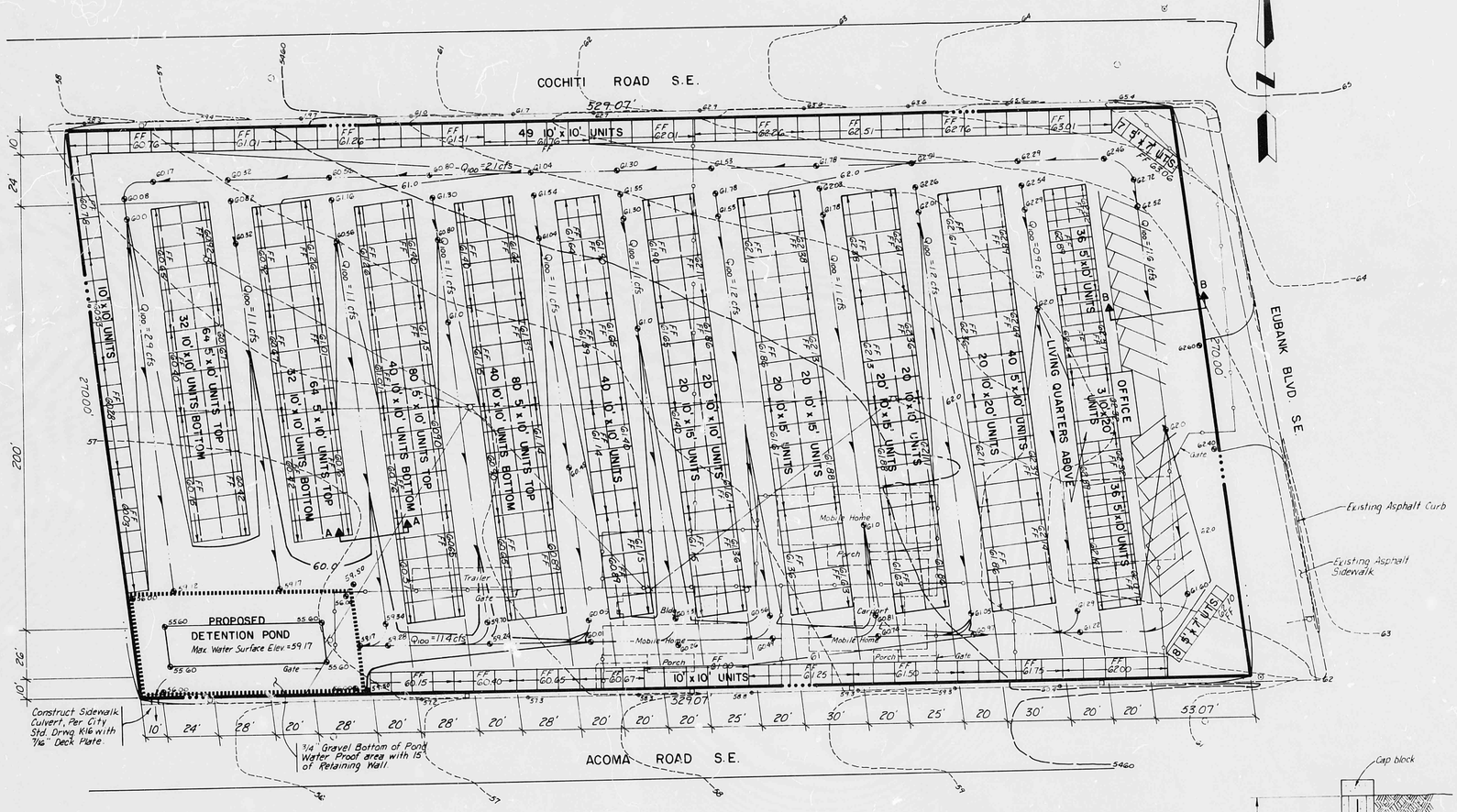
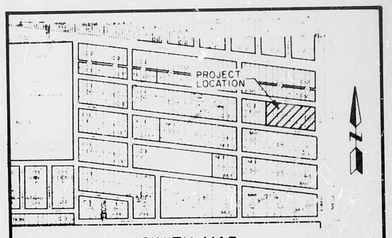
HYDROLOGY L20/D14 EUBANK AND ACOMA S.E.

L20/D14

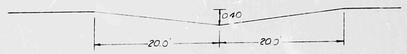
KUBANK AND
ACOMA S.E.

1 PLAN





LEGAL DESCRIPTION:
BLOCKS 10 AND 11 OF SKYLINE HEIGHTS ADDITION



SECTION B-B
SWALE SECTION

SECTION A-A
TYPICAL SWALE SECTION

BENCH MARK:
STATION IS A STANDARD ACS BRASS TABLET STAMPED "5 - L 21 RESET - 1974" SET IN THE ESE CURB RETURN OF THE INTERSECTION OF EUBANK BLVD, S.E. AND CENTRAL AVE.
ELEV. = 5466.54

The proposed site is located at the northwest quadrant of the intersection of Eubank, S.E. and Acoma, S.E. The 3.27 acre parcel is currently developed and zoned C-3. Plans call for the construction of self-storage units with an asphalt driving surface in between the units.

The surrounding streets intercept all flows from the north, east and south. The adjacent property to the west discharges no storm flows onto the site.

The Albuquerque Master Drainage Study (AMDS) indicates that the project is not located in a Flood Hazard Zone.

On-site ponding is provided. Under present conditions, there is limited downstream capacity at Moon Street. Improvements to the downstream conditions are recommended by the AMDS. Development will result in the peak discharge of this site, as shown hereon, does not require completion of the downstream improvements. The storm flows will be routed through a detention pond and discharged through a sidewalk culvert onto Acoma Road. The flows will be conveyed to the west on Acoma to the intersection of Moon Street and Acoma, S.E.

