HYDROLOGY

G17/D3A
1 PLAN

G17/D3A

1 Plan

MASTER CONCEPTUAL GRADING AND DRAINAGE PLAN
FOR
CARLISLE PLAZA

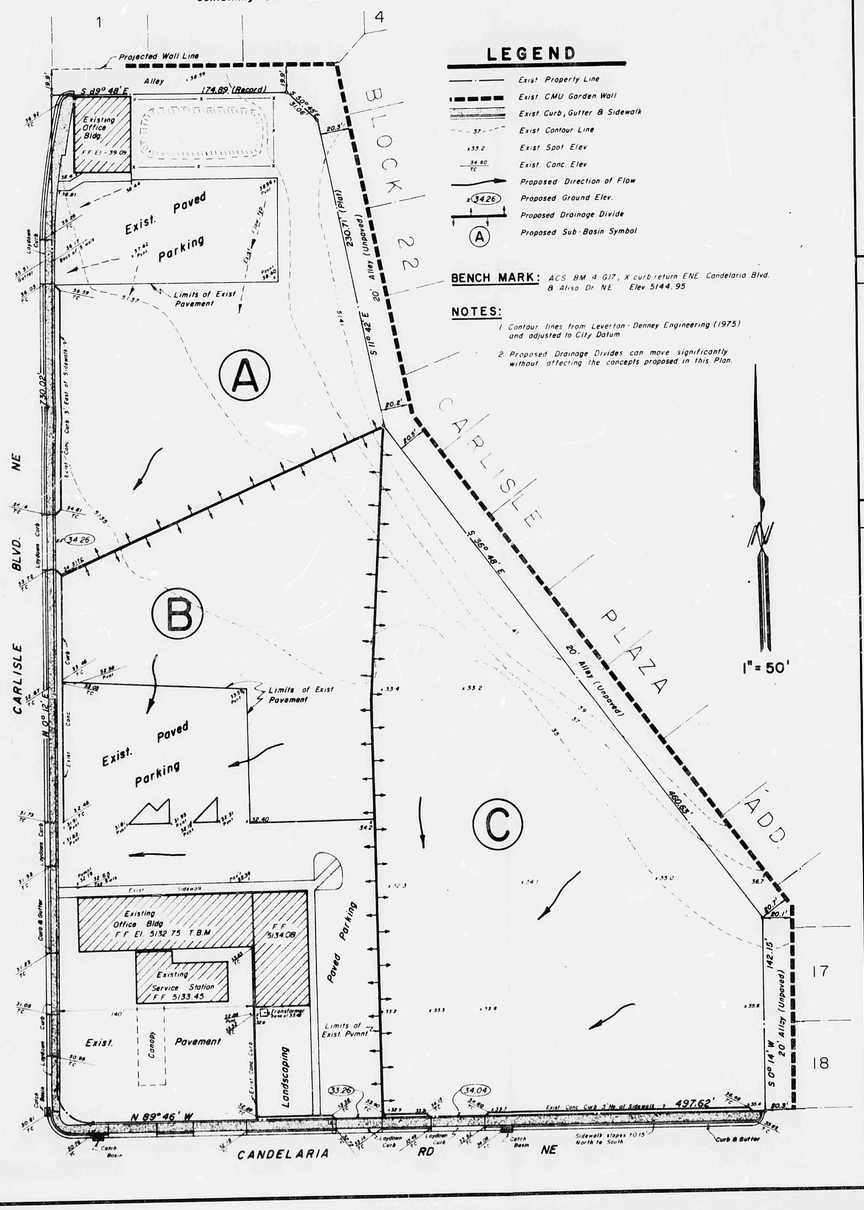
APRIL, 1983

RECEIVED
APR 1 5 1983
ENGINEERING

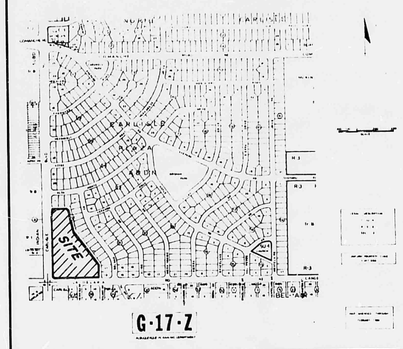
PLAN

LEGAL DESCRIPTION

Lot A of Block 22 of CARLISLE PLAZA ADDITION, an addition to the City of of Albuquerque, New Mexico, as the same is shown and designated on the plat of said addition, filed in the Office of the County Clerk of Bernalillo County, New Mexico on October 30, 1951.
Containing 6.1767 acres.

