HYDROLOGY K20/D3 1 PLAN

K20/D3

1 Plan

RECEIVED 2/5/79

K 20

Drainage Report

for

Lots 11 & 12 of Block 4

Waggoman-Dennison Addition

Schwanke Development

RECEIVED

FEB 06 1979

CITY ENGINEERS

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

Engineering Associates, Inc.

August F. Mosimann, P.E.

2819 Claremont Place, N.E.

Albuquerque, N. M. 87110

February 1, 1979

The site includes Lot Numbers 11 and 12 of Block 4 of Waggoman-Dennison Addition which is located in the one hundred block of General Stillwell, N.E.

Design Guidelines

The following formulas are used throughout this study:

Rational Formula	Q = CIA
and	
Runnoff Volume Formula	V = CPA
Where	Q = Runoff Rate (CFS)
	I = Intensity (IN/HR)
	A = Area (Acres or ft^2)
	V = Volume (Cu.Ft.)
	C = Runoff Coefficient
	P - Precipitation (in)

The precipitation amount for this area is 2.5 in. for the 100-year 6-hour storm (see Figure 1).

The assumed runoff coefficients (C) are a follows:

Area Type	C
Paved	.90
Roof	.90
Landscaped	.40
Unimproved	.40

Existing Site Study

The existing site is undeveloped and slopes from the southeast toward the northwest. An existing concrete curb and gutter along the east property line intercepts all offsite flows.

The existing undeveloped site includes .32 Ac (14006 S.F.) and the runoff calculation for this site follows:

The runoff coefficient is .40.
The slope is one percent.
The runoff length is 170 ft.
The concentration time is 12 minutes (see Figure 3).
The intensity is 189/12 + 25) = 5.11 in/hr (see Figure 2).
The area is .32 Ac (14006 S.F.).

The runoff flow is

$$Q = CIA = .4 \cdot 5.11 \cdot 0.32 = 0.65 \text{ CFS}$$

The runoff volume is

$$V = CPA = .4 \cdot \frac{2.5}{12} \cdot 14006 = 11.67 \text{ Cu.Ft.}$$

Developed Site Study

The development will consist of two 1200 S.F. warehouse buildings, 4920 S.F. of paving, and 6686 S.F. of undeveloped land which will include a ponding area.

The composite runoff coefficient "C" for the new development is as follows:

Portion	Area (S.F.)	C	C X Area
Paving	4920	.9	4428
Roof	2400	.9	2160
Undeveloped	6686	.4	2674
Totals	14006		9262

$$C = \frac{9262}{14006} = .66$$

The land slope is one percent.
The length of runoff is 170 ft.
The concentration time is 10 min. (Figure 4).
The intensity is 189/(10 + 25) = 5.4 in/hr (Figure 2).
The runoff flow is

$$Q = CIA = .66 \cdot 5.4 \cdot \frac{14006}{43560} = 1.15 \text{ CFS}$$

The runoff voluem is

$$V = CPA = .66 \cdot \frac{2.5}{12} \cdot 14006 = 1926 \text{ Cu.Ft.}$$

The quantity of water required to be ponded and dispersed on the developed site is:

Developed Site Runoff	1926
Less Undeveloped Site Runoff	-1167
Ponding Required	248 Cu.Ft.

This pond will be located along the west boundary of the site.

Recommendations and Conclusions

Grade the site so that runoff flows from the west boundary toward the east boundary. Provide a 248 Cu.Ft. ponding area along the west boundary. This will insure that no additional runoff from the site will occur due to the development.

