet C1 of 4
Scale: AS SHOWN	Date: 9/7/2018	Job: A18018	

F:\A18JOBS\A18018 Shops at The 24's\GRADE & DRAIN\A1808 G&D PLAN.dwg, 9/11/2018 11:33:13 AM, corv



EXISTING BASINS TO EXISTING INLETS #1 AND #2

Q = 3.69 CFS (EXISTING BASINS)



PROPOSED BASINS TO NEW INLETS #1 AND #2

Q = 3.63 CFS (PROPOSED BASINS)
Q = 1.67 CFS (DETENTION POND)

PROPOSED BASINS TO NEW INLETS #1 AND #2

Q = 1.87 CFS (PROPOSED BASINS, ASSUMED UNDEVELOPED CONDITIONS 50%A, 50%B)

N

20' 10' 0 20' 20'

SCALE: 1" = 20'

HYDROLOGY NOTES

OVERALL HYDROLOGY PLAN:

THE PROJECT IS THE RECONSTRUCTION AND REGRADING OF A 0.46 AC PORTION WITHIN AN EXISTING 3.05 AC PROPERTY. IN REGARDS TO HYDROLOGY, THE PROPOSED CONSTRUCTION COMPARED TO THE EXISTING IS NOT SIGNIFICANT. AS THE IMPERVIOUS AREA IS NOT CHANGED SIGNIFICANTLY, THE AREA OF CONSTRUCTION WOULD SHED DISCHARGE SIMILAR TO EXISTING CONDITIONS, WITHOUT CONSIDERATION OF THE ROUTING AFFECTS FROM FIRST FLUSH CAPTURE OR A DETENTION POND. THE PROPOSED INLETS ARE EQUIPPED WITH ORIFICE PLATES TO REDUCE THE STORM WATER DISCHARGE RATE FROM EXISTING SIMILAR TO THE INTENT OF THE ORIGINAL CONSTRUCTION.

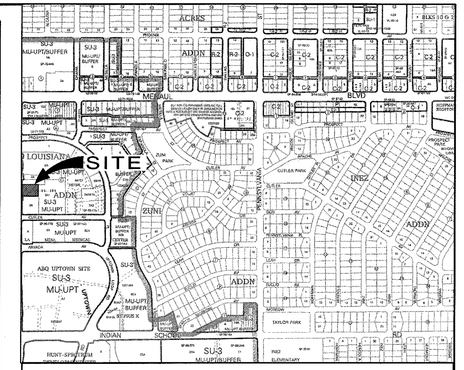
THE EXISTING 3.05 AC PROPERTY WAS APPROVED IN ABOUT 1978 FOR ONE BUILDING WITH RUNOFF DETAINED ON THE ROOF, AND ASPHALT PARKING LOTS ON THE WEST, SOUTH, AND EAST SIDES OF THE BUILDING ALSO USED TO DETAIN RUNOFF. RECENTLY THE PARKING LOT ON THE EAST SIDE OF THE EXISTING BUILDING WAS CONVERTED INTO AN UNDERGROUND PARKING LOT AND THE DETENTION THERE WAS REPLACED BY RETENTION. TWO EXISTING PARKING LOT PONDS ON THE SOUTH SIDE OF THE EXISTING BUILDING DRAIN TO SUMP INLETS WITH 6" DIAMETER ORIFICE PLATES LOCATED 2" BELOW THE SURFACE OF THE GRATES. THE EXISTING PARKING LOT PONDS ON THE WEST SIDE OF THE BUILDING HAVE FALLEN INTO A STATE OF DISREPAIR; THE FAR WEST INLET ORIFICE PLATE HAS RUSTED THROUGH AND THE NEXT INLET TO THE EAST HAS BEEN MODIFIED AND THE ORIFICE PLATE IS MISSING. THE EXISTING DRAINAGE SYSTEM WAS CONSTRUCTED IN PHASES FOR WHICH DIFFERENT DRAINAGE CRITERIA WAS IN PLACE BETWEEN THE FIRST TWO PHASES AND LAST TWO PHASES.

