HYDROLOGY

H16/D38

H16/D38

Commercial

Bldg.

1 Plan

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

August 30, 1982

9-2-82
Meeting:
1.) Options
a) redo grading
b.) revise report to comply w/ Q100 UWD.

Mr. August Mossiman
Engineering Associates
1801 Lomas NW
Albuquerque, New Mexico 87106

Ref: I.O.F.F. Lodge

Dear Mr. Mossiman:

I have reviewed your drainage and grading plan for the aforementioned site and find the following items need to be addressed or verified:

1. The Q_1 is never calculated. The discharge rate of 3 pipes at 0.55 c.f.s. is greater than the developed Q_1 discharge. Therefore the stated premise of this design has not been solved.

2. Two ponds are within 15 feet of the structure which is not allowed.

3. The graphic volume of the ponds do not match the labeled pond volumes.

Please note that the Interim Drainage Guidelines of 1979 are no longer absolute and a less strict runoff proposal would be allowed on this site if the proper calculations and information are provided to this office.

If the consultant elects to use the Interim Drainage Guidelines then the pond volumes on the plan must be to scale. The City will allow the discharge rate of 1.8 c.f.s. as proposed. Please submit the revised scaled grading plan to this office for review of compliance to the drainage report submitted.

Sincerely,

Andre Houle, PE
Civil Engineer/Hydrology

AH/el

cc: Drainage File
Reading File

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

September 22, 1982

Mr. August Mosimann, PE
1801 Lomas Blvd. NW
Albuquerque, New Mexico 87106

Ref: 2700 Girard
LOFF Building (File No. H16-D38)

Dear Mr. Mosimann:

The Drainage and Grading Plan for the aforementioned project is hereby approved. This department shall sign the Building Permit upon attachment of the grading plan and "Special Order 19" to the construction plan.

Please contact me, if you require any additional information.

Sincerely,

Andre Houle, PE
Civil Engineer/Hydrology

AH/el

cc: Drainage File
Reading File

TRANSMITTAL LETTER

ESPEY, HUSTON & ASSOCIATES, INC.
Engineering & Environmental Consultants
4801 INDIAN SCHOOL ROAD N.E. SUITE 204
ALBUQUERQUE, NEW MEXICO 87110 Ph. (505) 255-1628

PROJECT:
(name, address)

PROJECT NO: Sunchase Apts

DATE: 6/7/84

TO: CITY ENGR
HYDROLOGY

ATTN: BERNIE

RECEIVED JUN 07 1984 HYDROLOGY SECTION

If enclosures are not as noted, please inform us immediately.

If checked below, please:

( ) Acknowledge receipt of enclosures.
( ) Return enclosures to us.

WE TRANSMIT:
(✓) herewith ( ) under separate cover via
( ) in accordance with your request

FOR YOUR:
( ) approval ( ) distribution to parties ( ) information
( ) review & comment ( ) record
(✓) use ( )

THE FOLLOWING:
(✓) Drawings ( ) Shop Drawing Prints ( ) Samples
( ) Specifications ( ) Shop Drawing Reproducibles ( ) Product Literature
( ) Change Order (✓ report

RECEIVED JUN 0 - 1984 HYDROLOGY SECTION

COPIES	DATE	REV. NO.	DESCRIPTION	ACTION CODE
1	Aug. 1983		Drainage report approval letter	E
1	July 1983		copy of report w/ conceptual plan	
1	July 1983		SG-1, 2 and 3 construction drawing for private improvements	

ACTION CODE
A. Action indicated on item transmitted
B. No action required
C. For signature and return to this office
D. For signature and forwarding as noted below under REMARKS
E. See REMARKS below

REMARKS

Copies as requested. Temporary C.O. to be issued on Phase II and subsequent phases subject to receiving engineer's certification within 30 days.

COPIES TO: (with enclosures)

BY: Jim Leyman

ONE PAGE

BJG ✓
RLD ✓

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE April 23, 1985 REF. NO._____

RECEIVED
APR 24 1985
DHOOYZ
HYDROLOGY SECTION

TO: Billy Goolsby, Hydrology

FROM: Barry C. Simmons, Senior Civil Engineer

SUBJECT: FIREFIGHTERS CLUB DRAINAGE (H16/D38)

In early December, 1984 I was requested by the manager of the Firefighters Club to look at their site before it was paved to see what, if anything, could be done about making some modifications to the grading plan. At that time I talked to you regarding the site and found that there is an existing off-site storm drainage system with catch basins just west of the site which you indicated would handle flows from the club location. You indicated that since the catch basins were not included in the original drainage plan the club could eliminate on-site ponding and grade the site to drain out the drivepads onto Girard. Based on that information I informed the contractor to eliminate the on-site ponding which he did.

