HYDROLOGY

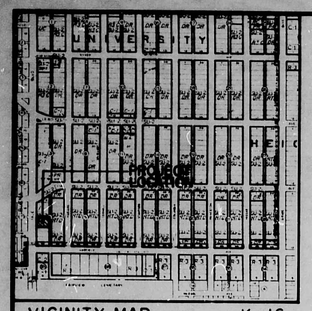
K16/D11

ONE PLAN

1 PLAN FOR

CAMINO REAL ADDN.

K16-D11



VICINITY MAP K-16
SCALE 1" = 800'

·LEGEND·

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5099 EXISTING CONTOUR
- 99 PROPOSED CONTOUR
- PROPOSED CONCRETE
- PROPOSED ASPHALT PAVING
- HIGHPOINT
- SWALE

T.B.M.:

FINISHED FLOOR OF EXISTING BUILDING, AS SHOWN.
ELEVATION = 5159.56 FEET (M&L.D.)

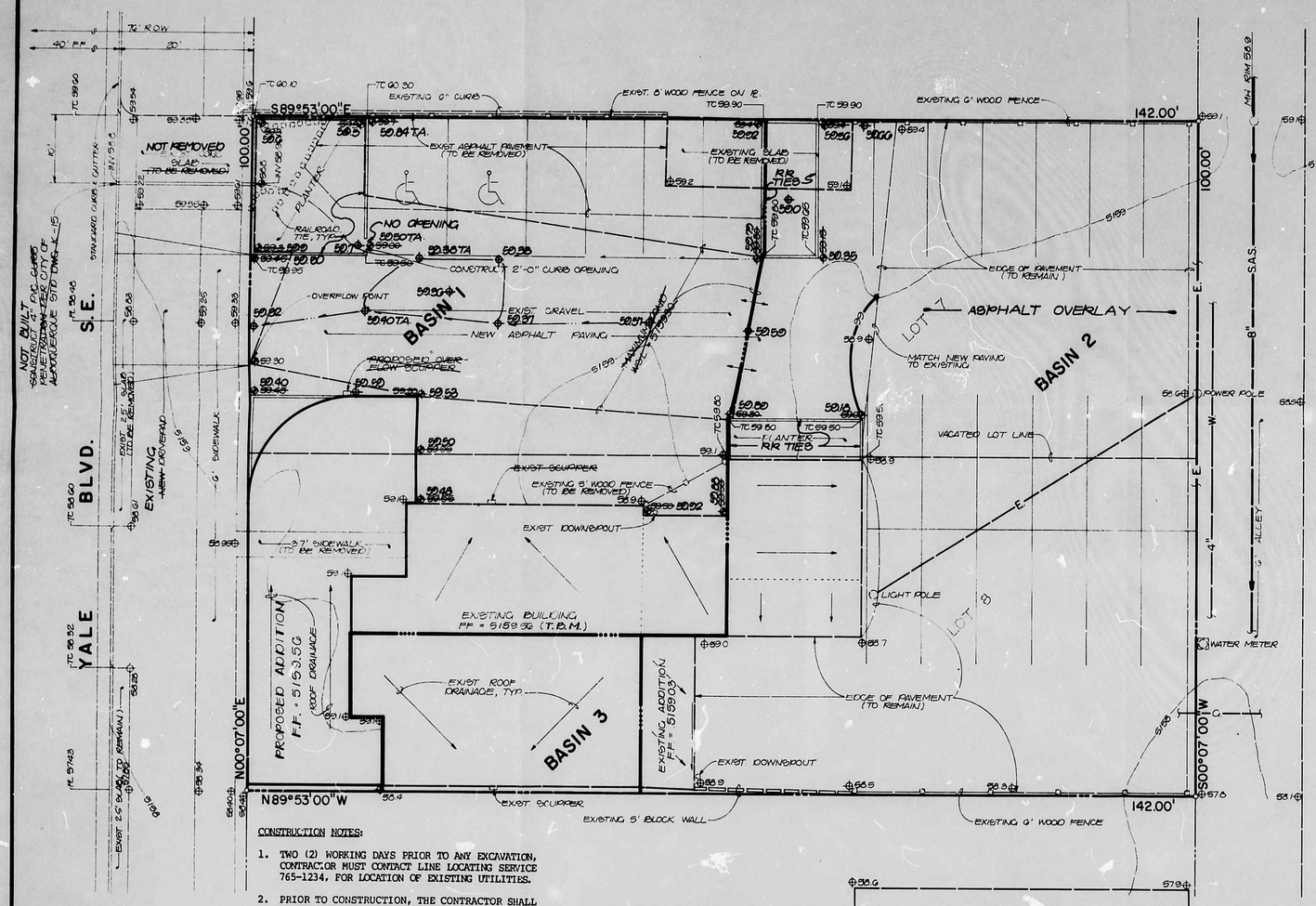
PROJECT BENCHMARK:

