HYDROLOGY K22/D35 1 PLAN

K22/D35

1 Plan

K22

PROJECT TITLE: Monzano Shopping Center ATLAS/DRNG. FILE #: K22/D35

LEGAL DESCRIPTION: Current Tract A & B Princess Jeanne Park Replat eminent

CITY ADDRESS:

ENGINEERING FIRM: HALL ENG CONTACT: RICHARD HALL

ADDRESS: 337 EUBANK #103 NE PHONE: 292 1115

OWNER: STEVE JOHNSON CONTACT: STEVE JOHNSON

ADDRESS: 3001 LOUISIANNA PHONE: 884 3930

ARCHITECT: NONE CONTACT:

ADDRESS: PHONE:

SURVEYOR: NONE CONTACT:

ADDRESS: PHONE:

CONTRACTOR: NONE CONTACT:

ADDRESS: PHONE:

RECEIVED
MAY 02 1985
HYDROLOGY SECTION

PRE-DESIGN MEETING:

___ YES

X NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 85-214 - 3/26/85

EPC NO. Z-1114-1 - 4/18/85

PROJ. NO. _____

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

___ DRAINAGE PLAN

X CONCEPTUAL GRADING & DRAINAGE PLAN

___ GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

X 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: May 1 1985

BY: Richard Hall

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

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

May 29, 1985

Mr. Richard Hall
Hall Engineering
337 Eubank NE, Suite 103
Albuquerque, N.M. 87123

REF: CONCEPTUAL DRAINAGE PLAN FOR ADDITIONS TO MANZANO SHOPPING CENTER (K22/D35) RECEIVED MAY 2, 1985

Dear Mr. Hall:

The referenced plan dated May 1, 1985 is approved for Site Development Plan Approval. Prior to the building permit release a drainage plan will have to be submitted and approved.

If you should have any questions or comments, please contact this office at 766-7644.

Sincerely,

Carlos A. Montoya
City/County Flood Plain Admin.

CAM/cl

DRAINAGE REPORT

FOR

MANZANO SHOPPING CENTER

RECEIVED
MAY 02 1985
HYDROLOGY SECTION

I. PURPOSE & SCOPE: This report has been prepared to present an analysis of storm water run-off flowing into and generated by the expansion of the Manzano Shopping Center. The expansion of the shopping center consists of 9500 sq. ft. additional retail space and construction of two new restaurants, The Village Inn and Luby's Restaurant within the perimeter of the property, with 4820 and 11,797 sq. ft. respectfully. This report has been written in compliance with requirements of the City of Albuquerque's Development Process Manual (DPM) Chapter 22, entitled "Drainage and Flood Control".

where

The hydraulic characteristics of the site were analyzed using methods and procedures in the DPM. The report contains recommendations for handling on-site and off-site flows.

II. SITE LOCATION & DESCRIPTION: The site is located as shown in figure # 1. The Southeast quadrant of the intersection of Lomas Blvd. and Juan Tabo Rd. N.E. as shown on city zone atlas page K-22-2. This parcel of land is currently described as follows:

Tracts A & B, Block 125

Princess Jean Park Addition

This property will be replatted with adequate easement to accomodate flow from lot to lot at a later date.

As shown in Fig. # 1, this site is also bounded on the East side by the Manzano High School property and the 1st National Bank property described as Tract A, Block 128 Princess Jean Park Addition and the Rio Vista Apartments property, described as Tract A, Monarch Park Addition on the South Side. Dividing the parcel of land is a 20' alley along the south property line.

The site is currently known as the Manzano Shopping Center. There is a total area of 55,775 sq. ft. retail space on the property with asphaulted parking lot. Currently there is no landscaping and can be considered 100 percent impervious. The expansion of the Manzano Shopping Center would increase the retail space and building area 27,317 sq. ft. and provide 18,148 sq. ft. of landscape (5 percent total area).

Manzano Shopping Center

The site has a gentle slope about 4 percent West toward Juan Tabo Blvd. Currently all runoff flow generated from the site is sheet flow into Juan Tabo Blvd. The majority of the flow direction will not change due to new construction. However, the flow would be blocked along West property line by concrete curbing and the flow is then channeled and discharged through two drive pads into Juan Tabo Blvd. Adequate curb height shall be provided to prohibit any flow over existing sidewalks. Grades along the property line adjacent to Lomas Blvd. are such it prohibits any off site flow from the North. Along portion of the Eastern side there is a retaining wall along the property line dividing the Manzano High School and Manzano Shopping Center. This wall extends approximately 700 feet from Lomas Blvd., blocking any off side from the East side of the shopping center. However, there are 4" weep holes placed periodically in the wall, contributing to off site flow. Approximately 200 ft. of the east property line at the southeast corner of the site is natural slope (westward) and does permit off flow. The total area considered contributing is approximately 0.92 acres. Currently all off site flow described is accepted and routed through the property. This property contains 7.86 acres more or less. There is only one type of soil found here which is TgB, Tijeras gravelly fine sandy loan. TyB soil series is classified in the Hydrologic Group "B". In accordance to Bernalillo County and Parts of Sandoval and Valencia County, New Mexico Soil Survey, Refer to Figure 4.

