DEVELOPMENT & BUILDING SERVICE CENTER
ONE STOP SHOP
600 SECOND ST. N.W.

ATTENTION: Arlene

505-924-3900

Records Withdrawal Form

Project No. J-19/D4, J-19/D4A, J-19/D4B, J-19/D4C **Date:** Dec 15, 2004

Project Title: Kaseman Hospital

a. File b. Mylars c. Redlines/Comments
d. Other G&D plans, Plats

Requested by: KEVIN Georges and Assoc. ATTN: BILL Santiago **Phone No.:** 255 4975
Name and Company

Comments: 1 Bond Copy Each of:
J-19 D4C - "Drop off Grading Plan, Plate 1, C102
J-19 D4B - A1 of 17, C102
J-19 D4A - 1 of 1
J-19 D4 = Plot Plan, A1, A2, Plate 1

Deliver copies to KGA - originals back to ~~Bldg Dept~~ Planning Suite 201.

Anticipated Return Date: _____

I hereby accept full responsibility for the security of the above noted records/plans until return receipt acknowledgement is completed. Records/plans will be returned to the Development and Building Services Center on or before the indicted anticipated return date.

Delivery Picked Up By:

Name: Sarah Motsinger **Organization:** Construction Reporter
Print

Signed: Sarah Motsinger **Date:** 12-15-04

Office Use Only

Return Acknowledged:

Received By: _____ **Date:** _____
Print

DEVELOPMENT & BUILDING SERVICE CENTER
ONE STOP SHOP
600 SECOND ST. N.W.
ATTENTION: Arlene
505-924-3900

Records Withdrawal Form

Project No. J-19/D4, J-19/D4A, J-19/D4B, J-19/D4C **Date:** Dec 15, 2004

Project Title: Kaseman Hospital

a. File b. Mylars c. Redlines/Comments
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J-19 D4C - "Drop off Grading Plan, Plate 1, C102"
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Anticipated Return Date: _____

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Delivery Picked Up By:

Name: Sarah Motsinger **Organization:** Construction Reporter
Print

Signed: Sarah Motsinger **Date:** 12-15-04

Office Use Only

Return Acknowledged:

Received By: R Porch **Date:** 12-14-04
Print

STORM DRAINAGE STUDY RELATIVE TO SITE PLAN DEVELOPMENT FOR ANNA KASEMAN HOSPITAL ALBUQUERQUE, NEW MEXICO

Boyle Engineering Corporation
consulting engineers / architects

STORM DRAINAGE STUDY RELATIVE TO SITE PLAN DEVELOPMENT FOR ANNA KASEMAN HOSPITAL ALBUQUERQUE, NEW MEXICO

JUNE 1978

TABLE OF CONTENTS

LETTER OF TRANSMITTAL

I. PURPOSE page 1

II. SCOPE page 1

III. LOCATION page 1

IV. EXISTING DRAINAGE CONDITIONS page 2

V. PROPOSED DRAINAGE PLANS page 3

VI. CONCLUSIONS AND RECOMMENDATIONS page 5

APPENDIX

Boyle Engineering Corporation

1721 Girard Boulevard, N.E.
Albuquerque, New Mexico 87106

consulting engineers

505 / 266-7789

June 5, 1978

Stevens, Mallory, Pearl & Campbell
115 Amherst Drive, SE
Albuquerque, New Mexico 87106

STORM DRAINAGE STUDY RELATIVE TO SITE PLAN DEVELOPMENT FOR THE ANNA KASEMAN HOSPITAL, ALBUQUERQUE, NEW MEXICO

Transmitted herewith is the "Storm Drainage Study Relative to Site Plan Development for the Anna Kaseman Hospital, Albuquerque, New Mexico".

This study comprises a comprehensive analysis in accordance with the requirements of Resolution No. 1972-2, Albuquerque Metropolitan Arroyo Flood Control Authority, and the City of Albuquerque.

Thank you for the opportunity of participating in your project.

BOYLE ENGINEERING CORPORATION

Fred Burns

Fred Burns, PE

Enclosure

VC/mmr

STORM DRAINAGE STUDY
RELATIVE TO SITE PLAN DEVELOPMENT FOR THE
ANNA KASEMAN HOSPITAL EXPANSION
ALBUQUERQUE, NEW MEXICO

I. PURPOSE:

This report is to present data relative to a storm run-off drainage study completed for the site of the Anna Kaseman Hospital and the proposed expansion to the facility located between Constitution Avenue, NE and Constitution Place, NE, Albuquerque, New Mexico.

II. SCOPE:

This report is to establish development plans and site grading such that the proposed development will be protected from flooding due to storm run-off and will not increase the threat of damage to contiguous properties. Estimation of the maximum additional run-off is based on the expansion of the existing facilities. Ponding will be provided to maintain existing improved conditions.

III. LOCATION:

The land area under study of this report is a parcel located within the City of Albuquerque in the NE ¼ of the SE ¼, Section 18, Township 10 North, Range 4 East, N.M.P.M. bounded on the west and south side by Constitution Place, NE, on the north by Constitution Avenue, NE, and on the east by existing commercial developments. The northern boundary is approximately 1210 feet long and extends 840 feet to the southern tip of the property. The land area of this tract is 18.89 acres of land more or less.

IV. EXISTING DRAINAGE CONDITIONS:

A. Topography: The tract is located in the Northeast Heights area which for the most part is fully developed. The elevation of the land at the high point is approximately 5360.00 feet. The natural soils existing at the site are products of the weathering of the Sandia Mountains and are of decomposed granite and limestone origin. Vegetation on the undeveloped portions of the site includes both landscaped grassed areas and large areas with sparse grass covering. Overall drainage is from east to west. Flow from upstream areas have been diverted by existing commercial developments located between the site and Wyoming Blvd., NE.

B. General: The site under study is presently composed of the following developed condition:

Roof Area = 2.25 acres
Pavement Area = 5.32 acres
Undeveloped = 11.32 acres

Run-off from the existing hospital facilities is transported through a storm drainage system to the south property line. It leaves the property as surface flow to Constitution Place, NE. This system gathers all roof run-off and flows from the parking area located immediately east of the hospital.

Run-off from the remaining parking areas and the undeveloped portions of the site are transported as surface flow to the intersection of Constitution and Constitution

Place, NE.

There are no existing ponding areas or other forms of drainage regulation or control on the site. Existing rate of run-off is 66.05 cfs. Total volume of run-off is approximately 125,203 cubic feet.

The northern boundary of the site is the edge of a flood prone area as shown in the Flood Plain Information Albuquerque Arroyos Part IV, prepared for the Albuquerque Metropolitan Arroyo Flood Control Authority by the Department of the Army, Albuquerque District, Corps of Engineers, Albuquerque, New Mexico.

V. PROPOSED DRAINAGE PLANS:

A. Criteria:

(1) General: Resolution No. 1972-2, Albuquerque Metropolitan Arroyo Flood Control Authority.

(2) Project Storm: 100-year intensity: frequency duration as shown on the Curves Chart 1, "1963 Master Plan of Drainage for the City of Albuquerque and Environs", as prepared by Gordon Herkenhoff and Associates, Inc., Consulting Engineers.

B. Flood Protection:

(1) Existing conditions: Due to both natural and constructed grading in the area, flow from contiguous properties is minimal. Currently, 40% of the site is already fully developed with a run-off coefficient of .95. The remaining 60% of the site is

undeveloped.

(2) Future Conditions: The proposed expansions will have 54% of the site fully developed, leaving 46% undeveloped or landscaped. The proposed building expansions are planned for areas already developed as parking lots which will not significantly alter the current drainage situation. The new parking facilities will be located in currently undeveloped areas reducing the permeability of those areas and creating additional run-off. The additional run-off generated by the new parking areas will be collected and diverted to ponding areas.

C. Site Drainage:

As shown on the attached drawing, drainage conditions on a large portion of the site will not be significantly altered. The existing subsurface drains will be retained to transport roof run-off to Constitution Avenue as presently exists. Expansions within this area consist of using existing parking areas for the new hospital structures. The overall coefficient of run-off will not be changed.

Additional parking will be provided to the north and west of the buildings altering the rate run-off in the area. Ponding will be provided to retain the additional run-off. The pond will be located on the west central portion of the site as shown on the attached drawing. The con-

tributing area will be the expanded parking facility located immediately north of the hospital. Grading will be provided to insure that the design contributing area flows to the pond. The ponded water will be disposed of through evaporation and percolation.

VI. CONCLUSIONS AND RECOMMENDATIONS:

On the basis of the study of this report, the following recommendations are proposed:

1. Retain existing drainage facilities for the transportation of storm run-off to Constitution Avenue, NE.
2. Provide ponding volumes as shown on the attached drawing to maintain existing rates and volumes of run-off.
3. Retain existing grading conditions in undeveloped areas for surface flows to Constitution and Constitution Avenue, NE.

Provided the above listed recommendations are implemented prior to or concurrent with the development of the property, it is concluded that the proposed development will not create a flood hazard to surrounding properties, nor will the property itself be in danger of flooding.

Respectfully submitted,

BOYLE ENGINEERING CORPORATION

Fred Burns

Fred Burns, PE

APPENDIX

Boyle Engineering Corporation

BY V.J.C. DATE 6/28 SUBJECT Drainage Study for Expansion of Anna Keseman Hospital SHEET NO. 1 OF ____
CHKD. BY ____ DATE ____ JOB NO. ____

Total Project Area = 18.89 Acres

Length = 1210 ft.

Ave. Slope = (115-84) ÷ 1210 = .0256

Existing Conditions:

Roof Area	= 2.25	.95 (2.25) = 2.14
Pavement Area	= 5.32	.95 (5.32) = 5.05
Undeveloped	= 11.32	.40 (11.32) = 4.53
	18.89	11.72

Ave Coefficient = 11.72/18.89 = .62

Proposed Conditions:

Roof Area	= 3.77	.95 (3.77) = 3.58
Pavement Area	= 6.39	.95 (6.39) = 6.07
Undeveloped	= 8.73	.40 (8.73) = 3.49
	18.89	13.14

Ave Coeff. = 13.14/18.89 = .696

Length of development to ponding area (max.) = 810 ft.

By graph, Pg. 18-01 "Data Book for Civil Engineers - Design", Seelye

t_c = 8.5 min.

$i_{100} = \frac{189}{t_c+25} = \frac{189}{8.5+25} = 5.64$ in/hr.

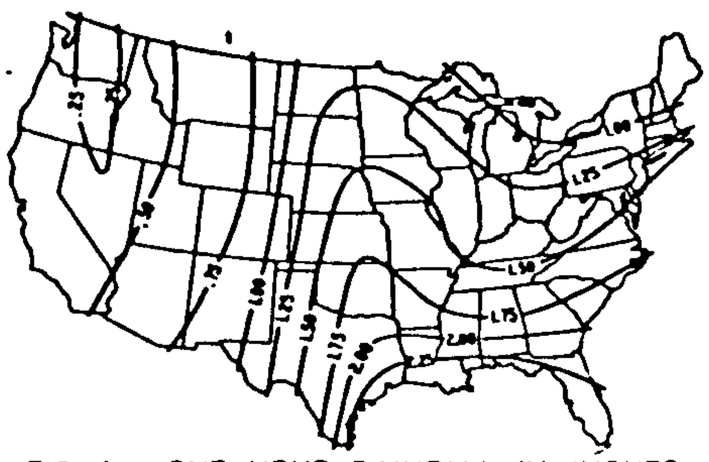


FIG. A. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 2 YEARS.

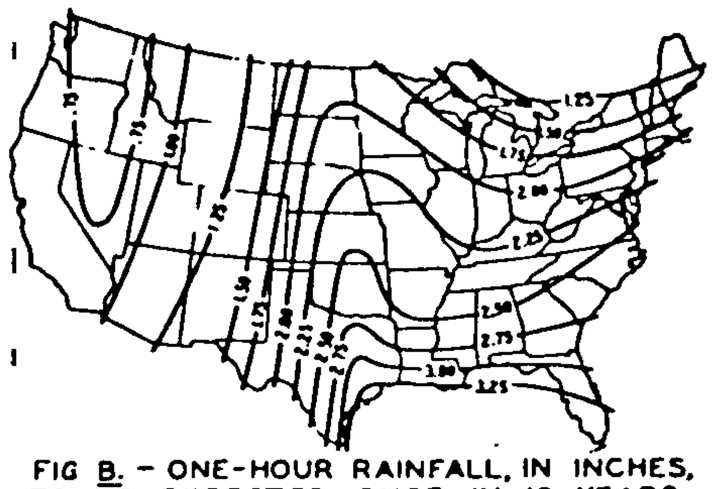


FIG B. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 10 YEARS.

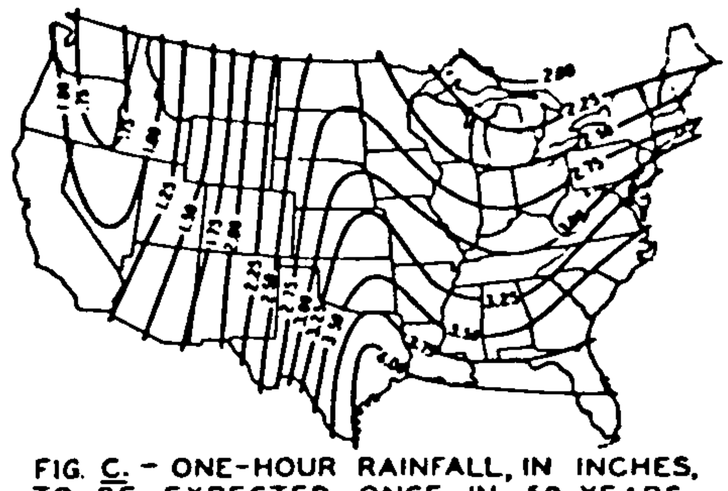


FIG. C. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 50 YEARS.

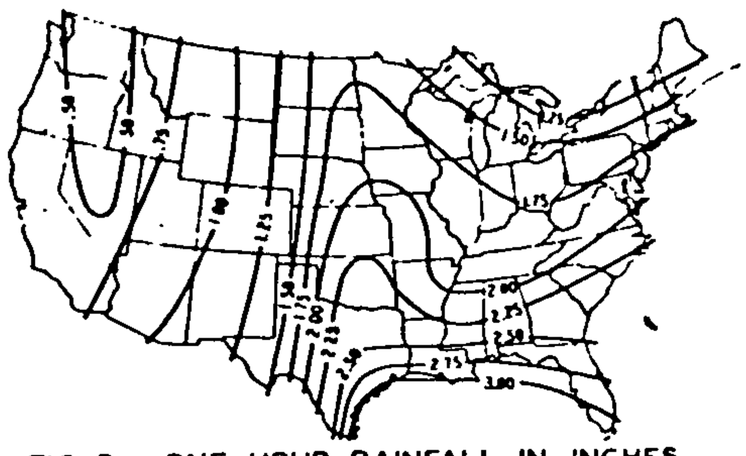


FIG. D. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 5 YEARS.

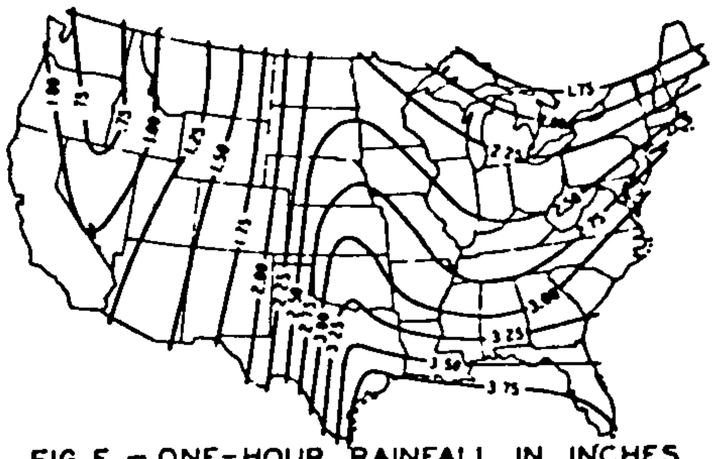


FIG. E. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 25 YEARS.

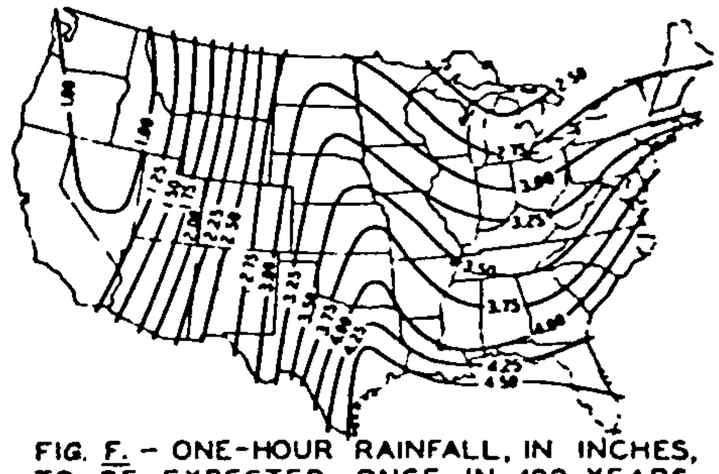


FIG. F. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 100 YEARS.

COMPUTATION OF i IN RATIONAL FORMULA.

EXAMPLE: Assume expectancy period = 5 years, See Fig. D, assume locality, find 1 hour intensity = 1.75 in. per hour.

FIG. G-INTENSITY EXPECTATION FOR ONE-HOUR RAINFALL*.