The club now needs to have the site approved and the C.O. signed off. Based on our conversation I am requesting that you approve the site as constructed and release the C.O.

BCS/rvg

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

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

June 28, 1985

Mr. John Mc Nerney
De La Torre/Rainhart
700 Lomas Blvd. NE
Albuquerque, NM 87102

RE: CONCEPTUAL DRAINAGE PLAN FOR MOSSMAN OFFICE BUILDING (G19/D19)
RECEIVED JUNE 24, 1983

Dear Mr. Mc Nerney:

The above referenced plan dated June 24, 1985 is approved for Site Development Plan sign-off.

Prior to building permit sign-off a drainage plan must be submitted and approved. My letter dated May 29, 1985 should be reviewed for comments.

A foundation only permit can be issued prior to building permit release after a drainage plan is submitted. Please request a "foundation permit" on the information sheet if this is what you are requesting.

If you should have any questions, please contact this office at 766-7644.

Sincerely,

Carlos A. Montoya
City/County Flood Plain Admin.

CAM/cl

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION/DESIGN HYDROLOGY SECTION

PRE-DESIGN CONFERENCE RECAP

HYDROLOGY SECTION PROJECT NO.: H16 DATE: 7-12-85

PLANNING DIVISION NOS. EPC: _____ DRB: _____

SUBJECT: COMMERCIAL BUILDING

LEGAL DESCRIP.: LOT 4B DUKE CITY INDUSTRIAL AREA

APPROVAL REQUESTED

_____ PRELIMINARY PLAT _____ FINAL PLAT

_____ SITE DEVELOPMENT PLAN X BUILDING PERMIT

_____ ROUGH GRADING

	WHO:	REPRESENTING:
ATTENDANCE:	Richard Dourte	
	Carlos Montoya	

_____ Conceptual Drainage Plan/Report required for Preliminary Plat and/or Site Development Plan sign-off.

X Approved Drainage Plan/Report required for Final Plat and/or Building Permit sign-off.

_____ Subdivision Improvements Agreement or Financial Security required.

FINDINGS: (1) DRAINAGE PLAN PER DPM (2) FREE DISCHARGE - DUE TO NO FLOODING DOWNSTREAM - minimum impact (3) Letter of Consent to work on adjacent property (4) Regional drainage easement to Girard

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: _____ SIGNED: _____

TITLE: _____ TITLE: _____

DATE: _____ DATE: _____

NOTE PLEASE PROVIDE A COPY OF THIS RECAP WITH THE DRAINAGE SUBMITTAL

PROJECT TITLE: Commercial bld ZONE ATLAS/DRNG. FILE #: H-16/D38

LEGAL DESCRIPTION: Lot 4B Duke City Industrial Area

CITY ADDRESS: 2706 Girard NE

ENGINEERING FIRM: Hall Engineering CONTACT: Richard Dourte

ADDRESS: 337 Eubank Blvd Suite 103 PHONE: 292-1115

OWNER: Orvice Creel CONTACT: Orvice Creel

ADDRESS: 2717 Girard NE PHONE: 884-1614

ARCHITECT: William Buckley CONTACT: William Buckley

ADDRESS: 740 San Mateo NE PHONE 255-9196

SURVEYOR: Hall Engineering CONTACT: Richard Dourte

ADDRESS: 337 Eubank Blvd Suite 103 PHONE: 292-1115

CONTRACTOR: Orvice Creel CONTACT: Orvice Creel

ADDRESS: 2717 Girard NE PHONE: 884-1614

RECEIVED
JUL 12 1985
HYDROLOGY SECTION

PRE-DESIGN MEETING:

X YES

___ NO

X COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 85 462 - 712185

EPC NO. ___

PROJ. NO. ___

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

___ GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

X BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER ___ (SPECIFY)

DATE SUBMITTED: 7-12-85

BY: Richard Dourte

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

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

July 15, 1985

Richard Hall
Hall Engineering
337 Eubank Boulevard, NE Suite 103
Albuquerque, New Mexico 87123

RE: DRAINAGE PLAN FOR COMMERCIAL BUILDING; DUKE CITY INDUSTRIAL AREA (H-16/D38) RECEIVED JULY 12, 1985

Dear Mr. Hall:

A preliminary review of your submittal for building permit approval has shown that the following information is lacking for this section to begin the review process.