THE NEW CONSTRUCTION REPLACES THE WEST INLET AND THE NEXT INLET TO THE EAST WITH NEW INLETS EQUIPPED WITH NEW ORIFICE PLATES. ADDITIONALLY, THE NEW CONSTRUCTION REMOVES THE MODIFICATIONS TO THE NEXT INLET TO THE EAST. THE TWO RECONSTRUCTED INLETS WILL BE SIMILAR TO THE EXISTING INLETS SOUTH OF THE EXISTING BUILDING AND WILL RESTORE THE ORIGINAL INTENT OF THE DESIGN. THE NEW INLETS WITH ORIFICE PLATES MITIGATE DISCHARGE FROM THE CONTRIBUTING BASINS TO LESS THAN AN ASSUMED UNDEVELOPED Q WITH 50% A, 50% B LAND TREATMENTS. THIS MAY BE CONSERVATIVE AS THE ORIGINAL C VALUE (RATIONAL METHOD) FOR THE LATTER PHASES OF UNDEVELOPED LAND OF THE EXISTING STORM DRAIN WAS ESTIMATED TO BE 0.50. ALSO, THE CONSTRUCTION MITIGATES THE DISCHARGE TO LESS THAN THE EXISTING INLETS IN THERE EXISTING CONFIGURATION.

THE NORTH AND SOUTH DOWNSPOUTS FROM THE BUILDING WILL FLOW TO FIRST FLUSH PONDS #3 AND #4, AND THE MIDDLE DOWNSPOUT DISCHARGES TO THE PARKING LOT DETENTION POND. THE FIRST FLUSH PONDS #1, #2,#3, AND #4 FILL AND THEN DRAIN INTO THE PARKING LOT DETENTION POND CREATED BY NEW SUMP INLETS EQUIPPED WITH 6" ORIFICE PLATES TO LIMIT FLOW FROM 3.63 CFS TO 1.67 CFS FROM BASINS 101 AND 100 COMBINED. THIS WILL DETAIN APPROXIMATELY 7" OF STORM WATER PONDING OVER INLET #2 (100 YR) IN THE NEWLY CONSTRUCTED PARKING LOT EAST OF THE NEW BUILDING. THIS DETENTION IS REQUIRED TO RESTORE LIMITED STORM WATER DISCHARGE FROM THE AFFECTED PORTION OF THE EXISTING STORM DRAIN AS ORIGINALLY APPROVED.

THE RESULTS ARE SUMMARIZED IN THE ATTACHED SUPPLEMENTAL INFORMATION:

THE STORM DRAIN SYSTEM IS EXISTING AND WILL BE RECONTRUCTED FROM INLET #2 AROUND THE BUILDING ON THE NORTH AND WEST SIDES. IT WILL JUNCTION BACK INTO THE EXISTING STORM DRAIN AT A LOCATION WEST OF THE PROPOSED BUILDING AND BE CONVEYED TO THE LOUISIANA STORM DRAIN. THE JUNCTION LOCATION AND THE EXISTING STORM DRAIN SYSTEM ARE TO BE VERIFIED ONCE UNCOVERED DURING CONSTRUCTION.



VICINITY MAP

LEGAL DESCRIPTION

LOT NUMBERED THREE-A-ONE (3-A-1) IN BLOCK LETTERED "C", OF LOUISIANA SUBDIVISION, CITY OF ALBUQUERQUE, NEW MEXICO, AS THE SAME IS SHOWN AND DESIGNATED ON THE SECOND CORRECTION PLAT OF LOT 3-A-1, BLOCK "C" OF SAID SUBDIVISION, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO, ON JULY 1, 1996, IN PLAT BOOK 96C, PAGE 290.

