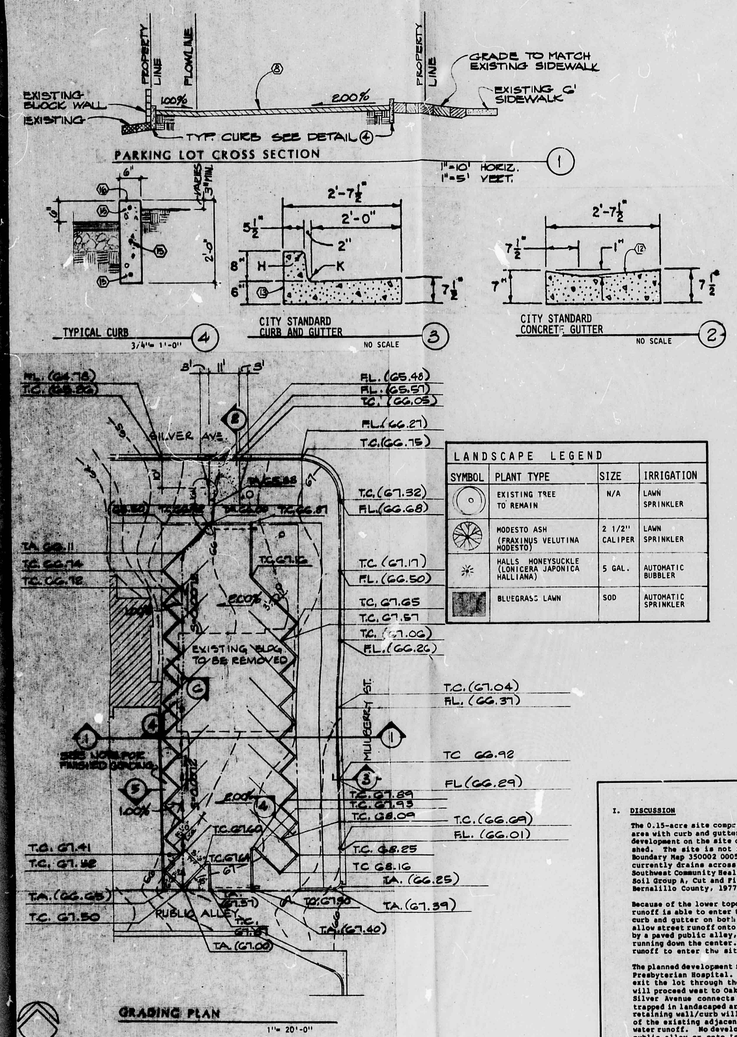
HYDROLOGY K15/D46 1 PLAN

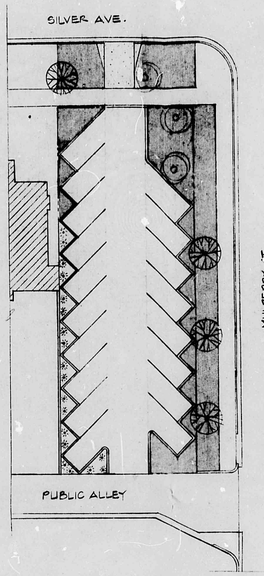
K15/D46

1 PLAN

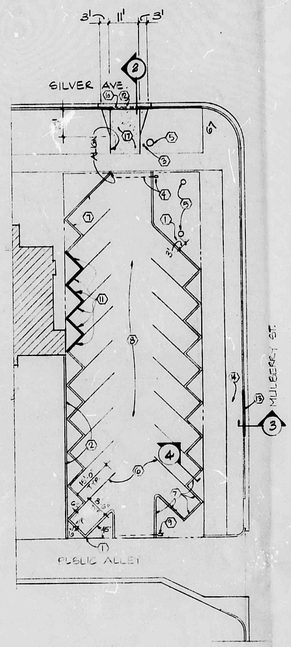
CITY OF [redacted]