Information Needed:

1. Plat showing proposed easement
2. Letter of concurrence from adjacent property owner.

Plan Drawing:

1. Existing City top of curb and flow line elevations on or adjacent to site on Girard & Phoenix.

Please provide this information so that we may process your request as expediently as possible.

Cordially,

Billy J. Goolsby
for Fred J. Aguirre, P.E.
Design Hydrologist

FJA/bsj

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Commercial b/d ZONE ATLAS/DRNG. FILE #: H-16 / D38

LEGAL DESCRIPTION: Lot 4B Duke City Industrial Area

CITY ADDRESS: 2706 Girard NE

ENGINEERING FIRM: Hall Engineering CONTACT: Richard Dourte

ADDRESS: 337 Eubank Blvd Suite 103 PHONE: 292-1115

OWNER: Orvice Creel CONTACT: Orvice Creel

ADDRESS: 2717 Girard NE PHONE: 884-1614

ARCHITECT: William Buckley CONTACT: William Buckley

ADDRESS: 740 San Mateo NE PHONE: ~~255-91~~ 255-9196

SURVEYOR: Hall Engineering CONTACT: Richard Dourte

ADDRESS: 337 Eubank Blvd Suite 103 PHONE: 292-1115

CONTRACTOR: Orvice Creel CONTACT: Orvice Creel

ADDRESS: 2717 Girard NE PHONE: 884-1614

RECEIVED
AUG 02 1985
HYDROLOGY SECTION

PRE-DESIGN MEETING:

X YES

___ NO

X COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. ___

EPC NO. ___

PROJ. NO. ___

TYPE OF SUBMITTAL:

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

___ GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

X BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER ___ (SPECIFY)

DATE SUBMITTED: ___

H16/D38

Desert Paper & Envelope Company, Inc.

2727 Girard N.E. Albuquerque, New Mexico 87107 Phone (505) 884-1614

RECEIVED
AUG 09 1985
HYDROLOGY SECTION

August 2,1985

The International Order of Firefighters are the owners of Lot 2B of Duke City Industrial Area and consent to the grade changes of Lot 2B Duke City Industrial Area as shown on the Drainage Plan dated August 2,1985 for Lot 4B Duke City Industrial Area.

William t. Pedigo
President Independent
Order of Firefighters

ACKNOWLEDGEMENT

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) SS

On this 7th day of August, 1985, the foregoing instrument was acknowledged before me by William T. Pedigo. My Commission expires June 27, 1988.

Jane Hudson

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

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

September 9, 1985

Mr. Richard Hall
Hall Engineering Co.
337 Eubank Blvd. NE, Suite 103
Albuquerque, NM 87123

RE: REVISED DRAINAGE PLAN FOR LOT 4B DUKE CITY INDUSTRIAL (H16-D38)
RECEIVED AUGUST 2, 1985

Dear Mr. Hall:

I have reviewed the above referenced submittal and forward the following comments:

1. The asphalt curb along the western edge of the parking area is not permanent enough for a continued conveyence of runoff. Vehicles backing over the curb will create holes whereby, the runoff, will pass through onto adjacent property.

2. There is no indication as to how the runoff will be contained within the access/drainage easement to the street, i.e. there are no curb & gutters shown nor is there any profile or hydraulic computations provided to show that the runoff will remain on the asphalt.

3. The curb-cut in Girard Blvd. does not line up with the access. How will the runoff be conveyed to the street? It cannot cross the City Right-of-Way without a drivepad or culvert.

4. Previous comment had requested concurrance for grading and construction off-site. Thus far, this section has not received any.

5. There is a swale identified adjacent to the south end of the building. Please provide details and hydraulics as to how this is to work. It is not apparent how the water can be contained nor how it can be turned 90°.

Should you have any questions or comments, please call this office at 766-7644.

Cordially,

Billy J. Goolsby

Billy J. Goolsby
C.E./Design Hydrology

BJG/cl

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Desert Paper & Envelope ZONE ATLAS/DRNG. FILE #: H16-D38

LEGAL DESCRIPTION: Lot 4B Duke City Industrial Area

CITY ADDRESS: 2706 Girard NE

ENGINEERING FIRM: Hall Engineering CONTACT: Parviz Eftekhari

ADDRESS: 337 Eubank NE #103 PHONE: 292-1115

OWNER: Orvice Creel CONTACT: Orvice Creel

ADDRESS: 2717 Girard NE PHONE: 884-1614

ARCHITECT: Bill Buckley Bill Buckley

ADDRESS: 3625 Central NE. 255-9196

SURVEYOR: Hall Engineering CONTACT: Richard Hall

ADDRESS: 337 Eubank NE #103 PHONE: 292-1115

CONTRACTOR: Orvice Creel CONTACT: Orvice Creel

ADDRESS: 2717 Girard NE PHONE: 884-1614

PRE-DESIGN MEETING:

✓ YES

___ NO

✓ COPY OF CONFERENCE RECAP SHEET PROVIDED

RECEIVED SEP 19 1985 HYDROLOGY SECTION

DRB NO. _____

EPC NO. _____

PROJ. NO. _____

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

✓ DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

___ GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

✓ BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER _____ (SPECIFY)

DATE SUBMITTED: Sept. 18, 1985

BY: Parviz Eftekhari

HALL ENGINEERING COMPANY INC.
337 EUBANK N.E., SUITE 103
ALBUQUERQUE, NEW MEXICO 87123
Phones: (505) 292-1115 & 292-1116

Sept. 20, 1985

Mr. Billy J. Goolsby
Design Hydrology Section
123 Central NW, Albuquerque, NM 87102

RE: REVISED DRAINAGE PLAN FOR LOT 4B DUKE CITY INDUSTRIAL (H16-D38)

Dear Mr. Goolsby

Enclosed please find the revised drainage plan for the referenced project. Regarding to your comments dated Sept. 9, 1985, we respond to your comments as follows;

1 - A 6 inches curb has been provided along the western edge of the parking area.

2 - We provided a 6 inches curb along the north edge of access/drainage easement, and by regrading the access we established a swale which will contain the water.(see plan)

3 - New grading will rout the water to the curb cut.

4 - A copy of letter has been provided for your review.(enclosed)

5 - New grading has solved this problem.(see plan)

At this time I would like to request an immediate approval of the plan. Thank you for your time and cosideration in this matter.

Sincerely

Parviz Eftekhari
Project Engineer

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE October 2, 1985 REF. NO._____

TO: Bernie Montoya, Hydrology

FROM: Barry C. Simmons, Senior Civil Engineer

SUBJECT: PROJECT 2181 ATRISCO APARTMENTS

As part of the referenced project, approximately 30 linear feet of 24" RCP storm drain was installed at the southwest corner of the property. The RCP tied into an existing manhole as per the approved plans.

cc: File 2181

BCS/rvg

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

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

October 2, 1985

Mr. Richard Hall
Hall Engineering Co.
337 Eubank NE, Suite 103
Albuquerque, NM 87123

REF: REVISED DRAINAGE PLAN FOR LOT 4B DUKE CITY INDUSTRIAL (H16-D38)
ENGINEER'S STAMP REVISED 9/18/85

Dear Mr. Hall:

Based on the information provided on your September 19, 1985 resubmittal, the above referenced drainage plan is approved for building permit.

If I can be of further assistance, please feel free to contact me at 766-7644.

Sincerely,

Carlos A. Montoya
City/County Flood Plain Admin.

CAM/BJM/cl

DRAINAGE PLAN SUMMARY

IOFF LODGE

GIRARD AND PHOENIX

wrong

The site soils consist of construction fill as outlined in the soil report. The location is immediately west of the AMAFCA North Diversion Channel; therefore the offsite flows are intercepted by the channel and the site is considered to be located in a Valley Area. There is a downstream flooding condition indicated on the Albuquerque Master Drainage Study at Menaul and University. Therefore ponding capable of holding the 50 year developed runoff volume with Q_1 discharge will be provided.

The design parameters as outlined in the Development Process Manuel are as follows.

The concertration time is 10 minutes minimum. (Page 4, Section 22.2)

The 50 year rainfall volume is .92 x 2.3 = 2.12in (Plate 22.2 D1)

The 50 year intensity is 4.66 in/hr (Plate 22.2 D-2)

The site area is 71492 Sq. Ft. (1.64 Ac.)

The undeveloped site drainage characteristics for the 50 year storm are:

V = .4· 2.12· 71492/12 = 5052 Cu Ft

and

Q = .4· 4.66· 1.64 = 3.057 CFS

(132+6)(2)

The developed site is divided essentially into three drainage areas. They have the following characteristics:

Area 1

	Area	C	C x Area
Paved	23085	.9	20777
Landscaped	4915	.4	1966
	28000 S.F.(0.642 Ac)		22743 S.F.

$$C = \frac{22743}{28000} = .81$$

$$V\ 50 = .81 \cdot \frac{2.12}{12} \cdot 28000 = 4010 \text{ Cu Ft}$$

$$Q\ 50 = 0.81 \cdot 4.66 \cdot 0.642 = 2.42 \text{ CFS}$$

Area 2

	Area	C	CX Area
Building	13760	.9	12384
Paved	2700	.9	2430
Landscaped	11772	.4	4709
	28232 S F (.648Ac)		19523 S.F.