DIANNE MCGEE LEE NEW MEXICO 11987 REGISTERED PROFESSIONAL ENGINEER

9-11-18

SHOPS @ THE 24s

SUB BASIN BOUNDARY EXHIBIT

dmg
MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

Designed: CP/DH	Drawn: DER, CP	Checked: DMG	Sheet C2 of 4
Scale: AS SHOWN	Date: 9/7/2018	Job: A18018	

F:\A18JOBS\A18018 Shops at The 24's\GRADE & DRAIN\A1808 G&D PLAN.dwg, 9/11/2018 11:48:27 AM, corv

HYDROLOGY NOTES

FIRST FLUSH CAPTURE PLAN:.

THE NEW GRADES WILL CAPTURE FIRST FLUSH RUNOFF FROM THE NEW CONSTRUCTION AREA AND EXISTING OFFSITE PAVED AREA. FIRST FLUSH PONDS 1+2, 3, AND 4 WILL CAPTURE FIRST FLUSH FROM THE BASINS AS SHOWN. THE REQUIRED FIRST FLUSH VOLUME GENERATED BY THE NEW CONSTRUCTION AREA IS CALCULATED AT 362 CF (0.26" FIRST FLUSH DEPTH). THE FIRST FLUSH PONDS CAPTURE 217 CF OF THIS VOLUME, YIELDING 145 CF TO THE MONETARY COMPENSATION POLICY OF THE CITY OF ALBUQUERQUE. THIS VOLUME IS ESTIMATED FROM THE AVAILABLE AREA OF THE CONTRIBUTING BASINS FOR THE PONDS. EACH POND CATCHES THE FIRST FLUSH, THEN DRAINS INTO THE PARKING LOT DETENTION POND.

COLLECTING FIRST FLUSH FROM OFFSITE AREAS IS NOT REQUIRED, HOWEVER, BECAUSE THE OFFSITE BASINS ARE AVAILABLE FROM EXISTING ELEVATIONS, OFFSITE BASIN DISCHARGE IS COLLECTED AND CREDITED TOWARDS THE CONSTRUCTION AREA REQUIRED FIRST FLUSH VOLUME. THE FIRST FLUSH PONDS 1+2 COLLECT FLOW THRU CURB OPENINGS AT UPSTREAM SIDES AND RELEASE VOLUME IN EXCESS OF FIRST FLUSH THRU DOWNSTREAM CURB OPENINGS THAT ARE LOWER IN ELEVATION. FIRST FLUSH PONDS #3, AND #4 COLLECT RUNOFF FROM ROOF DOWNSPOUTS AND SIDEWALK, THEN RELEASE EXCESS VOLUME THRU CURB OPENINGS TO THE PARKING LOT DETENTION POND. FIRST FLUSH POND #3 COLLECTS FROM A CURB OPENING AND DISCHARGES TO AN INLET AT A LOWER ELEVATION.

