DRAINAGE REPORT FOR

INDUSTRIAL ELECTRIC EQUIPMENT SERVICE
501 KINLEY AVENUE NE
ALBUQUERQUE, NEW MEXICO

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Albuquerque, New Mexico

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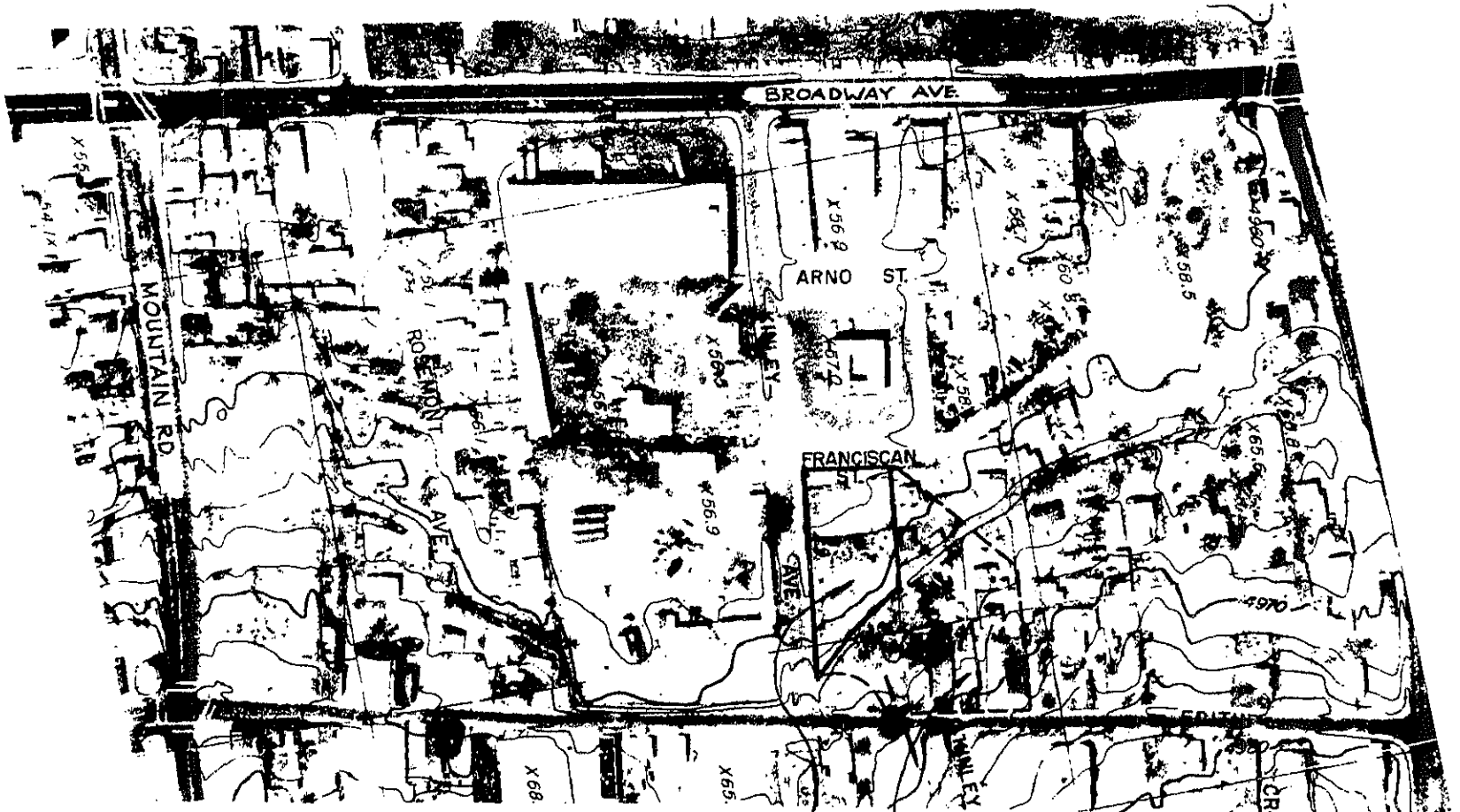
GRSL

Foundation Investigation–Hydrologic Studies
Land Surveys–Structural Analysis–Linear Development

DRAINAGE REPORT
FOR 501 KINLEY, N.E.



1" = 200'
2' CONTOURS

CITY

DRAINAGE REPORT

FOR

INDUSTRIAL ELECTRIC EQUIPMENT SERVICE

501 KINLEY AVENUE NE

ALBUQUERQUE, NEW MEXICO

A. GENERAL

This drainage plan has been prepared by Geotechnical Research & Services, Ltd., for the Industrial Electric Equipment Service. A previous drainage report of August 1977 concerning the westerly 0.232 acres of this property is being revised in this report.

The property described in this report is located at the corner of Franciscan and Kinley Avenues, Block 2 of the Springer Transfer Company's addition No. 1. More particularly, the property described consists of the easterly portion of Tract 1F, Block 2 and that portion of the Barelas Ditch situate within Block 2 vacated by District Court Cause No. 14157, Sub-No. 1385.

A fifty year frequency occurrence interval storm was used in the computations which are included in this report to determine the peak rate of storm water runoff from applicable drainage areas.

B. EXISTING SITE CONDITIONS

The 0.674 acre site is presently partially developed with 0.232 acres paved or roofed. The improvements presently consist of a

40' x 77' building and approximately 6000 square feet of asphaltic concrete parking area.

The unimproved 0.442 acres to the east of the existing building will be completely developed with asphalt paving and roofed structures.

The topography of the entire 0.674 acre site consists of extremely mild terrain (2%) which generally slopes from the northeast to the southwest. The Barelas Ditch which at one time was used to provide drainage for this area has been vacated and the ditch has been regraded to the approximate existing topography. It is assumed that the purpose for vacating the Barelas Ditch (District Court Cause Number 14157, Sub-No. 1385, Dated 5-27-77) was its discontinued useful purpose.