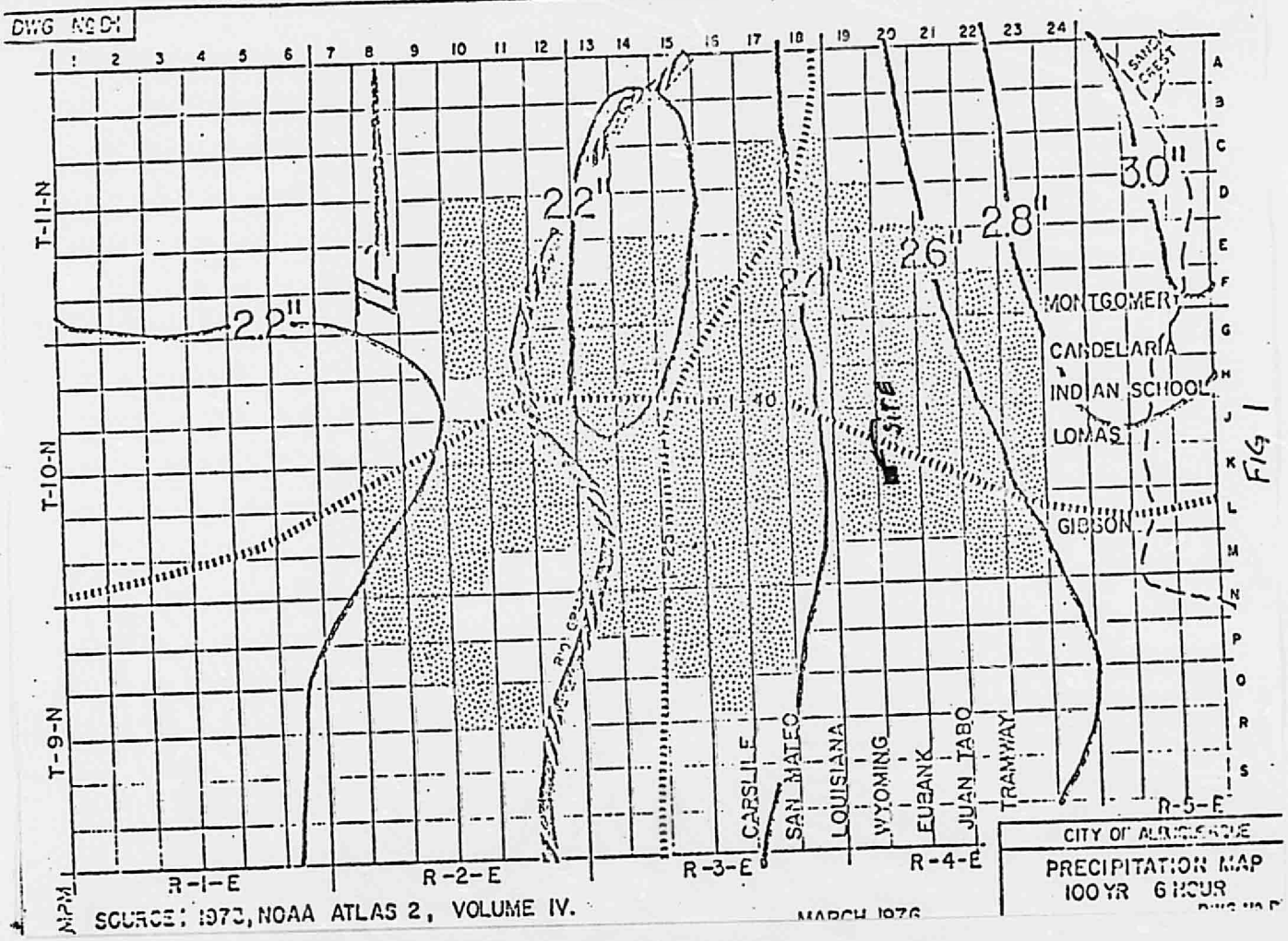
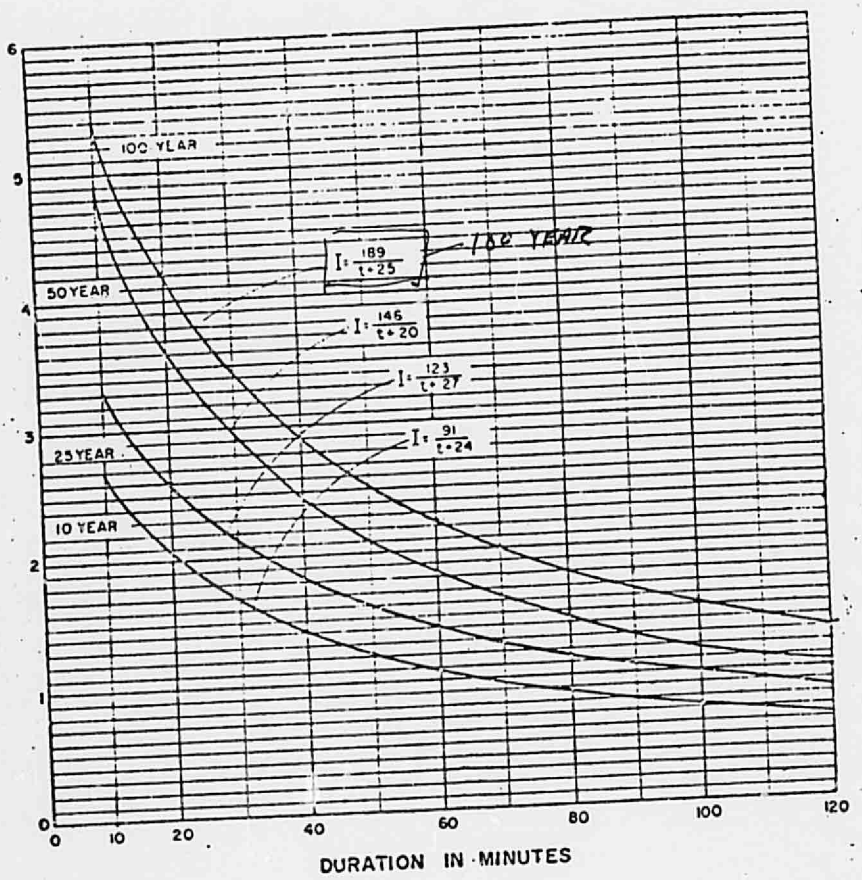

