HYDROLOGY M16/D13A OFFICE BLDG. FOR GEPT ASSOCIATES

M16 / D13A

OFFICE BLDG. FOR

GEPT ASSOCIATES

2 PLANS

DECEMBER 19, 1985

Architecture
Planning
Urban Design

PATRICK McCLERNON / ARCHITECTS PLANNERS

1401 Fifth Street NW
Albuquerque, N.M. 87102
505 242 5219

MR. CHARLES W. VOLTZ, AIA
CHIEF BUILDING OFFICIAL
CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
CODE ADMINISTRATION DIVISION
123 CENTRAL AVE. N. W.
ALBUQUERQUE, NEW MEXICO 87102

RE: TEMPORARY CERTIFICATE OF OCCUPANCY
OFFICE BUILDING
2100 AIR PARK ROAD, S. E.
ALBUQUERQUE, NEW MEXICO

DEAR MR. VOLTZ:

I WOULD LIKE TO REQUEST ISSUANCE OF A TEMPORARY CERTIFICATE OF OCCUPANCY RELATING TO TO DRAINAGE AND LANDSCAPING, ON BEHALF OF THE GENERAL CONTRACTOR, JERRY BROWN CONSTRUCTION COMPANY.

THIS CERTIFICATE OF OCCUPANCY WILL ALLOW THE TENANT TO MOVE INTO THE BUILDING WHILE THE LANDSCAPING IS BEING FINISHED. IN ADDITION OUR DRAINAGE ENGINEER IS IN THE PROCESS OF CERTIFYING COMPLIANCE OF THIS DRAINAGE PLAN.

SHOULD YOU HAVE ANY QUESTIONS, PLEASE ADVISE.

CORDIALLY,

PATRICK McCLERNON, AIA

PM/cm

cc/ MR. JERRY BROWN

Jacob A. Vigil
Consulting Engineers

RECEIVED
JAN 02 1986
HYDROLOGY SECTION

December 30, 1985

Billy Goolsby
Design Hydrology Section
123 Central N.W.,
Albuquerque, New Mexico 871102

Re: GEPT Associates- Office Building
Lot 4, Airport Business Park (M16/D13A)

Dear Mr. Goolsby:

This letter is to certify that Mr. Frank Lovelady and Mr. Jacob A. Vigil visited the above referenced site on December 23, 1985, and I certify that the grading plan including the drainage facilities have been constructed according to the approved set of plans.

The site grading contractor must be commended for the excellent workmanship; no remedial work is required.

Yours very truly,

Jacob A. Vigil

Jacob A. Vigil, P.E.

copy: Patrick McClernon,
1401 5th Street, N.W. 87102

MARCH 22, 1985

RE: GEPT ASSOCIATES
M16 D13a.

DEAR MR. GOOLSBY,

DUE TO A BUILDING SHIFT REQUIREMENT THE PREVIOUSLY APPROVED DRAINAGE PLAN WILL HAVE TO BE REVISED TO REFLECT THIS RELOCATION OF THE BUILDING. THIS MODIFICATION DOES NOT ALTER THE DRAINAGE SCHEME. I CERTIFY THAT THE CHANGES DO NOT ALTER THE DRAINAGE PLAN AND I AM ASKING YOU TO SIGN OFF ON THE DRAWINGS WITH THE UNDERSTANDING THAT I WILL SUBMIT TO YOU WITHIN 3 (THREE) DAYS A REVISED DRAIN PLAN FOR YOUR RECORDS.

YOURS VERY TRULY,

Jacob A. Vigil

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

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

February 28, 1985

Frank Lovelady
Lovelady & Associates
7408 Morrow Road, NE
Albuquerque, New Mexico 87110

RE: GRADING & DRAINAGE PLAN FOR OFFICE BUILDING FOR GEPT ASSOCIATES (M-16/D13A) RECEIVED FEBRUARY 26, 1985

Dear Mr. Lovelady:

Based on the information provided in the referenced submittal, the drainage plan dated February 25, 1985, is approved.

Please attach a copy of this approved drainage plan along with the appropriately approved copy of the "Drainage Facilities Within City Right-of-Way" document to the construction sets before Hydrology signs-off.

Also, please be advised that all underground facilities will need to be pre-inspected before backfilled. One alternative is to have the engineer certify. I recommend that you contact Molzen-Corbin & Associates, Inc. and try to coordinate your proposed storm sewer tie in with their design so that it may be possible to connect both systems at the same time and also within the same area.

If you have any questions or comments regarding this project, please call me at 766-7644.

Cordially,

Billy J. Goolsby

Billy J. Goolsby, P.E.
Design Hydrology Section

BJG:BJM/bsj

DRAINAGE INFORMATION SHEET

PROJECT TITLE: OFFICE BUILDING FOR GEPT ASSOCIATES ZONE ATLAS/DRNG. FILE #: M16/D13A

LEGAL DESCRIPTION: Lot 4, Airport Business Park

CITY ADDRESS: 2000 Air Park Road, S.E.

ENGINEERING FIRM: Lovelady & Associates CONTACT: Frank D. Lovelady

ADDRESS: 7408 Morrow Road, N.E. PHONE: 883-7973

OWNER: GEPT ASSOCIATES CONTACT: Pat McClernon

ADDRESS: PHONE: 245-5219

ARCHITECT: Dyer McClarnon Architects CONTACT: Pat McClernon

ADDRESS: 1401 5th Street N.W. PHONE: 245-5219

SURVEYOR: Vigil Engineering CONTACT: Jake Vigil

ADDRESS: PHONE: 881 -2455

CONTRACTOR: N/A CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

X YES

___ NO

X COPY OF CONFERENCE RECAP SHEET PROVIDED W/ [illegible]

RECEIVED FEB 26 1985 HYDROLOGY SECTION

DRB NO. ___

EPC NO. ___

PROJ. NO. ___

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

___ DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

___ Revisions to Grading and Drainage Plan per letter of Feb 12, 1985 BJG/BJM

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: February 25, 1985

BY: Frank D. Lovelady

Melzen Carbin
Mark Goodwin

DRAINAGE INFORMATION SHEET

PROJECT TITLE: OFFICE BLDG. FOR GEPT ASSOCNE ATLAS/DRNG. FILE #: M16-D13A

LEGAL DESCRIPTION: Lot 4 Airport Business Park

CITY ADDRESS: 2100 Air Park Road SE

ENGINEERING FIRM: Vigil Engineering CONTACT: Frank D. Lovelady

ADDRESS: 7408 Morrow Road, N.E. PHONE: 883-7973

OWNER: GEPT ASSOCIATES CONTACT: Pat McClernon

ADDRESS: PHONE: 245-5219

ARCHITECT: Dyer McClernon, Architects CONTACT: Pat McClernon

ADDRESS: 1401 Fifth Street N.W. PHONE: 245-5219

SURVEYOR: Vigil Engineering CONTACT: Jake Vigil

ADDRESS: PHONE: 881-2455

CONTRACTOR: N/A CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

X YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. ___

EPC NO. ___

AROUA NO. ___

RECEIVED FEB 07 1985 HYDROLOGY SECTION

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

X Revisions to Grading & Drainage Plan per Billy J. Goolsby's Letter of January 10, 1985

SECTION 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: February 7, 1985 (Second Submittal)

BY: Frank D. Lovelady Frank D. Lovelady

Lovelady & Associates
7408 Morrow Road NE
Albuquerque, N.M. 87110
February 7, 1985

Billy J. Goolsby, C.E.
Design Hydrology Section
123 Central N.W.
Albuquerque, N.M. 87102

RE: Grading & Drainage plan for Office Building for Gept Associates, (M-16/D13A)

Dear Billy:

With regard to your letter of January 10, 1985, the following revisions have been made:

1. The length of the 84 inch diameter pipe has been increased to account for the quantity calculated to be within the corrigations.

2. The plan has been reviewed by the DPM checklist as you requested and the missing items such as vicinity map, legend, etc. have been added.

Attached is the revised grading and drainage plan and information sheet.

Cordially,

Frank D. Lovelady

Frank D. Lovelady, P.E.

RECEIVED
FEB 07 1985
HYDROLOGY SECTION

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

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

February 12, 1985

Frank Lovelady
Lovelady & Associates
7408 Morrow Road, NE
Albuquerque, New Mexico 87110

RE: GRADING & DRAINAGE PLAN FOR OFFICE BUILDING FOR GEPT ASSOCIATES (M-16/D13A) RECEIVED FEBRUARY 7, 1985

Dear Mr. Lovelady:

Based on the information provided on your February 7, 1985 resubmittal, listed are certain items that will need to be addressed before final approval is given:

1. New information sheet with resubmittal designation.
2. Engineer's stamp with signature and revision date.
3. How do you propose to convey the off-site flows from the East across the proposed retaining wall.
4. Flow line and top of curve elevations along Gibson to determine .33' above T.C. elevation at property line.
5. Location and description of T.B.M.

If you have any questions or comments regarding this project, call me at 766-7644.

Cordially,

Billy J. Goolsby

Billy J. Goolsby, P.E.
Design Hydrology Section

BJG:BJM/bsj

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

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

January 10, 1985

Frank Lovelady
7408 Morrow Road, NE
Albuquerque, New Mexico 87123

RE: GRADING & DRAINAGE PLAN FOR OFFICE BUILDING FOR GEPT ASSOCIATED (M-16/D13A) RECEIVED DECEMBER 7, 1984

Dear Frank:

I have reviewed the referenced submittal and forward these comments:

1. While I am in agreement with the proposed scheme, I do not agree with utilizing the corregations as additional volume. The size specified is nominal so this inclusion may not be appropriate.