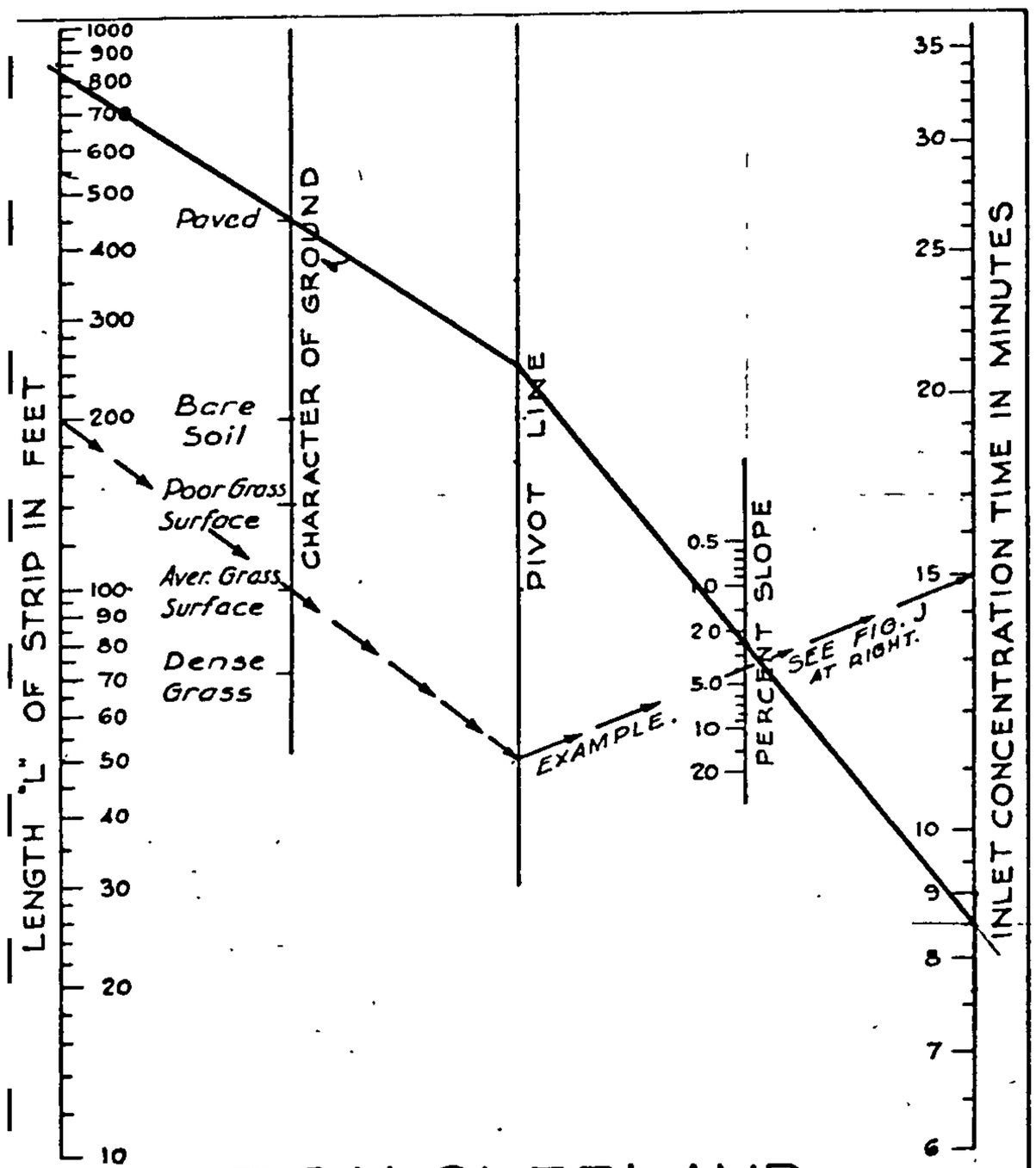


FIG. H-OVERLAND FLOW TIME.

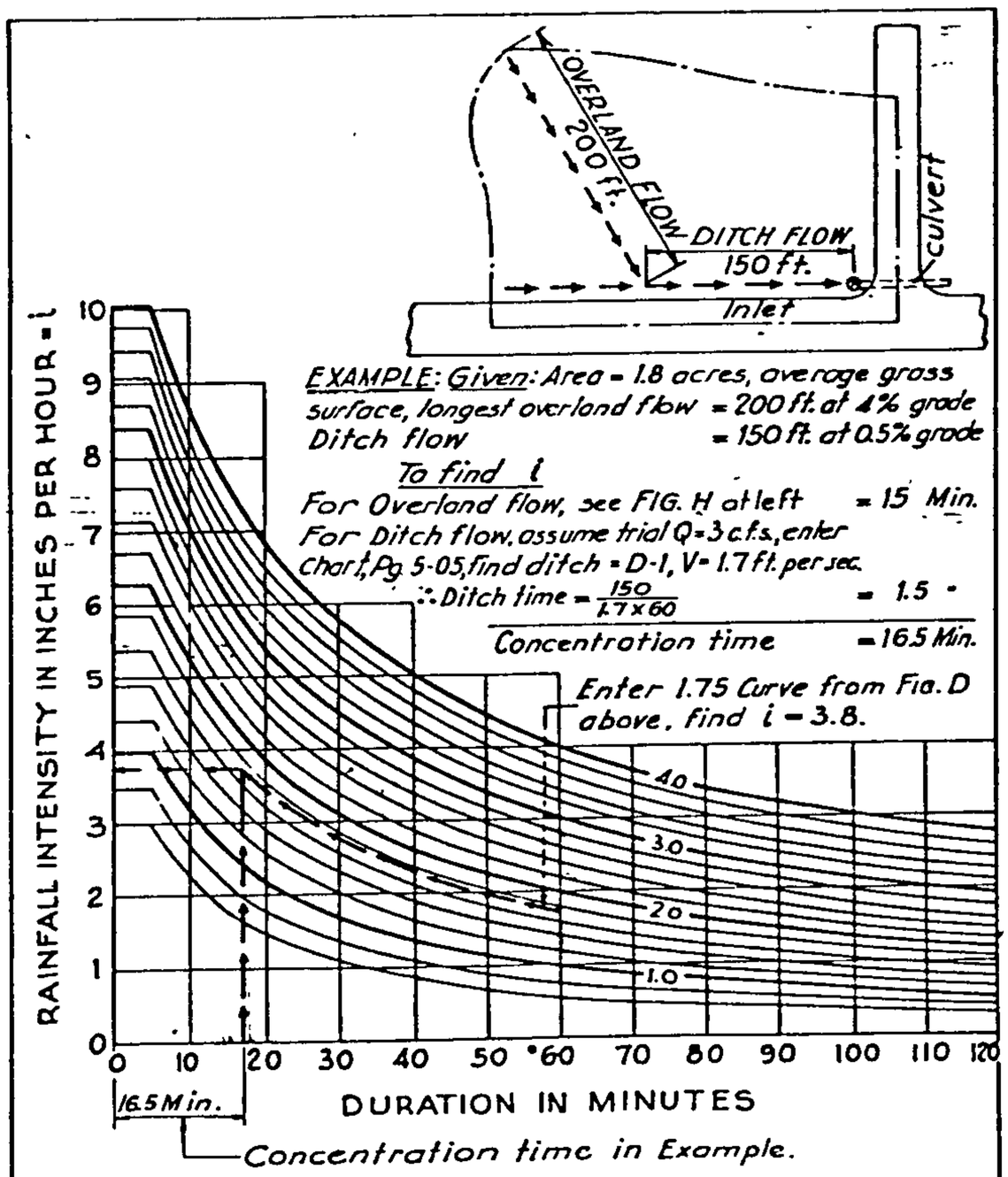


FIG. J-VALUES OF i RAINFALL INTENSITY-DURATION+

*Reproduced from Miscellaneous Publication No. 204, U.S. Dept. of Agriculture, by David L. Yarnell.
+Adapted from Engineering Manual of the War Department, Part XIII, Chap. I, Dec. '45.

Boyle Engineering Corporation

BY VJC DATE 6/78 SUBJECT Drainage Study for Expansion of Anna Kaseman Hospital SHEET NO. 2 OF
CHKD. BY DATE JOB NO.

Existing

$Q_{100} = 18.89(.62)(5.64) = 66.05$ cfs.

$Vol._{100} = 18.89(43560)(.62)\,2.95/12 = 125,415\ ft^3$

Proposed

$Q_{100} = 18.89(.696)(5.64) = 74.15$ cfs.

$Vol._{100} = 18.89(43560)(.696)(2.95/12) = 140,789$

$\Delta Q = 74.15 - 66.05 = 8.1$ cfs.

$\Delta Vol. = 140,789 - 125,415 = 15,374\ ft^3$

Ponding Area-1

Areas Contributing.

Pavement = .977
Grass = .127
Ponding Area = .448

$Vol._{req.} = [.977(.95) + \overset{1.339}{\cancel{.127(.4)}} + .448(1.0)]\,43560\left(\frac{2.95}{12}\right) = 15280\ ft^3$ ✓

flow Eliminated by Ponding.

$Q = [.977(.95) + .127(.4) + .448(.4)]\,1.552(5.64) = 10.14$ cfs.

Boyle Engineering Corporation

BY VJC DATE 6/78 SUBJECT Drainage Study for Expansion of Anna Kaseman SHEET NO. 3 OF
CHKD. BY DATE JOB NO.

Final Quantities.

Total Vol. of Runoff = 140,789 - 15,280

= 125,509 ≈ 125,415 (existing)

Rate of Runoff = 74.15 - 10.14 = 64.01 < 66.05 (existing)

THIS REPORT WAS, IN TURN, UPDATED BY THE 1-26-84 REPORT

501-238-60

OFFICE COPY
501-227-60

DRAINAGE REPORT

FOR

ANNA KASEMAN HOSPITAL PSYCHIATRIC UNIT

(An Update of the June 1978 Drainage Report)

RECEIVED
FEB 16 1993
HYDROLOGY DIVISION

May, 1983

Boyle Engineering Corporation
consulting engineers
Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110
505/883-7700

J19-D4

DRAINAGE REPORT

FOR

ANNA KASEMAN HOSPITAL PSYCHIATRIC UNIT

(An Update of the June 1978 Drainage Report)

May, 1983

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

J19 - D49

June 14, 1983

Mr. Frank Lovelady
Boyle Engineering Corp.
3939 San Pedro N.E.
Suite D
Albuquerque, N.M. 87110

RE: ANNA KASEMAN PSYCHIATRIC UNIT DRAINAGE REPORT

Dear Frank:

This letter is a follow-up to your correspondence dated 6/10/83 and will serve as formal notification that the referenced report is approved.

Per our telephone conversation of 6/13/83, it is my understanding that you will be discussing with the architect the possibility of providing low-flow channels in the ponds. Please keep us advised of any changes, as well as the status of certifying the project.

The Hydrology Office will sign-off once the approved plan along with copies of "Construction of Private Drainage Facilities in Public Right-of-Way" are placed in the City construction sets.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

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

J19 - D4a

June 7, 1983

Mr. Frank Lovelady
Boyle Engineering
3939 San Pedro N.E.
Suite D
Albuquerque, NM 87110

RE: ANNA KASEMAN PSYCHIATRIC UNIT - DRAINAGE REPORT

Dear Frank:

My comments regarding the referenced drainage report:

1. Item B3 - Has any thought been given to providing some sort of low flow channels in the large ponds? This type of improvement prevents the runoff from "pooling" and becoming a maintenance headache.

2. Item C - Statement: "...in excess of developed minus undeveloped 100-year 6-hour volume."

Comment - This type of statement refers to previous requirements under the "Interim Drainage Guidelines". Per the New Drainage Ordinance, downstream capacity is the controlling criteria and in cases where minimal capacity exists, developments are required to pond the entire 100-year runoff volume and release it at a controlled rate.

3. Recommendations - I concur with your proposals for the various areas.

4. As with other projects of this magnitude, I request that you investigate the possibility of your firm certifying the project. Realize that based on the current workload of the Hydrology Section it is difficult for the City to conduct such work.

5. Approved copies of "Construction of Private Drainage Facilities in Public Right-of-Way" will be required prior to release of any building permits.

I apologize for the delay in making my initial comments. This one "fell through the cracks". Please call if you have any questions.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

Boyle Engineering Corporation

Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110

consulting engineers

505 / 883-7700

Mr. Brian G. Burnett
Civil Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, N.M. 87103

May 12, 1983

RE: ANNA KASEMAN PSYCHIATRIC UNIT - DRAINAGE REPORT
S01-227-60

Dear Brian:

Attached are three (3) copies of the subject drainage report. This is a update of the Storm Drainage Study dated June 1978.

Special Order No. 19 sheets 1 and 2 of 2 are bound in the drainage report. The orginals and two copies are being forwarded to Assistant City Engineer/Design Section for review and approval.

If you have any questions please call me at 883-7700.

Sincerely,

BOYLE ENGINEERING CORPORATION

Frank D. Lovelady, P.E.
Senior Civil Engineer

cc: Quentin R. Kielich, P.E.
Assistant City Engineer/Design Section

INFORMATION SHEET

PROJECT TITLE Anna Kaseman update of 1978 Drainage Report J19/D4

TYPE OF SUBMITTAL Drainage Report Update

ZONE ATLAS PAGE NO. J-19

CITY ADDRESS 8300 Constitution Avenue, N.E.

LEGAL DESCRIPTION Tract numbered "1" (one) of tracts "E", "F" and a portion of Tract "A" east end addition in the city of Albuquerque, New Mexico filed July 24, 1973 (C9-03)

ENGINEERING FIRM BOYLE ENGINEERING CORPORATION PHONE 883-7700

CONTACT Frank D. Lovelady

ADDRESS 3939 San Pedro, NE Suite D, 87110

OWNER Southwest Community Health Services PHONE

CONTACT

ADDRESS

ARCHITECT Stevens, Mallory, Pearl & Campbell PHONE 255-8668

CONTACT Don Stevens

ADDRESS 115 Amherst Drive, NE 87106

SURVEYOR Ross Howard Company PHONE 897-0291

CONTACT Ross Howard

ADDRESS Tower Plaza, Corrales, N.M.

CONTRACTOR PHONE

CONTACT

ADDRESS

DATE SUBMITTED May 10, 1983

BY Frank D. Lovelady

Use this Information Sheet when submitting the following:

Drainage report or plan, conceptual grading and drainage plan, engineer's certification plan, erosion plan and grading plan. Provide the information applicable to your submittal.

TABLE OF CONTENTS

LETTER OF TRANSMITTAL

INFORMATION SHEET

I. PURPOSE

II. SCOPE

III. LOCATION

IV. EXISTING DRAINAGE CONDITIONS

V. PROPOSED DRAINAGE PLANS

VI. CONCLUSIONS

VII. RECOMMENDATIONS

DRAINAGE CALCULATIONS

SPECIAL ORDER NO. 19 - SHEETS 1 and 2 of 2.

LIST OF FIGURES

Figure 1	Anna Kaseman Hospital Drainage Report Area Delineated on Albuquerque Master Drainage Study Photo Map J-19
Figure 2	Anna Kaseman Hospital Drainage Report Area Delineated on Flood Hazard Boundary Map No. 350002-006B
Figure 3	Anna Kaseman Hospital Drainage Report Area Delineated on "SOIL SURVEY OF BERNALILLO COUNTY" Sheet No. 31
Figure 4	City of Albuquerque, Control Station Data, Bench Mark 5-J19

LIST OF PLATES

Plate 1	Anna Kaseman Psychiatric Unit Grading and Drainage Plan
Plate 2	Anna Kaseman Psychiatric Unit Architectural Site Plan

DRAINAGE REPORT
FOR
ANNA KASEMAN HOSPITAL PSYCHIATRIC UNIT

(An Update of the 1978 Drainage Report)

I. PURPOSE:

The purpose of this report is to present information and calculations relative to storm runoff and storage volumes for the proposed Psychiatric Unit Addition.

II. SCOPE:

The scope of this report is to include a presentation of all runoff rates and volumes to show that the Psychiatric Unit will be protected from flooding and that the proposed development will not increase the threat of flood damage to contiguous properties. Calculations of on-site flow depths and velocities and design of a positive discharge for the detention pond will also be included.

III. LOCATION:

The tract of land considered by this report is located in the City of Albuquerque in the NE 1/4 of the SE 1/4, Section 18, TION, R4E, NMPM. The tract is bounded on the north by Constitution Avenue, N.E., on the west and south by Constitution Place, N.E. and on the east by existing commercial development which faces Wyoming Boulevard, N.E. The total area of this tract is 18.89 acres of land, more or less.

IV. EXISTING DRAINAGE CONDIDTIONS:

A. Topography and Soils

Topography of the site slopes from east to west. The elevation of the high point is approximately 5360 feet. The low point of the site is at an elevation of approximately 5330 and is located at the southeast corner of the instersection of Constitution Avenue, N.E. and Constitution Place, N.E. The distance between the high and low points is approximately 1,230 feet which is an average slope of 0.0244 feet per foot.

The natural soils existing at the site are Embudo-Tijeras Complex which is about 50 percent an Embudo gravelly fine sandy loam and about 35 percent a Tijeras fine sandy loam. The Embudo soil is in drainage ways and depressions and the Tijeras soil is on low ridges in narrow undulations. Both soils are in Hydrologic Soil Group B. (1)

(1) Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, USSCS, BIA, BLM & NM AG Experiment Sta.

B. On-Site Drainage Conditions

The site which is the subject of this study is presently partially developed. The amounts of land occupied by each category of development or that remains undeveloped is shown as follows:

Roof Area	3.77 acres
Pavement Area	6.39 acres
Undeveloped or Planted	8.73 acres
TOTAL	18.89 acres

Roof drains from the existing building are discharged into an existing storm drain to the south property line. The storm drain is discharged as surface flow into Consititution Place, N.E. This storm drain system also gathers some flow from the parking area located immediately east of the present Hospital building.