LANDSCAPE LEGEND			
SYMBOL	PLANT TYPE	SIZE	IRRIGATION
	EXISTING TREE TO REMAIN	N/A	LAWN SPRINKLER
	MODESTO ASH (FRAXINUS VELUTINA MODESTO)	2 1/2" CALIPER	LAWN SPRINKLER
	HALLS HONEYSUCKLE (LONICERA JAPONICA HALLIANA)	5 GAL.	AUTOMATIC BUBBLER
	BLUEGRASS LAWN	SOD	AUTOMATIC SPRINKLER



LANDSCAPING PLAN
1"= 20'-0"



SITE PLAN
1"= 20'-0"

KEYED NOTES

1. BEGIN LAYOUT HERE
2. REPAINT EAST SIDE OF EXISTING WALL
3. PARKING CARD READER
4. AUTOMATIC ENTRY GATE
5. EXISTING TREE TO REMAIN
6. PAINTED STRIPING, TYPICAL
7. 6" CONCRETE CURB, TYPICAL
8. ASPHALTIC CONCRETE
9. AUTOMATIC EXIT GATE
10. NEW CURB CUT
11. RETAINING WALL/CURB, SEE DETAIL 6
12. NEW CONCRETE GUTTER AT DRIVEPAD PER CITY STANDARD, TYPE 1, DWG P-8
13. NEW CONCRETE CURB AND GUTTER TO INFILL ABANDONED DRIVEPAD, PER CITY STANDARD TYPE 1, DWG. P-8
14. NEW 4" CONCRETE SIDEWALK WITH 6 X6/W1.4 X W1.4 W.W.F. PER CITY STANDARD SECTION A-A, DWG P-13
15. #4 REINFORCING BAR CONTINUOUS TOP AND BOTTOM
16. CONCRETE CURB
17. 8" CONCRETE DRIVE PAD WITH 6 X 6 W1.4 X W1.4 W.W.F. PER CITY STANDARD DRAWING P-11

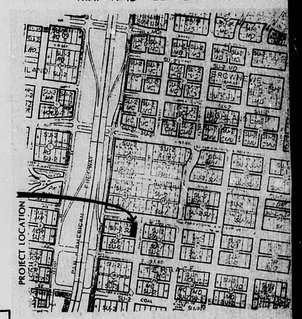
GENERAL NOTE

IN LANDSCAPED AREAS ADJACENT TO EXISTING BLOCK WALL, SLOPE FROM 6 INCHES BELOW TOP OF CURB TO 9 INCHES ABOVE EXISTING GROUND AT BLOCK WALL AND INSTALL 1 1/2" ϕ WEEP HOLES, AT 20'-0" O.C. PER DETAIL 5

ALBUQUERQUE CONTROL SURVEY VERTICAL DATUM

ELEVATIONS SHOWN ARE BASED ON A SURVEY TIED TO A STANDARD N.M.S.H.C. BRASS CAP LABELED "STA I-25-27" LOCATED AT THE SOUTHWEST CORNER OF LEAD AND OAK STREETS, APPROXIMATELY 2'-0" WEST OF I-25.

MAP K-15 EL. = 5067.45



LOCATION PLAN
NO SCALE

LEGAL DESCRIPTION

LOT 1, BLOCK 17, TERRACE ADDITION, ALBUQUERQUE, NEW MEXICO

DRAINAGE PLAN

I. DISCUSSION

The 0.15-acre site comprising Lot 1 is an infill site in a fully-developed area with curb and gutter and sidewalk on all adjacent streets. Previous development on the site consisted of a residential dwelling plus a storage shed. The site is not in a flood hazard zone, as shown on Flood Hazard Boundary Map 350002 0005B dated December 4, 1979. A portion of the site currently drains across the west property line into Lot 2, also owned by Southwest Community Health Services. The soil on the site is in Hydrologic Soil Group A, Cut and Fill, as shown on Plate 31 of the SCS Soil Survey of Bernalillo County, 1977.

Because of the lower topography of the adjacent lot to the west, no offsite runoff is able to enter the site from that direction. Lot 1 is bounded by curb and gutter on both Silver Avenue and Mulberry Street, which do not allow street runoff onto the site. On the south property line it is bounded by a paved public alley, which has an inverted crown, with a valley gutter running down the center. The constructed alley grades do not permit alley runoff to enter the site.