2. The plan presented is incomplete for approval. Please refer to the DPM checklist for requirements.

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

Cordially,

Billy J. Goolsby

Billy J. Goolsby, C.E.
Design Hydrology Section

BJG/bsj

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Ofc. Bldg for Gept Assoc. ZONE ATLAS/DRNG. FILE #: M-16 / D13A

LEGAL DESCRIPTION: Airport Business Park; Lot 4

CITY ADDRESS:

ENGINEERING FIRM: Vigil Engineering CONTACT: Frank Lovelady

ADDRESS: 7408 Morrow Rd, NE PHONE: 883-7973

OWNER: Gept Associates CONTACT:

ADDRESS: PHONE:

ARCHITECT: Dyer/McClernon CONTACT: Pat McClernon

ADDRESS: PHONE: 245-5219

SURVEYOR: Vigil Engineering CONTACT: Jake Vigil

ADDRESS: PHONE: 881-2455

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

X YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. ___

EPC NO. ___

PROJ. NO. ___

TYPE OF SUBMITTAL:

X 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)

RECEIVED DEC 07 1984 HYDROLOGY SECTION

DATE SUBMITTED: 12/07/84

BY: [signature]

STORM DRAINAGE REPORT

FOR

OFFICE BUILDING FOR GEPT ASSOCIATES
(LOT 4 - AIRPORT BUSINESS PARK)

NOVEMBER 16, 1984

PREPARED BY
VIGIL ENGINEERING
2932 ORTIZ, DRIVE N.E.
ALBUQUERQUE, NEW MEXICO 87110

(505) 881-2455

RECEIVED
DEC 7 1984
HYDROLOGY SECTION

INFORMATION SHEET

PROJECT TITLE Office Building for Gept Associates TYPE OF SUBMITTAL Drainage Report/Plan

ZONE ATLAS PAGE NO. M-16/13A CITY ADDRESS

LEGAL DESCRIPTION Lot 4 Airport Business Park

ENGINEERING FIRM Vigil Engineering CONTACT Frank D. Lovelady

ADDRESS 7408 Morrow Road NE PHONE 883-7973

OWNER Gept Associates CONTACT

ADDRESS PHONE

ARCHITECT Dyer/McClernon CONTACT Pat McClernon

ADDRESS PHONE 245-5219

SURVEYOR Vigil Engineering CONTACT Jake Vigil

ADDRESS PHONE 881-2455

CONTRACTOR CONTACT

ADDRESS PHONE

PRE-DESIGN MEETING:

X YES
___ NO
___ COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
X BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
___ OTHER _____ (SPECIFY)

FRANK D. LOVELADY
NEW MEXICO
6512
12/6/84
REGISTERED PROFESSIONAL ENGINEER

DATE SUBMITTED: Dec 6, 1984

BY: Frank D. Lovelady

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III.	LOCATION AND USE	1
IV.	EXISTING CONDITION	1
V.	PROPOSED DEVELOPED CONDITIONS	2
VI.	CONCLUSIONS	3
VII.	RECOMMENDATIONS	3

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FIGURE 1	VICINITY MAP
FIGURE 2	FLOODWAY MAP
FIGURE 3	STORM SEWER MAP
FIGURE 4	KIRTLAND AFS STORM SEWER LAYOUT
FIGURE 5	KIRTLAND AFB STORM SEWER ELEVATIONS
FIGURE 6	SOIL MAP

APPENDIX B DRAINAGE CALCULATIONS

APPENDIX C SPECIAL ORDER 19

STORM DRAINAGE REPORT
GEPT & ASSOCIATES OFFICE BUILDING
AIRPORT BUSINESS PARK - LOT 4

I. PURPOSE:

THE PURPOSE OF THIS REPORT IS TO PRESENT A COMPREHENSIVE ANALYSIS OF DRAINAGE CONTROL CONSTRAINT ON THE PROPOSED DEVELOPMENT AS SET FORTH IN CITY STANDARDS AND CRITERIA AND AS ESTABLISHED BY THE MASTER DRAINAGE REPORT FOR AREA (PUERTO DEL CIELO). CITY REQUIREMENTS FOR A DEVELOPMENT OF THIS MAGNITUDE NORMALLY REQUIRE ONLY A DRAINAGE PLAN. HOWEVER, THE VOLUME OF MATERIAL TO BE PRESENTED WARRANTED THE REPORT FORMAT IN THIS PARTICULAR CASE.

II. SCOPE:

THE SCOPE OF THIS REPORT INCLUDES DETERMINING ON-SITE FLOW VOLUMES AND RATES, ANALYZING PONDING REQUIREMENTS AND DETERMINING POND DISCHARGE RATES AND THE ABILITY OF THE EXISTING STORM SEWER TO ACCEPT THEM. THE 1977 REPORT AND 1984 REVISIONS WILL BE EXAMINED WITH REGARD TO THE PROPOSED DEVELOPMENT.

III. LOCATION AND USE:

THE PROPERTY BEING DEVELOPED IS LOCATED ON LOT 4, AIRPORT BUSINESS PARK IN THE SOUTHWEST CORNER OF GIBSON BOULEVARD AND GIRARD BOULEVARD, S.E. THE PROPERTY IS BEING DEVELOPED AS AN OFFICE COMPLEX. THE LOT CONTAINS 1.4304 ACRES. THE LOCATION IS SHOWN IN FIGURE 1.

IV. EXISTING CONDITIONS:

A. OFF-SITE

THE PROPERTY IS PRESENTLY UNDEVELOPED. THE LOT WILL BE ACCESSED BY WAY OF AIR PARK ROAD WHEN IT IS CONSTRUCTED. GIBSON BOULEVARD IS ADJACENT TO LOT 4 ON THE NORTH AND GIRARD BOULEVARD IS EAST OF LOT 4. AN EXISTING 27-INCH DIAMETER RCP STORM SEWER IS CENTERED ON THE SOUTH LOT LINE OF LOT 4 WHICH IS THE CENTER OF A 20-FOOT PUBLIC DRAINAGE AND UTILITY EASEMENT. THE FLOODWAY MAP IS SHOWN IN FIGURE 2.

NO OFF-SITE FLOW COMES FROM GIBSON BOULEVARD. A VERY SMALL AMOUNT OF OFF-SITE FLOW COMES FROM THE GRASSED PARK STRIP ON THE WEST SIDE OF GIRARD BOULEVARD. HOWEVER, GIRARD HAS BEEN RECONSTRUCTED SINCE THE 1977 DRAINAGE REPORT WAS APPROVED AND IT NOW FLOWS TO GIBSON. THE SINGLE "C" CATCH BASIN THAT ONCE DRAINED THIS PART OF GIRARD BOULEVARD HAS BEEN REMOVED.

A SINGLE "D" CATCH BASIN EXISTS ON THE EAST SIDE OF THE STREET IN THE GRASSED RIGHT-OF-WAY. A FIELD INVESTIGATION REVEALED THAT THE STORM SEWER CONTINUES EAST FROM THE CATCH BASIN. THE CITY STORM SEWER MAPS SHOW THE SYSTEM ENDING AT THIS POINT. (SEE FIGURE 3).

THE AIRPORT MANAGER'S OFFICE WAS CONTACTED IN AN ATTEMPT TO OBTAIN AS-BUILT INFORMATION ON THE STORM SEWER. THE AIRPORT ENGINEER STATED THAT THE SYSTEM DID NOT DRAIN THE RUNWAY BUT WAS PART OF THE KIRTLAND AFB STORM SEWER SYSTEM. THE BASE CIVIL ENGINEER'S OFFICE PROVIDED A DRAWING SHOWING THE SYSTEM WHICH IS REPRODUCED IN FIGURES 4 AND 5.

THE ORIGINAL REPORT PLACED THE OFF-SITE FLOW ENTERING THE NOW-REMOVED SINGLE "C" CATCH BASIN AT 30.3 CFS. SINCE THE INTAKE CAPACITY OF THE SINGLE "C" CATCH BASIN WAS ESTIMATED TO BE ONLY 5 CFS, THE REPORT STATED THAT THE REMAINING 25.3 CFS WOULD RUN OVERLAND IN THE EASEMENT ABOVE THE STORM SEWER. THIS SITUATION NO LONGER EXISTS AND THE ONLY FLOW ENTERING THE STORM SEWER AT GIRARD BOULEVARD IS THE QUANTITY THAT ENTERS THE SINGLE "D" CATCH BASIN. THIS IS ALSO ESTIMATED TO BE 5 CFS (PLATE 22.3 D-6) ASSUMING 0.5' FLOW DEPTH AND S=0.002 FT. PER FT.

THE KIRTLAND SYSTEM WAS PARTIALLY ANALYZED TO DETERMINE
1) THE CAPACITY OF THE SYSTEM, AND
2) THE FLOW TIME FROM THE MOST REMOTE MANHOLE TO GIRARD BOULEVARD. THE LAST LEG OF THE STORM SEWER HAS A CAPACITY OF 6.0 CFS NEGLECTING ANY SURCHARGE. THE TOTAL FLOW TIME IS 41.1 MINUTES PLUS T E MINIMUM TIME OF CONCENTRATION OF 10 MINUTES FOR A TOTAL OF 51.1 MINUTES. THIS TIME WOULD INCREASE AS THE DEPTH OF FLOW IN THE PIPES DECREASES. A FULL ANALYSIS OF FLOW QUANTITIES AND DEPTH OF FLOW IS NOT WARRANTED FOR THIS REPORT.

B. ON-SITE

THE PROPERTY SLOPES FROM EAST TO WEST AT ABOUT 5 PERCENT. THERE IS LIGHT VEGATATION WITH LITTLE EVIDENCE OF EROSION. THE SOIL TYPE IS WaB, WINK FINE SANDY LOAM, 0 TO 5 PERCENT SLOPES, WHICH IS INCLUDED IN HYDROLOGIC SOILS GROUP B. (SEE FIGURE 6). RUNOFF FROM THE LOT FLOWS WEST TO COLUMBIA DRIVE.

V. PROPOSED DEVELOPED CONDITIONS:

A. THE SITE PROPOSED DEVELOPMENT WILL MAKE NEARLY THE ENTIRE LOT IMPERVIOUS WITH ROOF SURFACES AND ASPHALT PARKING LOT. THE REQUIRED LANDSCAPING WILL BE THE ONLY IMPERVIOUS AREAS.

THE RUNOFF IS TO BE PICKED UP IN CATCH BASINS AND STORED UNDERGROUND IN AN 84-INCH CMP WITH CONCRETE ENDCLOSURES. DISCHARGE WILL BE AT A CONTROLLED RATE TO THE 27-INCH STORM SEWER. HOWEVER, THE REQUIRED PONDING CAN BE REDUCED BY ONE HALF DUE TO THE FACT THAT THE PEAK DISCHARGE FOR THE SITE CAN BE SAFELY DISCHARGED LONG BEFORE PEAK RUNOFF FROM THE KIRTLAND SYSTEM EVER REACHES THE SITE.

B. STORM SEWER

THE CAPACITY OF THE 27-INCH STORM SEWER EAST OF COLUMBIA DRIVE IS APPROXIMATELY 38 CFS. WEST OF COLUMBIA DRIVE THE DIAMETER INCREASES TO A 30-INCH RCP AND THE SLOPE FLATTENS TO 0.0094 AND THE CAPACITY IS APPROXIMATELY THE SAME.