Runoff from the parking areas north of the Hospital flows to an existing trench drain which discharges into the retention pond. The parking area west of the building also flows to the pond. This pond does not presently have a positive discharge or overflow spillway. Since a positive discharge is proposed, the pond will be refered to hereinafter as a detention pond.

Other areas also drain directly into Constitution Place, N.E.. For the most part all of the site south of the north edge of the existing building drain into Constitution Place N.E.. and, of course, the undeveloped land at the west end of the site also drains into either Constitution Place N.E. or Constitution Avenue, N.E.

C. Off-Site Drainage Conditions

On all sides of the site except the east side, the existing streets are lower than site property. On the east side, drainage is mostly away from the site and in the direction of Wyoming Boulevard. N.E., Constitution Avenue, N.E. or Constitution Place, N.E.. A very small amount of land east of the N.E. corner of the site appears to drain onto the site but its contribution to the overall drainage flows is insignificant.

V. PROPOSED DRAINAGE IMPROVEMENTS

A. Criteria

The computations, conclusions and recommendations contained in this report are based on criteria in the city of Albuquerque Development Process Manual, Volume 2, Design Criteria.

B. Site Drainage

The proposed Psychiatric Unit addition will improve conditions considerably as far as drainage leaving the site. The roof drains will be connected to a storm sewer line that outfalls into the existing pond. Surrounding the Psychiatric Unit is approximately 1.25 acres of planted area including lawns and shrubs that was previously asphalt parking lot. All drainage areas are delineated on Plate I and numbered from 1 through 9. A discussion of each drainage area follows:

1. Area Number 1 is the northwest corner of the site that is undeveloped except for several transplanted trees. Vegitation is sparce. The area drains directly into Constitution Avenue, N.E. and Constitution Place, N.E..

2. Area Number 2 is mostly existing and proposed parking lot. There is some grass and the parking lot barrier islands are filled with pea gravel with plastic sheeting under the gravel which has some absorptive capacity but is considered impermeable for this report. The outfall is a proposed trench drain which discharges into the detention pond.

3. Area Number 3 is the existing parking lots directly in front of the Hospital building. The area has very little grass and is mostly impermeable. The detention pond is included in this area. The outfall is a trench drain which discharges into the detention pond.

4. Area Number 4 is a very small area near the north wing of the Psychiatric Unit. The area has no outlet so it will retain runoff water. However, the lowest part in which retention will occur is more than 20 feet from the building.

5. Area Number 5 covers the main extrance drive immediately north of the hospital and the west parking lot. This area drains to a concrete rundown near the northwest corner of the west parking lot. The rundown discharges into the detention pond.

6. Area Number 6 includes the proposed Psychiatric Unit and adjacent court yards. It also includes a small area north of the existing building that previously was drained by the existing storm drain along the east side of the existing building. This area will be drained by a new storm drain line which outfalls directly into the detention pond.

7. Area Number 7 includes the original building, the 1978 additions and certain surrounding areas. All of these outfall directly into Constitution Place, N.E.. The points of building drain outfall are shown on Plate I.

8. Area Number 8 is the site of a future addition. This area will have no outlet but will retain all runoff. The depth of ponding will be minimal and will be at least 20 feet from any building foundation. Since the area is grass, the runoff should be quickly absorbed.

9. Area Number 9 is east of the Proposed Psychiatric Unit, is mostly grass and discharges directly into Constitution Place N.E..

C. Detention Pond

The existing detention pond has a volume of about 32,000 cubic feet which is about 12,220 cubic feet in excess of developed minus undeveloped 100-year 6-hour volume. A positive discharge has been designed which will drain the entire 100-year, 6-hour volume for those areas which drain to the pond in less than 16 hours.

The 6" diameter pipe discharge will have a minumal effect on downstream flows in Constitution Place. Any overflow that might occure would be along the northwest bank of the pond and it is not anticipated that such overflow would cause significiant erosion or damage to downstream property.

VI. CONCLUSIONS

A. The proposed Psychiatric Unit will result in a decrease in direct discharge to the adjacent streets.

B. The present system of discharging existing roof drains into Constitution Place, N.E., should be continued.

VII. RECOMMENDATIONS

A. Retain existing drainage facilities for transporting existing roof drainage to Constitution Place N.E.

B. Install a storm drainage system to transport drainage from roofs and surrounding court yards of Psychiatric Unit to the pond.

C. Install parking lot drainage facilities to direct parking lot drainage to the pond.

D. Install a positive discharge pipe between the pond and Constitution Place so that the pond will not have standing water.

E. The pond slopes, banks and bottom should be seeded with native grasses to improve appearance and reduce erosion.

If the above recommendations are implemented with the proposed development of the property, it is concluded that the proposed development will not create a flood hazard to surrounding properties, nor will the property itself be in danger of flooding.

Respectfully Submitted

BOYLE ENGINEERING CORPORATION

FRANK D. LOVELADY
NEW MEXICO
6512
May 11, 1983
REGISTERED PROFESSIONAL ENGINEER

Frank D. Lovelady, P.E.
Senior Civil Engineer

Boyle Engineering Corporation

BY FDL DATE 5-4-83 SUBJECT ANNA KASEMAN PSYCHIATRIC UNIT SHEET NO. 1 OF 7
CHKD. BY ____ DATE ____ DRAINAGE REPORT JOB NO. 501-227-60

DRAINAGE CALCULATIONS

I. TIME OF CONCENTRATION

$$T_c = 0.0078 \left(L^{0.77} / S^{0.385} \right)$$

$L = 1{,}230'$ $S = 0.0244$

$$T_c = 0.0078 \left(1.230^{(0.77)} / 0.0244^{(0.385)} \right)$$

= 7.8 MINUTES USE minimum Tc of 10 minutes

II DRAINAGE AREAS AND "C" FACTORS (See DPM Plate 22.2 C-1)

AREA NUMBER	AREA (ACRES)	UNDEVELOPED	PLANTED	IMPERVIOUS	PERCENT IMPERVIOUS	"C" FACTOR
1	2.97	2.97		0.00	0.0	0.34
2	3.64		0.89	2.75	75.6	0.74
3	1.59		0.13	1.46	91.8	0.88
4	0.08		0.08	0.00	0.0	0.34
5	2.70		0.79	1.91	70.7	0.70
6	0.99		0.41	0.58	58.6	0.62
7	5.74		0.68	5.06	88.2	0.84
8	0.36		0.33	0.03	8.3	0.38
9	0.21		0.21	0.00	0.0	0.34
POND	0.61	0.61		0.00	0.0	0.34
TOTALS	18.89			11.79	62.4	0.64

III RAINFALL INTENSITY (SEE DPM Plate 22.2 D-1

100-YEAR, 6-HOUR RAINFALL VOLUME IS 2.4 INCHES
FOR Tc = 10 MIN

$$I_{100} = 2.4 \times 6.84 \times 10^{-.51} = 5.07$$

$$I_5 = 5.07 \times 0.541 = 2.74$$

IV UNDEVELOPED FLOWS AND VOLUMES

A. Undeveloped rainfall volume – Based on the development existing on July 15, 1972

Roof Area	=	2.25 Acres
Pavement Area	=	5.32 Acres
Undeveloped	=	11.32 Acres
Total	=	18.89 Acres

Percent impermeable = 40.07%. From Plate 22.2 C-1 the "C" Factor is 0.52

Undeveloped Volume and Flow

$$V_{100} = (2.4/12)(18.89)(0.52)(43560) = 85{,}576 \text{ CF}$$

$$Q_{100} = 0.52\,(5.07)(18.89) = 49.8 \text{ cfs}$$

V. DEVELOPED FLOWS AND VOLUMES

$$V_{100} = (2.4/12)(18.89)(0.64)(43560) = 105{,}324$$

$$Q_{100} = 0.64\,(5.07)\,18.89 = 61.3 \text{ cfs}$$

VI REQUIRED POND VOLUME

DEVELOPED V_{100} – UNDEVELOPED V_{100}

$$105{,}324 - 85{,}576 = 19{,}748 \text{ CF}$$

Existing POND VOLUME = 31,968 CF (Adequate)

VII POND POSITIVE DISCHARGE

A. Design Flow - Pond discharge will be designed for Q_5 for those areas draining to the pond.
$I_5 = 2.74$

Area Number	Area (Acres)	"C" Factor	Q_5 (cfs)
2	3.64	0.74	7.38
3	1.59	0.88	3.83
5	2.70	0.70	5.17
6	0.99	0.62	1.68

Total Q_5 = 18.06 cfs

B. Total Volume discharged to pond:

Area Number		
2	(2.4/12)(3.64)(0.74)(43560) =	23,467
3	(2.4/12)(1.59)(0.88)(43560) =	12,190
5	(2.4/12)(2.70)(0.70)(43560) =	16,466
6	(2.4/12)(0.99)(0.62)(43560) =	5,347
Pond	(2.4/12)(0.61)(0.34)(43560) =	1.807

Total 100year 6hour Volume = 59,277

Volume to be discharged by positive discharge

C. Pond Discharge Pipe

INVERT ELEVATION OF INLET = 5340.0 = POND BOTTOM

INVERT ELEVATION OF OUTLET = 5333.07 = Street F.L. PLUS 0.24'

SLOPE = 40.0 - 33.07 / 190 = 0.0365 %

TRY 6" DIA SCH 40 PVC PIPE OD = 6.625

ID = 6.625 - 2(0.28) = 6.06" = 0.5500'

AREA $A = (0.55^2)\pi/4 = 0.2376$ SF

MANNINGS EQUATION FOR PIPE FLOWING FULL

$$Q = (0.463/0.011)(0.55)^{8/3}(0.0365)^{1/2} = 1.63 \text{ CFS}$$

CHECK INLET WITH ORIFICE EQUATION

$$Q = CA\sqrt{2gh}$$

C = 0.616 (BRATTER/KING 6TH Ed. Table 4.5)

A = .2376 SF h = 1.5'

$$Q = 0.616\,(0.2376)\sqrt{2\,(32.2)(1.5)} = 1.44 \text{ cfs}$$

Time required to discharge the entire 100-year 6-hour storm

59,277 / (1.44 X 3600) = 11.43 hours

59,277 / (0.83 X 3600) = 19.83 hours (for h = 0.5)

AVERAGE = (11.43 + 19.83)/2 = 15.63 HOURS < 24 HRS

D. Outfall Into Constitution Place NE

Check capacity of City Standard sidewalk culvert w/ steel plate top. (Dwg. K-16-1)

By Mannings equation $Q = A\left(\frac{1.486}{n}\right)R^{2/3}S^{1/2}$

Area $A = \frac{1}{2}(7.25+6.75)(x\,5'' \times 2)$ For 10" wide, Flow 1/4"
$= 70$ sq in $= 0.486$ SF
From steel plate.

Wetted Perimeter $P = (6.75+5.02)2 = 23.54'' = 1.96'$

$R = A/P = \frac{0.486}{1.96} = 0.248$

$S = 1/4''/\text{Foot} = 0.02\%$

$Q = 0.486\left(\frac{1.486}{0.013}\right)(0.248)^{2/3}(0.02)^{1/2} = 3.10$ CFS

VIII PARKING LOT DRAINAGE

A. CONCRETE CHANNEL CONNECTING PARKING LOTS.
(see Section BB, Plate 1)

Area = 1.58 Acres (0.61 Acres Planting)
% Impermeable = 61.4%
"C" Factor = 0.64

$Q_{100} = CIA = 0.64(5.07)1.58 = 5.13$ cfs

slope = 0.61' in 68' = 0.009 %

Try 6' wide Channel 3" deep
P = 6.5' A = 1.5' R = 1.5/6.5 = 0.23

Using Mannings Equation $Q = A\left(\frac{1.486}{0.013}\right)(0.23)^{2/3}(0.009)$

$= 6.10$ cfs

6.10 cfs > 5.13 cfs Section is adequate.

B. Trench Drain

Area = 3.64 Acres "C" = 0.74 (AREA NO. 2)

$Q = 0.74(5.07).3.64 = 13.66$ cfs

TRY 18" wide x 18" DEEP SECTION.

$P = 1.5 + 2(1.5) = 4.5$

$A = 1.5 \times 1.5 = 2.25$

$R = 2.25/4.5 = 0.5$ $S = 1.5'$ in $130' = 0.0115$

$Q = AV = 2.25\,(1.486/0.013)\,(0.5)^{2/3}\,(0.0115)^{1/2}$

$Q = 17.37$ cfs

C. Grate For Trench Drain

Try Neenah R-4999-FF TYPE "B" GRATE

FROM Neenah Manual "Inlet Grate Capacities for ponded water"
Area per 2 foot Section = 1.4 SF

FROM nomograph, Assume 2" of standing water depth over grate, 1.4 SF grate opening per section, the discharge per 2 foot section is 2.5 cfs.

The total length of Grate is 22' + 30' = 52'
Therefore, capacity of Grate is

$$\frac{52}{2} \times 2.5 = 65 \text{ cfs}$$

Assuming Flow increases linearly with depth the grate should have adequate capacity with only 1/2 inch standing water (16.25 cfs)

D. TRENCH DRAIN OUTFALL - TRAPEZODAL SECTION.

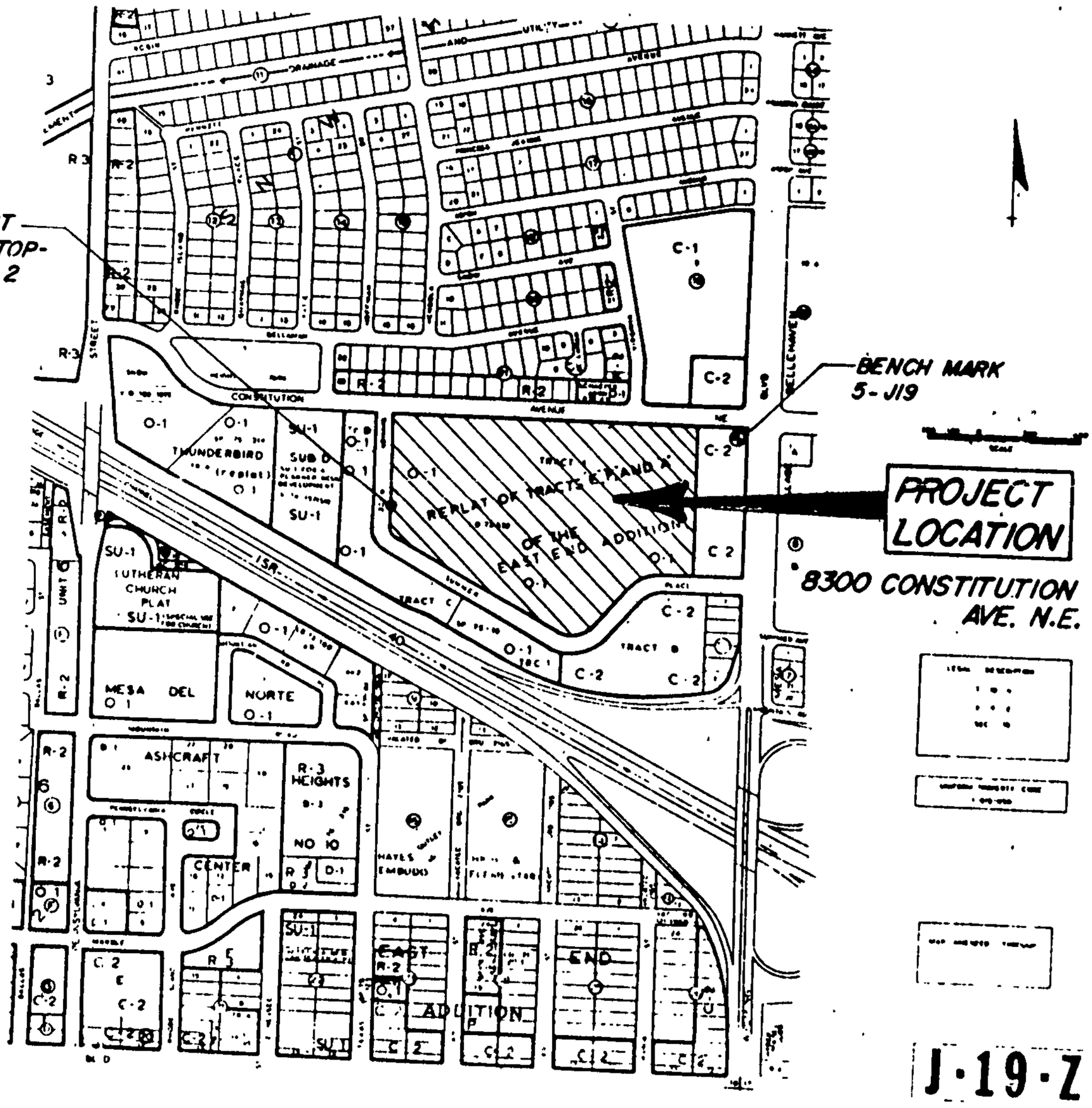
TRY 1 foot bottom, 1 foot depth, 45° SIDE SLOPES

AREA = 2 SF P = 3.28

R = 2/3.28 = 0.6098 S = 0.0115

$$Q = 2\left(\frac{1.486}{0.013}\right)(0.6098)^{2/3}(0.0115)^{1/2} = 17.63$$

CHANNEL SHOULD HAVE 6" MIN FREEBOARD



VICINITY MAP

1"=750'