DWG NO.
T-11-N
T-10-N
T-9-N
R-1-E
R-2-E
R-3-E
R-4-E
R-5-E
2.2"
2.2"
2.4"
2.6"
2.8"
3.0"
SANDIA CREST
MONTGOMERY
CANDELARIA
INDIAN SCHOOL
LOMAS
GIBSON
SITE
CARSLILE
SAN MATEO
LOUISIANA
WYOMING
EUBANK
JUAN TABO
TRAMWAY
NPM
SOURCE: 1973, NOAA ATLAS 2, VOLUME IV.
MARCH 1976
CITY OF ALBUQUERQUE
PRECIPITATION MAP
100 YR 6 HOUR

FIG 1



MASTER PLAN OF DRAINAGE
CITY OF ALBUQUERQUE - NEW MEXICO
AND ENVIRONS

INTENSITY DURATION
FREQUENCY CURVES

(ALBUQUERQUE AREA - 1951)

GORDON HERKENHOFF & ASSOC
CONSULTING ENGINEERS
ALBUQUERQUE, NEW MEXICO

CHART
1

FIG 2

DRAINAGE — RUNOFF — I

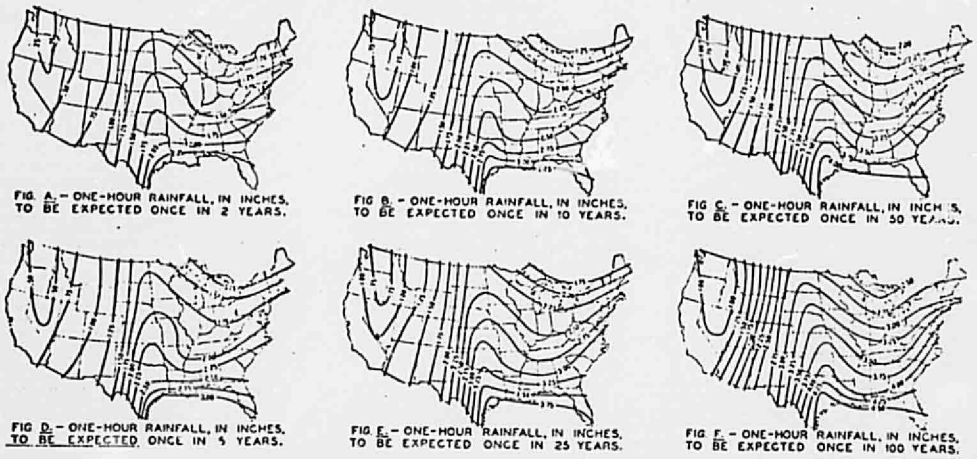


FIG. A. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 2 YEARS.