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How
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III. Method of Analysis: The perak flow rate for the site was determined by the rational method. Kirpich Equation was used to reduce the time of concentration over asphaltic surface.

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$$L = 460 \text{ ft} \quad \text{Elevation} = 18.5 \text{ ft} \quad S = \frac{18.5}{460}$$

$$T_c = 0.0078 \frac{L^{0.77}}{S^{0.585}}$$

$$T_c = 0.007 \frac{460^{0.77}}{0.0402^{0.385}} = 3 \text{ minutes}$$

The time of concentration for existing condition and condition with improvement would vary slightly, therefore, the minimum value T_c equally 10 minute can be used for our Drainage Calculations.

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

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III. Method of Analysis Continued: Ra[illegible] was es[illegible]shed by applying equation on Plate 22.2 D-1 [illegible]la[illegible] .2, D-2.

6 - hour rainfall (R_6) 100 year [illegible]ien[illegible] approximated at 2.45.

$I = (R_6)\ 6.84\ T_c \exp^{-0.51}$

$= 2.45 \times 6.84 \times 10 \exp^{-0.51}$

$= 5.18$ in/hr

The value of the run-off coefficient was determined as follows:

Existing Conditions:

Types of Surfaces	C	A (ft^2)	C x A
Building (Roof Area)	1.00	55,775	55,775
Concrete Paving	1.00	10,625	10,625
Asphalt Paving	0.90	275,957	248,361
Total		342,357	314,761

Proposed Conditions:

Types of Surfaces	C	A (ft^2)	C x A
Building (Roof Area)	1.00	83,092	83,092
Concrete Paving	1.00	16,095	16,095
Asphalt Paving	0.90	225,022	202,519
Landscaping	0.40	18,148	7,259
Total		342,357	308,965

Weighted "C" Factor

Existing

$\frac{314,761}{342,357} = 0.92$

Proposed

$\frac{308,965}{342,357} = 0.90$

Peak Discharges (Rational Method)

Existing Conditions

$Q_{100} = 0.92 \times 5.18 \times 342357/43560$

$= 37.45$ cfs

$Q_{10} = 37.45 \times 0.657$

$= 24.61$ cfs

Proposed Conditions

$Q_{100} = 0.90 \times 5.18 \times 342357/43560$

$= 36.64$

$Q_{10} = 36.64 \times 0.657$

$= 24.07$

V. Down Stream Analysis Continued: Method of Analysis's Peak Discharge of this report. The time of concentration was attained by Segment Analysis. Plate 22.2 B-2 was used to establish the flow time over asphalt paved pond and plate 22.2 B-1 for over land flow time. The most hydraulically remote point of this watershed basin being just east of Manzano High School football field. The portion of the path of the flow is unimproved and the water run off generated would travel overland a distance of approximately 1000ft southward. The pathway has a gental slope of 1.2% and the velocity of the flow would be 0.6 ft/sec.

The flow time was established as follows:

$$\frac{1000\text{ft}}{0.6\text{ ft/sec}} \times \frac{1}{60\text{ sec}} = 27.8 \text{ minutes}$$

Thence the flow continues on the paved inverted crown alley adjacent to the Manzano High School property. It would travel a distance of 2000 ft on the surface and 450 ft in a storm sewer to Juan Tabo Blvd. N.E.

Total Flow time:

$$\frac{2450\text{ ft}}{2.55\text{ ft/sec}} \times \frac{1}{60\text{ sec}} = 16.0 \text{ minutes}$$

Thence the flow continues Southward to the analysis point. The analysis point being a catch basin at the basin of the flood zone as shown on Panel 31 of 50 Floodway and Flood Boundary Maps. The total distance traveled is 2350 ft.