FRANK D. LOVITT NEW MEXICO REGISTERED PROFESSIONAL ENGINEER
May 11, 1982

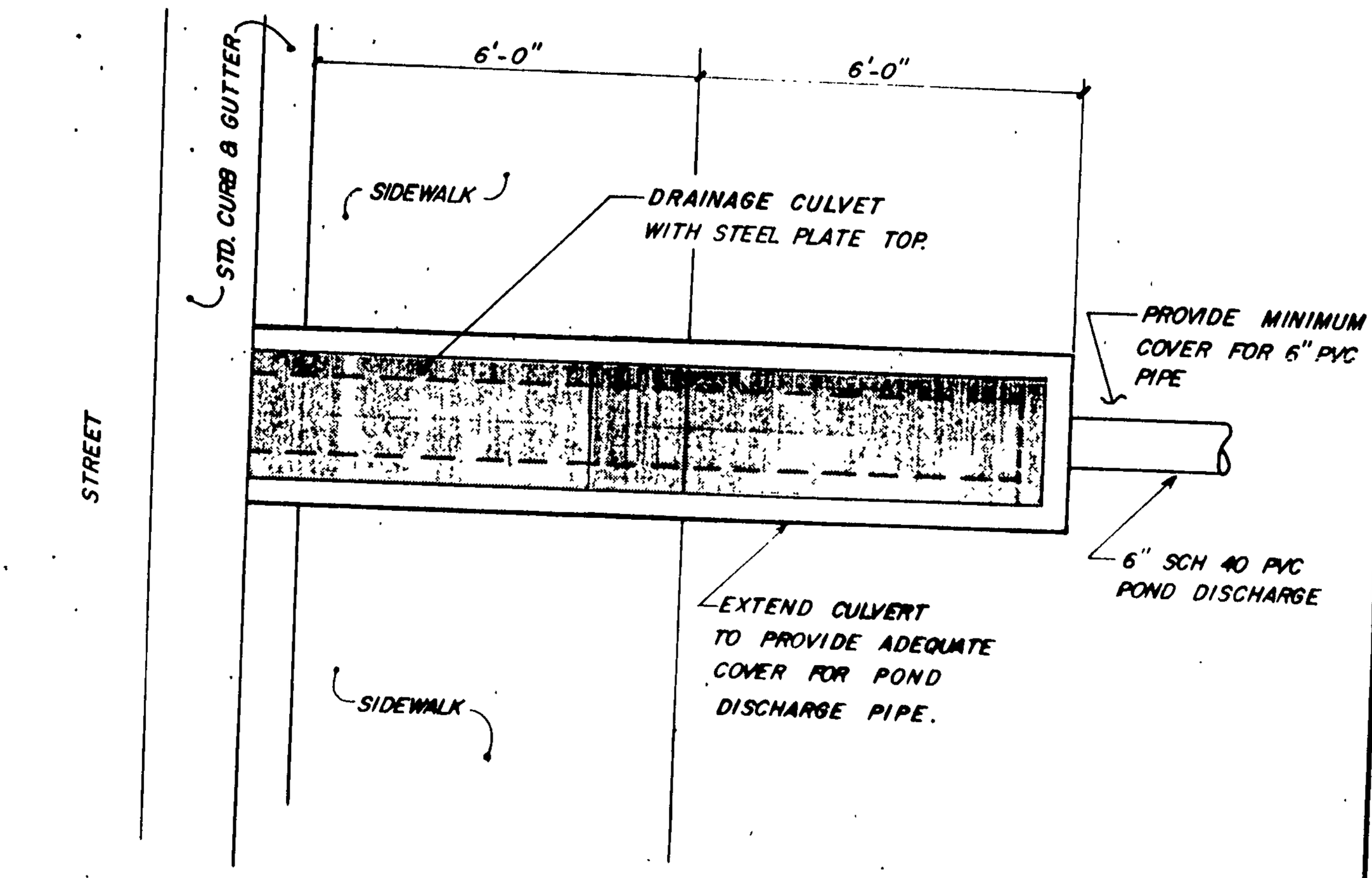
NOTICE TO CONTRACTOR

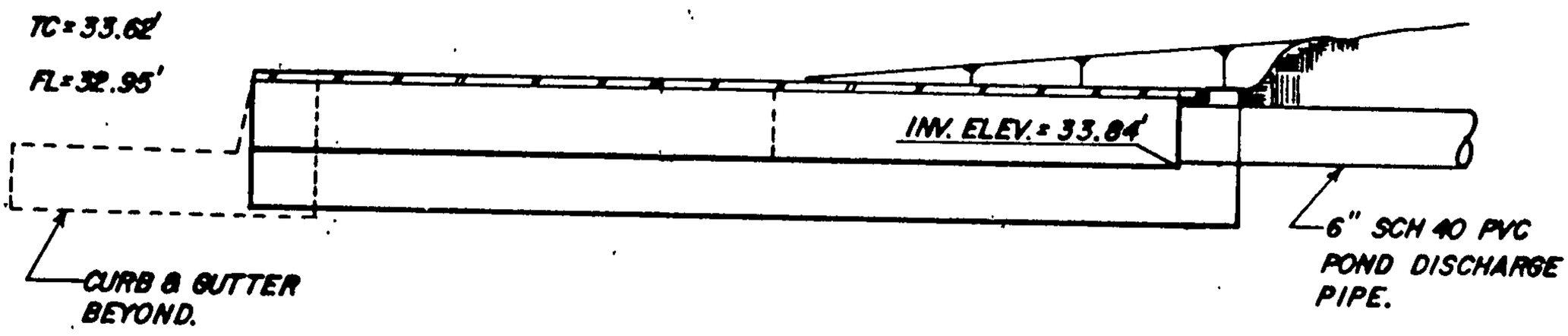
1. An excavation/construction permit will be required before beginning any work within City right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.
2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall 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 Arterial street use.

S01-227-60

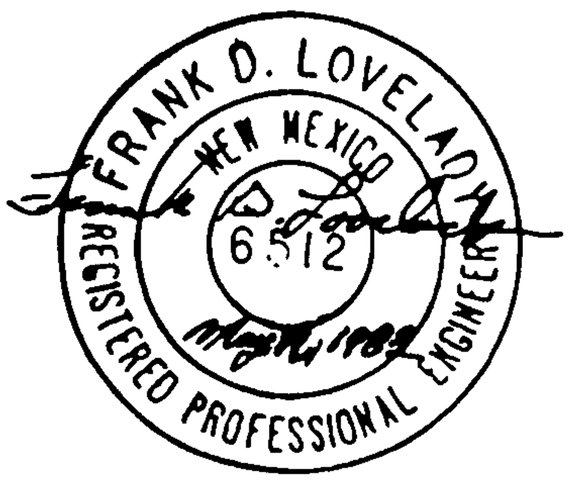
CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE
A.C.E. / DESIGN			ANNA KASEMAN HOSPITAL PSYCHIATRIC UNIT DRAINAGE
INSPECTOR			
A.C.E. / FIELD			PERMIT NO. SHEET 1 OF 2 — MAP NO. J-19





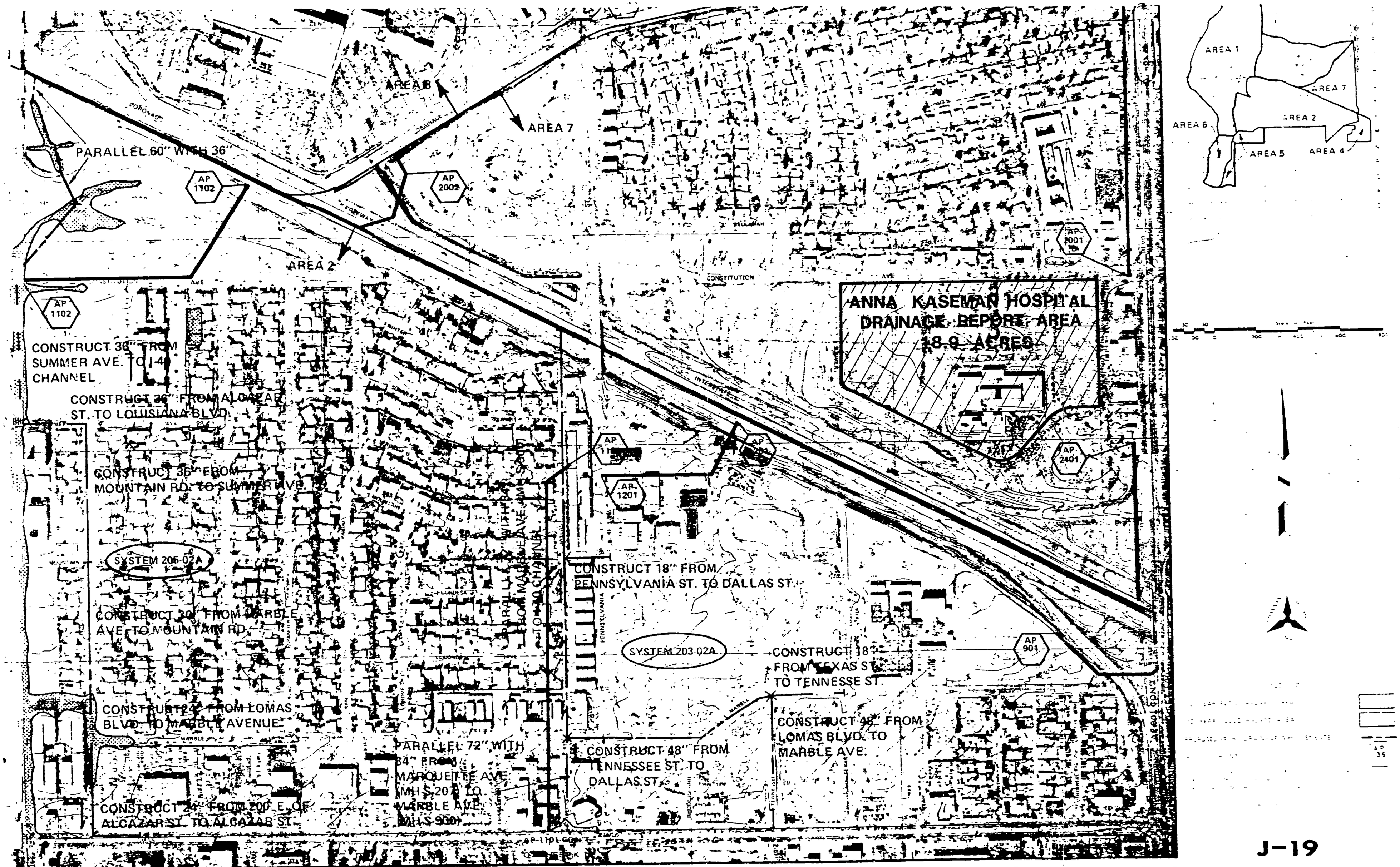
NTS



S01-227-60

CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE ANNA KASEMAN HOSPITAL PSYCHIATRIC UNIT DRAINAGE	
A.C.E. / DESIGN				
INSPECTOR				
A.C.E. / FIELD			PERMIT NO. SHEET NO. 2 OF 2	MAP NO.



ALBUQUERQUE MASTER DRAINAGE STUDY

J-19

FIGURE 1

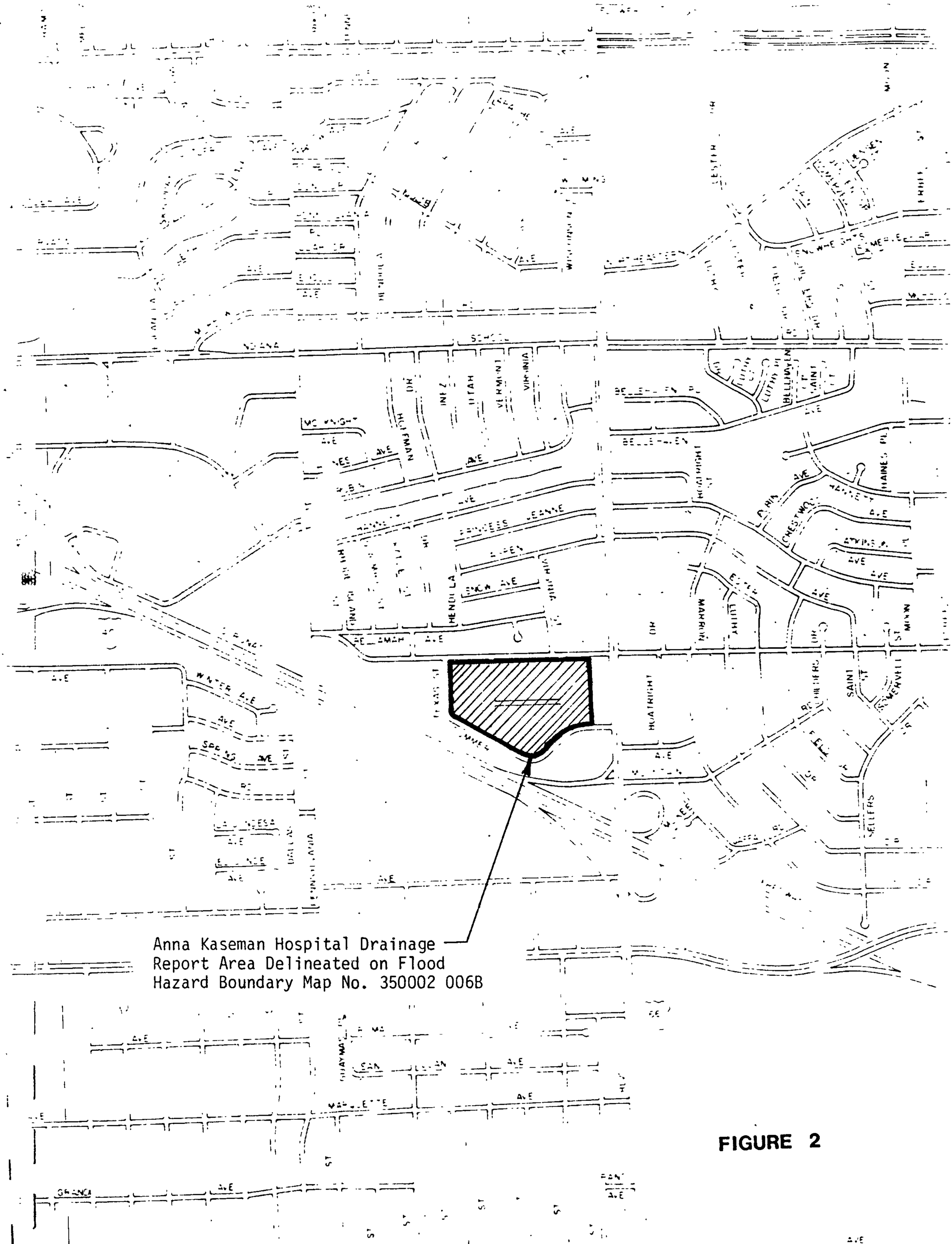

Anna Kaseman Hospital Drainage
Report Area Delineated on Flood
Hazard Boundary Map No. 350002 006B

FIGURE 2

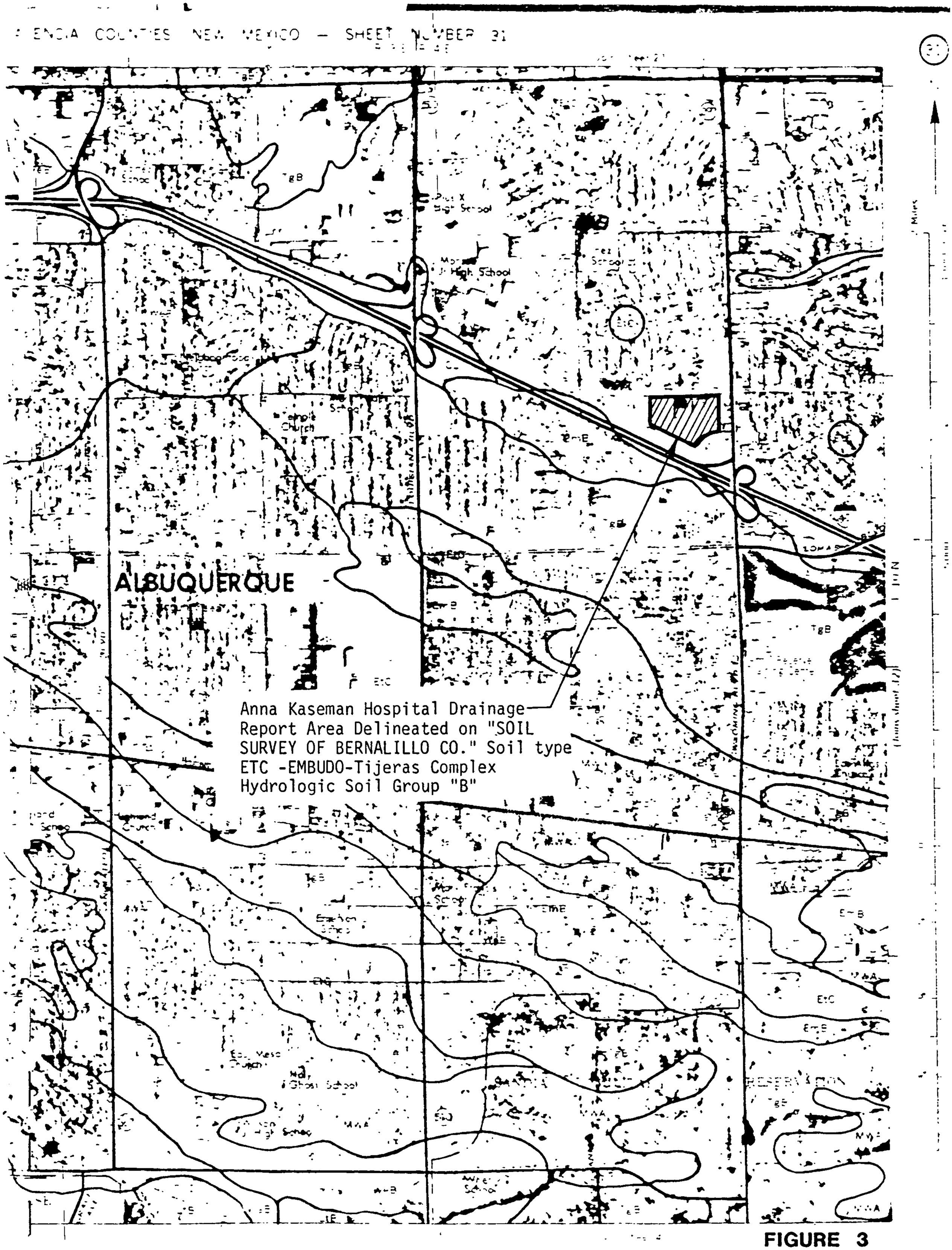

ENCIA COUNTIES NEW MEXICO — SHEET NUMBER 31
ALBUQUERQUE
Anna Kaseman Hospital Drainage Report Area Delineated on "SOIL SURVEY OF BERNALILLO CO." Soil type ETC -EMBUDO-Tijeras Complex Hydrologic Soil Group "B"