THE STORM SEWER WILL BE REQUIRED TO ACCEPT 29.8 CFS. THE TIME THAT THIS FLOW WILL REACH THE CATCH BASIN ON COLUMBIA DRIVE WILL BE APPROXIMATELY 17 MINUTES. AGAIN, THE FLOW FROM THE PROPOSED SITE WITH TC = 10 MINUTES, WILL ENTER THE STORM SEWER AND BE WELL DOWNSTREAM BEFORE THE PEAK FLOW FROM THE SUBDIVISION ARRIVES.

VI. CONCLUSION

DUE TO THE CLOSE PROXIMITY OF THE SITE TO THE EXISTING 27-INCH DIAMETER STORM SEWER, AND BECAUSE UPSTREAM CONDITIONS FROM KIRTLAND AFB DO NOT REACH THE SITE FOR MORE THAN 50 MINUTES, THERE IS JUSTIFICATION FOR INCREASING THE CONTROLLED DISCHARGE RATE AND REDUCING THE PONDING REQUIREMENTS.

VII. RECOMMENDATIONS

1. IT IS RECOMMENDED THAT UNDERGROUND PONDING BE PROVIDED.

2. IT IS RECOMMENDED THAT THE POSITIVE DISCHARGE OF THE POND BE EQUAL TO ONE HALF THE 100-YEAR DEVELOPED DISCHARGE.

APPENDIX A FIGURES

FIGURE	1	VICINITY MAP - ZONE ATLAS MAP M-16
FIGURE	2	CITY OF ALBUQUERQUE FLOODWAY MAP
FIGURE	3	CITY OF ALBUQUERQUE SEWER STORM SEWER MAP
FIGURE	4	KIRTLAND AFB STORM SEWER - LAYOUT
FIGURE	5	KIRTLAND AFB STORM SEWER - ELCUATIONS
FIGURE	6	SOIL MAP

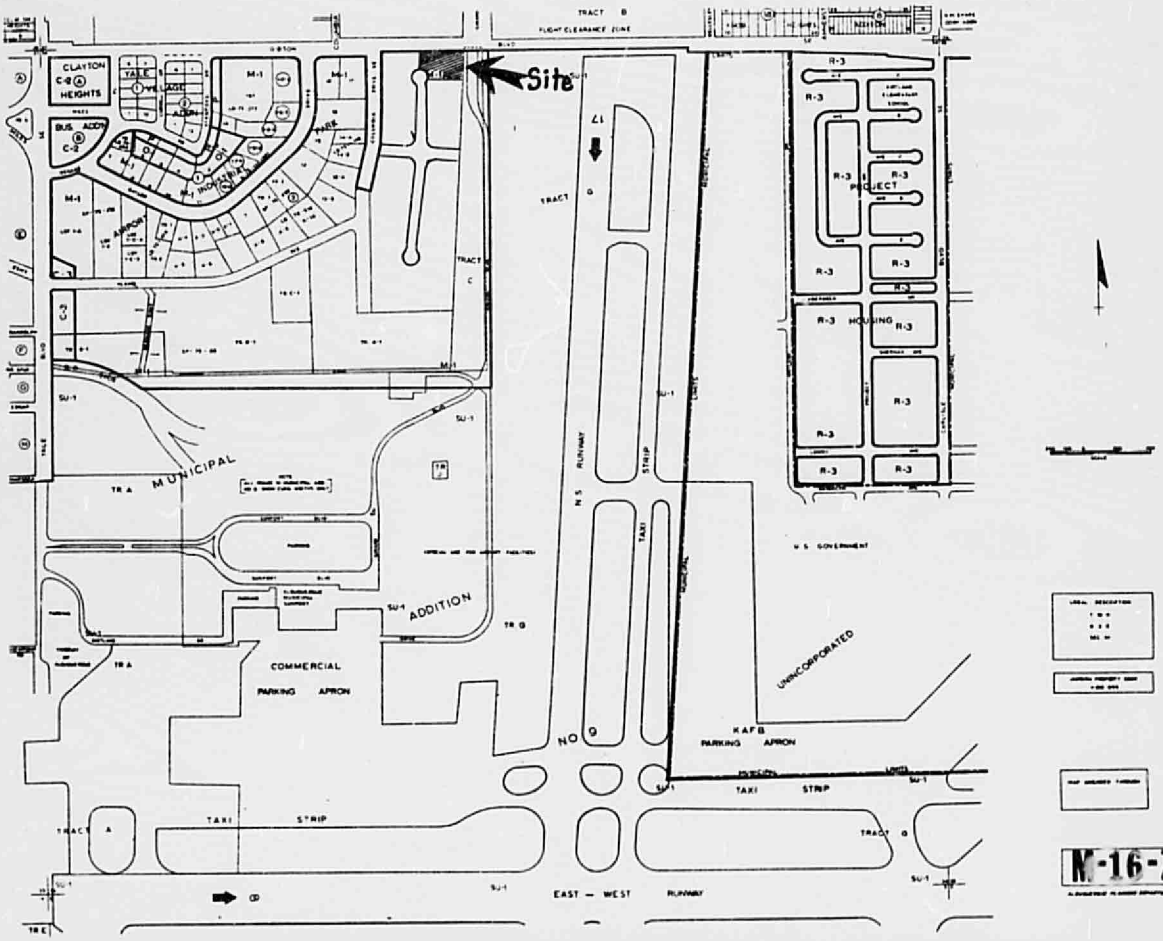

Site
TRACT B
FLIGHT CLEARANCE ZONE
CLAYTON HEIGHTS
TABLE VILLAGE ADDN
BUS ADDN
M-1
C-2
C-3
SU-1
MUNICIPAL
ADDITION
COMMERCIAL
PARKING APRON
TRACT A
TRACT C
TRACT G
TRACT D
TRACT E
N.S. RUNWAY
TAXI STRIP
EAST — WEST RUNWAY
R-3
PROJECT
HOUSING
U.S. GOVERNMENT
UNINCORPORATED
KAFB
PARKING APRON
NO