AN ACS BENCHMARK A TRIANGLE CHISELED ON TOP OF A CONCRETE CURB @ THE NW/W RETURN, LOCATED @ THE INTERSECTION OF GARFIELD AVE. SE AND COQUELL AVE. SE
ELEVATION = 5160.55 FEET (M&L.D.)

LEGAL DESCRIPTION:

LOTS 7 & 8, BLOCK 4 UNIVERSITY HEIGHTS ADDITION
STREET ADDRESS:
416 YALE BLVD. S.E.

SCALE 1" = 10'



CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 765-1234, FOR LOCATION OF EXISTING UTILITIES.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.

EROSION CONTROL MEASURES

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
2. 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.

DRAINAGE PLAN

The following items concerning the Camino Real Addition 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 Yale Boulevard S.E. between Coal Avenue S.E. and Garfield Avenue S.E. At present, the site is developed as a restaurant. Surrounding parcels are also developed.

As shown by Plate K-16 of the Albuquerque Master Drainage Study, the site lies adjacent to a designated Flood Hazard Zone. This Flood Hazard Zone is Yale Boulevard S.E. It appears from the mapping that this flooding is contained within the street right-of-way. Because of this, the finish floor of the addition has been maintained at the same elevation as the existing building which is approximately one foot higher than the corresponding top of curb elevation. This ensures protection from flooding from the street.

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, 3) the limit and character of the existing improvements, and 4) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements include the construction of a building addition along with additional asphalt paving and several landscaped planners. At present, the site is characterized by three drainage basins. Basin 1 drains the west portion of the parking lot and part of the building to Yale Boulevard S.E. Basin 2 drains the remainder of the parking lot and a portion of the building to an existing alley located at the rear of the property. Basin 3 drains the remainder of the roof to the south onto a neighboring parcel. The proposed drainage pattern will not alter the existing pattern. In fact, the rate of runoff from Basins 2 and 3 will not be changed by the the proposed construction. Basin 1, on the otherhand, will experience a slight increase in runoff, but due to the flooding in Yale Boulevard S.E. will be routed through a positive discharge pond located at the northwest corner of the parcel. This pond will drain to Yale Boulevard S.E. Lastly, there are no offsite flows affecting this site other than those which exist within Yale Boulevard S.E. The neighboring parcels to the north and south drain in much the same fashion as does this site. The alley drains in a southerly direction toward Garfield Avenue S.E.

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, the proposed improvements, due to the implementation of the positive discharge pond, will not increase the peak runoff from the site.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 31:
WeB WinK-Embudo Complex
Hydrologic Soil Group B

Rational Method

Discharge: $Q = CiA$

where C varies
$i = P_6(6.84)(T_c^{-0.51} = 4.78$ in/hr
$P_6 = 2.26$ in (DPM Plate 22.2 D-1)
$T_c = 10$ min (minimum)
A = area, acres

Volume: $V = CP_6A(1/12)$

where C varies
$P_6 = 2.26$ in (DPM Plate 22.2 D-1)
A = area, sf

Existing Condition

1. Basin 1

$A_{total} = 6{,}080$ sf = 0.14 Ac
$A_{imp} = 2{,}080$ sf; % impervious = 34%
'C' = 0.50 (DPM Plate 22.2 C-1)
$Q_{100} = CiA = 0.50(4.78)(0.14) = 0.3$ cfs
$V_{100} = CP_6A = 0.50(2.26/12)(6{,}080) = 570$ cf

2. Basin 2

$A_{total} = 7{,}150$ sf = 0.16 Ac
$A_{imp} = 6{,}350$ sf; % impervious = 89%
'C' = 0.85
$Q_{100} = CiA = 0.85(4.78)(0.16) = 0.7$ cfs
$V_{100} = CP_6A = 0.85(2.26/12)(7{,}150) = 1{,}140$ cf

3. Basin 3

$A_{total} = 970$ sf = 0.02 Ac
$A_{imp} = 920$ sf; % impervious 95%
'C' = 0.92
$Q_{100} = CiA = 0.92(4.78)(0.02) = 0.1$ cfs
$V_{100} = CP_6A = 0.92(2.26/12)(970) = 170$ cf