The existing drainage pattern is primarily from the north and east. Flow from the site is presently intercepted by curbed and guttered streets on the south and west, and the area to the north of Sprunk Street and east of Edith Boulevard is not considered as contributory in storm water runoff due to walls, curbs, and street grades.

C. RECOMMENDATIONS

1. The triangular pond proposed in the August 1977 report will be rehabilitated to detain the drainage from the westerly 0.23 acres of the site, with positive discharge to the street.

2. It is proposed to construct other detention areas for the easterly 0.44 acres. These areas will also have positive drainage to the street by 4" pipes through the curb.
3. Contributing drainage from the 1.50 acres to the northeast can be diverted from the site by paved swales along the north and east property lines, if required.

By DLL Date 5/20/81 Subject Industrial Electric Drainage Sheet No. 1/5

CRITERIA: Runoff not to increase due to developed conditions — 50 year frequency storm

Peak runoff rate to be determined by Rational Formula - $Q = CIA$

C = Runoff Coefficient = 1.0 for Pavement & Roofs in Valley
= 0.40 for Bare Ground

I = Rainfall Intensity - See Sheet 2/5

A = Area under consideration, in Acres

Area I: Westerly 0.23 acres, roofed & paved

Original condition $C = 0.40$, $A = 10100$ sq. ft. $= 0.23 A_c$

T_c = Time of concentration for Length = 130'
& Elev. Diff. = 2.5'

From Kirpich Nomograph (See Sheet 3/)

$T_c < 10$ minutes, so use $T_c = 10$

$I_{50} = 5.4$ inches per hour

$Q = 0.40 \times 4.8 \times 0.230 = 0.44$ cfs

From Hydrograph (See Sheet 3/5) $T/T_p = 2.67$

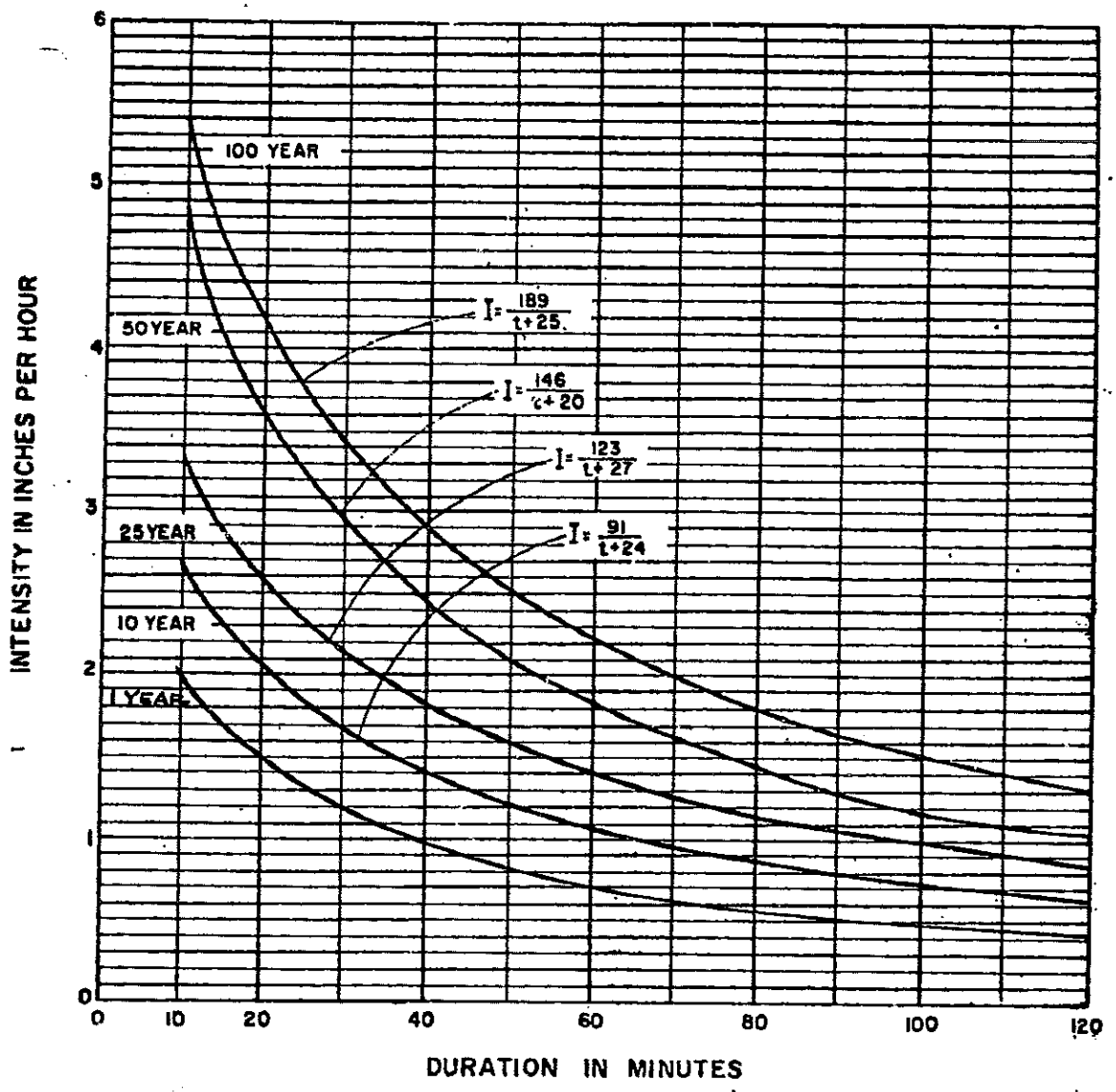
$T_c = T_p$ = Time to peak $= 10 \times 2.67 = 27$ minutes

Runoff Volume $= 0.44 \text{ cfs} \times 27/2 \times 60 = 356$ cu. ft.