FIGURE 3

5

CONTROL STATION DATA

City of Albuquerque, New Mexico
Municipal Development
Engineering Division

Name of Station 5-J19 State NM Co. Bernalillo

Establishing Agency _____ Year _____ Chief of Party _____

Section 18 Township 10N Range 4E Map No. J-19

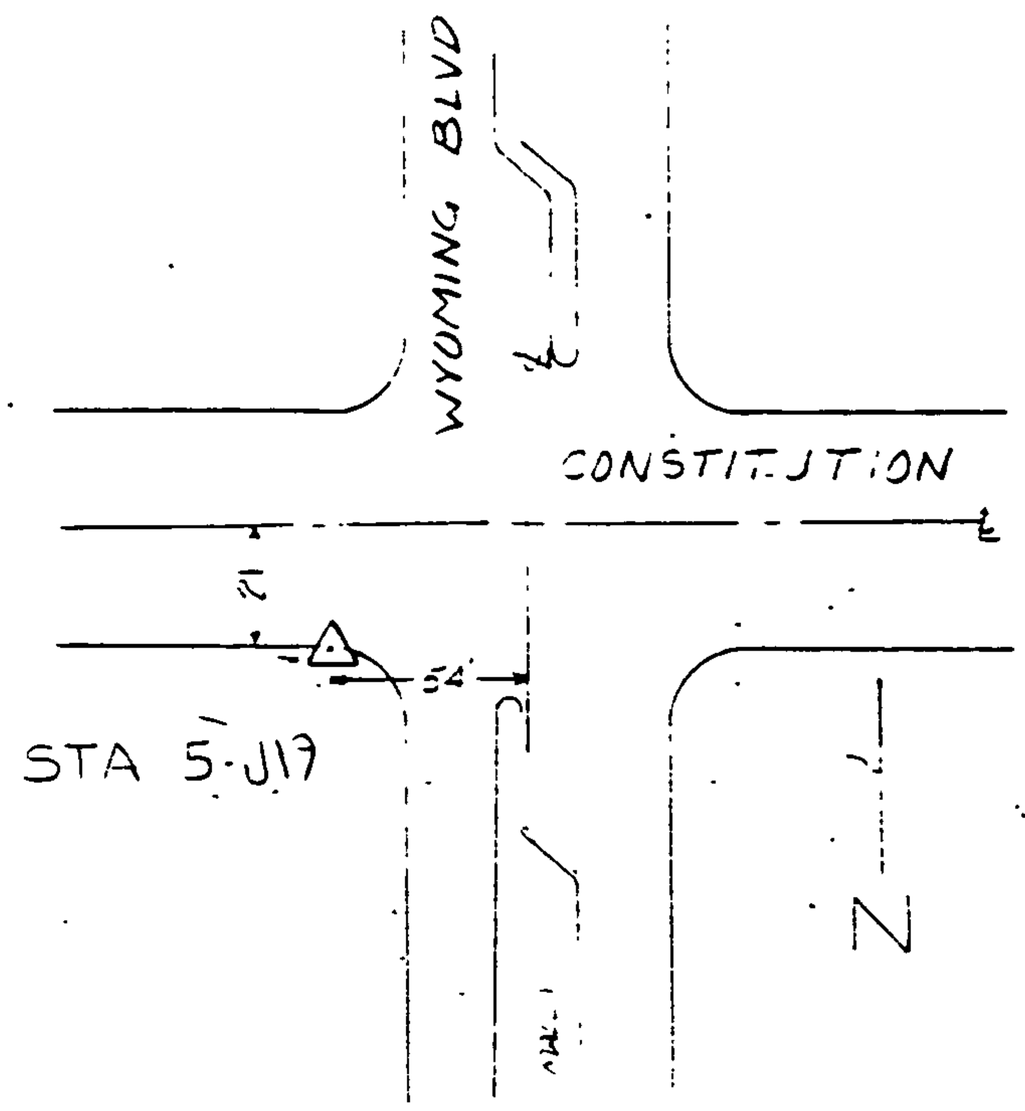
Description:

The station is located 5.9 miles east of downtown Albuqueruqe, at the intersection of Wyoming Blvd. and Constitution Ave.

To reach the station from the intersection of I-40 and Wyoming Blvd., go north on Wyoming 0.8 miles to Constitution Ave. The station is located in the Southwest quadrant of the intersection.

The station mark is a standard A.C.S. brass tablet stamped " 5-J19, 1979 " set flush with the curb.

Location Sketch:



HORIZONTAL DATA

FIELD METHOD [X] Traverse [ ] Triangulation [ ] Trilateration

GEOGRAPHIC POSITION (NAD 1927) 2nd -order

Latitude 35° 05' 40.23433" Longitude 106° 33' 01.17474"

PLANE COORDINATES Projection TM State NM Zone Central

X 410161.99 Y 1489778.92 Ground-to-Grid Factor .99965286

ELEVATION DATA

SPIRIT LEVEL ELEVATION (SLD 1929) Feet 5360.37 Meters 1633.840 2nd-Order

TRIGONOMETRIC ELEVATION Feet _____ Meters _____

AZIMUTH DATA

θ (or Δα) Angle -0° 10' 22"

Station	Grid Azimuth ° ' "	Geodetic Azimuth ° ' "	DISTANCE Feet	DISTANCE Meters
1-J19	91 04 30		2006.76	611.663
3-J20	269 31 26		2708.24	825.474

FIGURE 4

Boyle Engineering Corporation
consulting engineers
Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110
505/883-7700

Update to

DRAINAGE REPORT

(May 1983)

for the

DAY SURGERY UNIT
KASEMAN
PRESBYTERIAN HOSPITAL

(formerly Anna Kaseman Hospital)

8300 Constitution Avenue, NE

Albuquerque, New Mexico

RECEIVED
APR 25 1985
HYDROLOGY SECTION

January 26, 1984

®

Boyle Engineering Corporation

Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110

consulting engineers

505 / 883-7700

City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

January 26, 1984
AL-S01-238-60

ATTN: Mr. Fred J. Aguirre, Civil Engineer/Hydrology

RE: SUPPLEMENTAL DRAINAGE REPORT FOR DAY SURGERY UNIT, KASEMAN PRESBYTERIAN HOSPITAL, 8300 CONSTITUTION, N.E. (Update to May 1983 Drainage Report, J19-D4)

Dear Fred:

Transmitted herewith is one copy of the update to the subject Drainage Report, which was approved by your office on June 14, 1983.

These revisions were brought about by the planned addition of a Day Surgery Unit for the Kaseman facility and an accompanying parking lot. The latter affects the runoff calculations and ponding requirements shown in the May 1983 Drainage Report.

A 8,900 cu ft detention pond (No. 2) is proposed inside the west property line to accept the increased runoff from the new parking lot. A 6-inch controlled discharge pipe to a new sidewalk culvert is proposed to drain this pond. S. O. 19 Drawings for construction in the public right-of-way (approved by Bob Kielich on 1-25-84) are included in this Supplemental Report.

The south berm of the existing pond (No. 1) will be regraded, reducing its volume slightly from 31,968 to 28,000 cu ft. However there will still be sufficient capacity for the 26,300 cu ft of net discharge. All other drainage features established in the May 1983 Report are being constructed as shown in that report.

Please call if you have any questions.

Sincerely,

BOYLE ENGINEERING CORPORATION

Thornton D. Schwenk

Thornton D. Schwenk, P.E.
Senior Civil Engineer

cc: Phil Stevens; Stevens, Mallory, Pearl & Campbell

INFORMATION SHEET

PROJECT TITLE Kaseman Presbyterian Hospital TYPE OF SUBMITTAL Report Update

ZONE ATLAS PAGE NO. J-19 CITY ADDRESS 8300 Constitution, N.E.

LEGAL DESCRIPTION Tract numbered "1" (one) of Tracts "E" "F" and a portion of Tract "A" East End Addition in the City of Albuquerque, N.M. Filed July 24,1973 (C9-03)

ENGINEERING FIRM BOYLE ENGINEERING CORPORATION CONTACT Thornton D. Schwenk

ADDRESS 3939 San Pedro N.E., Suite D PHONE 883-7700

OWNER Presbyterian Hospital Center CONTACT Jim Hinton

ADDRESS 1100 Central, S.E. PHONE 841-1234

ARCHITECT Stevens,Mallory, Pearl & Campbell CONTACT Chris Willadsen

ADDRESS 115 Amherst, S.E. PHONE 255-8668

SURVEYOR Ross Howard Company CONTACT Ross L. Howard

ADDRESS Corrales, New Mexico PHONE 898-7976

CONTRACTOR Lembke Construction Co., Inc. CONTACT

ADDRESS 1719 5th N.W. PHONE 243-7808

PRE-DESIGN MEETING:

X YES
___ NO
X 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)

DATE SUBMITTED: January 30, 1984 BY: Thornton D. Schwenk

Thornton D. Schwenk

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO. J 19-D4a DATE: 1/6/84

PLANNING DIVISION NO. _____

CONFERENCE RECAP

SUBJECT: Anna Kaseman Hospital

ATTENDANCE: WHO	REPRESENTING
Thornton Schwenk	
Billy Goolsby	

FINDINGS: ① Drainage Plan update to cover area being modified as per DPM.
② Controlled discharge as per previousely approved Master Plan, or
③ Free discharge if it can be demonstrated that downstream capacity exists.
④ Approved "Construction Within Public R/W" documents required for SW culverts.

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: Billy J. Goolsby
TITLE: CE / Hydrology
DATE: 1/6/84

SIGNED: Thornton D. Schwenk
TITLE: SENIOR CIVIL ENGINEER
BOYLE ENGR. CORP.
DATE: 1-6-84

KASEMAN PRESBYTERIAN HOSPITAL PARKING LOT

for

DAY SURGERY ADDITIONS

DRAINAGE CALCULATIONS

January 26, 1984

(Revisions to May 1983 Drainage Report, approved 6-10-83)

I. TIME OF CONCENTRATION:

Use T_c = 10 minutes (minimum)

(Ref. May 1983 Drainage Report)

II. RAINFALL INTENSITY: (Ref. Plate 22.2 D-1, DPM)

i_{100} = 2.40 inches (100-year, 6-hour rainfall volume)

$I_{100} = i_{100}\ (6.84)\ T_c^{-0.51}$ (Plate 22.2 D-2, DPM))

$= 2.40\ (6.84)\ 10^{-0.51}$

= 5.07 inches/hr

$I_5 = 0.541\ I_{100}$ (Plate 22.2 D-1, DPM)

= 0.541 (5.07) = 2.74 inches/hr

III. UNDEVELOPED FLOWS AND VOLUMES:

A = 18.89 acres = 822,848 sq ft

C = 0.52

V_{100} = (2.40/12)(822,848)(0.52) = 85,576 cu ft

Q_{100} = 0.52 (5.07)(18.89) = 49.8 cfs

IV. DRAINAGE AREAS AND "C" FACTORS: (Plate 22.2 C-1, DPM)

SCS Soil Group: B

AREA NO.	AREA (acres)	UNDEVL.	PLANTED	IMPERVIOUS	PERCENT IMPERVIOUS	"C" FACTOR
1A*	1.96	1.96	Ø.	Ø.	Ø.	Ø.34
1B*	Ø.84		Ø.1Ø	Ø.74	88.1	Ø.84
POND* NO. 2	Ø.17	Ø.17	Ø.	Ø.	Ø.	Ø.34
2	3.64		Ø.89	2.75	75.6	Ø.74
3*	1.59		Ø.12	1.47	92.4	Ø.88
4	Ø.Ø8		Ø.Ø8	Ø.	Ø.	Ø.34
5*	2.77		Ø.81	1.96	7Ø.8	Ø.7Ø
6	Ø.99		Ø.41	Ø.58	58.6	Ø.62
7A*	5.42		Ø.36	5.Ø6	93.4	Ø.89
7B*	Ø.32		Ø.Ø8	Ø.24	75.Ø	Ø.74
8	Ø.36		Ø.33	Ø.Ø3	8.3	Ø.38
9	Ø.21		Ø.21	Ø.	Ø.	Ø.34
POND* NO. 1	Ø.54	Ø.54	Ø.	Ø.	Ø.	Ø.34
	18.89			12.83		

*NOTE: Change to May 1983 Report

Percent impervious = 12.83/18.89 x 1ØØ = 67.9

Average "C" Factor = Ø.68

V. DEVELOPED FLOWS AND VOLUMES:

$V_{1ØØ}$ = (2.4/12)(822,848)(Ø.68) = 111,9Ø7 cu ft

$Q_{1ØØ}$ = Ø.68(5.Ø7)(18.89 = 65.1 cfs

VI. REQUIRED POND VOLUMES:

Developed $V_{1ØØ}$ - Undeveloped $V_{1ØØ}$

111,9Ø7 - 85,576 = 26,331 cu ft

Capacity of Pond No. 1 = 28,ØØØ cu ft
(reduced from previous 31,968 cu ft)
Capacity of Pond No. 2 (new) = 8,9ØØ

Total pond volumes = 36,9ØØ > 26,331 O.K.

VII. POSITIVE DISCHARGE FROM DETENTION PONDS

Maximum flow discharged from a pond should not exceed Q_5 for those areas draining to that pond.

$Q_5 = CAI_5$ $\qquad$ $I_5 = 2.74$ in/hr

$V_{100} = CAi_{100}$ $\qquad$ $i_{100} = 2.40$ inches

A. POND NO. 1

AREA NO.	AREA (acres)	"C" FACTOR	Q_5 (cfs)	V_{100} (cu ft)
2	3.64	0.74	7.38	23,467
3	1.59	0.88	3.83	12,190
5	2.77	0.70	5.31	16,893
6	0.99	0.62	1.68	5,347
POND	0.50	0.34	0.47	1,481
	9.49		---	---
			18.67	59,378

Total 100-year, 6-hour volume draining to Pond No. 1 is 59,378 cu ft. This volume is not significantly different than the value of 59,277 cu ft calculated in the May 1983 Report.

B. POND NO. 2

AREA NO.	AREA (acres)	"C" FACTOR	Q_5 (cfs)	V_{100} (cu ft)
1B	0.84	0.84	1.93	6,147
7B	0.32	0.74	0.65	2,063
POND	0.17	0.34	0.16	504
	1.33		---	---
			2.74	8,714

Total 100-year, 6-hour volume draining to Pond No. 2 is 8,714 cu ft.

VIII. POND DISCHARGE PIPES

A. POND NO. 1

Invert elev. of inlet at pond bottom	=	5340.00
Flow line in street	=	5332.62
8-in curb height	=	0.67

		5331.95
Fall of sidewalk culvert = 12' x 0.02	=	.24

Invert elev. of outlet into culvert	=	5332.19

Slope = (40.00 - 32.19)/190' = 0.0411 ft/ft

Try 6-in diam. discharge pipe:

A = $(0.5)^2/4$ = 0.196 sq ft

Check Manning's equation for pipe flowing full:

Q = $(0.463/0.011)(0.5)^{8/3}\ (0.0411)^{1/2}$ = 1.34 cfs

Check inlet with orifice equation:

Q = CA $(2gh)^{1/2}$

C = 0.616 (Bratter/King, 6th Ed., Table 4.5)

h = 18" pond depth = 1.5'

Q = 0.616 $(0.196)(2x32.2x1.5)^{1/2}$ = 1.19 cfs < 18.67
Orifice equation controls

Average time to discharge 59,378 cu ft from 100-yr, 6-hr storm:

For h = 1.5': 59,378/(1.19x3600) = 13.9 hr
For h = 0.5': 59,378/(0.69x3600) = 23.9 hr

Avg. = (13.9 + 23.9)/2 = 18.9 < 24 hrs

B. POND NO. 2

Invert elev. of inlet at pond bottom	=	5334.50
Flow line in street	=	5331.45
8-in curb height	=	0.67

		5330.78
Fall of sidewalk culvert = 12' x 0.02	=	.24

Invert elev. of outlet into culvert	=	5331.02

Slope = (34.50 - 31.45)/12' = 0.254 ft/ft

Try 6-in diam. discharge pipe:

A = $(0.5)^2/4$ = 0.196 sq ft

Check Manning's equation for pipe flowing full:

Q = $(0.463/0.011)(0.5)^{8/3}\ (0.254)^{1/2}$ = 3.34 cfs

Check inlet with orifice equation:

Q = CA $(2gh)^{1/2}$

C = 0.616 (Bratter/King, 6th Ed., Table 4.5)

h = 18" pond depth = 1.5'

$Q = 0.616\ (0.196)(2x32.2x1.5)^{1/2} = 1.19$ cfs < 2.74
Orifice equation controls

Average time to discharge 8,714 cu ft from 100-yr, 6-hr storm:

For h = 1.5': 8,714/(1.19x3600) = 2.0 hr
For h = 0.5': 8,714/(0.69x3600) = 3.5 hr

Avg. = (2.0 + 3.5)/2 = 2.7 < 24 hrs

IX. CAPACITY OF STANDARD CITY SIDEWALK CULVERT

GIVEN: M, width of opening = 12 in = 1.0 ft
S, slope = 1/4 in/ft = 0.0208 ft/ft
D, depth of flow = 3 in = 0.25 ft
n, Manning's coefficient = 0.013

