HYDROLOGY K18/D21 2 PLANS

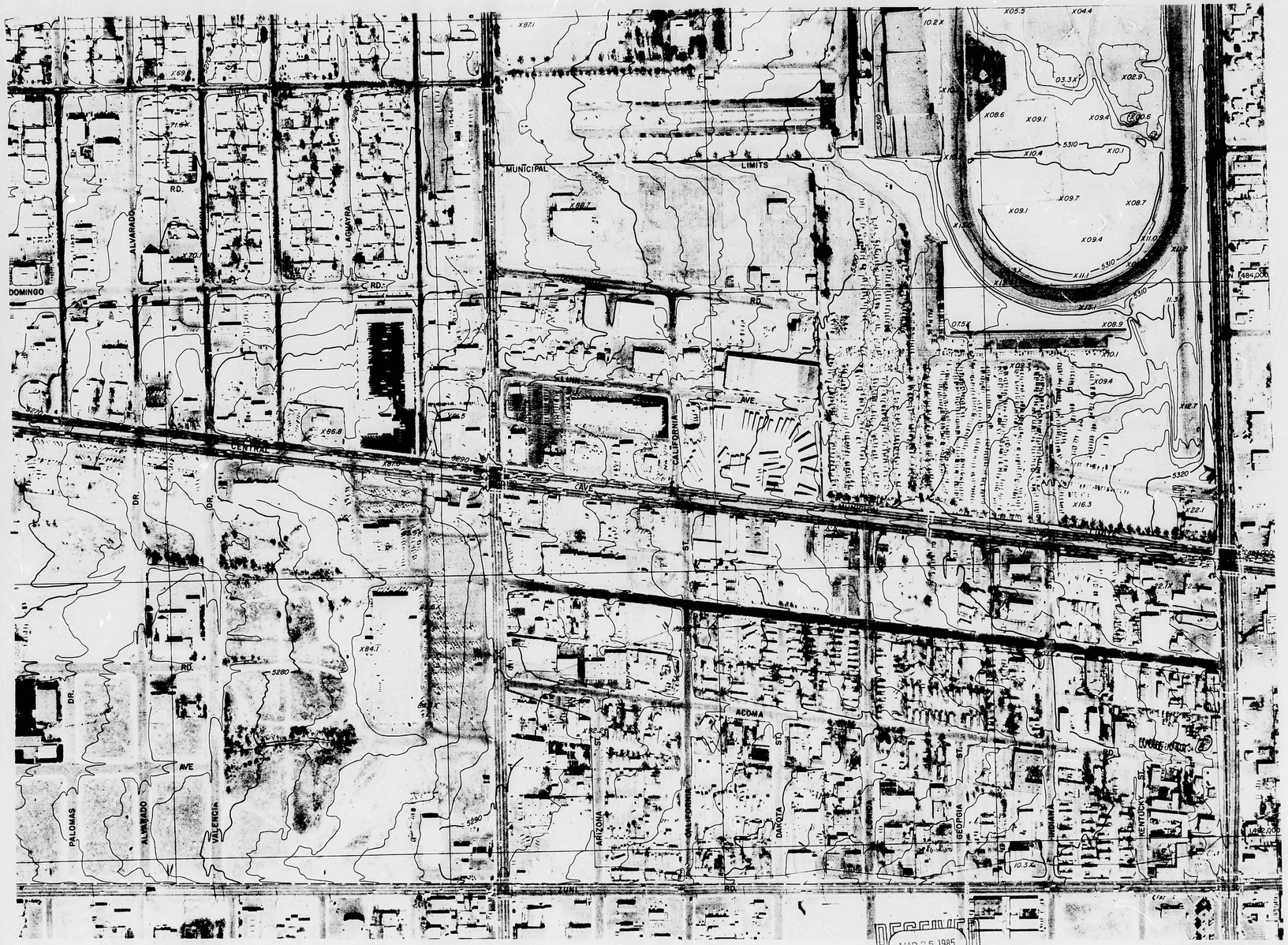
K18/D21

2 Plans

C

B

A



WATER SHED AREA

RECEIVED
MAR 25 1985
HYDROLOGY SECTION

COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERI
PHOTOGRAPHS TAKEN MARCH 21, 1976, BY KOOGLE & POL
ENGINEERING, ALBUQUERQUE, NEW MEXICO

C

B

A

THIS PLAN SHOT TWICE
ONCE ON LIGHT AND
ONCE ON DARK.

