HYDROLOGY K19/D27 1 PLAN

K19/D27

1 Plan

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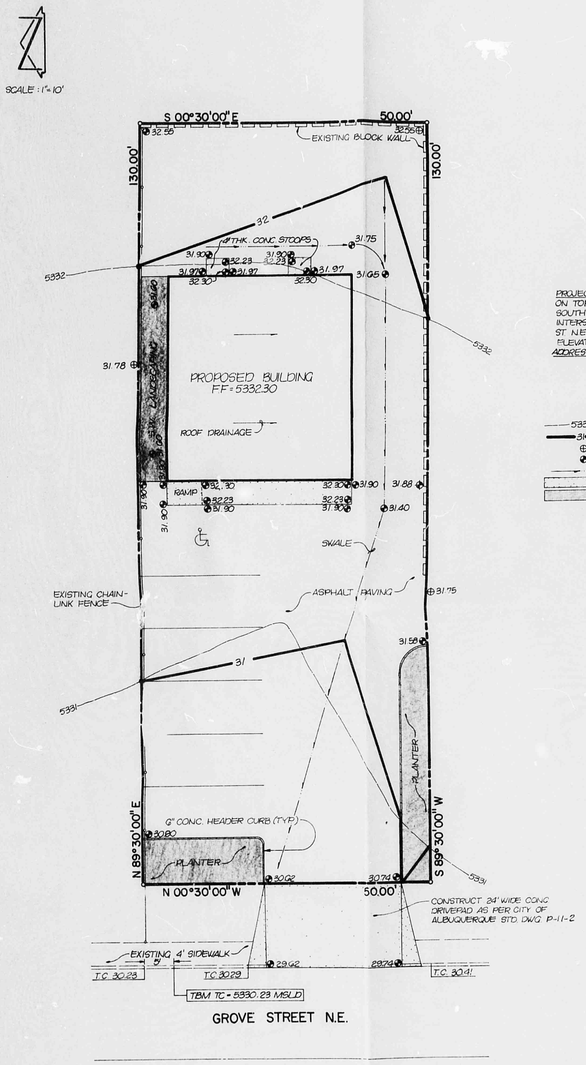


PROJECT BENCHMARK: A SQUARE, 12, CHISELED ON TOP OF THE CONC CURB LOCATED AT THE SOUTH-SOUTHEAST CURB RETURN AT THE INTERSECTION OF LOMAS BLVD N.E. AND ESPANOLA ST N.E. (CITY OF ALBUQUERQUE BENCHMARK I-K19 ELEVATION: 5330.17 FEET (M.S.L.D.)
ADDRESS: 722 GROVE NE

LEGEND

5331	EXISTING CONTOUR
31	PROPOSED CONTOUR
⊕3238	EXISTING SPOT ELEVATION
⊕3238	PROPOSED SPOT ELEVATION
	SWALE WITH DIRECTION OF FLOW
	PROPOSED CONCRETE
	PROPOSED LANDSCAPE

Calculations

Ground Cover Information

1. From SCD Bernalillo County Soil Survey, Plate 31:
   EtC Embudo Tijeras Complex
   Hydrologic Soil Group B
2. Existing Condition

   A perv = 6500 sf = 0.15Ac

   A imp = 0 sf

   from DPM Plate 22.2C-1,

   'C' Factor = 0.34 (% impervious = 0)
3. Developed Condition

   A imp = 5965 sf

   A perv = 535 sf

   % impervious = $\frac{5965}{6500}$ = 92%

   'C' factor = 0.88 (DPM Plate 22.2C-1)

Rational Method

1. Discharge: Q = CiA

   where C varies

   $i = P_6 (6.84) T_c^{-0.51} = 4.92$ in/hr

   P_6 = 2.33 in (DPM Plate 22.2D-1)

   $t_c = .00013L^{0.77}S^{-0.385}$ = 10 min (minimum)

   A = area = 0.15 Ac
2. Volume $V = CP_6A(1/12)$

   where C varies

   P_6 = 2.33 in (DPM Plate 22.2D-1)

   A = 6500 sf

Existing Condition

$Q_{100} = CiA = 0.34 (4.92) 6500 = 0.3$ cfs

$V_{100} = CP_6A = 0.34 (2.33) 6500 = 430$ cf

Developed Condition

$Q_{100} = CiA = 0.88 (4.92) 6500 = 0.6$ cfs

$V_{100} = CP_6A = 0.88 (2.33) 6500 = 1110$ cf

Comparison

$\Delta Q_{100} = 0.6 - 0.3 = 0.3$ cfs

$\Delta V_{100} = 11.10 - 430 = 680$ cf

Free Discharge vs Controlled Discharge

$\Delta Q = Q_{100, free} - Q_{100, controlled} = 0.6-0.6 = 0$

Orifice Equation

$Q = C A \sqrt{2gh}$

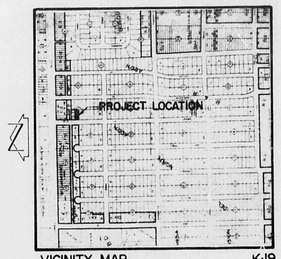
let h = 1.0 ft

C = 0.8 (Cameron Handbook)

$A = \frac{\pi d^2}{4}$ sf (4" pipe)

$g = 32.2$ ft per sec^2

$Q = 0.80 \pi \left(\frac{0.33}{4}\right)^2 \sqrt{2(32.2)(1.0)} = 0.6$ cfs



VICINITY MAP K-19
SCALE 1" = 800'

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Drainage Plan

The following items concerning the Garcia Barber Shop Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located on the east side of Grove N.E. just south of Lomas N.E. The site is more particularly described as Lot 21, Block 1 of the B & R Addition. At present, the site is undeveloped. Adjacent sites are presently developed.

As shown by Plate K-19 of the Albuquerque Master Drainage Study, the site does not lie within a designated flood hazard zone. Furthermore, the review of Plate K-19 reveals that downstream flooding conditions do not exist. Offsite flows do not inpact the project site. This is due to the developed state of the surrounding properties. The existing drainage pattern of the site is one in which runoff flows from east to west.

The grading plan shows: (1) existing and proposed grades indicated by spot elevations and contours at 1'0" intervals, (2) continuity between existing and proposed elevations and (3) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements include the construction of a barber shop and adjacent asphalt parking and required landscaping. The grading required by these improvements will not alter the existing drainage pattern. Runoff will continue to flow from east to west into Grove N.E. This discharge of runoff will be via the driveway cut.

The calculations which appear below analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used for this analysis in accordance with the City of Albuquerque Development Process Manual, Volume II. As shown by these calculations and the analysis of a hypothetical orifice outlet from a pond, the direct discharge of runoff from the site in the developed condition is equivalent to the controlled rate of discharge from a pond if a pond were to be constructed. Because of this and the fact that downstream flooding conditions do not exist, the runoff from this site in the developed condition will not be routed through a positive discharge pond. In addition to this, only a minor increase in runoff is anticipated due to the proposed development.

APPROVED FOR DRAINAGE
Oct 21, 82
CITY ENGINEER — DATE
CONTINGENCIES

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR — STATE OF NEW MEXICO — THOMAS M. MANN JR. 5992
10/13/82

811 DALLAS, N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS

NO.	DATE	BY	REVISIONS

DESIGNED BY: JGM.
DRAWN BY: CGC.
APPROVED: TTM.

JOB NO. 21091
DATE 10/82

DRAINAGE & GRADING PLAN
JERRY GARCIA BARBER SHOP

FILE NO.
SHEET 1 OF 1

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

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