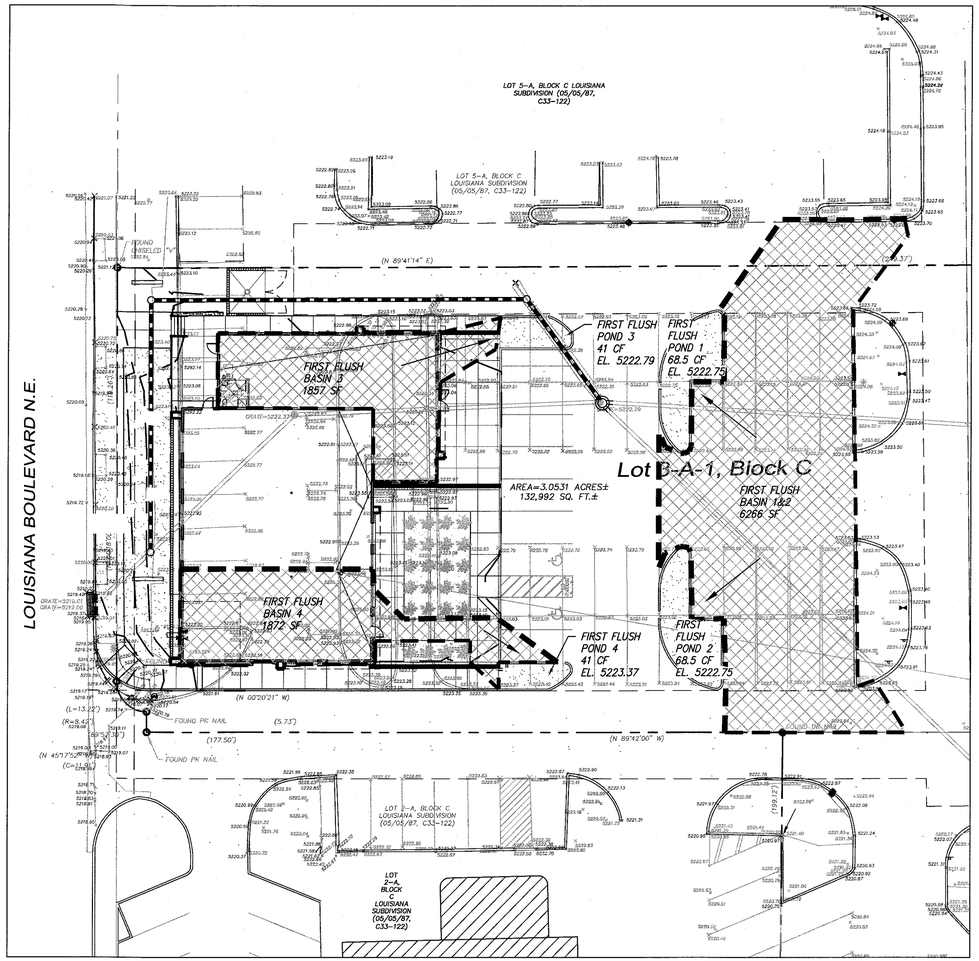
First Flush Pond Design Details

Area of Construction:	SF
	20085

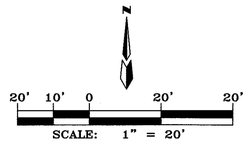
Proposed (SF)	
Impervious	Landscape
16709	3376

First Flush depth: (inches)	0.26
Required First Flush Volume based on Design: (CF)	362

Proposed Design First Flush Capacity		Available First Flush	
PONDS 1 & 2			
Depth (FT):	0.20	First Flush Basin to Ponds #1 & 2	
Bottom (SF)	295	Area	6266
		Available	
Top (SF)	390	First Flush	**136**
Volume (CF)	68.5		
Two Ponds (1&2)	137		
POND 3			
Depth (FT):	0.31	First Flush Basin to Pond #3	
Bottom (SF)	107	Area	1857
		Available	
Top (SF)	156	First Flush	**40**
Volume (CF)	41		
POND 4			
Depth (FT):	0.39	First Flush Basin to Pond #4	
Bottom (SF)	81	Area	1872
		Available	
Top (SF)	128	First Flush	**41**
Volume (CF)	41		
First Flush Credited Volume (CF)=			**217**