CITY OF ALBUQUERQUE
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TO THE POOR QUALITY OF THE
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C

DRAINAGE INFORMATION

I. References

A. City of Albuquerque, Development Process Manual (DPM), Volume 2, Design Criteria
B. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, U.S. Soil Conservation Service
C. Flood Insurance Rate Map, City of Albuquerque, New Mexico Panel 30/50

II. General Information

A. Site Location and Elevation Data
1. Legal Description: Lots 12 thru 16, Block 14, FAIRGROUNDS ADDITION
2. Total Site Area: 34,250 sq ft (0.786 ac)
3. City Address:
4. City Bench Mark: 5-L18, Elevation 5315.534
5. County Zone Atlas: K-18

B. Soil Type (Reference B)
TgB, Web Hydrologic Soils Group B

C. 6-hour, 100-year rain, R_6= 2.3 inches Reference A, Plate 22.2 D-1

D. Runoff Coefficient ("C" Factor) Reference A, Plate 22.2 C-1
Undeveloped "C" Factor, Curve B is 0.34
Developed "C" Factor, assume the following values:
Buildings and concrete surfaces 1.00
Asphalt concrete paving 0.90
Landscaping, same as natural soil 0.34
Weighted "C" Factor:

Type of Surface	"C"	Area (SF)	C x A
Buildings	1.00	15000	15000
Concrete	1.00	750	750
Asphalt	0.90	12575	11317
Landscaping or natural	0.34	5925	2014
Totals			29081

Weighted "C" Factor= $\frac{\sum (\text{"C"} \times A)}{\sum A}$ = 0.85

E. Time of Concentration - Developed Area
Watershed length L = 250 ft
Watershed change in elevation h = 3.5 ft
Watershed slope S = h/L = 0.014 ft/ft
by Kirpich equation $T = 0.0078\ (L^{0.77}/S^{0.385})$
T = 2.3 minutes
T_c = 10 minutes miminum

F. Intensity Reference A Plate 22.2 C-1
$I = R_6 \times 6.84 \times T_c^{-0.51}$
= 4.86 in/hr

G. Peak Discharge - Rational Method: Q = CIA
Q = 0.85 x 4.86 x 0.786
= 3.25 cfs

III. Existing Conditions - Undeveloped

A. "C" Factor = 0.34
B. Time of Concentration < 10 minutes
C. Peak Discharge - Rational Method: Q = CIA
Q = 0.34 x 4.86 x 0.786
= 1.30 cfs

IV. Justification of Free Discharge

A. Additional discharge caused by development: 3.25 - 1.30 = 1.9 cfs. This is a comparitively small quantity.
B. Downstream conditions: The analysis point is the intersection of Acoma Road to San Pedro Drive.

SUMMARY OF STREET FLOW TIMES:

STREET NAME	ELEVATIONS HIGH	ELEVATIONS LOW	H (ft)	L (ft)	S (ft/ft)	V (ft/s)	Time (min)
Arizona Street	5291.5	5288.0	3.5	350	0.010	2.8	2.1
California Street	5295.0	5291.5	3.5	350	0.010	2.8	2.1
Dakota Street	5297.5	5295.0	2.5	350	0.007	2.2	2.7
Florida Street	5300.0	5297.5	2.5	350	0.007	2.2	2.7
Georgia Street	5303.0	5300.0	3.0	350	0.009	2.6	2.2
Indiana Street	5307.5	5303.0	4.5	350	0.013	3.1	1.9
Kentucky Street	5312.0	5307.5	4.5	350	0.013	3.1	1.9
						TOTAL	15.6

C. Portion of the flow is over land
L = 615 ft
H = 4.0 ft
S = 0.006 ft/ft
V = 1.3 ft/s
TIME = 7.9
TOTAL TIME OF CONCENTRATION = 23.6

D. $I = R_6 \times 6.8 \times T_c^{-0.51}$
$= 2.3 \times 6.84 \times 23.6^{-0.51}$
= 3.10
NOTE: The time of concentration is based on street and overland flow velocities as obtained from City of Albuquerque Development Process Manual (DPM) Plate 22.2 B-1 & 2.

E. Peak Discharge
A = 41.70 (area by Planimeter)
Q = CIA
= 0.85 x 3.10 x 41.70
= 109.8 cfs

F. Existing Capacity Plate 22.3 D-1
Slope of street = 0.010 ft/ft
Depth = 0.87 ft
Q = 60 cfs per halvestreet

NEW LEGAL DESCRIPTION

LOT 12-A, BLOCK 14, FAIRGROUNDS ADDITION.