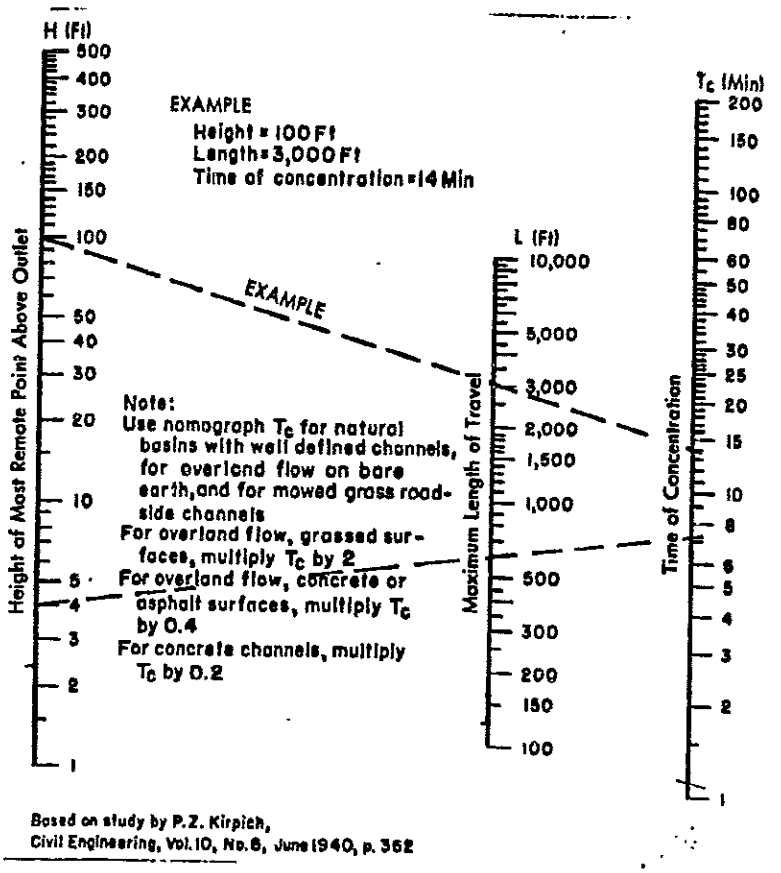
Developed Condition $C = 1.0$

with 95% Paved or Covered = 9500 s.f.
& 5% Pond Area = 600 s.f.

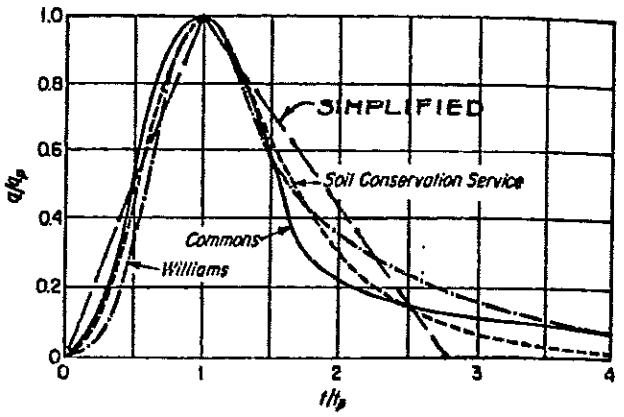
Composite $C = .95 \times 1.0 + 0.05 \times 0 = 0.95$

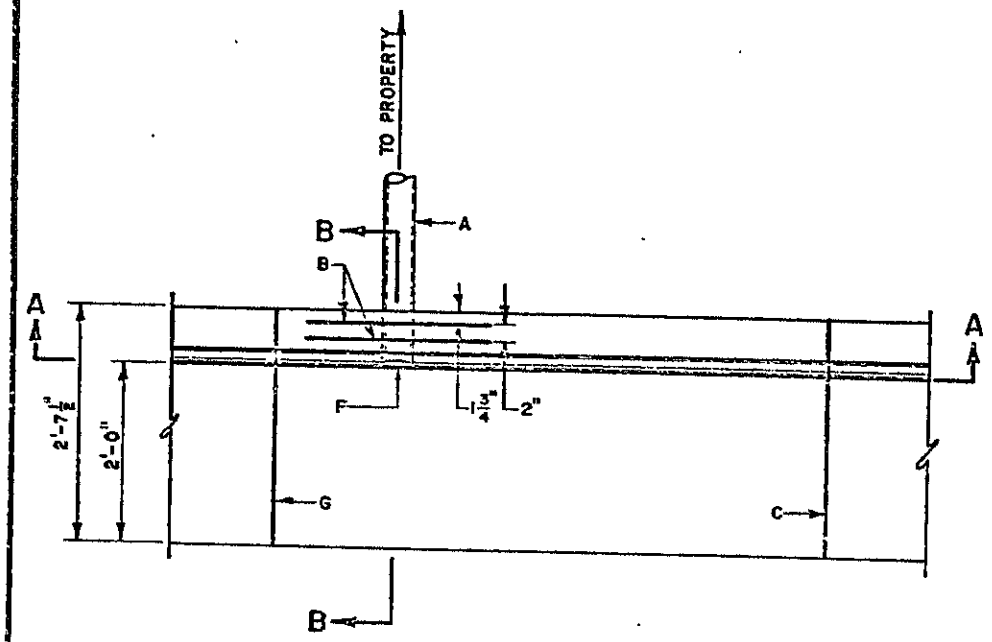


MASTER PLAN OF DRAINAGE CITY OF ALBUQUERQUE - NEW MEXICO AND ENVIRONS	
INTENSITY DURATION FREQUENCY CURVES (ALBUQUERQUE AREA - 1961)	
GORDON HERKENHOFF & ASSOC CONSULTING ENGINEERS ALBUQUERQUE, NEW MEXICO	CHART 1