PROPOSED FIRST FLUSH BASINS



SHOPS @ THE 24s

FIRST FLUSH BASINS

MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

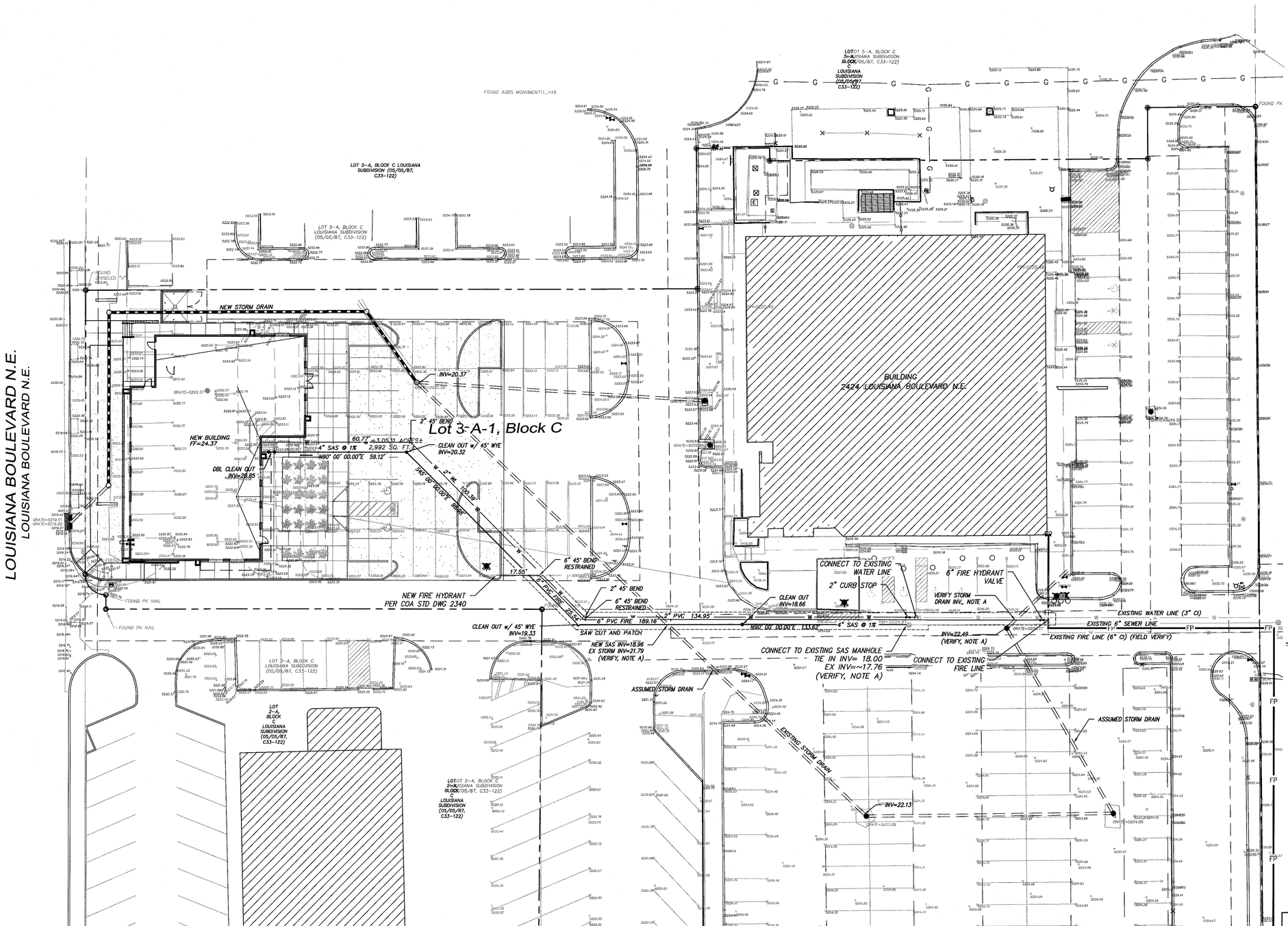
DIANNE HOELZER NEW MEXICO 17087 REGISTERED PROFESSIONAL ENGINEER
9-11-18

Designed: CP/DH	Drawn: DER, CP	Checked: DMG	Sheet C3 of 4
Scale: AS SHOWN	Date: 9/7/2018	Job: A18018	

F:\A18JOBS\A18018 Shops at The 24's\GRADE & DRAIN\A1808 G&D PLAN.dwg, 9/11/2018 11:37:20 AM, corv

LOUISIANA BOULEVARD N.E.