PROJECT TITLE

H.C GLASS CO. WAREHOUSE

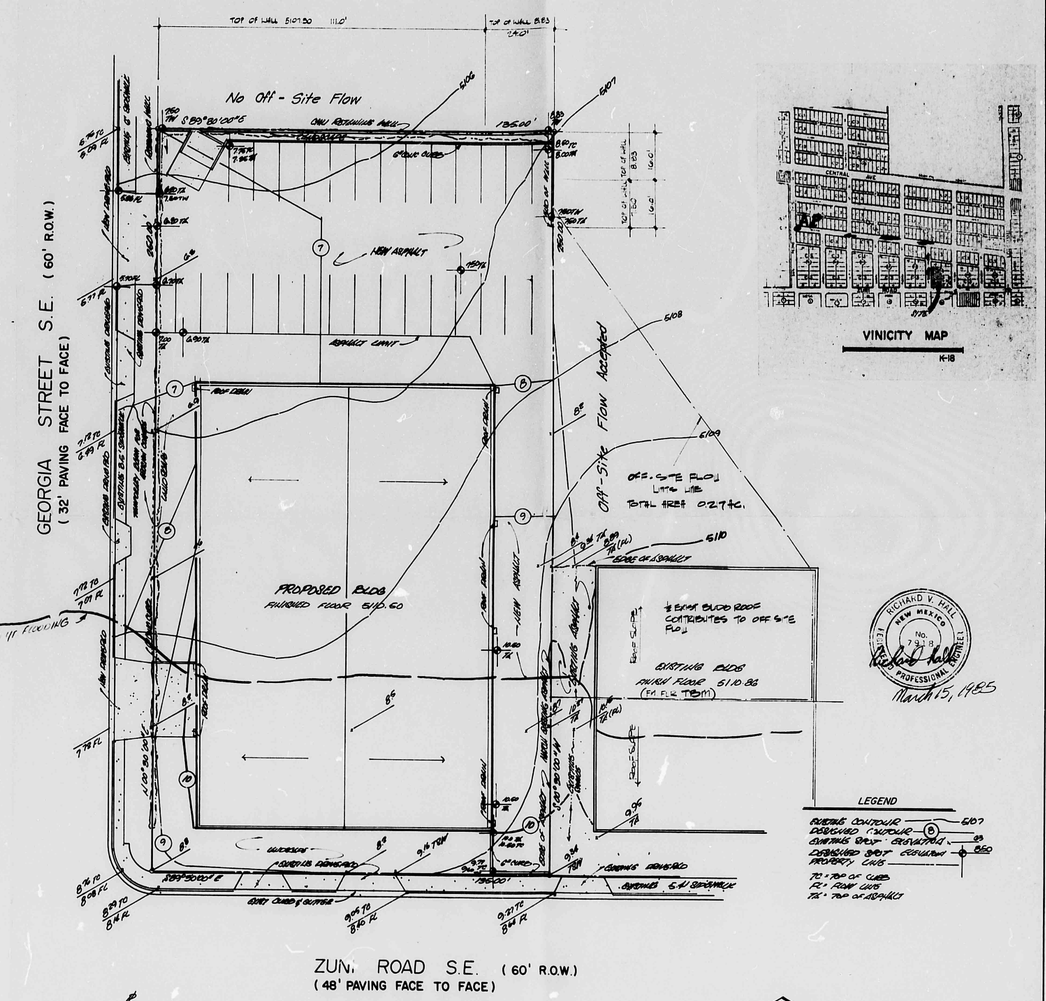
OFF-SITE FLOW CALCULATIONS

A = 0.217 ac
C = 0.85
I = 4.86 in/hr
PEAK DISCHARGE (RATIONAL METHOD)
Q = CIA
Q = 0.85 x 4.86 x 0.217
Q = 0.90 CFS

FLOOD PROOFING

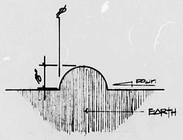
FINISHED FLOOR 2' ABOVE FLOWLINE OF STREET

GRADING AND DRAINAGE



RICHARD V. HALL
NEW MEXICO
No. 7318
PROFESSIONAL ENGINEER
March 15, 1985

NORTH SCALE 1" = 20'



TEMPORARY BERM FOR EROSION CONTROL
(DURING CONST. ONLY)

NOTE TO CONTRACTOR:
THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.

APPROVED FOR DRAINAGE

SIGNATURE 4-26-85 DATE
TITLE
ADVISE DRAINAGE INSPECTOR WHEN GRADING EXECUTED

RECEIVED
MAR 25 1985
HYDROLOGY SECTION

2

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