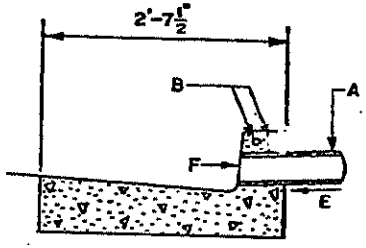


Based on study by P.Z. Kirpich,
Civil Engineering, Vol. 10, No. 6, June 1940, p. 362

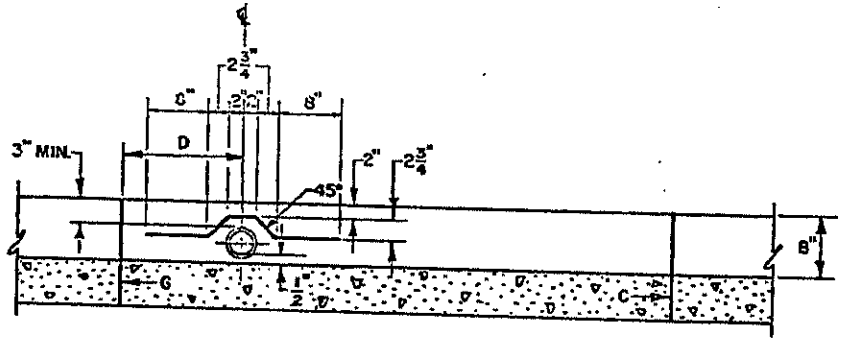




PLAN



SECTION B-B



SECTION A-A

GENERAL NOTES:

1. WHEN PLACING DRAIN THROUGH EXISTING CURB, REMOVE AND REPLACE ENTIRE STONE OF CURB AND GUTTER.
2. THE CITY DOES NOT ACCEPT RESPONSIBILITY FOR MAINTENANCE FOR ANY DRAIN LINES INSTALLED BY OR FOR PRIVATE PROPERTY OWNERS.

CONSTRUCTION NOTES:

A. DRAIN, D.I. OR SCH. 40 P.V.C. PIPE, 4" NOM. SIZE (MAX.) TO PROPERTY.
B. 2-NO. 3 BARS, 2'-4" LONG, PLACED AS SHOWN.
C. COLD JOINT.
D. DISTANCE FROM ℄ OF DRAIN TO NEAREST JOINT, VARIABLE WITH 15" MIN.
E. SLOPE ¼" PER FT. WITHIN R.O.W.
F. DRAIN PIPE NOT TO PROTRUDE BEYOND CURB FACE.
G. JOINT NEAREST TO DRAIN TO BE AN EXPANSION JOINT

CITY OF ALBUQUERQUE

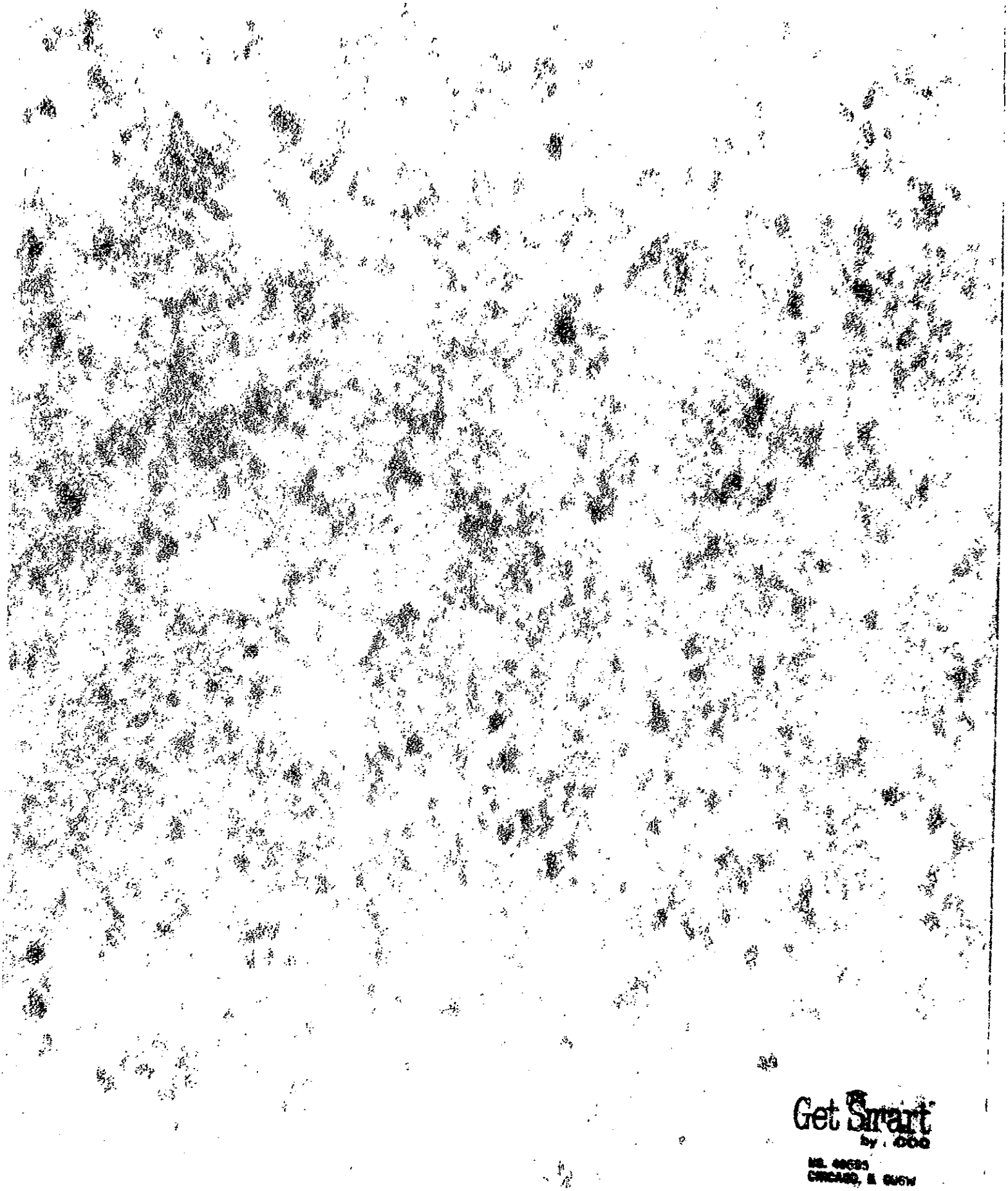
REVISIONS

DRAINAGE

DRAIN LINE THROUGH CURB

DWG. K-15

JAN. 1981


Get Smart
by . DDB

RECD
AUG 4 1977
BLDG & INSP. DIV.