$$C = \frac{19523}{28232} = .69$$

$$V\ 50 = .69 \cdot \frac{2.12}{12}\ .28232 = 3442 \text{ CuFt}$$

$$Q\ 50 = .69 \cdot 4.66 \cdot .648 = 2.0839 \text{ CFS}$$

Area 3

	Area	C	CX Area
Roof	2940	.9	2646
Paved	8259	.9	7433
Landscaped	4061	.4	1624
	15260 SF (.350Ac)		11704 SF

$$C = \frac{11704}{15260} = .767$$

$$V\ 50 = .767 \cdot \frac{2.12}{12}\ .15260 = 2064 \text{ Cu Ft}$$

$$Q\ 50 = .767 \cdot 4.66 \cdot .350 = 1.25 \text{ CFS}$$

Each of these areas will collect into a pond. The ponds will discharge through three inch diameter pipes which according to the Manning Equation, will carry 0.55 CFS if they are sloped 1 percent

$$Q = \frac{1.49}{N} A R^{2/3} S^{1/2}$$

$A = \pi \cdot (.25/2)^2 = .05$ Sq Ft
$P = \pi \cdot .25 = .79$ Ft
$R = A/P = .06$ Ft
$S = .01$
$N = .01$ (smooth pipe)

$Q = C_a\sqrt{2gh}$
$Q = (.6)(0.05)\sqrt{64.4(1)} = .24$ cfs.

August F. Mosimann
for Engineering Associates, Inc.
July 28, 1982

Revisions to

Drainage Plan Summary

IOFF Lodge

Girard and Phoenix

Pond volumes will be equal to the 100 year developed volume with a discharge rate equal to the 100 year undeveloped volume. A one year volume will be held on the site. Runoff volumes and flows will be based on the Rational Formula as outlined in the Development Process Manual. The rainfall volume is 2.3 in (Plate D-1).

Area 1
This area includes the east parking lot. The undeveloped site is cut and fill land and is in SCS Soils Group A.(cut and fill). The area is 28000 Sq. Ft. (.6428 Acres)

The 100 year undeveloped runoff is as follows:
The land is bare and is roughly 50% impervious

C = .42 (Plate CI)
The concentration time is :

$$Tc = .0078 \frac{(185)^{0.77}}{(.005)^{.385}} = 3.33 \text{ min. (10 min. minimum)(page 22.2-4)}$$

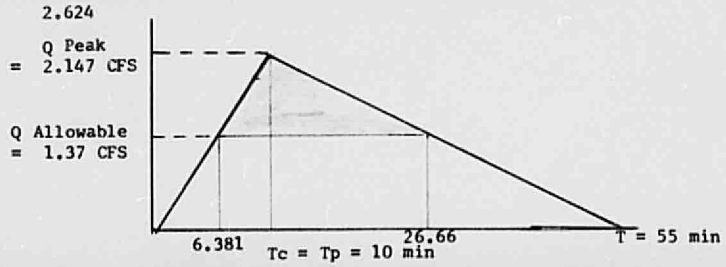
The intensity is 2.2x2.3 = 5.06 in/hr

Q100 = .42x5.06x.6428 = 1.37 CFS
This is the allowable outflow.

The developed site consists of 23085 Sq. Ft. of paving and 4915 Sq. Ft. of Landscaped ponding area. (82.5% impervious)

C = .66 (Plate Cl)
The concentration time is 10 min (Page 22.2-4)
The intensity is 5.06 in/hr.
Q100 = .66x5.06x.6428 = 2.1467 CFS
$V100 = .66 \times \frac{2.3}{12} \times 28000 = 3542$ Cu Ft

The runoff hydrograph for the developed runoff is shown below. The allowable outflow of 1.37 CFS has been superimposed in order to determine the pond size.