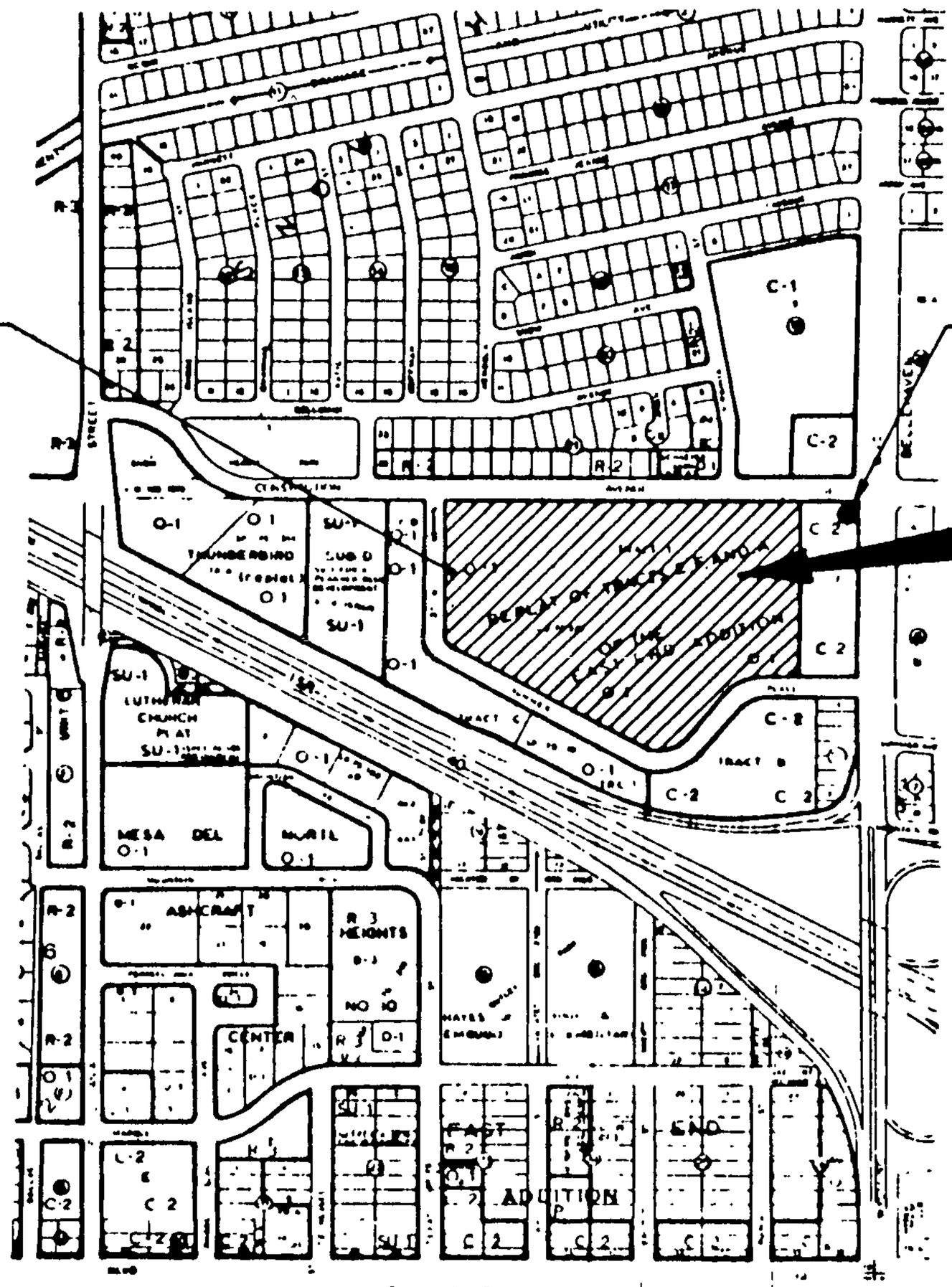
$R = A/P = (1.0)(0.25)/[2(0.25) + 1.0] = 0.167$

$$V = \frac{1.486}{n} R^{2/3} S^{1/2}$$

$$= \frac{1.486}{0.013} (0.167)^{2/3} \quad (0.0208)^{1/2}$$

= 4.99 ft/sec

Q = VA = 4.99(0.25) = 1.24 cfs > 1.19 cfs from 6" pipes



VICINITY MAP
1" = 750'

REGISTERED PROFESSIONAL ENGINEER
No. 4739
NEW MEXICO
THORNTON D. SCHWENK
1-24-84

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. 84-1.

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.

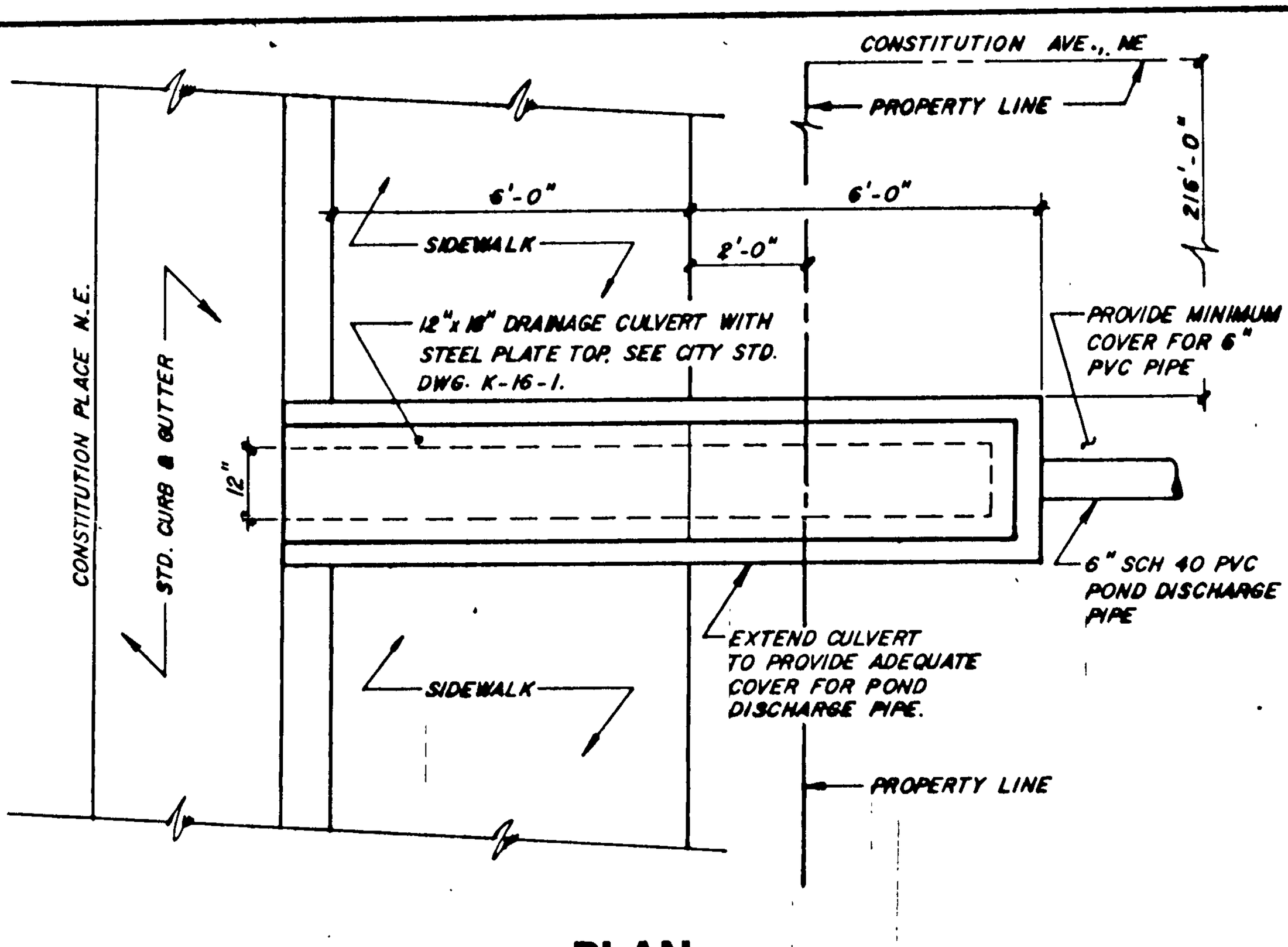
S01-238-60

Boyle Engineering Corporation
consulting engineers / architects

D-15

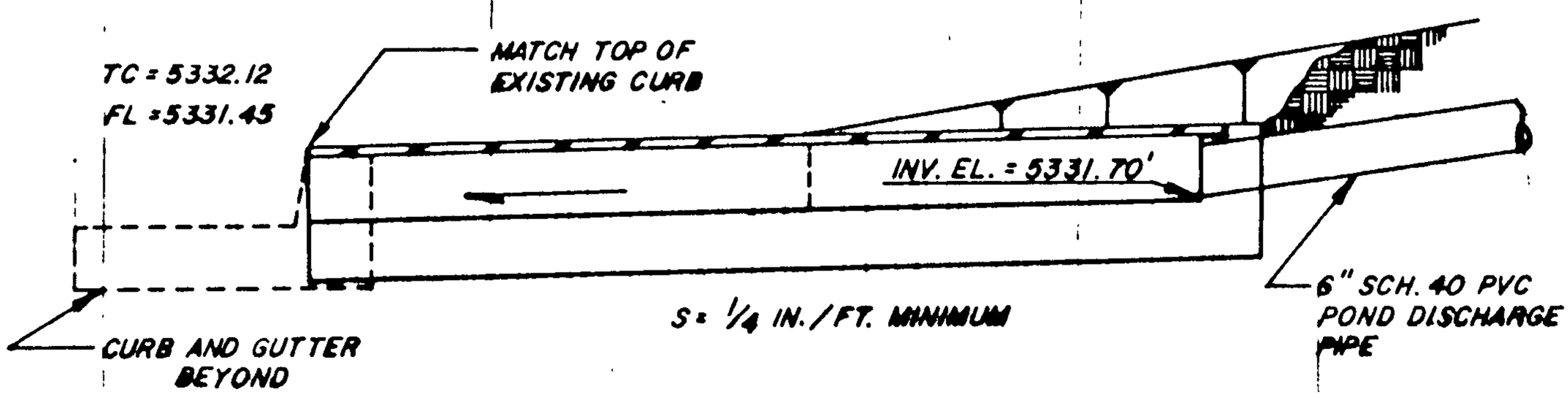
CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE DRAINAGE FOR KASEMAN PRESBYTERIAN HOSPITAL DAY SURGERY UNITS	
A.C.E. / DESIGN	[illegible]	25 Jan 84		
INSPECTOR			PERMIT NO.	MAP NO. J - 19
A.C.E. / FIELD			SHT. NO. 1 of 2	



PLAN

NTS



SECTION

NTS

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
No. 4739
THORNTON D. SCHWENK

S01-238-60

Boyle Engineering Corporation
consulting engineers / architects

CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE DRAINAGE FOR KASEMAN PRESBYTERIAN HOSPITAL DAY SURGERY UNITS	
A.C.E. / DESIGN	G Kulich	25 Jan 84		
INSPECTOR			PERMIT NO.	MAP NO. J - 19
A.C.E. / FIELD			SHT. NO. 2 of 2	

BETZER, ROYBAL & HILL P.C.
ATTORNEYS AT LAW

201 Third Street, N.W., Suite 2075
Albuquerque, New Mexico 87102
Phone: (505) 768-7333
Fax: (505) 768-7322

~~Sil Community~~
~~Health Services~~
file in the Drainage Report for this property

COVER PAGE

TO: Richard Duorte

DATE: December 6, 2000

FACSIMILE NO.: 924-3864

FROM: Jay D. Hill

OPERATOR: RoseAnn Walsh

TOTAL NUMBER OF PAGES, INCLUDING THIS PAGE: 6
If you do not receive any of these pages, please call the operator at **768-7295**.

MESSAGE:

IMPORTANT!

THE INFORMATION CONTAINED IN THIS FACSIMILE MESSAGE IS CONFIDENTIAL AND INTENDED SOLELY FOR THE USE OF THE INDIVIDUAL OR ENTITY NAMES ABOVE. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, OR THE EMPLOYEE OR AGENT RESPONSIBLE FOR DELIVERING IT TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION, COPYING, OR UNAUTHORIZED USE OF THIS COMMUNICATION IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS FACSIMILE IN ERROR, PLEASE NOTIFY THE SENDER IMMEDIATELY BY TELEPHONE, AND RETURN THE FACSIMILE TO THE SENDER AT THE ABOVE ADDRESS VIA THE UNITED STATES POSTAL SERVICE. THANK YOU

87127408

DECLARATION OF PRIVATE DRAINAGE EASEMENT AND RECIPROCAL ACCESS EASEMENT

THIS DECLARATION of private drainage easement and reciprocal access easement is made and executed this 2nd day of ~~August~~ July, 1987 by SOUTHWEST COMMUNITY HEALTH SERVICES, a New Mexico non-profit corporation (hereinafter referred to as the "Declarant").

WHEREAS, the Declarant owns fee title to two adjacent tracts of real estate within the City of Albuquerque, New Mexico, hereinafter referred to as the "Hospital Tract" (described in Exhibit "A" attached hereto) and the "Office Tract" (described in Exhibit "B" attached hereto); and

WHEREAS, the Declarant desires to develop and use the Hospital Tract and the Office Tract as an integrated medical complex; and

WHEREAS, to facilitate the use and development of the Hospital Tract and Office Tract as an integrated medical complex, the Declarant desires to create a private drainage easement and reciprocal access easement between the two tracts.

NOW, THEREFORE, the Declarant hereby declares, grants and establishes a private drainage easement and reciprocal access easement as follows:

1. A private surface drainage easement shall extend over and across the surface of that portion of the asphalt paved areas on the Hospital Tract northwest of "Basin 'C'" (as Basin "C" is shown on the Grading and Drainage Plan attached hereto as Exhibit "C"). Said asphalted areas shall be hereinafter referred to as the "Drainage Easement." The Drainage Easement may be used for the drainage of storm and drainage waters originating in "Basin 'C'", but not from any other areas within the Office Tract. All real estate within the Drainage Easement which is no longer asphalt paved after construction of a building, structure or landscaping in the Drainage Easement shall be released from the terms of this Drainage Easement for so long as it remains without asphalt paving.

2. A private reciprocal access easement shall extend over and across the surface of all the asphalt paved areas accessible to and intended for general vehicular ingress and

egress in the Hospital Tract and the Office Tract. Said asphalt areas shall hereinafter be referred to as the "Access Easement." The Access Easement shall be used for vehicular and pedestrian access for the benefit of only those entities entitled to use the Hospital Tract or the Office Tract and their employees, agents and invitees. All real estate which is no longer asphalt paved upon construction of a building, other structure or landscaping in the Access Easement shall be released from the terms of the Access Easement for so long as it remains without asphalt paving.

3. The owner of the Hospital Tract, as to the Drainage Easement and that portion of the Access Easement in the Hospital Tract, and the owner of the Office Tract, as to that portion of the Access Easement in the Office Tract, may use the Drainage Easement and Access Easement for any purpose which does not interfere with the drainage and reciprocal access rights granted hereunder.

4. The owner of the real estate comprising the Drainage Easement shall maintain it at such owner's sole cost and expense. The owner of the real estate on which each portion of the Access Easement is located shall maintain the portion of the Access Easement located on its real estate at its sole cost and expense. Both the Drainage Easement and the Access Easement shall be maintained in compliance with any ordinances or regulations of any governmental authority applicable to them.

5. The Drainage Easement and the Access Easement shall be perpetual unless they shall no longer be necessary for development and use of the Hosptial Tract and the Office Tract as an integrated medical complex as determiend by the Declarant and the City of Albuquerque Development Review Board of other appropriate City of Albuquerque administrative authority. Upon a determination of non-necessity as described in the preceeding sentence, the Drainage Easement and/or the Access Easement and the rights therein granted in this Declaration shall cease and revert back to the Declarant, or its successors and assigns as to each of the Hospital Tract and the Office Tract.

6. This Declaration shall run with the land and shall be binding upon the Declarant, its successors-in-interest, and its assigns as to the Hospital Tract and the Office Tract.

IN WITNESS WHEREOF, the Declarant sets its hand on the date first written above.

DECLARANT:

SOUTHWEST COMMUNITY HEALTH SERVICES,
a New Mexico non-profit corporation,

By Richard Barr
Richard Barr, President

00799

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing document was acknowledged before me this 2nd day of ~~August,~~ 1997 by Richard Burr, President of Southwest Community Health Services, a New Mexico non-profit corporation, on behalf of said corporation.

Patricia Burnworth
NOTARY PUBLIC

My Commission Expires:
5-24-99

EXHIBIT "B"

OFFICE TRACT

90-801

A CERTAIN PARCEL OF LAND BEING IDENTIFIED AS AN EASTERLY PORTION OF TRACT "A" OF THE REPLAT OF A PORTION OF THE EAST END ADDITION, ALBUQUERQUE, NEW MEXICO, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT OF SAID ADDITION FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO, ON FEBRUARY 28, 1964 AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING, FOR A TIE, AT THE NORTHEAST CORNER OF SAID TRACT "A" OF SAID EAST END ADDITION, AND BEING FURTHER IDENTIFIED AS THE POINT OF INTERSECTION OF THE SOUTHERLY RIGHT-OF-WAY LINE OF CONSTITUTION AVE., N.E. WITH THE WESTERLY RIGHT OF WAY LINE OF WYOMING BLVD., N.E. THENCE RUNNING S 00 47' 00" E, 200.00 FEET DISTANCE ALONG SAID WESTERLY R/W LINE OF WYOMING BLVD., N.E. TO THE NORTHEAST CORNER AND REAL PLACE OF BEGINNING OF THE PARCEL HEREIN DESCRIBED; THENCE, S 00 47' 00" E., 250.24 FEET DISTANCE CONTINUING ALONG SAID WESTERLY W LINE OF WYOMING BLVD., N.E. TO THE SOUTHEAST CORNER OF THE PARCEL HEREIN DESCRIBED; THENCE, S 89 19' 00" W, 200.00 FEET DISTANCE TO THE SOUTHWEST CORNER OF THE PARCEL HEREIN DESCRIBED; THENCE, N 00 47' 00", 250.80 FEET DISTANCE TO THE NORTHWEST CORNER OF THE PARCEL HEREIN DESCRIBED; THENCE, N 89 28' 40" E, 200.00 FEET DISTANCE TO THE NORTHEAST CORNER AND PLACE OF BEGINNING OF THE PARCEL HEREIN DESCRIBED AND CONTAINING 50,104 SQUARE FEET (1.150 ACRE) MORE OR LESS.