DRAINAGE PLAN
INDUSTRIAL ELECTRIC EQUIPMENT SERVICE

August 1977

DRAINAGE REPORT

FOR

INDUSTRIAL ELECTRIC EQUIPMENT SERVICE

IN

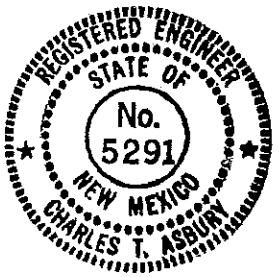
ALBUQUERQUE, NEW MEXICO

A. GENERAL

This drainage plan has been prepared by Asbury & Associates, Consulting Engineers, for the Industrial Electric Equipment Service.

The property described in this report is located at the corner of Franciscan and Kinley Avenues, Block Five of the Springer Transfer Co.'s addition No. 1. More particularly, the property described consists of Lots 1, 2, 3, 4, 5, 6, 7, 8 and 10 and that portion of the Barelas Ditch Situate with Block 5 vacated by District Court Cause No. 14157, Sub-No. 1385.

A one hundred year frequency occurance interval storm was used in the computations which are included in this report to determine the peak rate of storm water runoff from applicable drainage areas.



B. EXISTING SITE CONDITIONS

The existing site is presently undeveloped with the exception of City Utilities and some fencing and drive pads. The present site is a parcel containing 0.72 acres of which approximately 0.26 acres will be improved in the immediate future. The improvements consist of the construction of a pre-fabricated $40' \times 50'$ building and approximately 3500 Ft^2 of asphaltic concrete parking area.

The unimproved areas to the east of the building site will remain unchanged.

The topography of the entire 0.72 acre site consists of extremely mild terrain (2%) which generally slopes from the northeast to the southwest. The Barelas Ditch which at one time was used to provide drainage for this area has been vacated and the ditch has been regraded to the approximate existing topography. It is assumed that the purpose for vacating the Barelas Ditch (District Court Cause Number 14157, Sub-No. 1385, dated 5-27-77) was its discontinued useful purpose.

The proposed site is presently intercepted by a curbed and guttered vehicular drive and the area to the north and east are not considered as contributory in storm water runoff.

C. SOLUTION

It is proposed to construct a triangular pond with an average sectional area of 11 Ft^2. This is sufficient to retain the additional 627 Ft^3 of increased runoff. The triangular pond is proposed to have 6 inches of 3/4 inch gravel which will increase local retention and soil percolation.

ENGINEERING

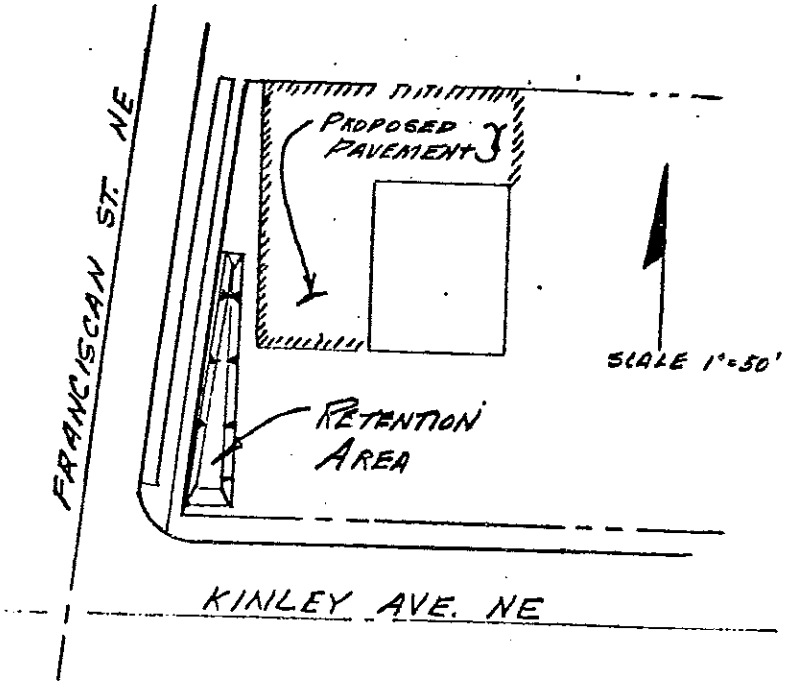
COMPUTATIONS

ASBURY & ASSOCIATES
CONSULTING ENGINEERS
210 LA VETA, NE
ALBUQUERQUE, NEW MEXICO

PROJECT: INDUSTRIAL ELECTRIC ELECTRIC SUPPLY

BY: C.T.A. DATE: 8-11-77

STORM DRAINAGE ANALYSIS



CRITERIA

RUNOFF VOLUME SHALL NOT INCREASE DUE TO DEVELOPED CONDITIONS. - BASIS OF COMPUTATIONS 100 YEAR FREQUENCY STORM.

RUNOFF

C= COEFFICIENT OF RUNOFF
C = 1.00 PAVED AREAS.
C = 1.00 ROOF AREAS.
C = 0.40 UNSURFACED AREAS.