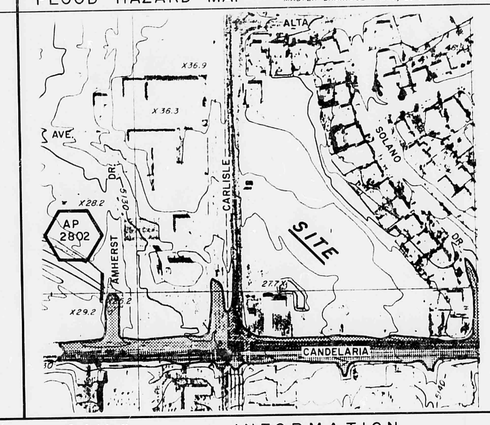


VICINITY MAP



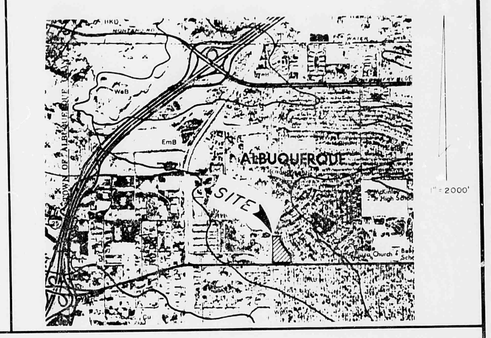
FLOOD HAZARD MAP

Parts of Sheets G-16, G-17, H-16 & H-17 of ABQ. MASTER DRAINAGE PLAN, Bohannan-Huston, Inc 1981



SOILS MAP

From: SOIL SURVEY OF BERNALILLO COUNTY AND PARTS OF SANDOVAL AND VALENCIA COUNTIES, NEW MEXICO, USDA S.C.S., June 1977, Sht 22



SOILS INFORMATION

DESCRIPTION:

EmB Embudo gravelly fine sandy loam, 0 to 5 percent slopes. This level to gently sloping soil is on the East Mesa. It has the profile described as representative of the series. Included in mapping are areas around Central Avenue and Tramway Road in Albuquerque where the surface layer is thick and slightly darker than is typical and the substratum is limy and cobbly. Also included are areas of Tiperas, Millett, and Tesajo soils.

Runoff is medium, and the hazard of water erosion is moderate.

This soil is used for watershed, wildlife habitat, community development, and range. It is subject to periodic flooding. Control of moisture is needed for proper compaction. Dryland capability subclass VIIc; native plant community 4.

Soil series and map symbols	Depth to: Bedrock	Seasonal high water table	Depth from surface	USDA texture of representative profile	Classification: Unified	AASHTO	Coarse fragments greater than 3 inches
Embudo (EmB, EH For Tiperas part of EH, see Tiperas series.	>5	>5	0-20	Gravelly fine sandy loam and gravelly sandy loam	SM	A-2, A-4	-
			20-60	Gravelly loamy coarse sand	SM	A-1	-

Percentage passing sieve: No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)	Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Salinity	Shrink-swell potential	Risk of corrosion for: Uncoated steel	Concrete
85-95	70-85	40-75	25-50	NP	NP	0.6-0.2	0.07-0.09	7.9-8.4	0-1	Low	Low	Low
80-95	50-70	20-45	10-25	NP	NP	20-0.60-0.06		7.9-8.4	0-1	Low	Low	Low

Hydrologic soil group B

HYDROLOGIC DATA AND SAMPLE CALCULATIONS

EXISTING CONDITIONS:

OFF-SITE: The 6.18 acre site is currently protected from off-site runoff on the north and east by a CMU garden wall. The lot grading behind the existing wall is such that, should the wall be removed, little if any runoff will enter the site. Under worst-case conditions, the site would recieve runoff from backyards and half the roof areas of 18, R-1 lots. The Albuquerque Master Drainage Plan, Vol. III shows a total 100-yr flow rate in Candelaria Blvd. west of Carlisle Blvd. (AP 2802) of 271 cfs (10 yr = 117 cfs). The peak occurs 0.26 hrs (15 min.) after rainfall begins which is at least 10 min. after a hydrograph from the site would peak. The existing storm drain in Candelaria Blvd. has approx. 140 cfs capacity (48" Dia. @ S=0.0101). There are three double C type catch basins adjacent to the site which collect runoff from the site and thus protect Candelaria and Carlisle Blvd.s from both nuisance and storm flows generated on the site. The approximately 130 cfs (100 yr) of surface flow in Candelaria Blvd. exceeds the street capacity and could potentially cause flooding along the southern edge of the site.