Developed Condition

1. Basin 1

$A_{total} = 6{,}080$ sf = 0.14 Ac
$A_{imp} = 5{,}620$ sf; % impervious = 92%
'C' = 0.88
$Q_{100} = CiA = 0.88(4.78)(0.14) = 0.6$ cfs
$V_{100} = CP_6A = 0.88(2.26/12)(6{,}080) = 1{,}010$ cf

2. Basin 2

$A_{total} = 7{,}150$ sf = 0.16 Ac
$A_{imp} = 6{,}870$ sf; % impervious = 96%
'C' = 0.93
$Q_{100} = CiA = 0.93(4.78)(0.16) = 0.7$ cfs
$V_{100} = CP_6A = 0.93(2.26/12)(7{,}150) = 1{,}250$ cf

3. Basin 3

$A_{total} = 970$ sf = 0.02 Ac
$A_{imp} = 920$ sf; % impervious 95%
'C' = 0.92
$Q_{100} = CiA = 0.92(4.78)(0.02) = 0.1$ cfs
$V_{100} = CP_6A = 0.92(2.26/12)(970) = 170$ cf

$\cancel{Q_{release} = CA\sqrt{2gh} = 0.25 \text{ cfs}}$

$\cancel{\text{where } C = 0.8}$
$\cancel{A = 0.0873 \text{ sf } (4'' \text{ dia. pipe})}$
$\cancel{g = 32.2 \text{ ft/sec}^2}$
$\cancel{h = 59.3 - 58.9 = 0.17 = 0.2'}$

$\cancel{\text{By hydrograph analysis, } V_{required} = 163 \text{ cf}}$
$\cancel{V_{pond} = \tfrac{1}{2}[(A_{58.9} + A_{59.0})(0.1) + (A_{59.0} + A_{59.3})(0.3)]}$
$\cancel{= \tfrac{1}{2}[(0 + 360)(0.1) + (360 + 1{,}780)(0.3)]}$
$\cancel{= 340 \text{ cf} > V_{required}}$

Comparison

1. Basin 1

⚠ $\Delta Q_{100} = \overset{0.6}{\cancel{0.25}} - \overset{0.3}{} = \overset{0.3}{\cancel{0}}$ cfs ~~(no change)~~ INCREASE
$\Delta V_{100} = 1{,}010 - 570 = 440$ cf (increase)

2. Basin 2

$\Delta Q_{100} = 0.7 - 0.7 = 0$ cfs (no change)
$\Delta V_{100} = 1{,}250 - 1{,}140 = 110$ cf (increase)

3. Basin 3

No Change

⚠ **CERTIFICATION**

The construction of the Camino Real Addition paving did not follow the grades shown on the approved grading and drainage plan. The as-built elevations are shown hereon to demonstrate that Basin 1 freely discharges via the existing drivepad to Yale Boulevard S.E. The approved plan called for a positive discharge pond which was not built. The pond was not built because the existing drivepad was left in place. Because of this, a standard 4-inch PVC curb penetration could not be constructed in accordance with City of Albuquerque Standard Details. Without the construction of this release point, the paving contractor attempted to discharge the runoff through the existing drivepad to Yale Boulevard S.E. In view of the minor increase experienced by this further development of Basin 1, this free discharge appears acceptable. This will result in a 0.3 cfs overall increase in runoff from Basin 1 for the 100-year, 6-hour rainfall event. The change in runoff volume will remain at 440 cf, which will have an insignificant impact on the water surface level in the adjacent street flooding. All other construction appears to be in accordance with the approved plan. No changes have been made to Basin 2 and Basin 3. In addition, the proposed finish floor is in compliance with the approved drainage plan. Based on the above information, the issuance of a certificate of occupancy for this project is hereby recommended and requested.

RECEIVED
MAR 04 1985
HYDROLOGY SECTION

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NEW MEXICO
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REGISTERED PROFESSIONAL ENGINEER

7-84

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ENGINEERS

NO	DATE	BY	REVISIONS
⚠	2/85	JGM	CERTIFICATION

DESIGNED BY J.G.M.
DRAWN BY L.B.D.
APPROVED J.G.M.

JOB NO 41001
DATE 6-84

GRADING & DRAINAGE PLAN
CAMINO REAL ADDITION

K16/D11

FILE NO
SHEET 1 OF 1