FIG. 1

M-16-Z

FIG. 2

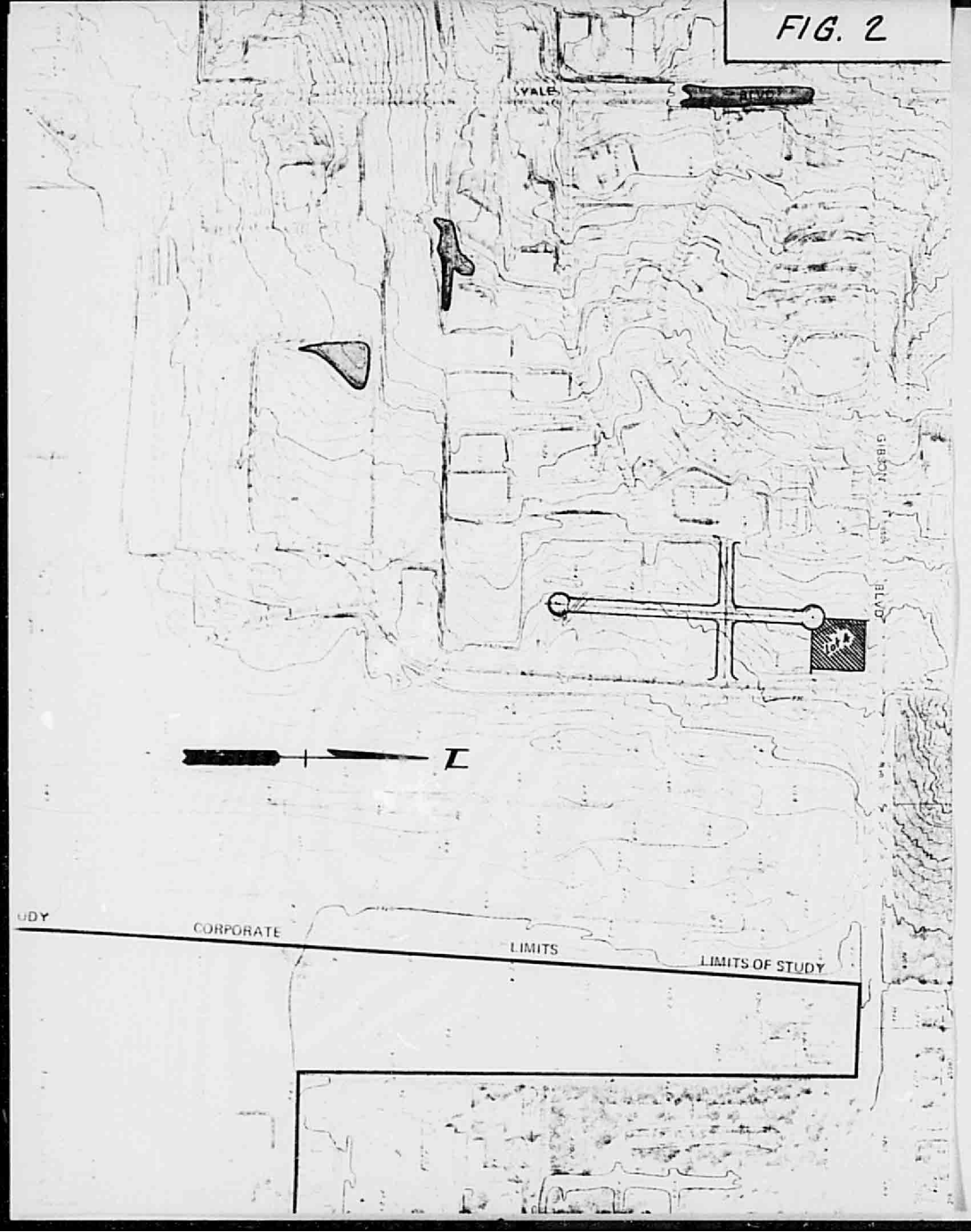
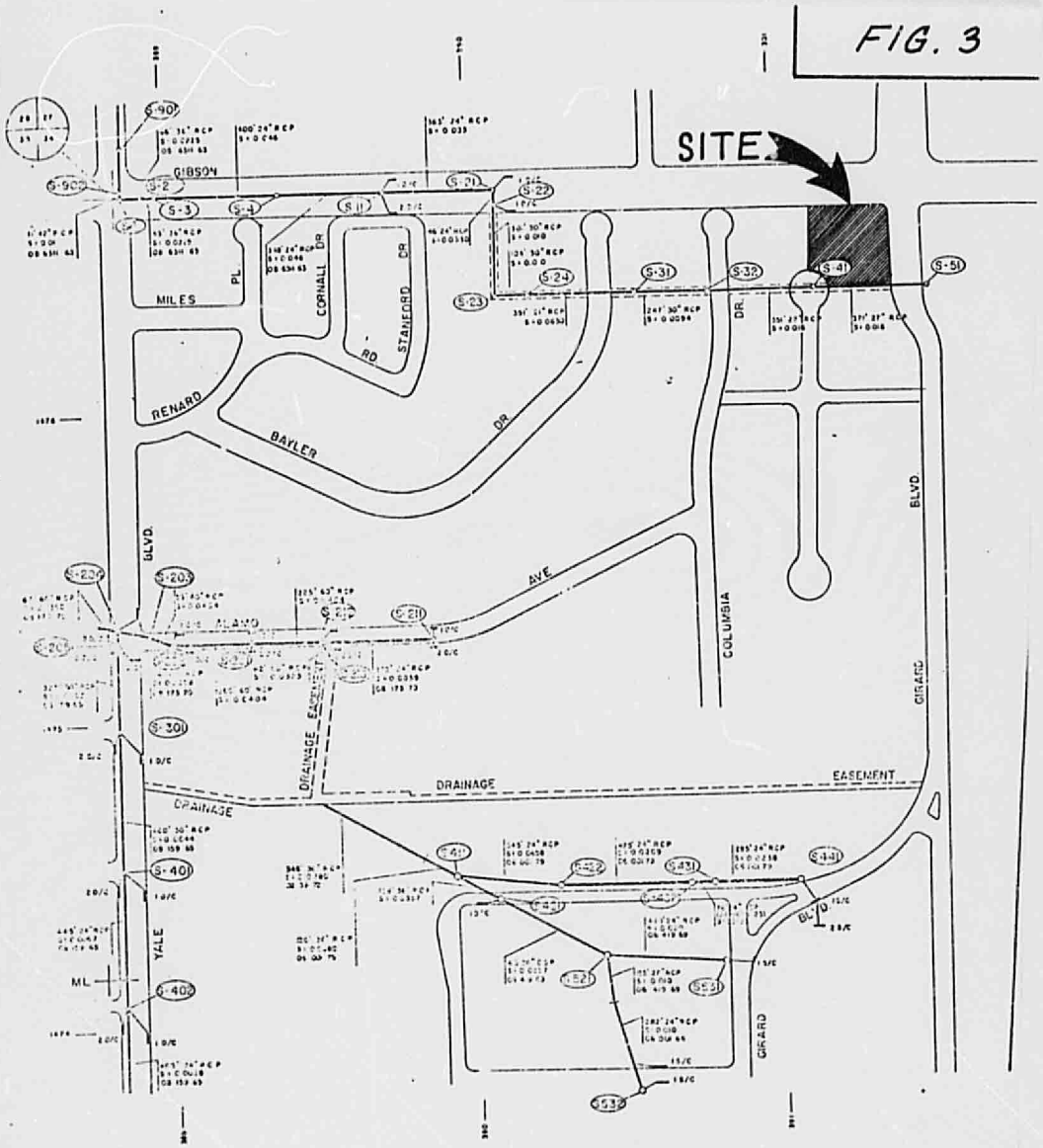
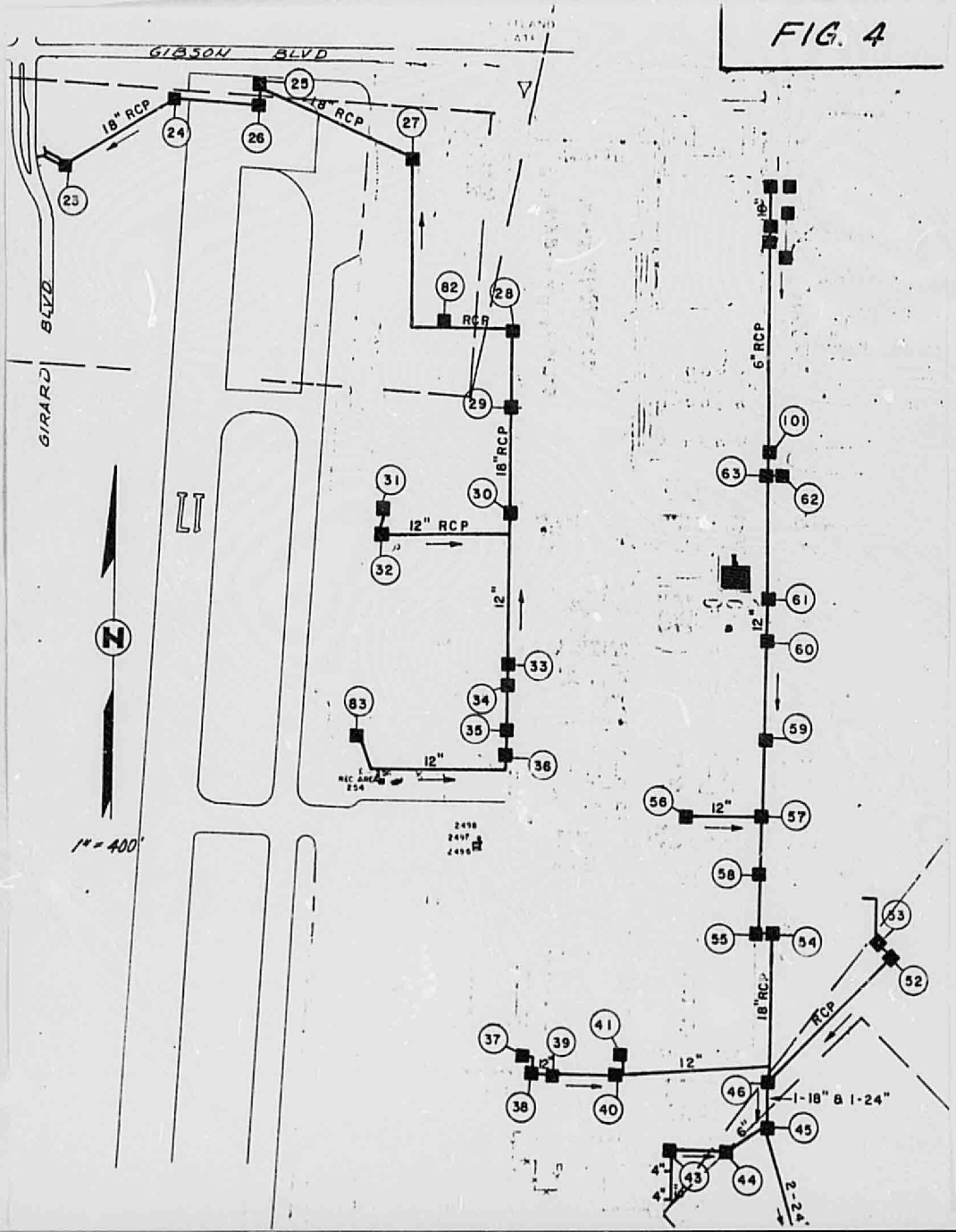


FIG. 3



NEXT SHEET No

FIG. 4


GIBSON BLVD
GIRARD BLVD
18" RCP
18" RCP
RCP
18" RCP
12" RCP
12"
12"
12"
12"
12"
6" RCP
18" RCP
RCP
1-18" & 1-24"
2-24"
6"
4"
4"
LI
N
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83
101