The required pond volume is

$$1/2 \times 20.279 \times (2.147-1.37) \times 60 = 473 \text{ Cu Ft}$$

The 1 year storm volume is .68 in. The one year pond volume is:

$$V = .66 \times \frac{.68}{12} \times 28000 = 1047 \text{ Cu Ft.}$$

Area 2
This area includes 13760 Sq. Ft. of buildings, 2700 Sq. Ft. of paving, and 11772 Sq.Ft. of landscaping (58.3% impervious). The area is 28232 Sq. Ft. (.6481 acres)

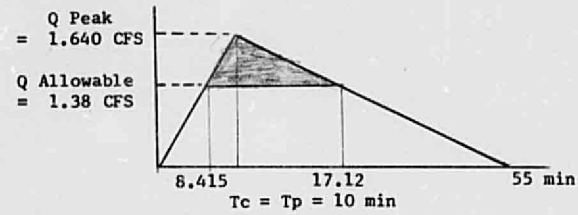
The 100 year undeveloped runoff is as follows:

The land is bare and is roughly 50% impervious
C = .42 (Plate C 1)
The concentration time is 10 minutes (page 22.2-4)
The intensity is 2.3 x 2.2 = 5.06 in/hr.
Q100 = .42x5.06x.6481 = 1.38 CFS
This is the allowable outflow.

The developed runoff is as follows:

C = .5 (plate C 1)
The concentration time is 10 minutes (page 22.2-4)
The intensity is 5.06 in/hr.
Q100 = .5x5.06x.6481 = 1.640 CFS
$V100 = .5 \times \frac{2.3}{12} \times 28232 = 2705$ Cu Ft.

The runoff hydrograph for the developed runoff is shown below. The allowable outflow of 1.38 CFS has been superimposed in order to determine pond size.



The required pond volume is

$$1/2 \times 8.707 \times (1.640 - 1.38) \times 60 = 68 \text{ Cu Ft.}$$

The one year storm volume is .68 in.
The one year pond volume is

$$V = .5 \times \frac{.68}{12} \times 28232 = 800 \text{ Cu Ft.}$$

Area 3

The area includes 2940 Sq Ft of buildings, 8259 Sq Ft of paving, and 4061 Sq Ft of landscaping. (73.4% impervious). The area is 15260 Sq.Ft. (.3503 acres)

The 100 year undeveloped runoff is as follows:

C = .42 (Plate C 1)
The concentration time is 10 minutes (page 22.2-4)
The intensity is 2.3 x 2.2 = 5.06 in/hr

Q100 = .42x5.06x.3503 = .7445 CFS

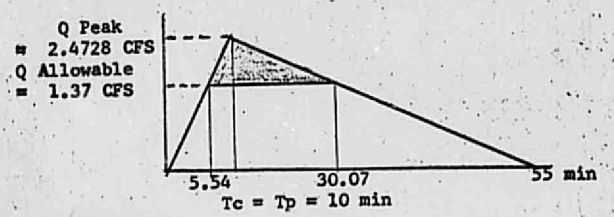
This is the allowable outflow

The 100 year developed runoff is as follows:

C = .58 (plate C 1)
The concentration time is 10 minutes (page 22.2-4)
The intensity is 5.06 in/hr.
Q100 = .58x5.06x.3503 = 1.0281 CFS
V100 = $.58 \times \frac{2.3}{12} \times 15260$ = 1696 Cu Ft.

This runoff is surcharged by the 1.37 CFS allowable runoff from Area 1. The total runoff is 2.4728 CFS

The runoff hydrograph for the developed runoff is shown below. The allowable outflow of 1.37 CFS has been superimposed in order to determine the pond size.



The required pond volume is

1/2 x 24.429 x (2.4728 - 1.37) x 60 = 812 Cu Ft

The one year storm volume is .68 in
The one year pond volume is

$V = .5 \times \frac{.68}{12} \times 15260 = 432$ Cu Ft

The allowable discharge of 1.37 CFS will be attained by using 2 - 6" O pipes The resulting flow is 2.23 CFS under 6 in of head in accordance with the orifice formula

$Q = 2 \cdot \pi \cdot .25^2 \sqrt{2 \cdot 32.2 \cdot .5} = 2.23$

IOFF LODGE

Offsite Flows:

A 160 ft. by 145 ft. parcel of land adjacent to the IOFF Lodge site at the east end of the north property line which is owned by the IOFF Lodge will be left undeveloped.

The runoff which flows toward the south and west will be intercepted by a berm along the west and south sides. Each leg of the berm will be 120 ft. long and the length will be 9½ in.