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.*

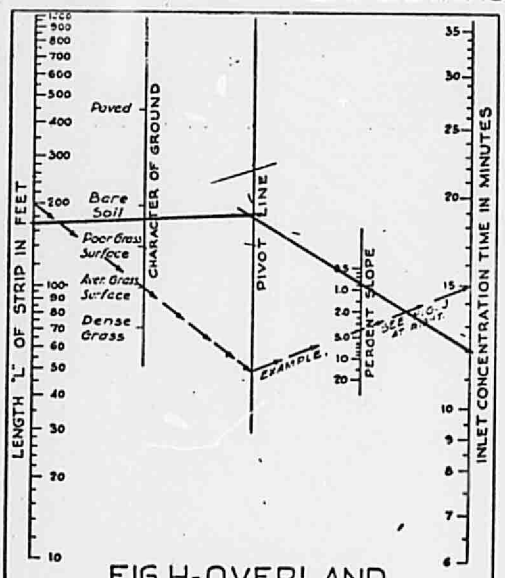


FIG. H-OVERLAND FLOW TIME.

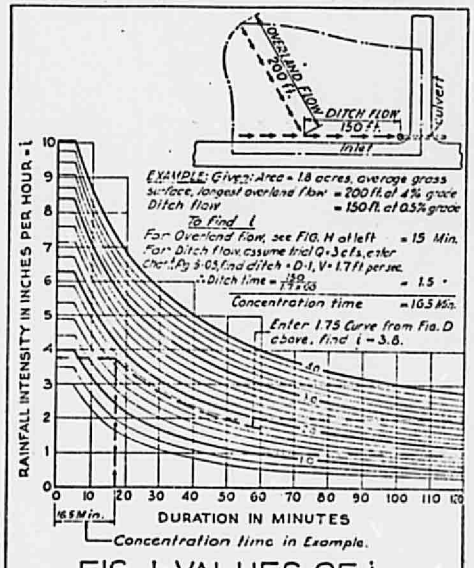


FIG. J-VALUES OF i RAINFALL INTENSITY-DURATION.†

*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.

FIG 3

DRAINAGE — RUNOFF — I

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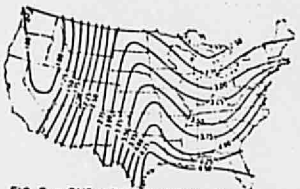

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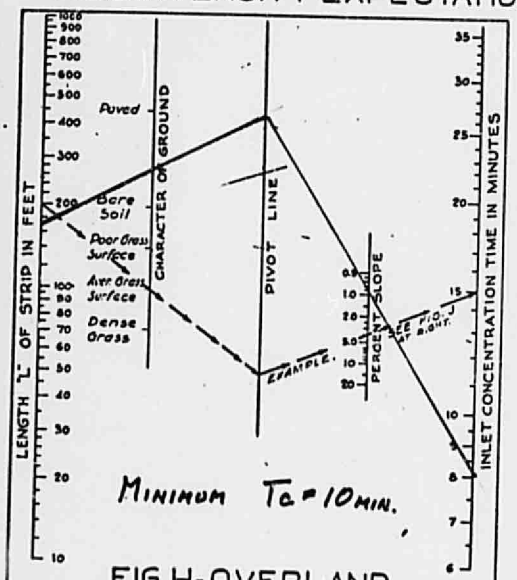

FIG. H - OVERLAND FLOW TIME.