FIG. 5

MANHOLE SCHEDULE

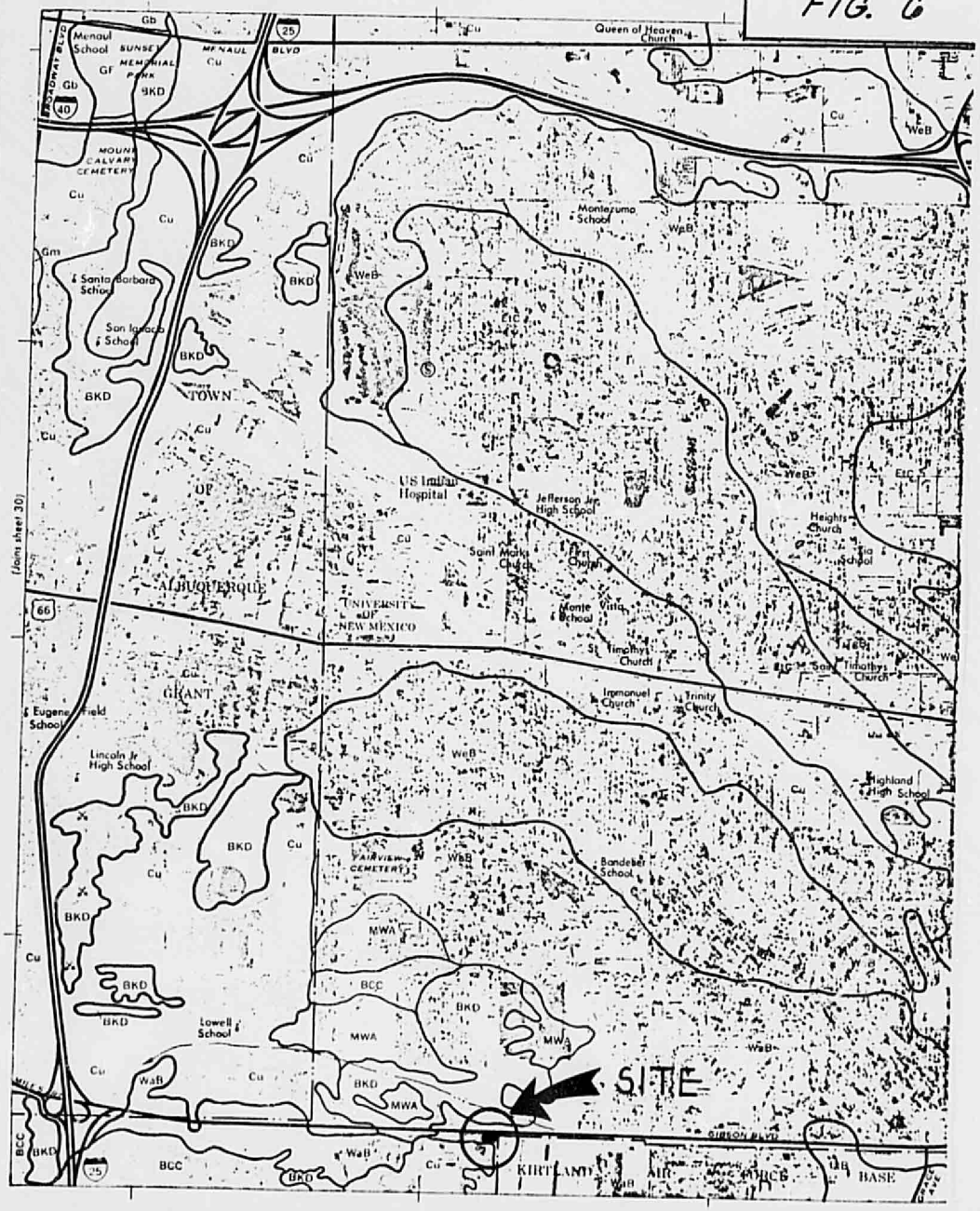
M.H. NO.	INVERT ELEVATION	TOP OR GRADE ELEVATION	M.H. NO.	INVERT ELEVATION	TOP OR GRADE ELEVATION
23	5297.54	5302.90	79	5315.25	5318.26
24	5310.43	5314.62	80	5311.31	5319.38
25	5311.18	5314.13	81	5318.04	5311.65
26	5311.32	5314.77	82	5312.91	5315.24
27	5311.90	5314.37	83	5315.00	5315.26
28	5312.91	5315.31	84	5312.16	5320.13
29	5313.26	5321.73	85	5313.25	5318.40
30	5313.58	5321.66	86	5313.53	5318.10
31	5314.18	5317.13	87	5314.29	5318.00
32	5314.04	5317.81	88	5314.87	5318.24
33	5314.11	5316.09	89	5316.91	5321.46
34	5314.40	5320.21	90	5319.82	5325.92
35	5314.35	5319.68	91	5317.12	5323.22
36	5314.40	5317.65	92	5317.42	5322.05
37	5312.07	5319.82	93	5319.72	UNK
38	5312.07	5315.82	94	5322.31	5324.51
39	5312.07	5316.50	95	5320.60	5323.10
40	5311.66	5316.65	96	5316.81	5323.40
41	5311.66	5314.39	97	5310.56	5314.65
43	UNK	UNK	98	5312.40	5318.05
44	UNK	UNK	99	5318.48	5314.48
45	5310.69	5315.75	100	5311.60	5317.96
46	5310.94	5317.28	101	5316.08	5318.14
51	5308.15	5315.49	102	5309.06	5316.81
52	5312.20	5317.03	103	5312.75	5318.21
53	5312.30	5316.90	104	5314.30	5318.20
54	5312.16	5316.59	105	5320.36	5325.28
55	5312.24	5316.41	106	5320.57	UNK
56	5313.58	5317.55	107	5320.42	5327.20
57	5313.10	5316.79	108	5316.04	5322.50
58	5314.34	5316.93	109	5320.42	5327.20
59	5315.20	5317.46	110	5321.09	5327.37
60	5315.53	5317.57	111	5315.65	5321.55
61	5315.65	5317.88	115	5315.50	5319.54
62	5316.60	5318.73	116	5315.15	5321.61
63	5316.58	5318.53	117	5315.86	5321.13
64	5316.05	5319.18	119	5318.42	5322.58
65	5317.08	5318.84	120	5318.21	5322.35
66	5318.20	5319.93	121	UNK	UNK
67	5319.10	5320.31	122	UNK	UNK
68	5314.90	5323.90	123	UNK	UNK
69	5317.63	5320.63	124	UNK	UNK
70	5317.73	5321.36	125	5318.70	5321.26
71	5348.00	5321.14	126	5318.00	5320.67
72	5320.01	5317.30	127	5318.05	5320.54
73	5316.00	5319.89	128	5317.00	5320.57
74	5212.14	5318.18	129	5317.00	5321.19
75	5312.56	5316.00	130	5317.08	5322.25
76	5311.81	5315.90	131	5317.12	5323.22
77	5414.34	5318.34	132	5321.50	UNK
78	5315.33	5317.33			

A

B

BERNALILLO COUNTY, AND PARTS OF

FIG. 6



PAT McCLERNON
AIRPORT BUSINESS PARK-LOT 4
DRAINAGE REPORT

JACOB A. VIGIL
SEPTEMBER 27, 1984
SHT 1 OF 10

I. FROM DATA SUBMITTED BY BOHANNAN-HUSTON DRAINAGE REPORT:

LOT 4: DRAINAGE AREA = 1.77 ACRES

100YR-6HR STORM = 2.35 INCHES

$I_{100YR} = 4.97 \frac{\text{INCHES}}{\text{HOUR}}$; FOR TC = 10 MIN

10 YR-6HR STORM = 1.54 INCHES

$I_{10YR} = 3.27 \frac{\text{INCHES}}{\text{HOUR}}$, FOR TC = 10 MIN.

II. PEAK DISCHARGE 10 YEAR STORM, UNDEVELOPED:

LOT 4: DRAINAGE AREA = 1.77 ACRES

10YR-6HR STORM = 1.54 INCHES

$I_{10YR} = 3.27 \frac{\text{INCHES}}{\text{HOUR}}$; FOR TC = 10 MIN

$Q_{PEAK-10YR} = (0.45)(3.27)(1.77)$
$= 2.60$ CFS

DESIGN POND OUTLET FOR 2.60 CFS

III. PEAK DISCHARGE 100 YEAR STORM, DEVELOPED:

DRAINAGE AREA = 1.77 ACRES

100YR-6HR STORM = 2.35 INCHES

$I_{100YR} = 4.97 \frac{\text{INCHES}}{\text{HOUR}}$

$Q_{PEAK-100YR} = 0.90 \times 4.97 \times 1.77$
$= 7.92$ CFS

IV. DETERMINE REQUIRED STORAGE:

$I = 4.97$ OR $I = \frac{174}{T+25}$

$Q_n = \frac{174}{T+25}$; $V_n = \frac{174(60)T}{T+25}$

IV. DETERMINE REQUIRED STORAGE: (CONT'D)

$$V_n = \frac{10440T}{T+25}$$

STORAGE: $V_s = V_n - V_o$ $\qquad V_o = 40\,Q_oT$

$$V_s = \frac{10440T}{T+25} - 40\,Q_oT$$

$$\frac{dV_s}{dT} = \frac{d\,\frac{10440T}{T+25}}{dT} - \frac{d(40\,Q_oT)}{dT}$$

$$\frac{dV_s}{dT} = \frac{(T+25)(10440) - (10440T)(1)}{(T+25)^2} - 40\,Q_o$$

$$\frac{dV_s}{dT} = \frac{10440T + 261000 - 10440T}{T^2 + 50T + 625} - 40\,Q_o$$

$$\frac{dV_s}{dT} = \frac{261000}{T^2+50T+625} - 40\,Q_o$$

$$T^2 + 50T + 625 - \frac{261000}{40\,Q_o} = 0$$ THIS IS A QUADRATIC EQUATION

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$T = \frac{-50 \pm \sqrt{(50)^2 - 4(1)\left(625 - \frac{261000}{40\,Q_o}\right)}}{2(1)}$$

$$T = \frac{-50 \pm \sqrt{2500 - 2500 + \frac{6525}{Q_o}}}{2}$$

$$T = -25 + \sqrt{\frac{6525}{Q_o}}$$

IV. CONT'D.

$$Q_o = \frac{\text{ALLOWABLE OUTFLOW}}{\text{ACREAGE} \times \text{RUNOFF COEFFICIENT}}$$

$$= \frac{2.60}{1.77 \times 0.90}$$

$$= 1.63 \ \frac{\text{CFS}}{\text{ACRE IMPERVIOUSNESS}}$$

T = TIME IN MINUTES THAT MAXIMUM VOLUME OF STORAGE FROM ORFICE EQUATION.

$$T = -25 + \sqrt{\frac{6525}{Q_o}}$$

$$T = -25 + \sqrt{\frac{6525}{1.63}}$$

$$T = 38.3 \text{ MIN.}$$

V_S = MAXIMUM VOLUME OF STORAGE PER ACRE

$$V_S = \frac{10440T}{T+25} - 40 Q_o T$$

$$= \frac{10440(38.3)}{38.3+25} - 40(1.63)(38.3)$$

$$V_S = 6317 + 2497$$

$$V_S = 3820 \text{ FT}^3/\text{ACRE IMPERVIOUSNESS}$$

V_T = TOTAL VOLUME PER SITE

$$V_T = V_S \times \#\text{ACRES} \times \text{RUNOFF COEFFICIENT}$$

$$V_T = 3820 \times 1.77 \times 0.90$$

$$V_T = 6085 \text{ FT}^3 \quad \underline{\text{ANS.}}$$

V. SELECT (VIFLOW) PIPE OR PIPES:

$$Q = 0.60a\sqrt{2gh}$$

$$a = \frac{Q}{0.60\sqrt{2gh}}$$

$$a = \frac{2.60}{0.60\sqrt{2(32.2)(0.4)}}$$

$a = 0.85\ FT^2$ USE SIDEWALK CULVERT

INVERT EL. @ FLOWLINE OF CURB: 84.50 + (44 x .0125) = 85.05
85.05 - 0.67 (DEPTH OF CURB) =
84.38 FT.