Travel Time:

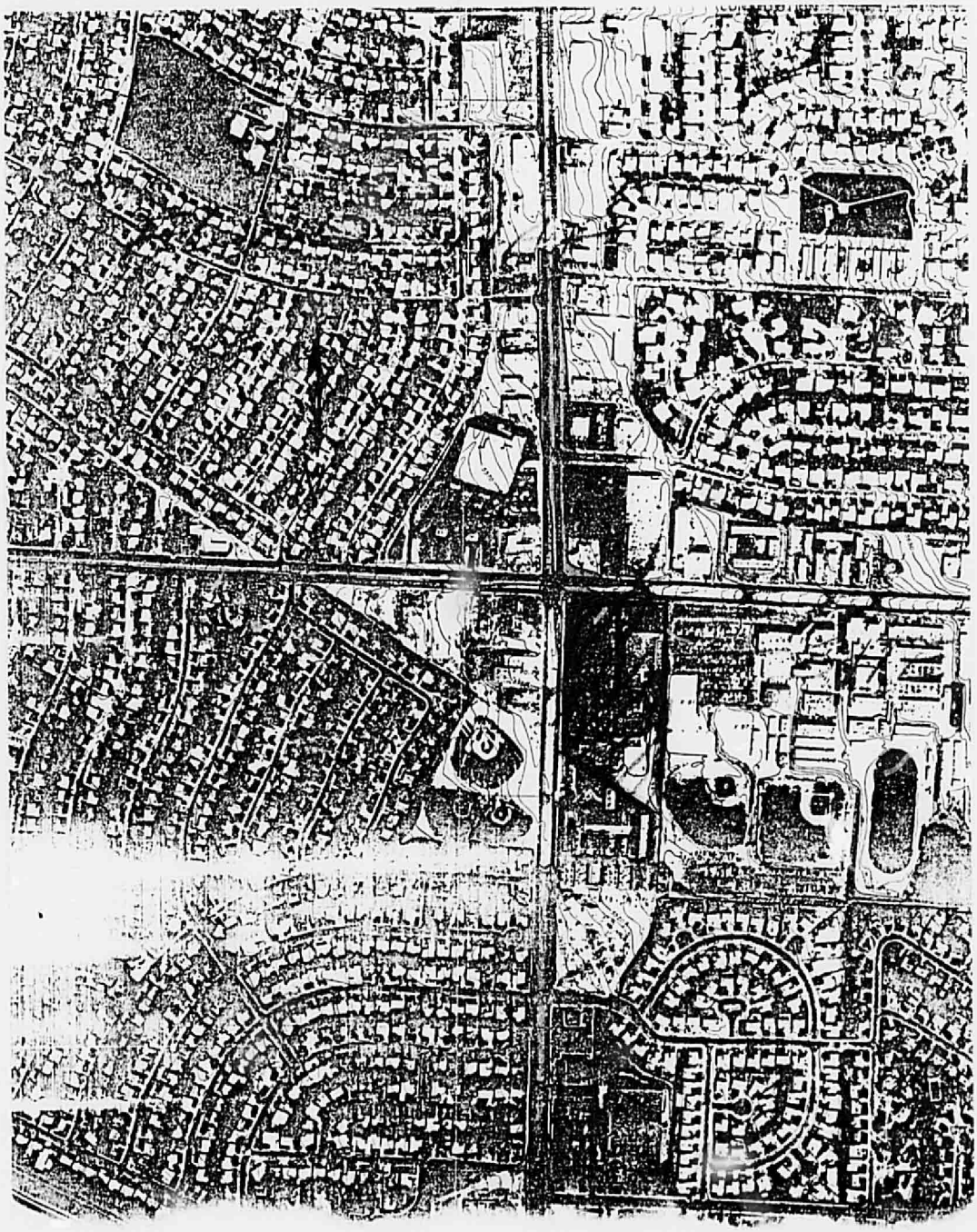
$$\frac{2350\text{ ft}}{1.2\text{ ft/sec}} \times \frac{1}{60\text{ sec}} = 32.6 \text{ minutes}$$

Thus the total time for the flow to travel from the most hydraulically remote point to the analysis point is 76.4 minutes.

Meanwhile the travel time from the subject site is as follows:

$$\frac{3600\text{ ft}}{1.2\text{ ft/sec}} \times \frac{1}{60\text{ sec}} = 50 \text{ minutes}$$

The purpose of this demonstration is to show the Manzano Shopping Center's location is situated at the bottom of the contributing water shed basin therefore, as shown on the hydrograph, restricting the flow would only add to the peak free discharge recommended.

VI. Erosion Control: Since the majority of the site has an asphalt surface there would be no problem with erosion. However, the Luby's Restaurant site is built up and slope to gradeat property line, the slope shall not exceed 3:1 slope. This slope will be landscaped to prevent erosion. During construction the contractor shall promptly clean up any material excavated or fill brought in place that is susceptible to being washed down the street.

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