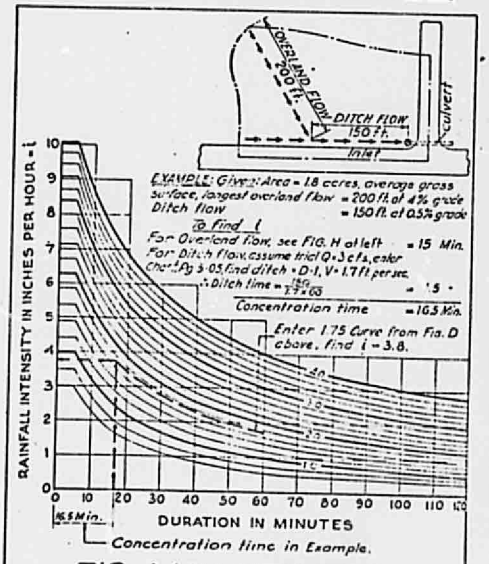

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FIG 4

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

MAYOR
David Rusk

February 14, 1979

K20-D3

Mr. August F. Mosimann
Engineering Associates, Inc.
2819 Claremont Place N.E.
Albuquerque, New Mexico 87110

Dear Mr. Mosimann:

The drainage report submitted for Lots 11 and 12 of Block 4 of the Waggoman-Dennison Addition is hereby approved.

Very truly yours,

Bruno Conegliano
Assistant City Engineer - Hydrology

BC/fs

cc - Dick Heller
Rich Leonard
Drainage File

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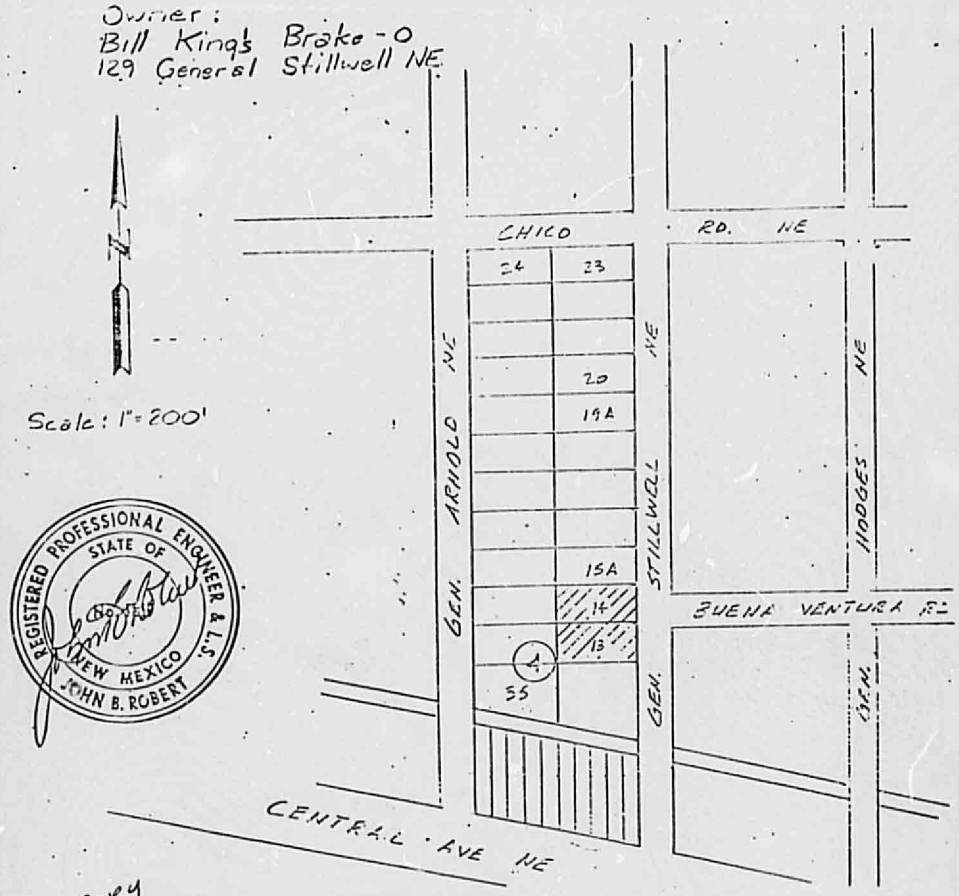
CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT OF WAY

Owner:
Bill Kings Brake-O
129 General Stillwell NE



This copy Belongs To Dick

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 Residential ~~Arterial~~ street use.