The proposed detention pond will be located in the southwest corner of the site. The pond shall be lined with a waterproof material in locations where it is within 15 feet of the property line or adjacent structures. The retaining walls will be constructed of reinforced concrete masonry units. The inside of the wall shall be waterproofed. A fence at least 30" in height shall be built around the pond. The center of the pond shall be depressed 4"-6" below the perimeter elevation to retain nuisance flows generated on the site.

CALCULATIONS

Drainage Conditions:

1. From SCS Bernalillo County Soil Survey, Plate 32, Soil Type: Embudo (EmB), Hydrological Soil Group: "B"
2. P_{100} = 2.42" (DPM Plate 22.2 D-1)
3. $i_{100} = 2.42 \times 6.84 \times 10^{-0.51} = 5.12$ in./hr. (for Tc = 10 min.)

Undeveloped Drainage Conditions On-Site:

Area = 142,515 SF (3.27 AC)
% Impervious = 5%
C = 0.36 (DPM Plate 22.2 C-1)
L = 566 Ft.
Δ Elevation = 9.9 Ft.
S = 0.017 Ft./Ft.
Vel = 0.77 Ft./Sec.
Tc = [L/(V x 60)] = 12.25 min.
$i = 2.42 \times 6.84 \times 12.25^{-0.51} = 4.61$"/Hr.
Q_{100} = CiA = (0.36)(4.61)(3.27) = 5.43 CFS
V_{100} = CPA = (0.36)(2.42)(142515)/12 = 10347 CF

Existing Drainage Conditions On-Site:

Area = 3.27 AC
% Impervious = 75%
C = 0.73 (DPM Plate 22.2 C-1)
L = 566 Ft.
Δ Elevation = 9.9 Ft.
S = 0.017 Ft./Ft.
Vel = 0.77 Ft./S
Tc = 566/0.77 = 12.25 Min.
$I = 2.42 \times 6.84 \times 12.25^{-0.51} = 4.61$"/Hr.
Q_{100} = (0.73)(4.61)(3.27) = 11.01 CFS

Developed Drainage Conditions On-Site:

Area = Impervious: 3.11 AC (95%)
Pervious: 0.16 AC (5%)
Total: 3.27 AC (100%)
C = 0.92 (DPM Plate 22.2 C-1)
Q_{100} = CiA = 0.92 (5.12)(3.27) = 15.4 CFS
V_{100} = CDA = 0.92 (2.42)(142515)/12 = 26441 CF

Discharge Calculations:

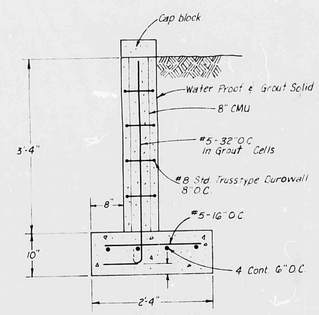
$Q = cAo\sqrt{2gh}$
C = 0.598 Q = 6.0 CFS h = 3 ft.
Ao = 0.722 SF Use 4" x 2'2" Opening
Vel = 6.0/0.722 = 8.32 FPS
Vel x d ≤ 6.5
d = 0.33 Ft. Vel = 8.31 FPS
8.31 x 0.33 = 2.77 ≤ 6.5

10-Year Storm Calculations:

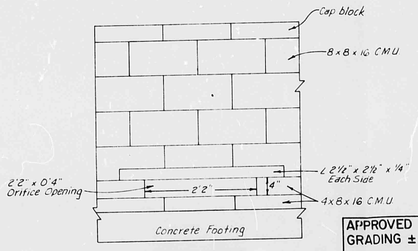
P_{100} = 2.42" (DPM Plate 22.2 D-1)
Reduction Factor for 10-Year Storm 0.675
P_{10} = 2.42 (0.675) = 1.63
$I = 1.63 (6.84)(10^{-0.51}) = 3.43$ in./hr.
Q_{10} = CiA = 0.92 (3.45)(3.27) = 10.38 CFS
V_{10} = CDA = 0.92(1.63)(142515)/12 = 17810 CF

Pond Volume Calculations:

Required Pond Volume = 15,600 cf
Max. Depth = 3.17 ft.



TYPICAL RETAINING WALL SECTION



ORIFICE OPENING
Scale: 3/4" = 1'0"

RECEIVED
MAY 04 1983
ENGINEERING

LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOURS
- PROPOSED CONTOURS
- DRAINAGE SWALE
- RETAINING WALL
- ELEVATION AT TOP OF CURB
- PROPOSED SPOT ELEVATION
- POWER OR LIGHT POLE
- OVERHEAD POWER LINE
- EXISTING CHAIN LINK FENCE
- WATER METER
- SEWER MANHOLE
- FIRE HYDRANT
- CONCRETE SIDEWALK OR PAD
- PROPOSED FINISHED FLOOR ELEVATION (MEAN SEA LEVEL ELEV. - 540000)

61.84 FF

APPROVED FOR ROUGH GRADING ± 1'0"

CITY ENGINEER DATE

Date	Revision	By

SELF STORAGE UNITS at EUBANK & ACOMA, S.E.

Project No.

GRADING & DRAINAGE PLAN

Seal: DAVID M. Y. MILLER, REGISTERED PROFESSIONAL ENGINEER, 5-3-83

Job No. 39409	Sheet 1 Of 1
Drawn By PE	Date 5 / 83
Checked By JH, DMYM	Scale 1 = 30'

L20 / D14