LOUISIANA BOULEVARD N.E.



LEGEND

- FOUND AND USED MONUMENT AS DESIGNATED
- DENOTES NO. 4 REBAR WITH YELLOW PLASTIC CAP "PS 11993" SET THIS SURVEY
- FOUND ALUMINUM AGRS MONUMENT AS DESIGNATED
- SET CP AS DESIGNATED
- EXISTING SERVICE/DROP POLE AS DESIGNATED
- EXISTING UTILITY POLE
- EXISTING ELECTRIC BOX
- EXISTING LIGHT POLE
- EXISTING TRANSFORMER
- EXISTING PULLBOX
- EXISTING TELEPHONE PEDESTAL
- EXISTING IRRIGATION CONTROL VALVE
- EXISTING WATER METER
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING PIV
- EXISTING SPIGOT
- EXISTING SANITARY SEWER MANHOLE
- EXISTING CLEANOUT
- EXISTING UNKNOWN MANOLE
- EXISTING GAS VALVE
- EXISTING SIGN
- EXISTING GAS METER
- EXISTING POND INLET
- EXISTING MEDIAN INLET
- EXISTING CURB INLET
- EXISTING GUARD POST
- EXISTING HANDICAP PARKING SPACE
- EXISTING CURB AND GUTTER
- EXISTING OVERHEAD UTILITY LINE
- EXISTING GAS LINE
- EXISTING TELEPHONE LINE
- NEW EASEMENTS
- 12" CMP — NEW STORM DRAIN
- NEW STORM DRAIN MH
- 6"WL — NEW WATERLINE
- NEW WATER METER SGL
- NEW WATER BEND
- NEW WATER TEE
- NEW GATE VALVE
- NEW FIRE HYDRANT
- 4"SAS — NEW SAS
- NEW SAS CLEAN OUT
- PAVEMENT CUT AND PATCH

City of Albuquerque Standard Utility Notes:

1. All waterline is C-900 PVC pipe and all sanitary sewer is SDR35 PVC pipe and all storm drain is RCP Class III unless noted otherwise on the plans.
2. EMD's shall be installed on all waterline and sanitary sewer appurtenances as per section 170 of Standard Specifications.
3. All residential waterline services shall be 3/4" unless noted otherwise on plans.
4. All Gate Valves shall be per COA Std. Dwg. 2326 and 2328.
5. All Type "C" manholes shall be per COA Std. Dwg. 2101.
6. All Type "E" manholes shall be per COA Std. Dwg. 2102.
7. All 3/4" and 1" water services shall be per COA Std Dwg 2362 and 2368
8. All 1-1/2" and 2" water services shall be per COA Std Dwg 2363 and 2367
9. All SAS services into main line shall be per COA Std Dwg 2125.
10. All SAS services into manholes shall be per COA Std Dwg 2118.

NOTE:
A. CONTRACTOR TO CONFIRM SAS CONNECTION INVERT AND LOCATE EXISTING STORM DRAIN ALONG UTILITY CORRIDORS PRIOR TO UTILITY CONSTRUCTION AND NOTIFY ENGINEER. STORM DRAIN LAYOUT IS ASSUMED. STORM DRAIN LAYOUT IS PER LARRY READ & ASSOCIATES 2002 DRAINAGE BASIN MAP

DIANE HOELZER — NEW MEXICO — 11967 — REGISTERED PROFESSIONAL ENGINEER
9-11-18

20' 10' 0 20' 40'
SCALE: 1" = 20'

SHOPS @ THE 24s

UTILITY PLAN

MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

Designed: DMG	Drawn: DER	Checked: DMG	Sheet C4 of 4
Scale: AS SHOWN	Date: 9/7/2018	Job: A18018	

F:\A1803OBS\A18018 Shoos at The 24's\PLANS\UTILITIES\A1808 UTILITY PLAN.dwg, 9/11/2018 11:45:14 AM, carv