RAINFALL = 2.2 INCHES = 100 YEAR FREQUENCY STORM

RUNOFF

EXISTING CONDITIONS.

AREA = 10,626 SQ. FT.

C = 0.40 NO IMPROVEMENTS.

VOLUME OF RUNOFF

$$\frac{2.2\ IN}{12\ IN/FT}\ (10{,}626\ FT^2)(0.40) = 779\ FT^3.$$

DEVELOPED CONDITIONS

VOLUME OF RUNOFF

$$(3100\ FT^2 + 2000\ FT^2)(1.0)\left(\frac{2.2\ IN}{12\ IN/FT}\right) + 4926\ (0.40)\left(\frac{2.2\ IN}{12\ IN/FT}\right) = 1406\ FT^3$$

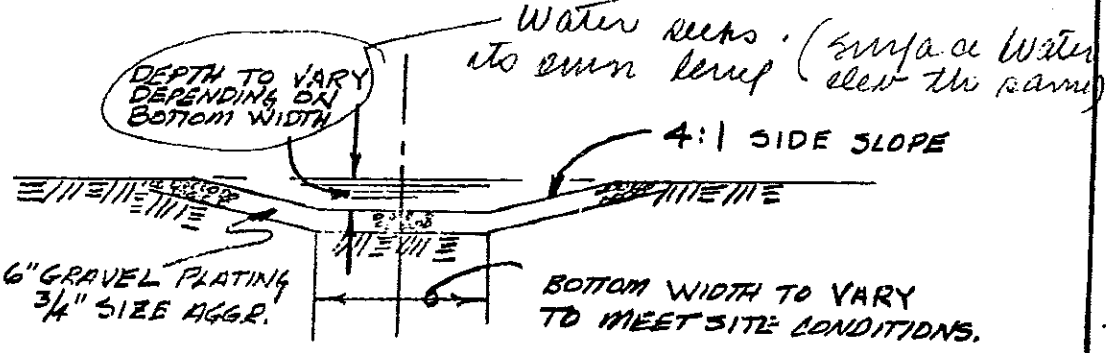
SOLUTION

PROVIDE FOR PONDING OF INCREASED RUNOFF DUE TO DEVELOPMENT OF A PORTION OF THE AREA.

INCREASED RUNOFF

$1406\ FT^3 - 779\ FT^3 = 627\ FT^3$

∴ A DITCH TYPE DETENTION AREA WILL BE USED



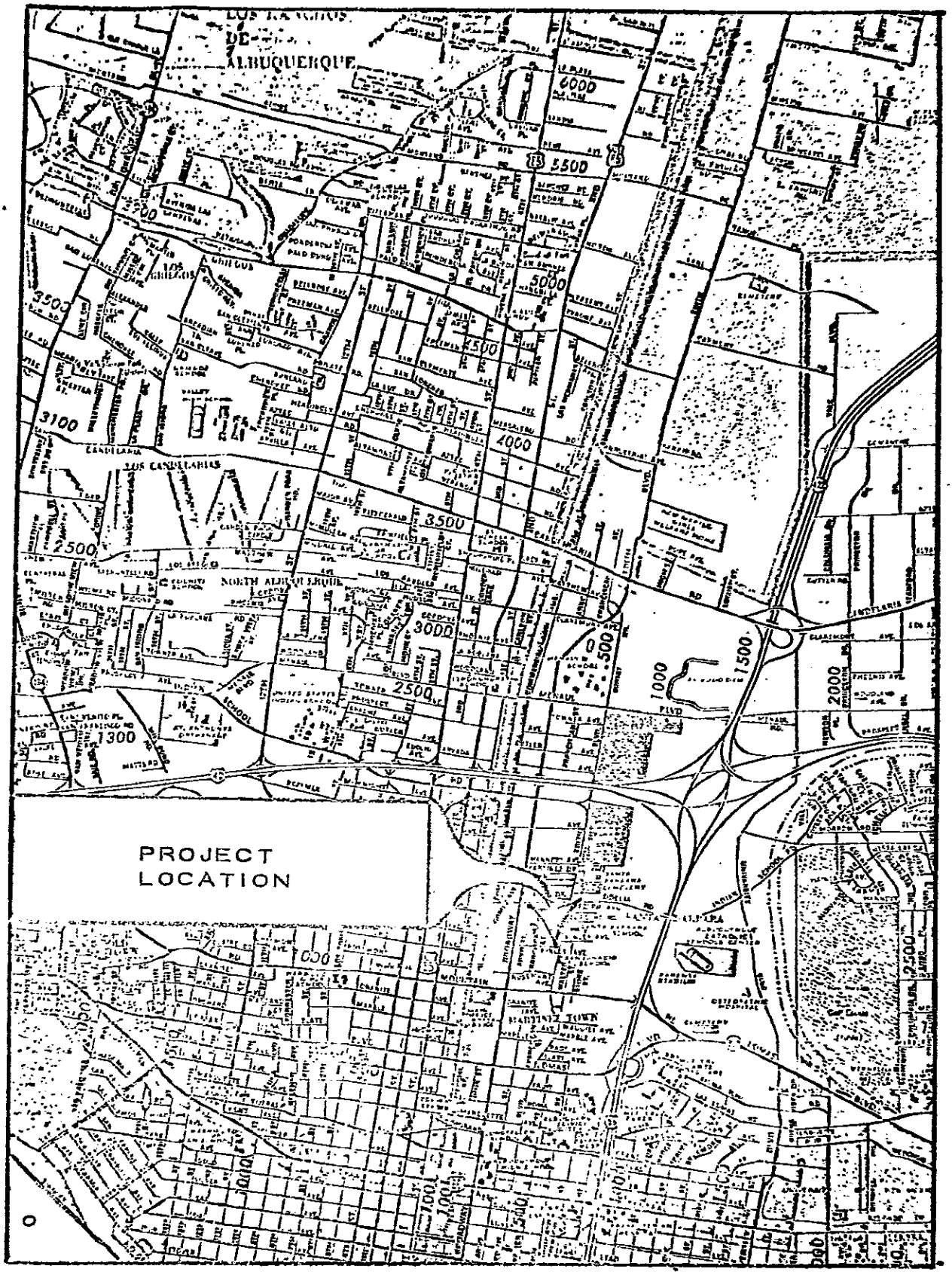
TRENCH SECTION

BUILD TRENCH SECTION - 70 FEET LONG, ALONG WEST SIDE OF PROPERTY PARALLEL TO FRANCISCAN ST.