INVERT EL. @ FL = 84.38

TRY 84" DIA. STORAGE PIPE:

$$a = \frac{2.60}{0.60\sqrt{2(32.2)(7.0)}}$$

$a = 0.204\ FT^2$

USE: 6" DIA ORFICE PIPE

$$a = \pi r^2$$

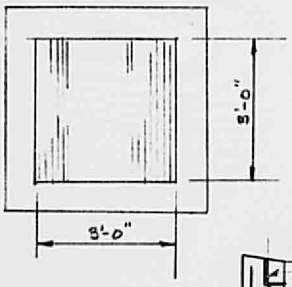
$$r = \sqrt{\frac{a}{\pi}} = \sqrt{\frac{0.204}{3.14}}$$

$r = 0.25\ FT$ OR $3.06"$

PAT McCLERNON
AIRPORT BUSINESS PARK - LOT 4
DRAINAGE REPORT

JACOB A VIGIL
OCT. 4, 1984
SHT 5 OF 10

VI. CHECK CAPACITY OF DROP INLETS:



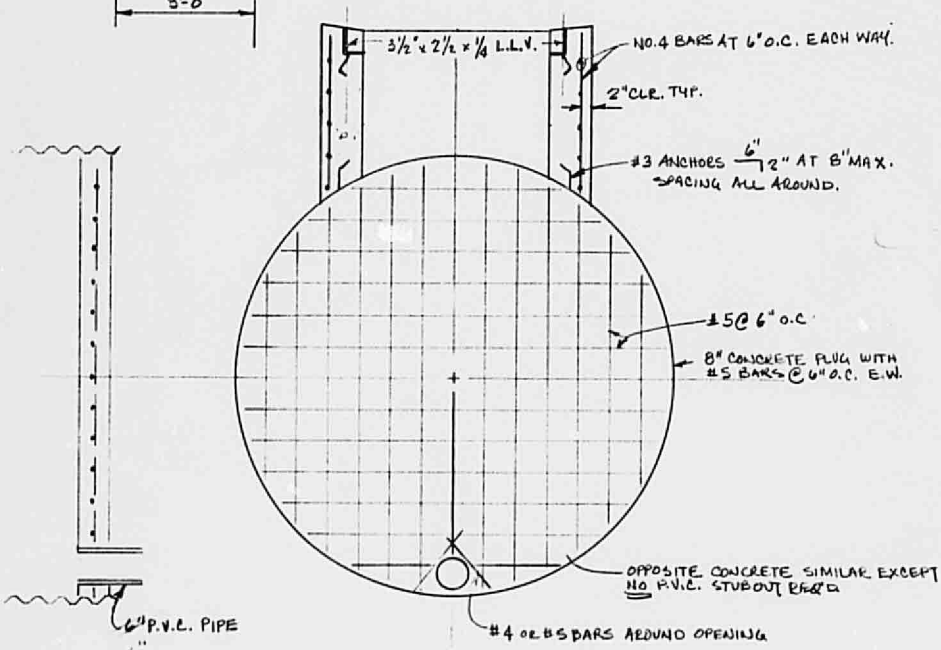
$Q = 3.0\ LH^{3/2}$

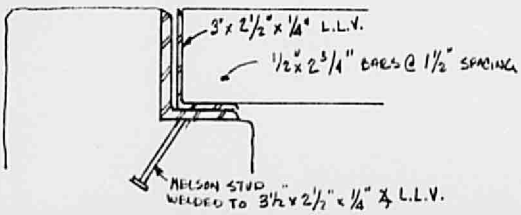
$Q = 3.0\ (12)(0.5)^{3/2}$

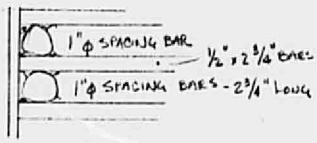
$Q = 12.73$ CFS

REQUIRED CAPACITY = 7.92 CFS

(2 DROP INLETS REQUIRED TO BEST INTERCEPT RUNOFF). $(2 \times 12.73) > 7.92$ CFS O.K.





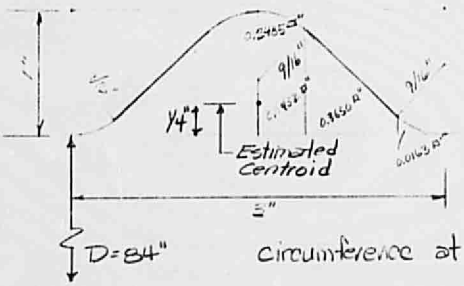


GRATE

ADDITIONAL CALCULATIONS

The following revisions are to minimize ponding due to available storm sewer capacity, parking lot ponding and volume in corrugations.

A-1. Volume of storage in corregations



AREA = $2\left(\frac{0.2465}{2} + 0.2432 + 0.3150 + 0.0163\right)$
= 1.4975 SQ IN.

AREA PER FOOT OF PIPE =
4 x 1.4975 = 5.99 SQ IN.

circumference at centroid = $(84" + 1/2")\pi$ = 265.46 inches

Total volume per foot length = (5.99 x 265.46)/1728 = 0.9202 cu ft/ft.

A-2 Volume of storage in Parking lot.

Pond in parking lot (2760 SF x 0.5) 1/3 = 460 CU. FT. (PYRAMID)

VOLUME OF PIPE = $7^2\pi/4$ = 38.48 CU. FT Per foot
0.92 " " " " in corregations
39.40

Required vol in pipe = 6085 − 460 = 5625

5625/39.40 = 142.77' say 143 feet = Required Length

Note: Due to available storm sewer capacity as described in the report, the required volume has been recalculated as shown on the following pages.

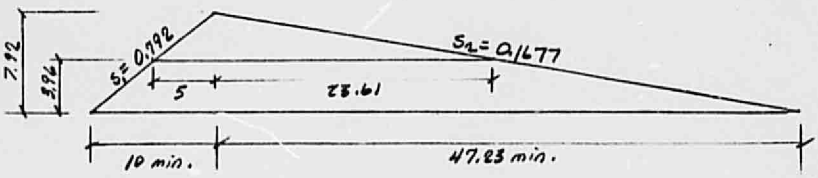
A-3 Pond Volume – Recalculation due to available storm sewer capacity.

In order to use available storm sewer capacity and yet provide storage as required, It is proposed to discharge at one-half the peak rate, or 3.96 cfs.

$V_{100} = C\,(R_6/12)\,A$ where A is area in sq.ft.

$V_{100} = 0.9\,(2.35/12)\,1.77 \times 43560 = 13.598$ cu.ft.

Duration $T = 2V/60Q = 2 \times 13.598/7.92 \times 60 = 57.23$ min.



Volume of Storage = $(3.96 \times 28.61)/2 \times 60 = 3399$ cf.

Required Vol. of 84" ϕ pipe = 3399 − 460 (Ponding in parking lot) = 2939 cu.ft.

Required Length of pipe = 2939 ÷ 39.40 = 74.6 feet

74.6 + 2(0.67) = 75.94 say 76 feet.

A-4. Capacity of Controlled Discharge Pipe. Assume non-pressure flow.
For 6"ϕ PVC n = 0.009 S = 0.0722 Using ARMCO sewer pipe calculator for d/D = 1.0 Q = 2.1 cfs < 3.96 cfs

Try 8"ϕ PVC Q = 4.5 cfs > 3.96 cfs OK

A-5 Orifice Plate to limit flow to 3.96 cfs maximum.

$Q = Ca\sqrt{2gh}$ $\quad a = Q/C\sqrt{2gh}$

$h = 86.5$ (Top of Pond level) $- 76.83$ (Spring Line)

$= 9.67$ feet.

$a = 3.96/0.6\sqrt{2 \times 32.2 \times 9.67} = 0.2645$ SF

$a = \pi r^2$ or $r = (a/\pi)^{1/2} = 0.2902$ feet.

dia $= 2(.2902) = 0.5803$ feet. $= 6.96$ inches say "7"

A-6 Time to Drain Pond.

$Q_{peak} = 3.96$ $\quad Q_{min} = 0.6(0.2673)\sqrt{2 \times 32.2 \times 0.5} =$

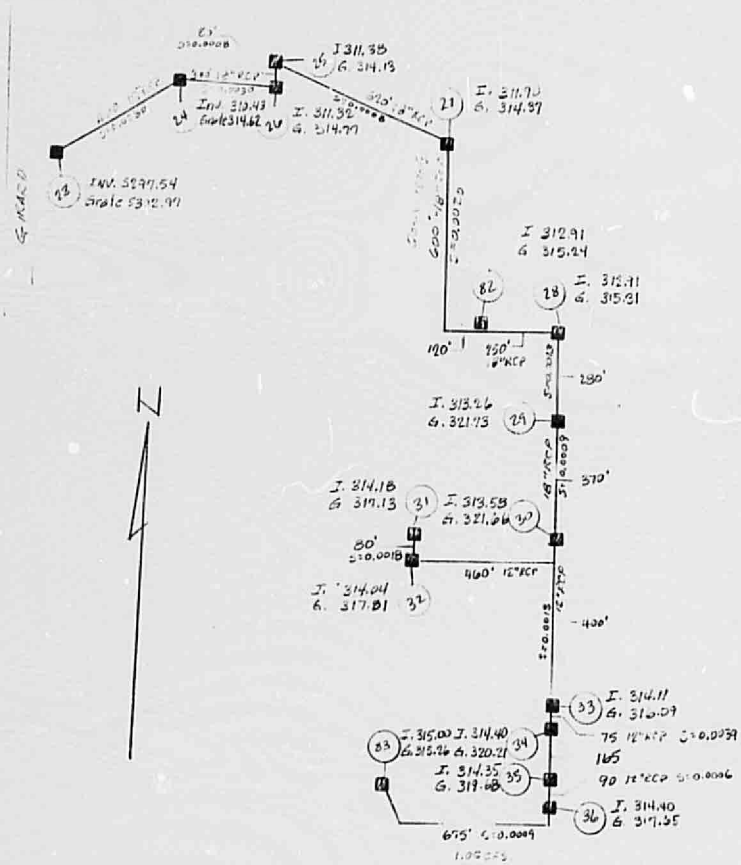
$= 0.91$ cfs

Average $Q = (3.96 + 0.91)/2 = 2.43$ cfs.

$3399/2.43 = 1399$ seconds $= 23.3$ minutes.

A-7 Analysis of Kirtland AFB System

The following pages contain an analysis of the Kirtland AFB system.



Kirtland AFB System.

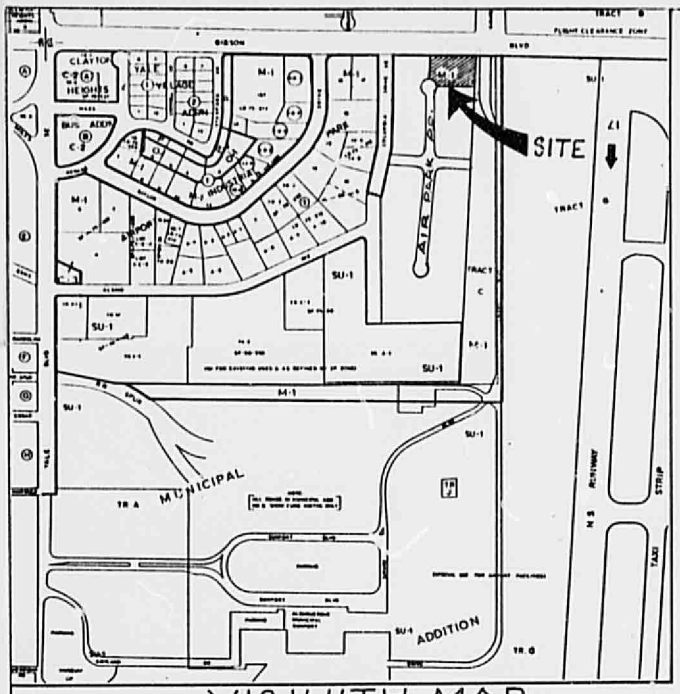
THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT.