ON-SITE: The 6.18 acre site is currently (April 1983) approx. 30% developed (1.85 acres), containing four buildings and associated parking lots and driveways. The buildings were developed over several years and except for the corner development, each has its own approved and constructed drainage facilities. The remaining 4.32 acres is lightly covered by native vegetation and graded such that most runoff ponds to be infiltrated or evaporated. The site currently generates little if any off-site runoff except in extreme events.

CALCULATIONS:
T_c <10 min. I_{10} = 3.18 in/hr I_{100} = 4.84 in/hr

Worst case
C = 0.48 (type B soils, 30% imperv.) A = 6.18 acres
Q_{10} = (0.48)(3.18)(6.18) = 9.4 cfs
Q_{100} = (0.48)(4.84)(6.18) = 14.4 cfs

Best case
0.55 acres with no drainage facilities; C = 1.0
5.63 acres with retention ponding; C = 0.34

Weighted C = [(1.0)(0.55)+(0.34)(5.63)]/6.18 = 0.40
Q_{10} = (0.40)(3.18)(6.18) = 7.9 cfs
Q_{100} = (0.40)(4.84)(6.18) = 12.0 cfs

FULLY DEVELOPED CONDITIONS:

OFF-SITE: It is anticipated that the adjacent lands to the North and East will not be altered from a drainage standpoint. Albuquerque Master Drainage Plan Projects 337-01 and 337-02 will reduce the flow rates in Candelaria Blvd. and thus the flooding potential upon their construction. It is recommended, however that any building constructed along and within 100 feet of Candelaria Blvd. have a minimum finished floor elevation or be flood-proofed to an elevation of at least 1.0-foot above the elevation of the top of curb on Candelaria Blvd. at a point perpendicular to the easternmost extremity of that building.

ON-SITE: Due to its extreme downstream position in the watershed drained by the 48" storm drain in Candelaria Blvd., and the relative timing of the pertinent hydrograph peaks, the site should not be provided with on-site detention ponding, except that which can be practically provided within landscaped areas to help reduce the amount and frequency of nuisance and landscape irrigation waters leaving the site. The site can be developed into three sub-basins, each draining directly or indirectly to one of the three existing catch basins adjacent to the site. Where ever practical, runoff should be directed under the sidewalk and into the back of a catch basin (existing developed areas are generally exempted). The drainage and grading in and adjacent to the alley should be addressed in detail in conjunction with and at the time that the first building is planned that has a direct impact on the alley itself or that requires or alters its use for access.

CALCULATIONS:

T_c <10 min. I_{10} = 3.18 in/hr I_{100} = 4.84 in/hr
Assume C = 0.92 (type B soils, 95% imperv.)

Sub-basin A Area = 1.44 acres
Q_{10} = (0.92)(3.18)(1.44) = 4.2 cfs
Q_{100} = (0.92)(4.84)(1.44) = 6.4 cfs

Sub-basin B Area = 2.60 acres
Q_{10} = (0.92)(3.18)(2.60) = 7.6 cfs
Q_{100} = (0.92)(4.84)(2.60) = 11.6 cfs

Sub-basin C Area = 2.14 acres
Q_{10} = (0.92)(3.18)(2.14) = 6.3 cfs
Q_{100} = (0.92)(4.84)(2.14) = 9.5 cfs

Totals:
Q_{10} = 18.1 cfs
Q_{100} = 27.5 cfs

EROSION CONTROL

As neither the phasing nor the configuration of future development is known at this time, the exact nature of erosion control requirements cannot be formulated. However, if the site is developed in phases, care should be taken to provide the following:

Construction Phase: Measures should be provided to prevent water-borne sediment from leaving the site and entering either the street or the storm drain. Further care should be excersized inorder to prevent damage to then existing on-site landscaped areas, drainage facilities and asphalt parking and driving surfaces.

Development Phase: Means should be provided to de-silt runoff from undeveolped and disturbed areas before it enters either the developed portion of the site or public rights-of-way.

DATE: 4-14-1983

REV. BY:	DATE:	REV. BY:	DATE:	REV. BY:	DATE:

LEVERTON - EASTERLING, INC.
- CONSULTING ENGINEERS -
5629 PARADISE BLVD. ABQ. N.M. PHONE 898-8021

SHEET 1 OF 1