HYDROLOGY

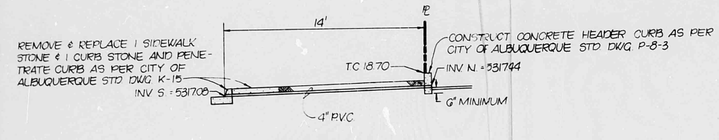
L16/D10

ONE PLAN

1 PLAN FOR

PAUL SMITH APTS.

L16-D10




SECTION A-A
SCALE: 1" = 5'

## DRAINAGE PLAN

The following items concerning the Paul Smith Apartments Drainage Plan are contained hereon:

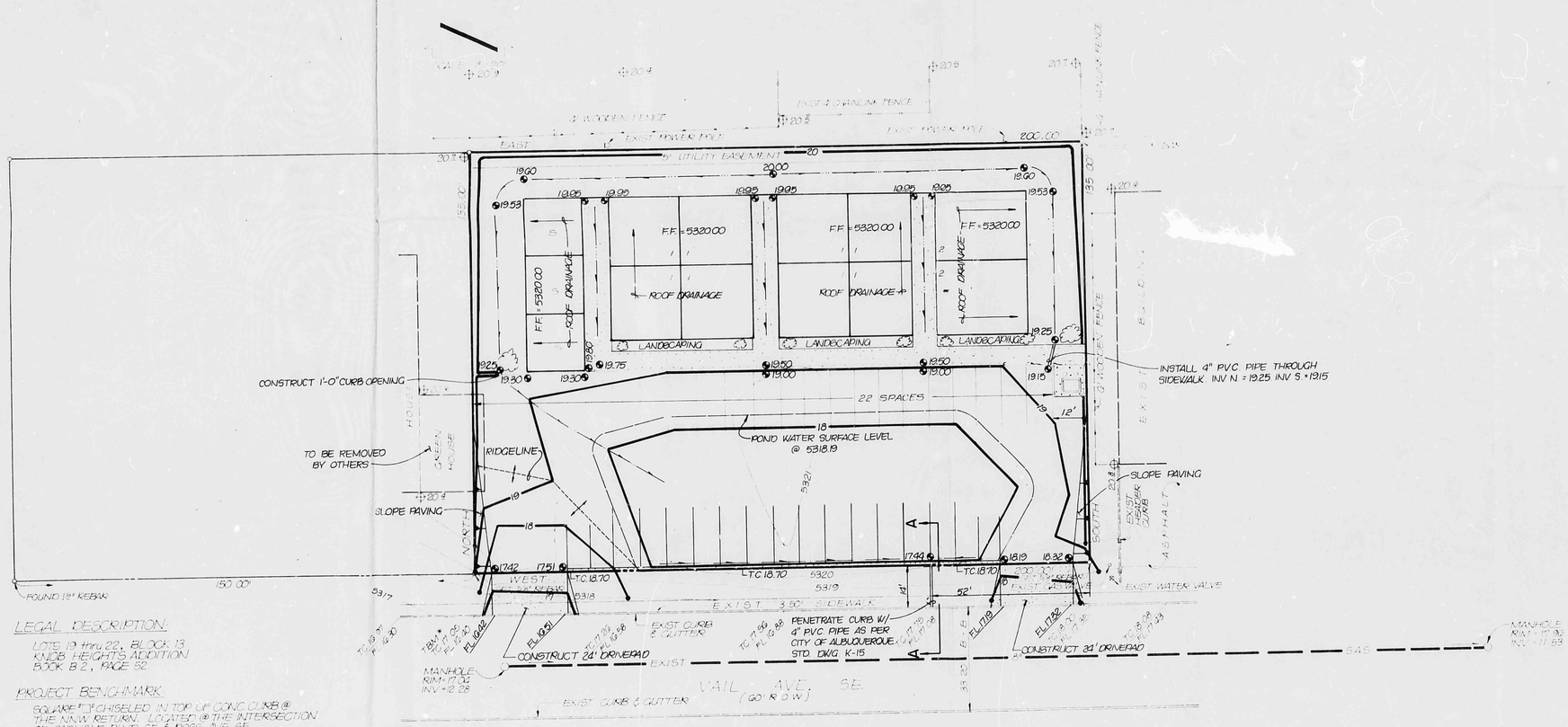
1. Vicinity Map
2. AMDS Plate
3. Grading Plan
4. Calculations

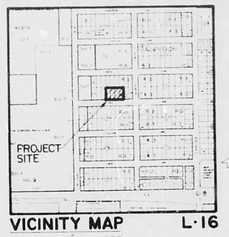
The proposed improvements, as shown by the Vicinity Map, are located along the north side of Vail Avenue, S.E. between Wellesley Drive, S.E. and Amherst Drive, S.E. The site is more particularly described as Lots 19 through 22, Block 13, Knob Heights Addition. The site is presently undeveloped. There is an encroachment by an existing greenhouse. However, this encroachment is to be resolved prior to the commencement of construction.