ANALYSIS OF FLOW TIME - KIRTLAND AFB SYSTEM

MH	TO	MH	DISTANCE	DIAMETER	SLOPE	CAPACITY	VELOCITY	FLOW TIME
58		36	675'	12"	0.0009 %	1.15 cfs	1.4 fps	8.0 min.
36		35	90'	12"	0.0006	0.95	1.15	1.3
35		34	165'	12"	0.0001	0.39	0.47	5.9
34		33	75'	12"	0.0039	2.40	2.9	0.4
33		30	400'	12"	0.0013	1.50	1.8	3.7
30		29	370	18"	0.0009	3.25	1.75	3.5
29		28	280	18"	0.0013	4.10	2.2	2.1
28		27	850	18"	0.0012	3.90	2.1	6.7
27		25	620	18"	0.0008	3.20	1.75	5.9
25		26	80'	18"	0.0008	3.20	1.75	0.8
26		24	300	18"	0.0030	6.0	3.4	1.5
24		23	460	18"	0.0028	6.0	3.25	2.3
								41.1 min.

Assumptions:

1. All lines flowing at d/D = 0.95



VICINITY MAP

M-16-7

Legal Description : Lot 4 Airport Business Park

Bench Mark : 11-L16 A square chiseled in the top of the concrete curb of the SSW return of Vail Avenue and Girard Blvd. Elevation 5270.78

City Address:

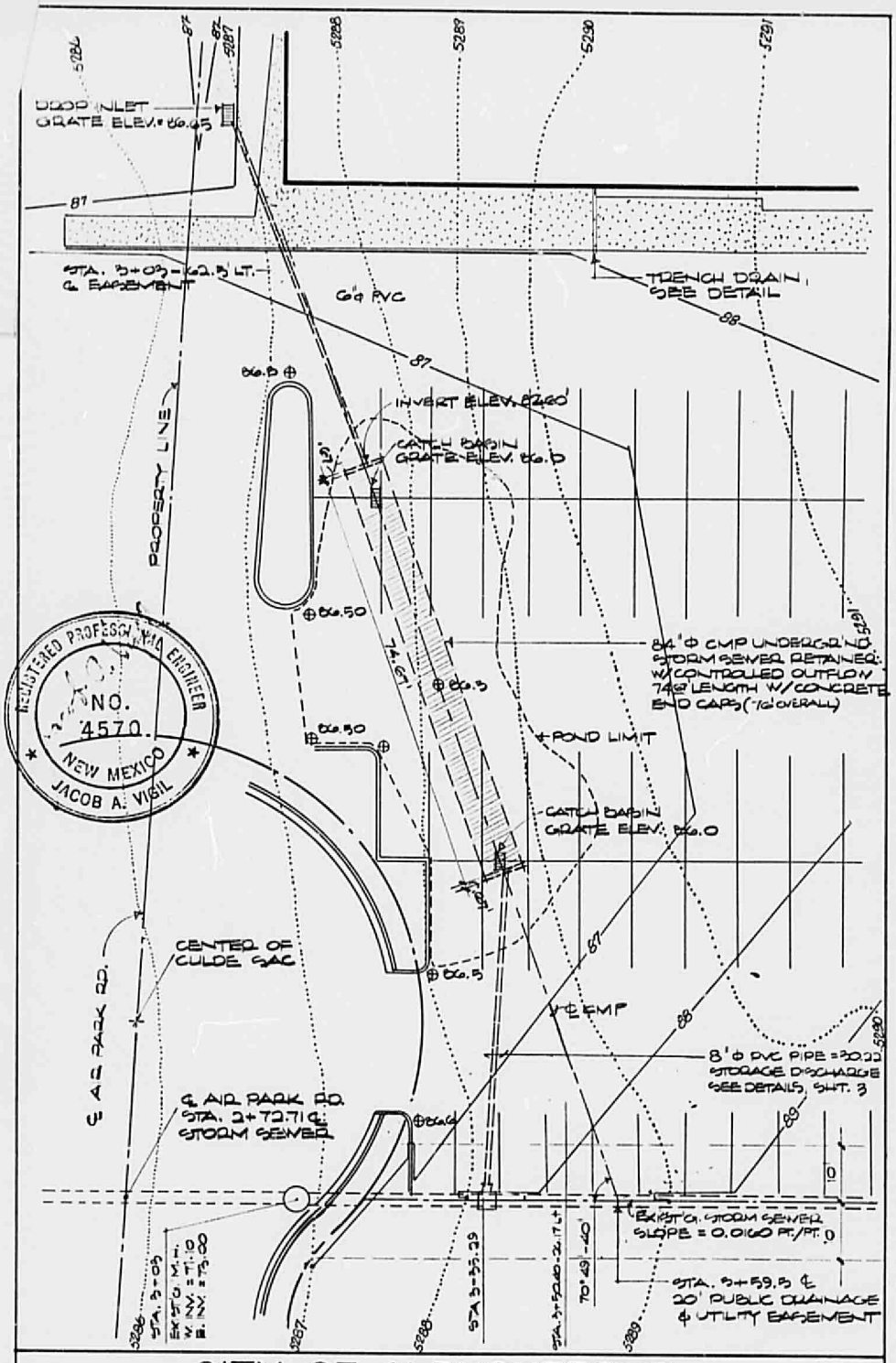
REGISTERED PROFESSIONAL ENGINEER NO. 4570 NEW MEXICO JACOB A. VIGIL

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 Public Works Contract No. 31 .
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 N\A street use.

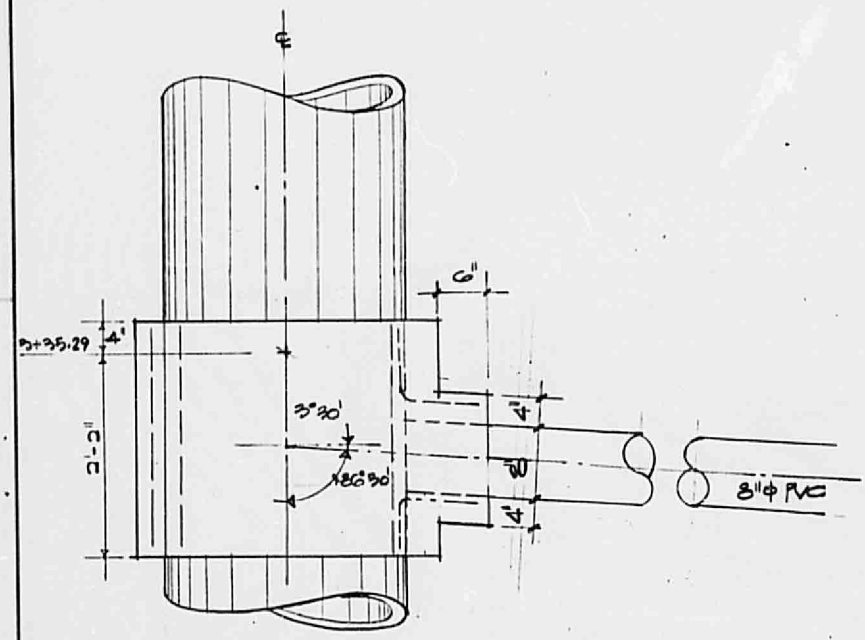
CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE GEPT ASSOCIATES - OFFICE BUILDING 84" CMP Runoff Retainer Discharge Vicinity Map - Notice to Contractor
A E DESIGN			
INSPECTOR			PERMIT NO. / MAP NO. M-16
A C E / FIELD			SHEET 1 OF 3

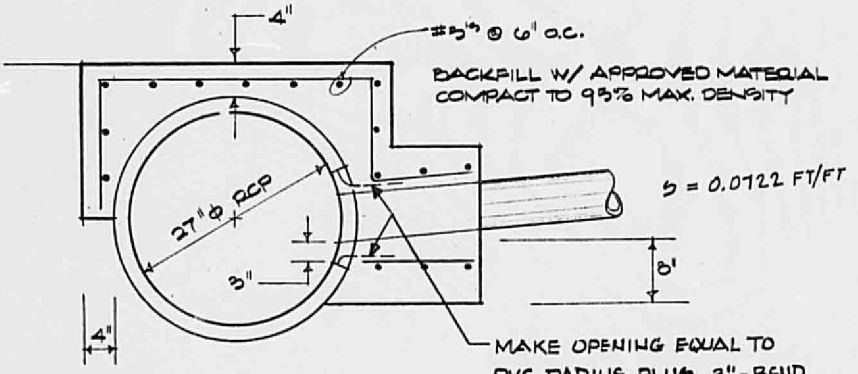


CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE DEPT ASSOCIATES - OFFICE BUILDING 84" CMP Runoff Retainer Discharge Plan - Connection to Existing Storm Sewer	
A.C.E. / DESIGN				
INSPECTOR			PERMIT NO.	MAP
A.C.E. / FIELD			SHEET 2 OF 3	NO M-16



PLAN
3/4" = 1'-0"



SECTION
3/4" = 1'-0"

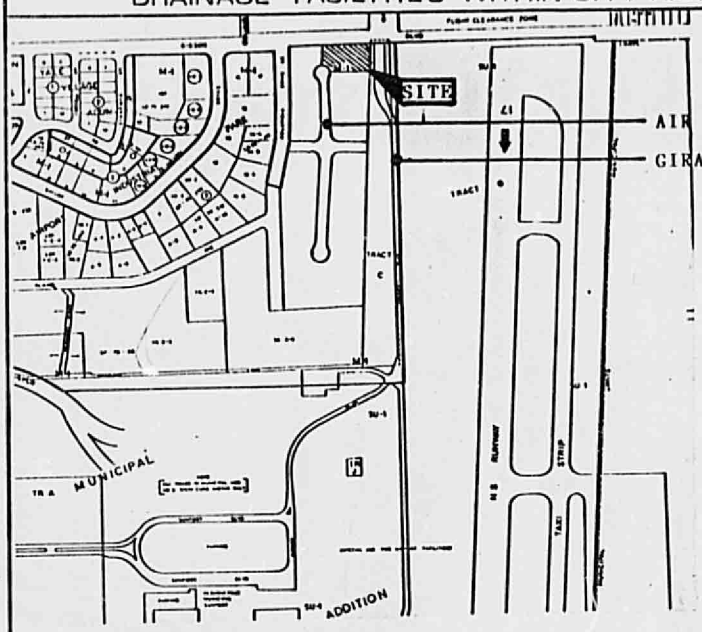
REGISTERED PROFESSIONAL ENGINEER
NO. 4570
NEW MEXICO
JACOB A. VIGIL

CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE GEPT ASSOCIATES - OFFICE BUILDING 84" CMP Runoff Retainer Discharge Details - Connection to Existing Storm Sewer	
A.C.E. / DESIGN				
INSPECTOR			PROJECT	MAP
A.C.E. / FIELD			Sheet 3 of 3	NO. M-16

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



ZONE ATLAS NO. M-16

FRANK O. LOVELADY
NEW MEXICO
6512
2/4/85
REGISTERED PROFESSIONAL ENGINEER

LOCATION MAP

LEGAL DESCRIPTION:

A CERTAIN TRACT OR PARCEL OF LAND SITUATED WITHIN THE CITY LIMITS OF THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO: BEING AND COMPRISING LOT 4, AIRPORT BUSINESS PARK, A SUBDIVISION OF THE CITY OF ALBUQUERQUE, NEW MEXICO.