The volume of runoff (see the Drainage Plan Summary) is:

$$V = CPA = .42 \times 2.3 \times 23{,}200/12 = 1868 \text{ Cu.Ft.}$$

The pyramid volume formula indicates that the volume provided will be:

$$1/3 \times \frac{120 \times 120}{2} \times \frac{9.5}{12} = 1900 \text{ Cu. Ft.}$$

Runoff from this parcel when it is developed will be routed toward the southwest corner where it will be intercepted by a drop inlet and conveyed through a pipe in the drainage easement to Girard Blvd

AFM

AUGUST F. MOSIMANN
STATE OF NEW MEXICO
NO. 6148
REGISTERED PROFESSIONAL ENGINEER

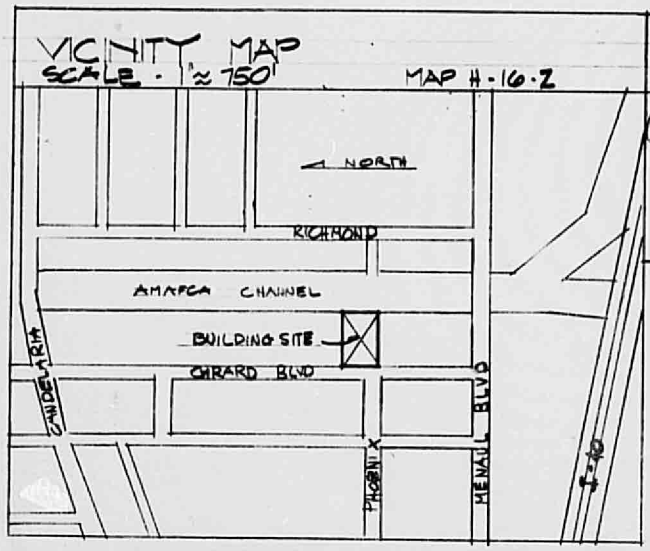
August F. Mosimann for
Engineering Associates, Inc.

September 20, 1982

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

SEAL 7/28/82



PROJECT LEGAL: BRUNACINI INDUSTRIAL PARK
UNIT 2 - LOT 2 & 3 PORTION LOT 4 BLOCK 3 DUKE CITY INDUST. AREA

APPROVED FOR DRAINAGE

8-22-82
DATE

SIGNATURE TITLE

ADVISE DRAINAGE INSPECTOR WHEN GRADING EXECUTED

NOTICE TO CONTRACTOR

1. An excavation/construction permit will be required before beginning any work within City right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.
2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with "Contract Documents for City-Wide Utilities and Cash Paving No. 30 "
3. Two working days prior to any excavation, contractor must contact Line Locating Service, 765-1234, for location of existing utilities.
4. Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.
5. Backfill compaction shall be according to ARTERIAL street use.

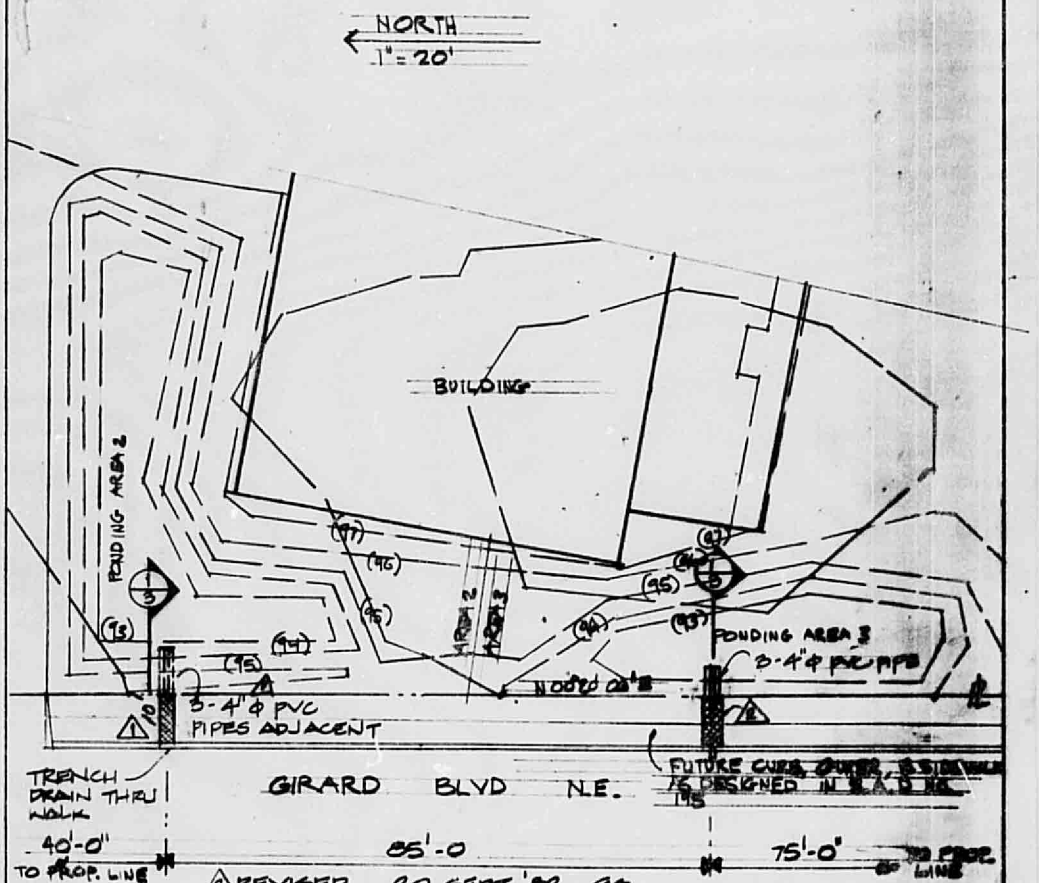
⚠ REVISED 16 SEPT '82 B-41 ⚠ REVISED: 20 SEPT. 82