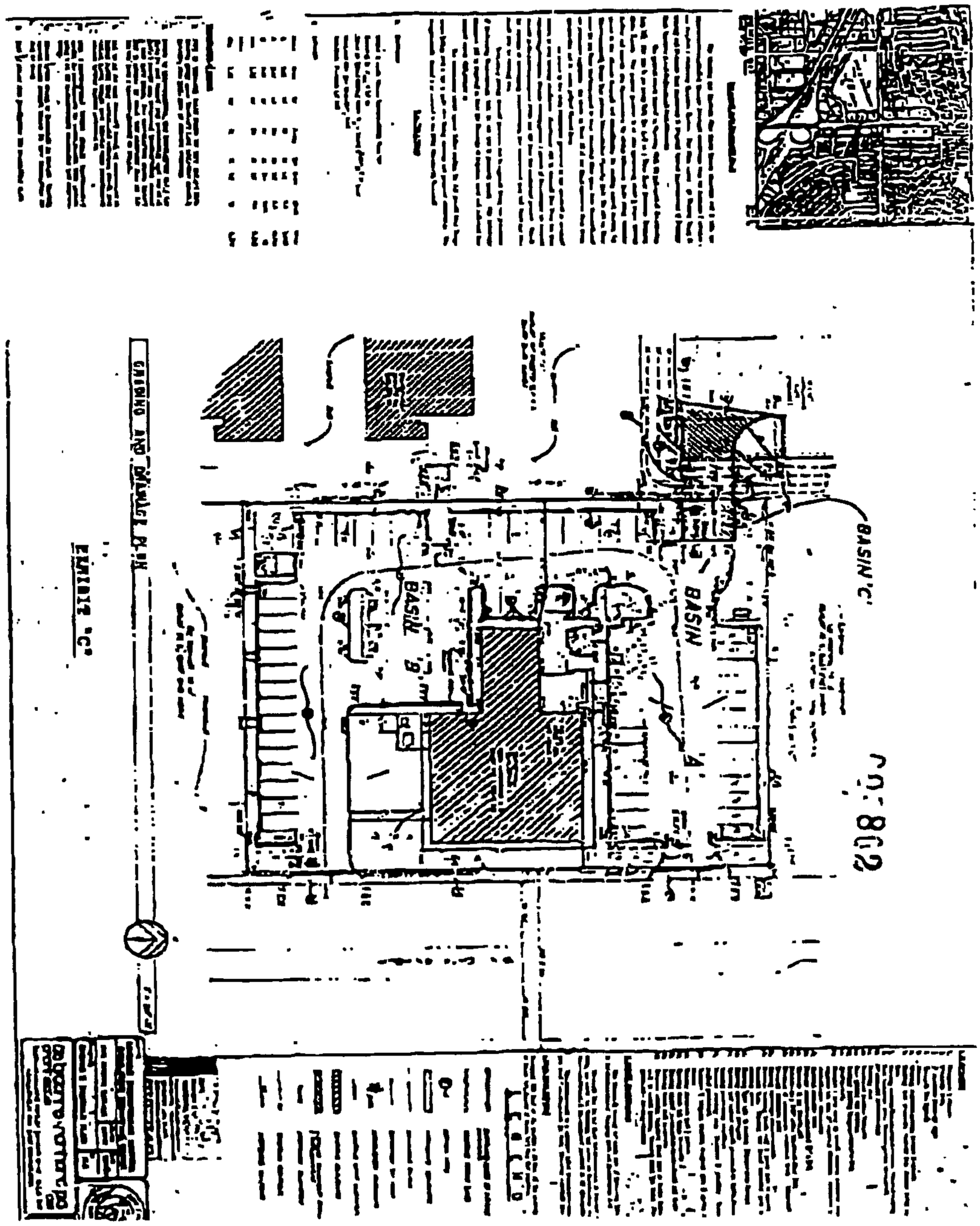
STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD

97 DEC 18 PM 3: 59

BK M5 569A PG 797-802

GLADYS M. DAVIS
CO. CLERK & RECORDER

DEPUTY



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CR MODICT REFERENCE: TIIE-19 OPTIONS 12 06 00 PAVID MOORHD REZAA

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Kaseman Hospital ZONE ATLAS/DRNG. FILE #: J19/D4

LEGAL DESCRIPTION: Tract 1, Replat of Tract E, F, A - East End Addition

CITY ADDRESS: 8300 Constitution

ENGINEERING FIRM: Boyle CONTACT: _____

ADDRESS: _____ PHONE: _____

OWNER: Kaseman CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: Stevens Mallory Pearl & Campbell CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: Kembke CONTACT: _____

ADDRESS: _____ PHONE: _____

PRE-DESIGN MEETING:

____ YES

____ NO

____ COPY OF CONFERENCE RECAP SHEET PROVIDED

RECEIVED
APR 25 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

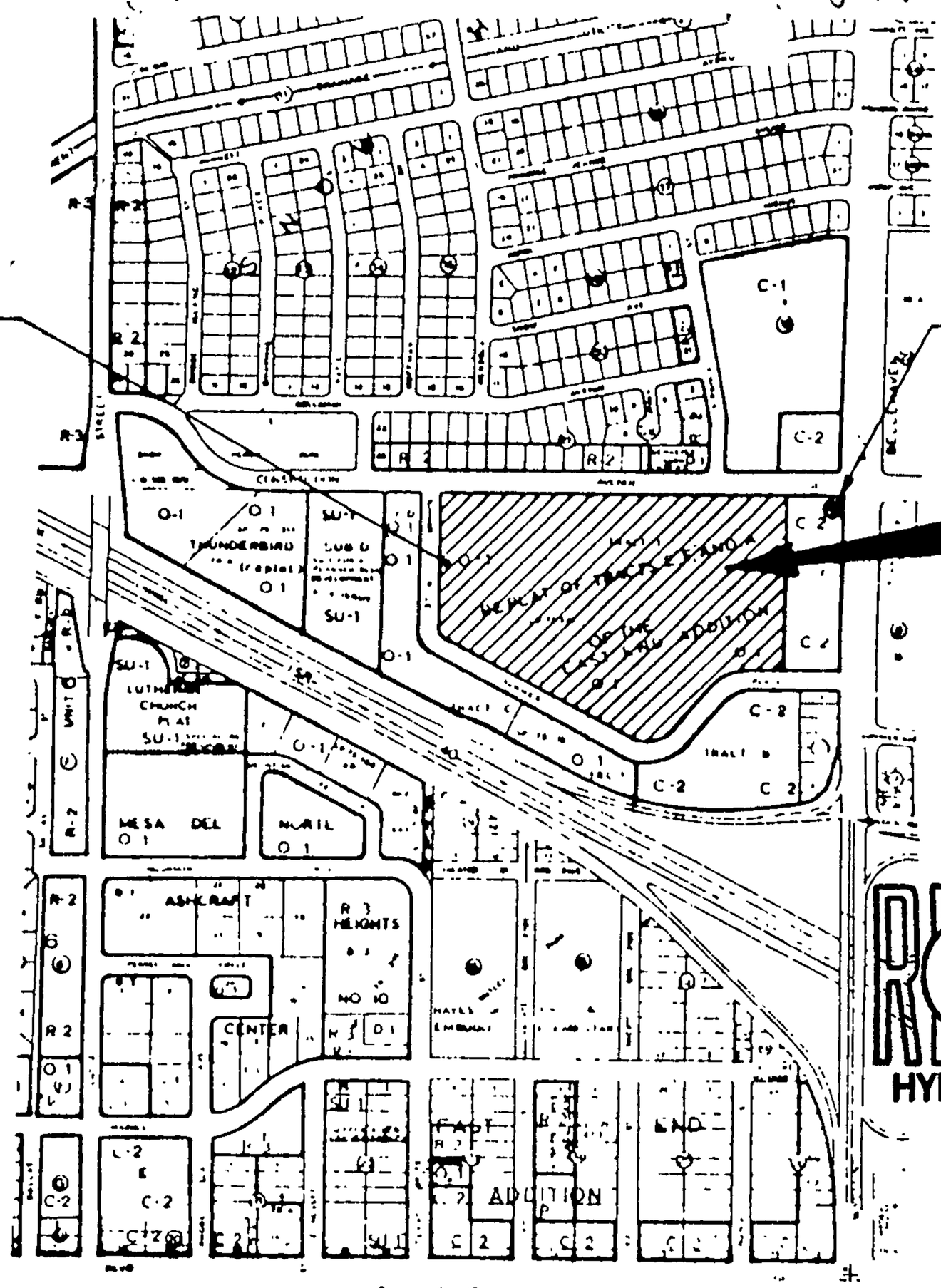
____ OTHER _____ (SPECIFY)

DATE SUBMITTED: 4/25/85

BY: [signature]

J19-Z4

Jerry L.



RECEIVED
MAR 01 1985
HYDROLOGY SECTION

J·19·Z

VICINITY MAP
1" = 750'

REGISTERED PROFESSIONAL ENGINEER
No. 4739
NEW MEXICO
THORNTON D. SCHWENK
1-29-84

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. 84-1.

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.

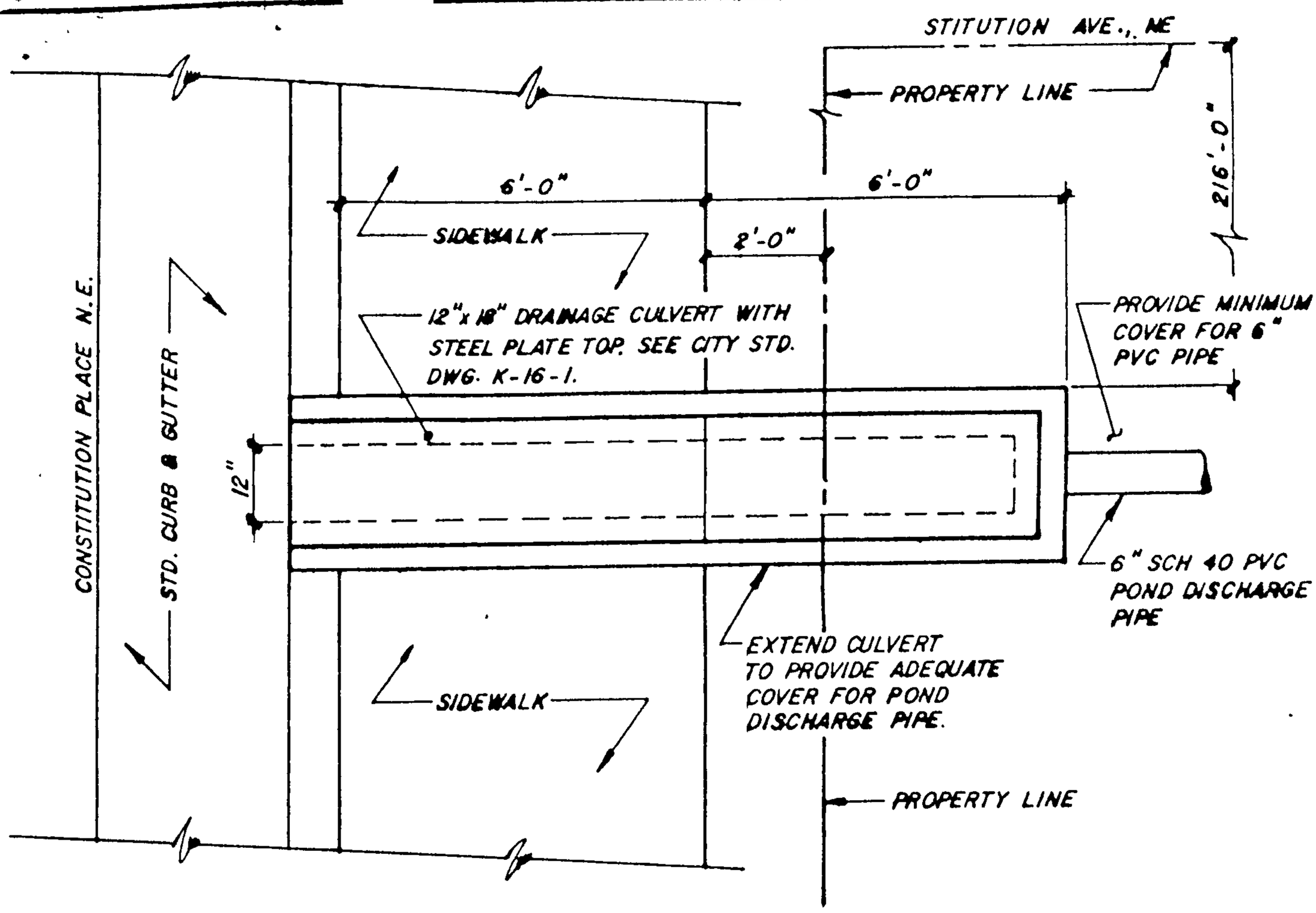
S01-238-60

Universal Const 0-15

Bowlin Engineering Corporation
consulting engineers / architects

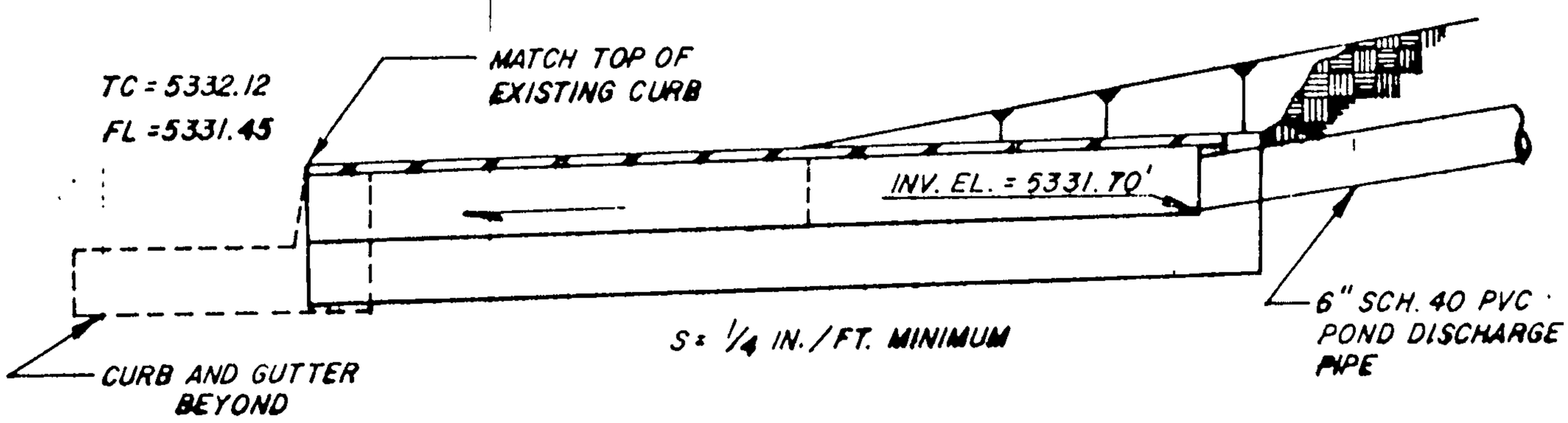
CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE DRAINAGE FOR KASEMAN PRESBYTERIAN HOSPITAL DAY SURGERY UNITS
A.C.E. / DESIGN	[illegible]	25 Jan 84	
INSPECTOR	Thomas Cruz	2/28/85	PERMIT NO. 18576
A.C.E. / FIELD	W.F. McNamara	3/1/85	SHT. NO. 1 of 2 — MAP NO. J - 19



PLAN

NTS



SECTION

NTS

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
No. 4739
THORNTON D. SCHWENK