The planned development for this lot is an 18-space overflow parking lot for Presbyterian Hospital. Water from the parking area will be diverted to exit the lot through the vehicle entrance on Silver Avenue. Site water will proceed west to Oak Street, where a type D inlet in the south curb of Silver Avenue connects to an existing 24-inch RCP storm drain. Water trapped in landscaped areas will percolate into the soil. A two-foot high retaining wall/curb will be used on Lot 1, parallel to and along the length of the existing adjacent residence on Lot 2, to protect it from nuisance water runoff. No developed runoff will be released onto the adjacent paved public alley or onto Lot 2.

II. CALCULATIONS

A. Site Characteristics

Area, A = 0.1515 Ac = 6,600 sq ft

Hydrologic Soil Group A, Cut and Fill
(Plate 31, SCS Soil Survey of Bernalillo County, 1977)

Existing (1986) Pervious CN = 61 (DPM Plate 22.2 C-2)
Residential

Developed Pervious CN = 98 (DPM Plate 22.2 C-2)
Paved Parking Lot

B. Time of Concentration/Time to Peak

$T_c = 0.0078\ L^{0.77}/S^{0.385}$ (Kirpich Equation, DPM p. 22.2-3)

Basin Length, L = 110 ft
Elevation Difference = 5067.9 - 5066.6 = 1.30 ft
Slope, S = 1.30/110 = 0.0118 = 1.18%

$T_c = 0.0078\ (110)^{0.77}/(0.0118)^{0.385} = 1.6$ min.

Use $T_c = T_p = 10$ min. (minimum)

C. Point Rainfall, 100-yr frequency, 6-hr volume

$P_6 = 2.25$ in. (DPM Plate 22.2 D-1)

D. Rational Method to quantify Peak Rate of Discharge

Discharge: Q = CiA

where C = Coefficient of Runoff based on surface type

$i = P_6(6.84)T_c^{-0.51} = 2.25(6.84)(10)^{-0.51} = 4.76$ in/hr

E. SCS Method to quantify Volume of Runoff

Volume: V = (43,560/12)RA

where direct Runoff, $R = (P-0.2\ S)^2/(P+0.8\ S)$
(DPM Plate 22.2 C-1)

and S = (1000-10 CN)/CN

F. Existing Condition

Residential Area.

Surface Type	Area	"C" Value	CA
Roofs	1,755	0.90	1,580
Lawns & Landscaping	4,845	0.25	1,211
Totals	6,600		2,791

C = 2,791/6600 = 0.42 (Weighted average per Emergency Rule, 1-14-86)

$(Q_{100})_E$ = CiA = 0.42(4.76)(0.1515) = 0.30 cfs

A_{imp} = 1755 sq ft; percent impervious = (1755/6600)100 = 27%

Using Pervious CN = 61,
Composite CN = 71 (DPM Plate 22.2 C-3)

S = (1000 - 10(71))/71 = 4.08

R = (2.25 - 0.2(4.08))²/(2.25 + 0.8(4.08)) = 0.37 in

$(V_{100})_E$ = (43,560/12) (0.37)(0.1515) = 215 cu ft

G. Developed Condition

Surface Type	Area	"C" Value	CA
Parking lot, drives, walks	5,314	0.95	5,048
Lawns, Landscaping	1,286	0.25	322
Totals	6,600		5,370

C = 5,370/6,600 = 0.81 (Weighted average per Emergency Rule)

$(Q_{100})_D$ = 0.81 (4.76)(0.1515) = 0.58 cfs

A_{imp} = 5,314 sq ft; percent impervious = (5,314/6,600)100 = 80.5%

Using Pervious CN = 98,
Composite CN = 98 (DPM Plate 22.2 C-3)

S = (1000 - 10(98))/98 = 0.204

R = (2.25 - 0.2(0.204))²/(2.25 + 0.8(0.204)) = 2.02 in

$(V_{100})_D$ = (43,560/12) (2.02)(0.1515) = 1,112 cu ft

H. Net Change

Q_{100} = 0.58 - 0.30 = 0.28 cfs (increase)

V_{100} = 1,112 - 205 = 907 cu ft (increase)

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PRESBYTERIAN HOSPITAL
S.W. CORNER OF SILVER AND MULBERRY
ALBUQUERQUE, NEW MEXICO 87102

K-15 D-4

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