HYDROLOGY

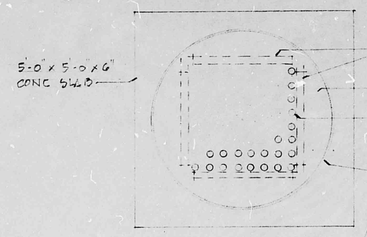
D17/D43

ONE PLAN

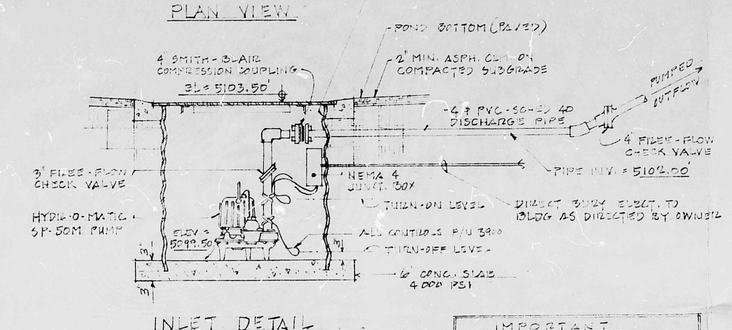
1 PLAN FOR

HITCHNER OFFICE/
WAREHOUSE

D17-D43



PLAN VIEW



INLET DETAIL

NO SCALE

IMPORTANT
SEE SHEET C-1 FOR BENCH MARK AND OTHER SURVEY INFO.

EXISTING CONDITIONS

The site is not in a flood hazard area on the Flood Hazard Boundary Map. Since the area drains directly into the AMAFCA North Diversion Channel, the City hydrology Section has determined that discharge of runoff need not be controlled.

Presently, the site drains away from Washington Street and onto Lot 22, to the west. See the approved drainage plan D17-D38 for Lot 22. Two retention ponds on Lot 24 handle that parcel's runoff, and Lot 26 directs runoff toward the south, away from the site.

Area of the site = 20,000 s.f.

Offsite contributing area = 9' x 100' = 900 s.f.

From S.C.S. Soil Survey, soil at the site is in hydrological group B. From Plate 22.2 C-1 of the Development Process Manual, 'c' factor = 0.34 for 0% impervious.

From Plate 22.2 D-1, 100-year rainfall = 2.2"

$$q_{100} = 0.34 \times \frac{2.2"}{12"/ft.} \times 20{,}900 \text{ s.f.}$$

= 1303 cu. ft. runoff from Lot 25.

q_{10} = 0.657 (1303) = 856 cu. ft.

Existing peak flow rate

S = 0.025 From 22.2 B-1, v = 0.95 fps

$$T_c = 0.0078 \left(\frac{L^{0.77}}{S^{0.385}}\right) = 2.09 \text{ min. (use 10 min.)}$$

From 22.2 D-2,

i_{100} = 2.16 x 2.2 = 4.752 in./hr.

i_{10} = 4.752 x 0.657 = 3.122 in./hr.

Onsite and offsite runoff

$$A = \frac{20{,}900 \text{ s.f.}}{43{,}560} = 0.48 \text{ acre}$$

q_{100} = c i_{100} A = 0.34 x 4.752 x 0.48 = **0.76 cfs**

q_{10} = 0.76 x 0.657 = 0.51 cfs onto Lot 22.

DEVELOPED CONDITIONS

Of the current 20,900 s.f. contributing runoff to the west, all but the proposed 24-ft. driveped will need to be handled.

Landscaped area = 100 + 180 + 580 + 2072 = 2432 s.f.

Unpaved area = 5 x 126 + 47 x 56 + 25 x 44 + 17 x 25 = 4787 s.f.

Roof & paving = 20,900 - 2432 - 4787 - 27 x 9 = 13,438 s.f.

Composite 'c' = [0.9 (13,438) + 0.34 (4787) + 0.3 (2432)] ÷ 20,657 65% imp

c = 0.70 ⇒ C = 0.66 < 0.70 OK

Peak runoff

$$q_{100} = ciA = 0.70\ (4.752)\ \left(\frac{20{,}900 - 243}{43{,}560}\right) = \underline{1.58 \text{ cfs}}$$

q_{10} = 1.58 (0.657) = 1.04 cfs

Developed runoff

V_{100} = 0.7 x 2.2" / 12 x 20,900 sf

V_{100} = 2682 c.f. ← detain

V_{10} = 2682 (0.657) = 1762 c.f.

Design pond with 2:1 side slopes and 2 ft. depth, except at south end.

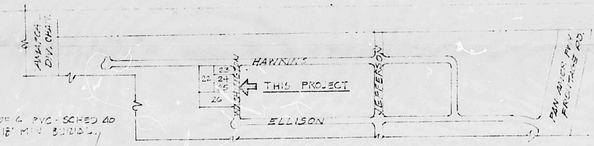
(A) area 15'x20' @ 2' depth = 200 c.f.

(B) area 15'x25' x 40' @ .8' avg = 800 cf

total = 2000 cf OK

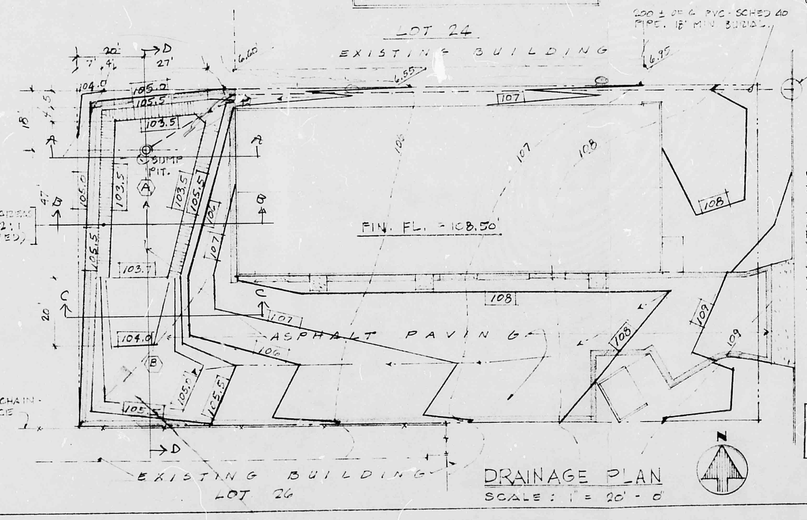
All runoff is to be directed into the detention pond, except for minor losses at the extreme northwest corner of the parcel. The site is to be paved with asphaltic concrete. Some pond bottom 1/2% to sump pit. Runoff will collect in the sump & be automatically pumped thru PVC pipe into Washington St.

Richard C Bright 12-26-83



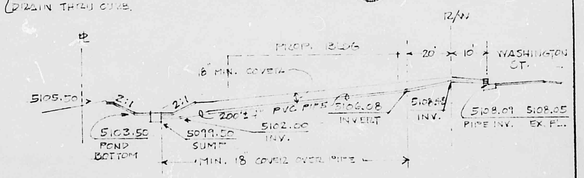
VICINITY MAP

D-17-Z



DRAINAGE PLAN

SCALE: 1" = 20'-0"



PROFILE

NO SCALE

12-26-83

Richard Stout

OFFICE/WAREHOUSE BLDG

DON HITCHNER - OWNER

7201 WASHINGTON STREET, NE

ALBUQUERQUE, NEW MEXICO

M. KENT STOUT - ARCHITECT

5017 COMMERCIAL NE 344-2750

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C-2

D17/D43