APPROVALS	NAME	DATE	TITLE: I.O.F.F. LODGE 2704 GIRARD NE
A.C.E./DESIGN	[illegible]	5 Aug 82	
INSPECTOR			PERMIT NO.
A.C.E./FIELD			SHEET 1 OF 3 — MAP NO. H-16

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

NOTE: CONSTRUCT IN ACCORDANCE W/ STD. DRWG. K-15 & STD. DRWG. K-16



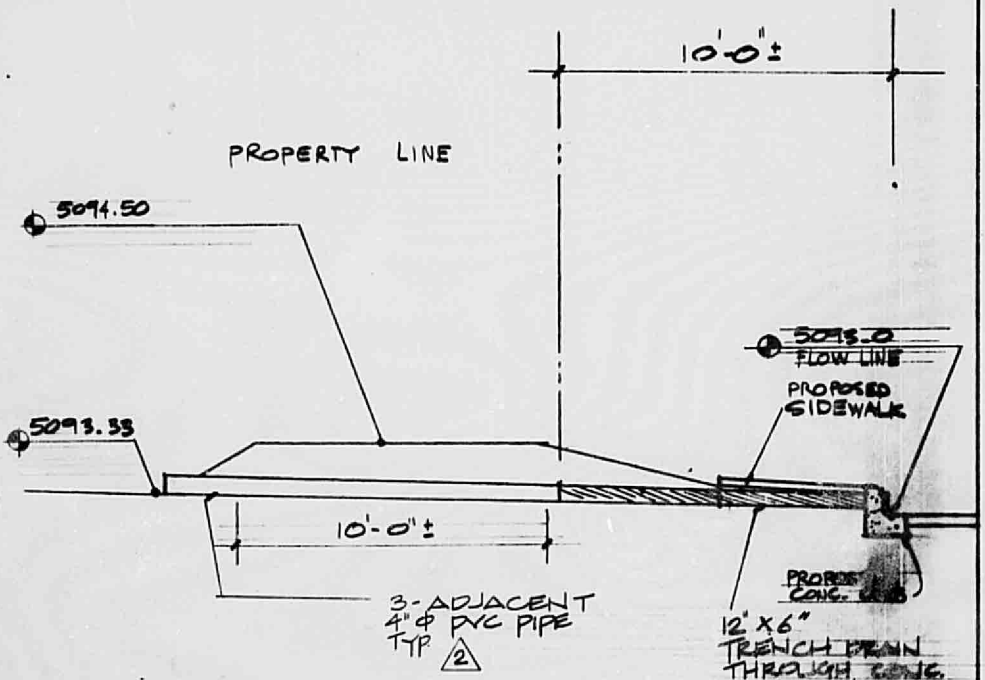
2 REVISED 20 SEPT. '82 gc
1 REVISED 16 SEPT 82 gc

B-41

APPROVALS	NAME	DATE	TITLE: I.O.F.F LODGE DRAINAGE 8704 GIRARD NE
A.C.E./DESIGN	[illegible]	5 Aug 82	
INSPECTOR			PERMIT NO.
A.C.E./FIELD			SHEET 2 OF 3 — MAP NO. H-16

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



PROFILE:

1/3 SECTION @ DRAIN
N.T.S.

NOTE - ALL ELEVATIONS ARE REFERENCED TO CITY OF ALBUQUERQUE MEAN SEA LEVEL DATUM

2 REVISED 20 SEPT. '82 gk
1 REVISED 16 SEPT '82 gk B-41

APPROVALS	NAME	DATE	TITLE: I.O.F.F. LODGE DRAINAGE 2704 Girard NE
A.C.E. / DESIGN	gk	5 Aug 82	
INSPECTOR			PERMIT NO. SHEET 3 OF 3
A.C.E. / FIELD			MAP NO. H-16