BENCH MARK: CITY BENCH MARK 11-L16, A SQUARE CHISELED IN THE TOP OF THE CONCRETE CURB OF THE SSW RETURN OF VAIL AVENUE AND GIRARD BLVD. ELEVATION 5270.78.

NOTICE TO CONTRACTOR

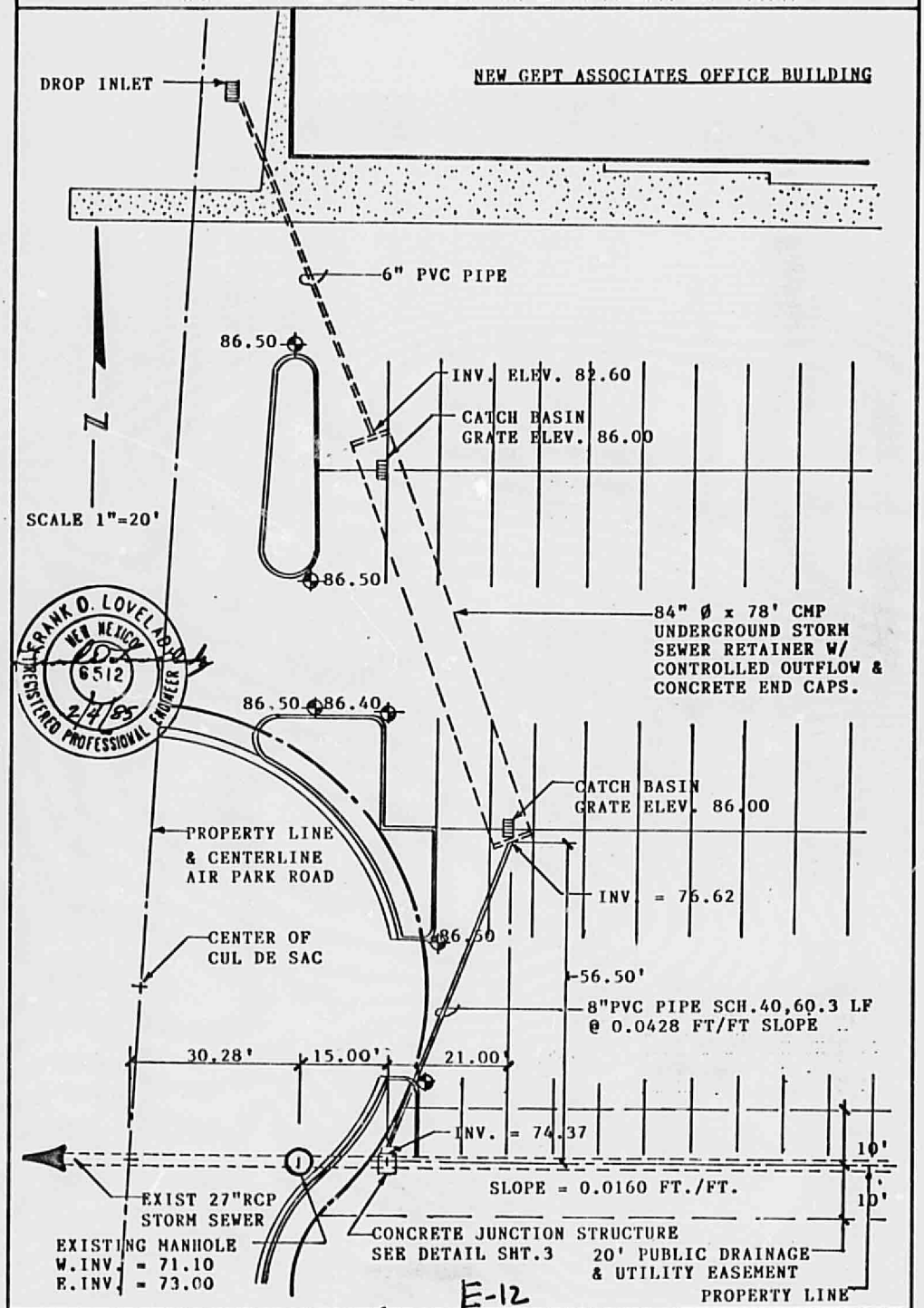
1. An excavation/construction permit will be required before beginning any work within City right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.
2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with "Contract Documents for City-Wide Utilities and Cash Paving No. 31 ".
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 N/A street use.

E-12

APPROVALS	NAME	DATE	TITLE: POND DISCHARGE PIPE C. DEPT ASSOCIATES OFFICE BUILDING 2100 AIR PARK ROAD, S.E.
A.C.E./DESIGN		02/12/85	
INSPECTOR			PERMIT NO. / MAP

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

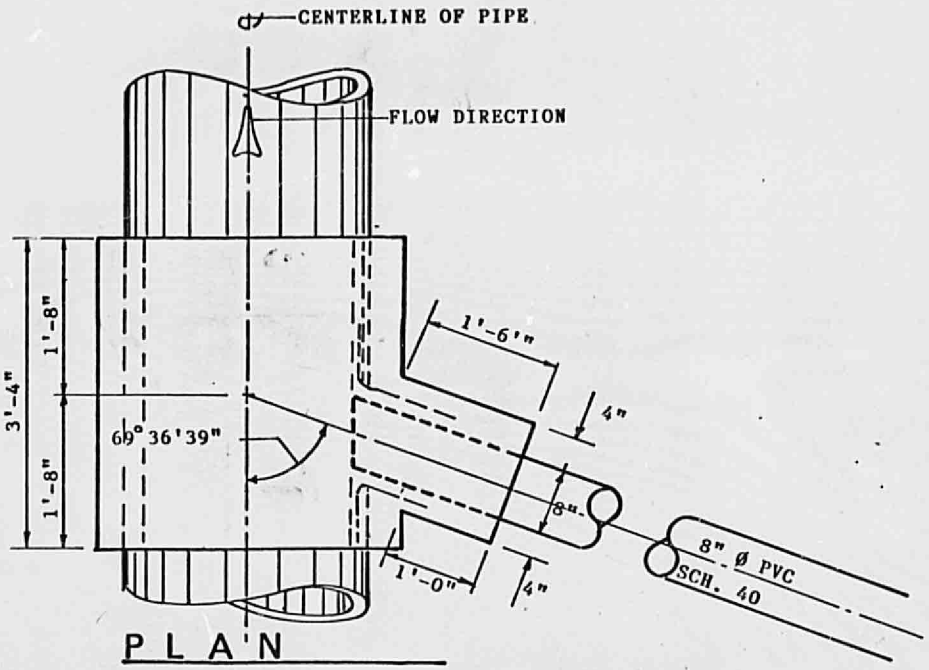


E-12

APPROVALS	NAME	DATE	TITLE: POND DISCHARGE PIPE GEPT ASSOCIATES OFFICE BUILDING 2100 AIR PARK ROAD, N.E.	
A.C.E./DESIGN		02/12/85		
INSPECTOR			PERMIT NO.	MAP
A.C.E./FIELD			SHEET 2 OF 3	NO. M-16

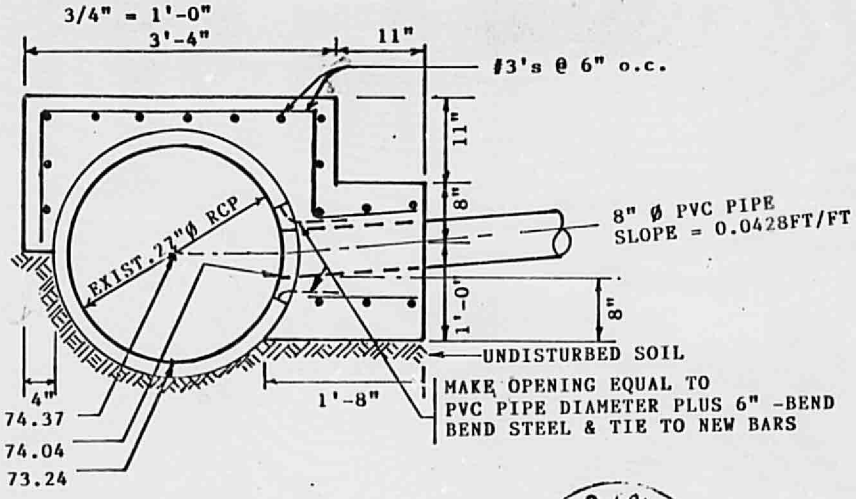
CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



PLAN

3/4" = 1'-0"



SECTION

3/4" = 1'-0"

FRANK O. LOVELADY
NEW MEXICO
6512
2/4/85
REGISTERED PROFESSIONAL ENGINEER

E-12

APPROVALS	NAME	DATE	TITLE: POND DISCHARGE PIPE GEPT ASSOCIATES OFFICE BUILDING 2100 AIR PARK ROAD, S.E.	
A.C.E./DESIGN		02/12/85		
INSPECTOR			PERMIT NO.	MAP NO. M-16
A.C.E./FIELD			SHEET 3 OF 3	