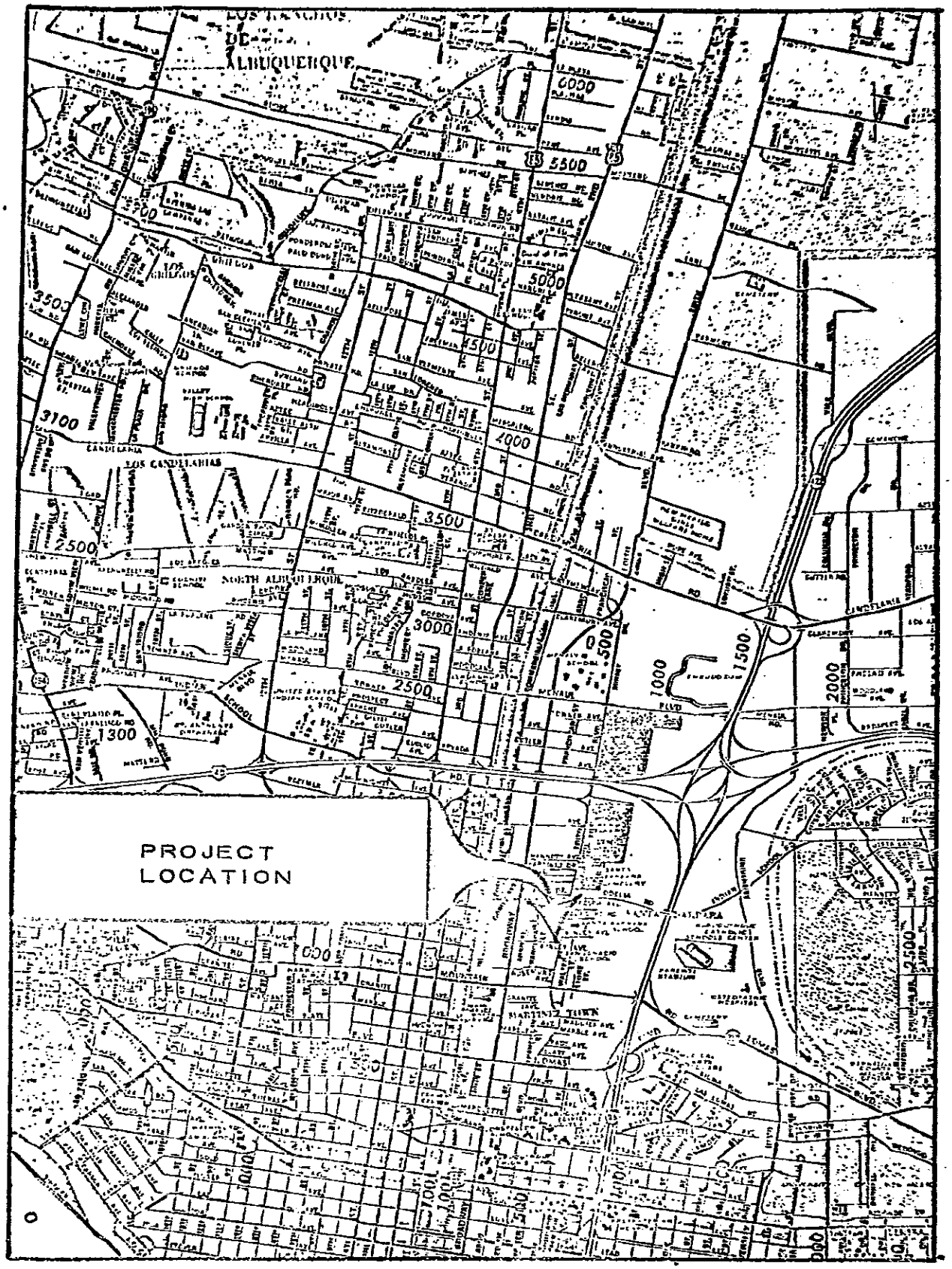
AVERAGE SECTIONAL AREA REQUIRED

$$\frac{627\ FT^3}{70} = 8.96\ FT^2$$ (SEE GRADING & DRAINAGE PLAN)

$$\text{AVG AREA} = \frac{(15 \times 1.0) + (7 \times 1.0)}{2} = 11\ FT^2\ \text{OK.}$$