C-141

APPROVALS	ENGINEER	DATE	TITLE: 129 General Stillwell NE Lots 13 & 14, Block 4 Waggoman - Denison Addition	
A.C.E./DESIGN	[illegible]	2-16-83		
INSPECTOR	D. Solis	11-14-83	PROJECT NO.	MAP NO.
A.C.E./CHIEF	[illegible]	2-9-84	SHT. 1 of 2	K-20

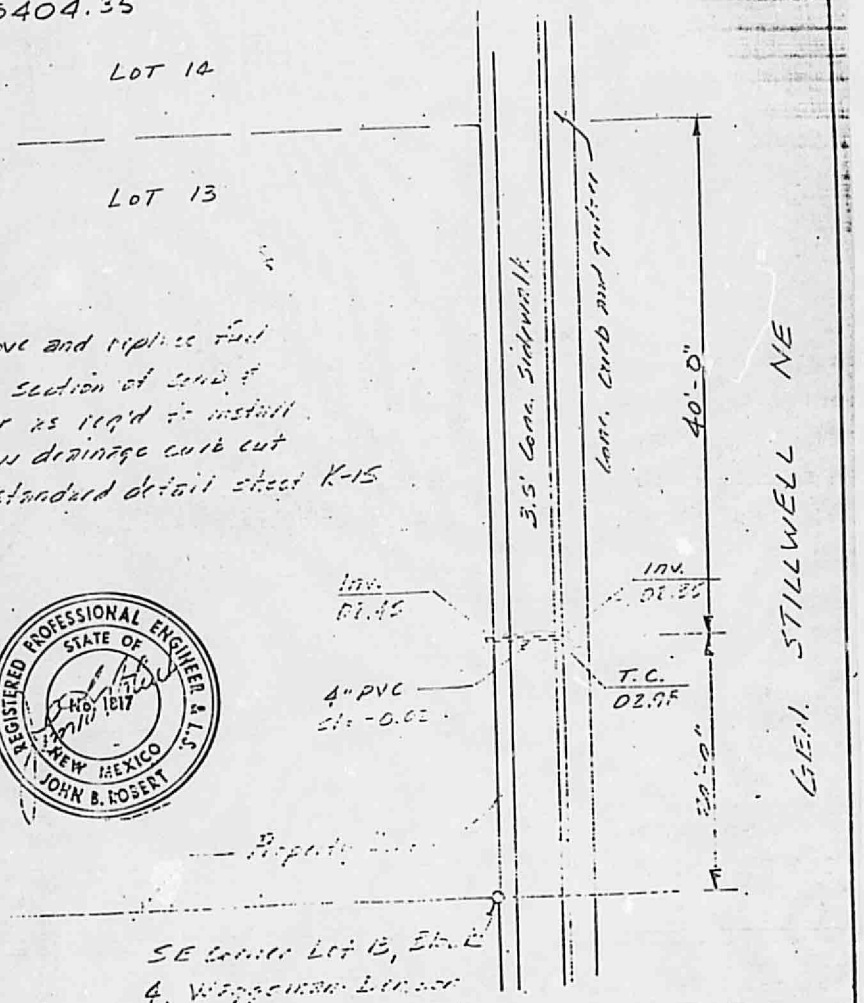
CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT OF WAY

Owner:
Bill Kings Brake-O
129 Gen. Stillwell NE

BENCHMARK
S.B.B. F.H. @
N.W. Cor. Central
Ave. & Gen. Arnold NE
Elev.= 5404.35

Scale : 1"=200'



REGISTERED PROFESSIONAL ENGINEER & L.S. STATE OF NEW MEXICO No. 1817 JOHN B. ROBERT

APPROVALS	ENGINEER	DATE
A.C.E./DESIGN		2/10/83
INSPECTOR		
A.C.E./FIELD		

TITLE: 129 General Stillwell NE
Lots 13 & 14, Block 4
Wappeman Denison Addition

PROJECT NO. 76
SHT. 2 of 7

MAP NO. K-23

Page 4 of 10