S01-238-60

Boyle Engineering Corporation
consulting engineers / architects

CITY OF ALBUQUERQUE

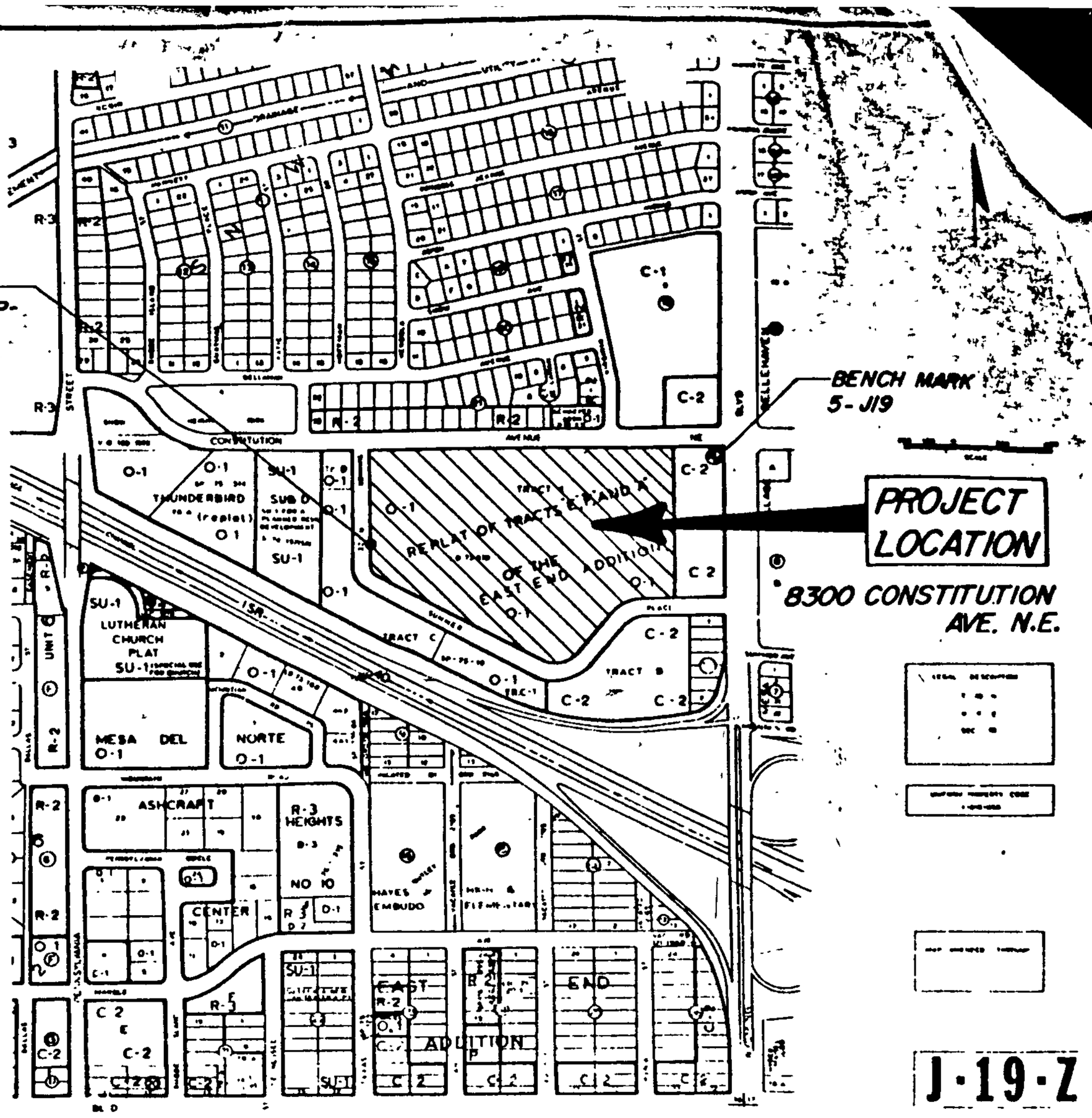
APPROVALS	ENGINEER	DATE
A.C.E. / DESIGN	[illegible]	25 Jan 84
INSPECTOR	[illegible]	2/28/85
A.C.E. / FIELD	W. F. McNamara	3/1/85

TITLE **DRAINAGE FOR KASEMAN PRESBYTERIAN HOSPITAL DAY SURGERY UNITS**

PERMIT NO.

SHT. NO. 2 of 2

MAP NO. **J - 19**



J·19·Z

VICINITY MAP

1"=750'

FRANK D. LOVELADY
NEW MEXICO
REGISTERED PROFESSIONAL ENGINEER
May 11, 1982

J19-D4.

NOTICE TO CONTRACTOR

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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.

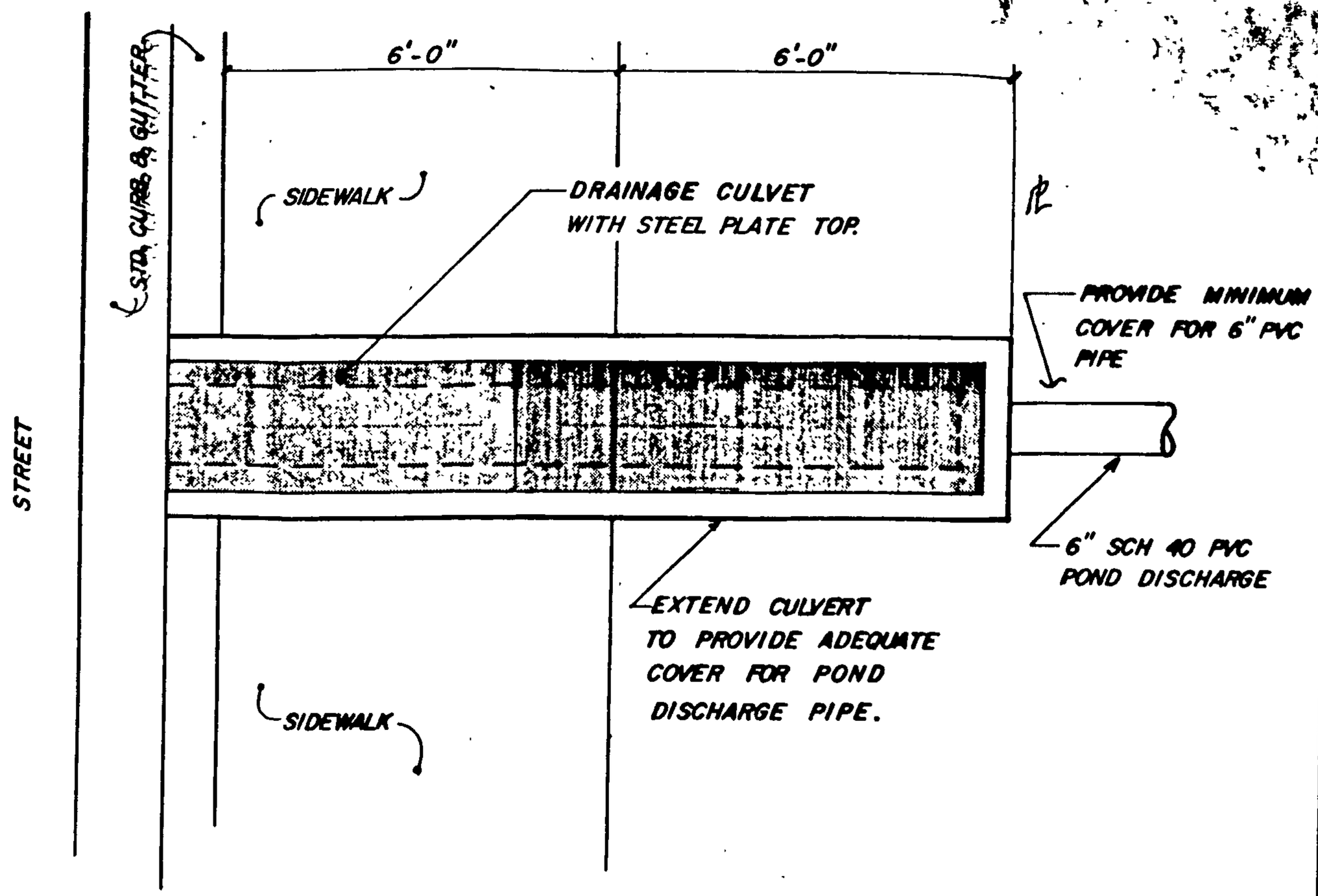
5. Backfill compaction shall be according to Arterial street use.

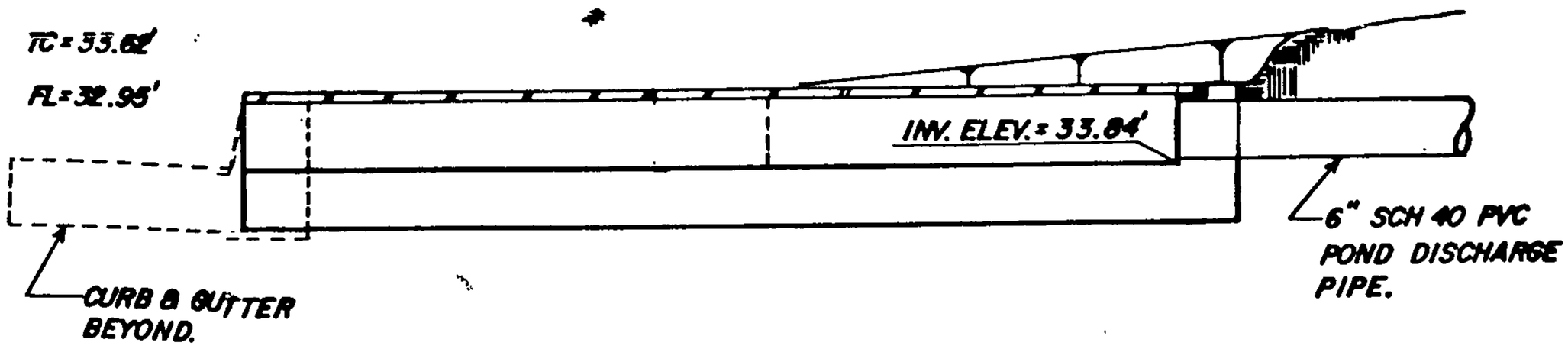
Universal Contractors Permit #15188 C-55

S01-227-60

CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE
C.E./DESIGN	[illegible]	13 May 83	ANNA KASEMAN HOSPITAL PSYCHIATRIC UNIT DRAINAGE
INSPECTOR	[illegible]	14 Sept 84	PERMIT NO. 15188 / MAP NO. J-19
C.E./FIELD	[illegible]	9/18/84	SHEET 1 OF 2





NTS

FRANK D. LOVELADY
NEW MEXICO
6512
REGISTERED PROFESSIONAL ENGINEER

UNIVERSAL CONSTRUCTORS

S01-227-60

CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE
A.C.E. / DESIGN		13 May 83	ANNA KASEMAN HOSPITAL PSYCHIATRIC UNIT DRAINAGE
INSPECTOR		14 Sept 84	PERMIT NO. 15188
A.C.E. / FIELD		9/18/84	SHEET NO. 2 OF 2 — MAP NO.

DENNEY-GROSS & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0696

December 8, 1981

Mr. Fred Aguirre
Hydrology Department
City of Albuquerque
123 Central Avenue N.W.
Albuquerque, NM 87102

Re: Kaseman Medical Plaza
DGA Job No. 444.12

Dear Mr. Aguirre:

The drainage improvements on Lot 6 of subject project basically comply with the approved drainage report and grading plan, to the best of our knowledge.

When improvements are complete on the remainder of the subdivision we will send you a final letter indicating any changes performed in the field.

Very truly yours,

Joe Allen

Joseph M. Allen

JMA/am

STEVENS, MALLORY, PEARL & CAMPBELL
ARCHITECTS
115 AMHERST DRIVE, S.E.
ALBUQUERQUE, NEW MEXICO
505 255-8668
87106

June 26, 1978

Mr. Bruno Conegliano
City of Albuquerque
City Engineer's Office
P. O. Box 1293
Albuquerque, New Mexico 87103

Subject: Anna Kaseman Hospital
Albuquerque, New Mexico
Storm Drainage Study

Dear Mr. Conegliano:

Transmitted herewith are two copies of a storm drainage study relative to development of Anna Kaseman Hospital, Albuquerque, New Mexico.

We are submitting this report for your review and approval prior to submitting plans to the Building Inspection Department for a building permit.

Sincerely,

Robert A. Moraga

RAM:dd

Encl.

DONALD P. STEVENS A.I.A.
ROBERT G. MALLORY A.I A.
GEORGE CLAYTON PEARL A I A
C ROBERT CAMPBELL A.I.A.

Boyle Engineering Corporation

consulting engineers

1721 Girard Boulevard, N.E.
Albuquerque, New Mexico 87106

505 / 266-7789

April 28, 1978

Bruno Conegliano
Assistant City Engineer
CITY OF ALBUQUERQUE
P.O. Box 1293
Albuquerque, New Mexico 87103

Anna Kaseman Hospital

This firm has been hired to prepare a drainage plan for the proposed expansion of Anna Kaseman Hospital and associated facilities. This expansion will involve additional parking areas as well as the construction of new hospital facilities on existing parking areas. The project will therefore include both the addition of impermeable surfaces and the re-use of existing impermeable surfaces with little or no change in the coefficient of run-off. We hereby request your approval for one of the following Methodologies in preparing this drainage report:

1. Provide transporation for storm run-off to the existing drainage channel located within the right-of-way of Interstate 40 or associated inlet facilities.

2. Provide ponding to maintain existing partially developed conditions for both rate and volume of run-off.

3. Provide ponding which will maintain undeveloped conditions for all areas involved in the proposed expansion, including those parking areas that will be re-used for construction of the new hospital facilities.

4. Provide ponding which will maintain undeveloped conditions for the entire property.

We recommend method #2 in accordance with Section 3-B, Par. 2 of Drainage Resolution 1972-2, "Compliance with the provisions of Paragraph 3 (B) shall be waived - where the municipal corporation certifies that the pattern and density of development existing on July 15, 1972 within the drainage area being considered has created a need for municipal storm sewer facilities." The existing facilities were constructed prior to July 15, 1972. Ponding of the incremental run-off will comply with the intent of Paragraph B.

Method #1, involving the disposal of run-off in the existing storm drain,

would require the acquisition of costly right-of-way and high initial construction costs. However, if this is, in your opinion, a possibility, we would like to retain this option for use later should the hospital require further expansion.

Methods #3 and 4 will require ponding volumes of 33,320 $ft.^3$ and 68,862 $ft.^3$ respectively. Neither of these options are required to comply with paragraph B.

Please indicate the methodology that you feel best suits the requirements of Resolution 2 in the area provided below and return a copy to this office.

Your prompt assistance in this matter is appreciated.

BOYLE ENGINEERING CORPORATION

Victor J Chavez

Victor J. Chavez, PE

Dear Vic

Ponding requirements are established on the basis of existing (undeveloped or developed) conditions

Bruce Campbell ACE	5-3-78	# 2
City Drainage Engineer	Date	Approved Method

VJC/mmr

CHECK LIST

1 - Flooding potential - adjacent water courses

no Is property located in the flood plain?

If so is the finished floor above the 100 yrs. flood level?

no Is property adjacent to a natural or artificial water course?

If so what are the specific AMAFCA or City requirements?

no Are drainage R.O.W. or easements shown on, or in the proximity of property? If so are there drainage problems?

2 - Relation of property to surroundings

no Per topo map, does property intercept other drainage upstream?

If so how is runoff conveyed across property?

no May there be erosion associated with offsite runoff conveyance?

no May erosion or siltation result from proposed construction activities?

no Does development block drainage from adjacent property?

3.- Site grading

no. Does site plan show contours before development (extending a minimum of 25 ft. beyond property lines)?

yes Does site plan show proposed grading with adequate swale definition to convey water to ponds?

yes Is all runoff conveyed to ponding areas before it overflows to public facilities?

no Does the proposed grading plan indicate that under cutting or backfilling adjacent to property lines may require retention walls?

Is there continuity between proposed new contours on site match

old contours offsite?

Is elevation of property line at least 0.3 ft. above top of curb?

4 - Storm water retention

yes Is ponding volume adequate (supply detailed completion)?

Are ponds balanced with areas they drain (can area draining to each pond to easily identified and will actually water flow there)? The plot plan must outline each drainage area.

yes Can pond volume be computed and verified?

yes Are ponds practical, can they be built as shown?

5 - Safety

Do the drainage provisions constitute an attractive nuisance, or safety hazard?

If the pond depth is greater than 18" are safety provisions supplied? (Minimum 3.0 ft. high chain link fence or similiar physical barrier of ponding areas are adjacent to public R.O.W.?

In general ponds of depth greater than 18" will not be accepted for both safety consideration and for long term effectiveness of the facilities. In those cases where limited space is available for ponding, the use of gravel pits under the parking areas is suggested. It must be pointed out that maintenance and effectivene of these facilities is necessary and is the responisbility of the owner. Existing or planned City facilities (streets, channels, storm sewers) can accomodate the natural runoff volumes. Greater discharges would cause flooding downstream and need to be limited at the source.

by Bruno

STANDARD REQUIREMENTS FOR DRAINAGE PLANS

PURPOSE: The increasing volume of drainage plans submitted to this office makes it mandatory that such plans be standardized as much as possible in order to expedite reviews. This standardization is as much to the advantage of the developer and engineer as it is to the Hydrology Section which enforces the AMAFCA RES. 72-2. For parcels of land less than 20,000 sq. ft. in surface area no formal drainage report is required; the construction plans need only to include the standard form attached herein and the site drainage plan. Developers for larger parcels of land will have to submit a formal drainage report as specified in the Resolution.

check list ?

RUNOFF PONDING: In most instances on site ponding is mandatory, with dispersal in the ground of the excess runoff arising from newly created impervious surfaces. The only exception allowed, is for those properties adjacent to a (B) deversion channel which was designed for higher standard than 100 years frequency storm (existing conditions). For detailed computations of the runoff before and after development the assumed runoff coefficient recommended are C = 0.4 for (C) undeveloped, landscaped or similar open areas and C = 0.9 for all other impervious surfaces, including areas in southwesteren type landscaping with underlying polyethilene film and gravel covered parking areas where vehicular traffic will compact the soil and render it impervious. Due to the inadequacy of the existing drainage fecilities in the valley area and to the limited capabilities of the City for providing relief, ponding requirements in the valley are higher than elsewhere.

(A)

Valley

COMPUTATION OF VOLUME OF RETENTION:

Valley Area = $1.0 \times \frac{2.2''}{12''} \times \text{Area (ft.}^2\text{)} = 0.18 \times A$?

East and West Mesa = $(0.9 - 0.4) \times \frac{2.4''}{12''} \times \text{Area (ft.}^2\text{)} = 0.1 \times A$

In order to fecilitate the design of drainage facilities, a checklist that will be followed in the review process is listed below ~~checklist~~.