PLAT NO. 1
INDUSTRIAL ELECTRIC EQUIPMENT SERVICE



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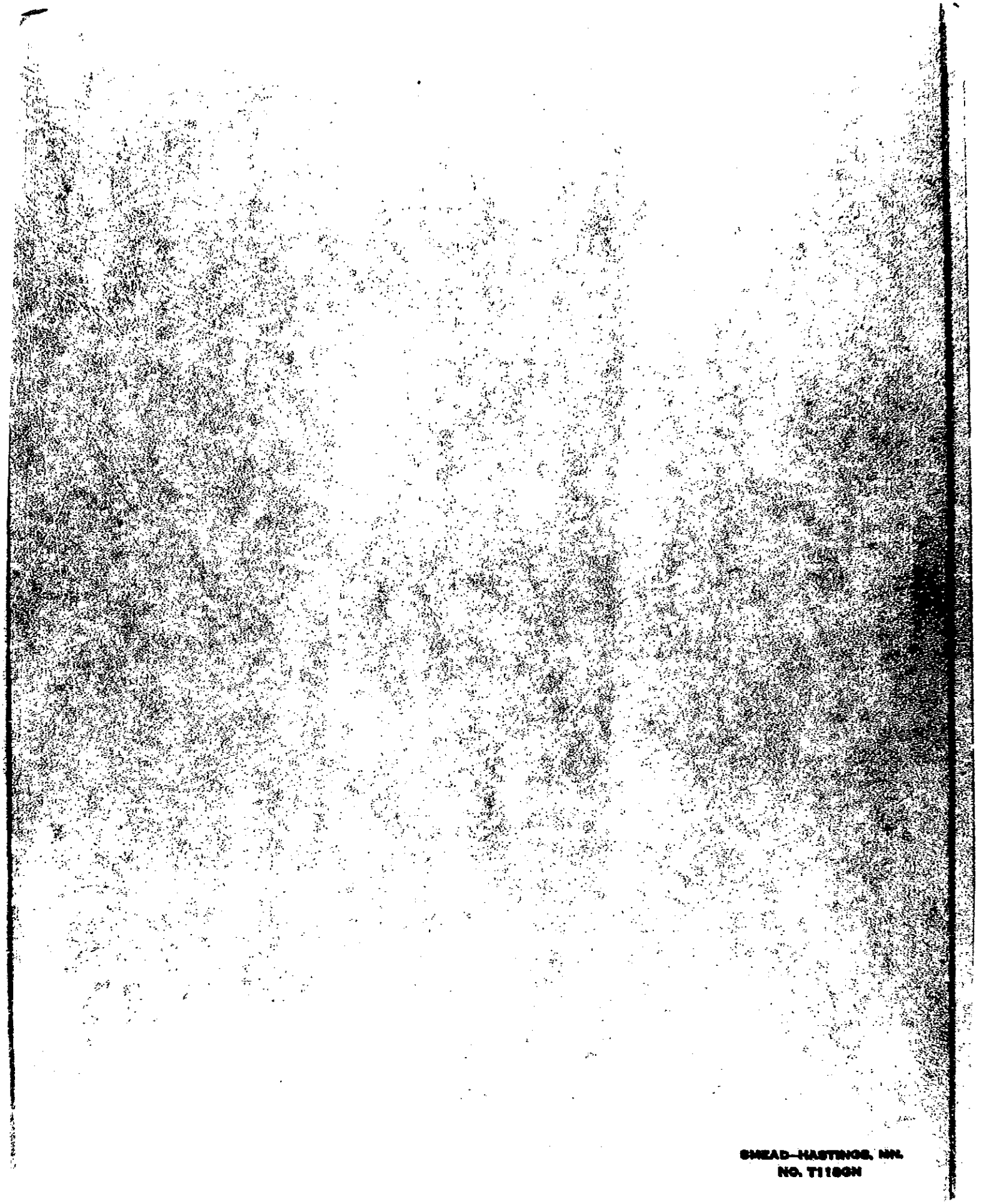

SHEAD–HASTINGS, MN.
NO. T118GN

Area I, Developed: $Q = 0.95 \times 4.8 \times 0.23 = 1.05$ cfs

Runoff Volume = $1.05 \times 27/2 \times 60 = 850$ cu. ft.

For positive outlet of Intensity = $I_1 = 2.0$

$\therefore Q_1 = 2/4.8 \times 1.05 = 0.44$ cfs = 4"ϕ pipe, $Q = 0.60$ cfs @ 2% slope

Provide Detention for Runoff Increase of:

$850 - 356 = 494$ cu. ft.

Assume Depressed Area, 9" deep w/ 2:1 front slope width = 20' along South PL, length = 20' at 2% slope with 1-4"ϕ pipe to gutter, $Q = 0.60$ cfs = 14 min. discharge

Retention Volume = 340 sq. ft. × 2" avg. depth = 60 cu. ft.
+ 60 sq. ft × 5" " " = 25 cu. ft.
85 cu. ft.
= 17%

Area II: Easterly 0.44 acres, roofed & paved

Original condition C = 0.40, length of flow = 130'
Elev. difference = 5'

T_c = < 10 minutes,

Use $T_c = 10$ ∴ $I = 4.8$

$Q = 0.40 \times 4.8 \times 0.44 = 0.85$ cfs

$V = 0.85 \times 27/2 \times 60 = 695$ cu. ft.

Developed Condition C = 1.0, Composite C = 0.95

$Q = 0.95 \times 4.8 \times 0.44 = 2.00$ cfs

$V = 2.00 \times 27/2 \times 60 = 1620$ cu. ft.

Develope Detention for Runoff Increase of:

$1620 - 695 = 935$ cu. ft.

GEOTECHNICAL RESEARCH & SERVICES, INC.

By DLL Date 5/20/81 Subject Industrial Electric Drain Sheet No. 5/5

Provide Depressed areas, 7" deep w/ 2:1 front slope
width = 20' each in two locations along South R/,
length = 20' @ 2% slope, Q, with 2-4" S pipes = 1.20 cfs = 13 min. discharge
Volume = 170 cu. ft. = 18%

Area III: 1.5 acres contributing from North east.
Length of flow = 250', Elev. diff. = 10'
T_c = < 10 minutes, use 10
With 20% of area rooted & paved, A = 0.30 Ac @ 0.95
Composite C = (0.95 × 0.30) + (0.40 × 1.20) = 0.77

$Q = 0.77 \times 4.8 \times 1.5 = 5.5$ cfs
$V = 5.5 \times 27/2 \times 60 = 4470$ cu. ft.

If required, off-site run-off can be diverted by a paved swale at the north and east property lines.
For 5.5 cfs at 0.50% grade, From Sealye Design 18-05-C
use D-68, 1.0' deep, 6.0' wide, sides at 3:1, Q = 6.0 cfs

DUANE LEE LEGAN REGISTERED PROFESSIONAL ENGINEER N. M. 2300

5/20/81