The site does not lie within a designated Flood Hazard Zone as indicated by Plate L-16 of the Albuquerque Master Drainage Study. Downstream flooding conditions do exist in the arroyo which passes through the existing golf course. Because downstream flooding exists, runoff from the site will be routed through a positive discharge pond.

The Grading Plan shows: 1) existing and proposed grades indicated by spot elevations and contours at 1'-0" intervals 2) continuity between proposed and existing grades and 3) the limit and character of proposed improvements. Also shown on this plan is the limit of ponding on the parking lot. If the pond volume is exceeded, runoff will overflow through the two driveway cuts.

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. Pond volume calculations are based on the average and area method. The pond discharge rate calculation is based on the orifice equation. The determination of the required ponding is determined based on hydrograph construction and the analysis of inflow and outflow. As shown by these calculations, the required volume of ponding is approximately equal to the volume of ponding provided.




VICINITY MAP L-16
SCALE 1" = 800'

AMDS L-16
SCALE 1" = 400'

### Calculations

Rational Method

1. Discharge: $Q = CIA$
   From DPM Plate 22.2 C-1
   C = rational coefficient

   $i = P_6(6.84)T_c^{-0.51}$ (100-yr, 6-hr storm)
   Where $P_6 = 2.4"$ (DPM Plate 22.2D-1)

   $T_c$ = time of concentration = $0.0078L^{0.77}S^{-0.385}$
   L = hydraulic length, ft.
   S = Slope, ft/ft
   A = basin area

EXISTING STATE

Site:
Area = 27000 sf = 0.62 Ac
Hydrologic Soil group B (SCS, Wink Embudo Series)
% impervious = 0
C = 0.34
$T_c$ = 10 minutes (min.)
i = 4.86 in/hr
$Q_{100}$ = 1.0 cfs
$V_{100}$ = 1759 cf

DEVELOPED STATE

Site:
Area = 27000 sf = 0.62 Ac
% impervious = 81
C = 0.77
$T_c$ = 10 minutes (min.)
i = 4.86 in/hr
$Q_{100}$ = 2.3 cfs
$V_{100}$ = 3485 cf

POND VOLUME

$A_{17.44}$ = 0 sf
$A_{18.0}$ = 5245 sf — Vol = 1470 cf
$A_{18.19}$ = 6285 sf — Vol = 1095 cf
ΣVol = 2565 cf

ORIFICE EQUATION:
$Q = C_d A_d \sqrt{2gH}$
H = head = 0.75 ft
$A_d$ = Area of 4" pipe = 0.0855 sf
$C_d$ = 0.74
Q = 0.44 cfs

REQUIRED PONDING:
$V_1 + V_2 = V_{100}$
$V_1 = 1/2 T_c Q_p$ = 691 cf
$V_2 = V_{100} - V_1 = 1/2\, Q_p T_r$ = 3293 cf
$V_{release} = \left(\frac{Q - Q^2}{2Q_p}\right)(T_c + T_r)$ = 1375 cf
$V_{required} = V_{100} - V_{release}$ = 3985-1375 = 2610 cf
$V_{available}$ = 2565 cf

LEGAL DESCRIPTION:
LOTS 19 thru 22, BLOCK 13
KNOB HEIGHTS ADDITION
BOOK B 2, PAGE 52

PROJECT BENCHMARK:
SQUARE "D" CHISELED IN TOP OF CONC CURB @ THE N.W. RETURN. LOCATED @ THE INTERSECTION OF CARLISLE BLVD. SE & KOBE AVE SE
ELEVATION = 5321.47 FEET (M.S.L.D.)

* TEMPORARY BENCHMARK:
TOP OF CURB ELEVATION @ PROPERTY LINE PROJECTION AS SHOWN.
ELEVATION = 5317.05 FEET (M.S.L.D.)

ADDRESS:
3433 VAIL AVE S.E.

LEGEND
- PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- DIRECTION OF FLOW
- TOP OF CURB ELEVATION
- FLOW LINE

RECEIVED
JAN 06 1983
ENGINEERING

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEW MEXICO — THOMAS MANUEL — 3797 — LAND SURVEYOR
1/3/83

Gary

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|---|---|---|---|
| TRUDEAU & ASSOCIATES, ALBUQUERQUE, NEW MEXICO — ENGINEERS | REVISIONS: DATE / BY | DESIGNED BY JGM/BKG; DRAWN BY M; APPROVED TTM | 2136-1; 12/82 |

GRADING AND DRAINAGE PLAN
PAUL SMITH APARTMENTS

L16/D10

FILE NO.
SHEET 1 OF 1