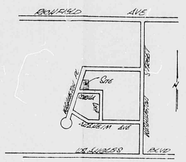
GRADING AND DRAINAGE PLAN



VICINITY MAP (H19)
C-17

CALCULATIONS

I REFERENCES:

A) CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL (DPM) VOL II, DESIGN CHAPTER, C-CHAPTER 22, DRAINAGE FLOOD CONTROL & HYDROLOGY CONTROL.

B) SOIL SURVEY OF BERNALILLO COUNTY & PART OF SANDOVAL AND VALENCIA COUNTIES, NEW MEXICO (1975)

C) MASTER DRAINAGE REPORT FOR CLIFFORD INDUSTRIAL PARK BY BOHANNON HUSTON

II GENERAL INFORMATION:

A) SOIL TYPE (REF B, SHT 11) EMP. BRELLO GRAVELLY FINE SANDY LOAM, HYDROLOGIC SOIL GROUP B

B) IMPERVIOUSNESS

BUILDING	7600 SF
SIDEWALK	806 SF
ASPHALT	9806 SF
LANDSCAPE	10286 SF
TOTAL	28706 SF (0.6590 AC)

% IMPERVIOUSNESS

$(8406 + 10286)/28706 = 0.661 \approx 66.0\%$

C) 'C' FACTOR (REF A PLATE 22.2-C-1)

UNDEVELOPED - CLASS D SOIL	C = 0.44
DEVELOPED - 100% IMPERVIOUS	C = 0.95

D) RAINFALL 100 YR. 6 HR. (REF) (REF A PLATE 22.2-D)

$R_6 = 2.15$ in.

E) TIME OF CONCENTRATION: USE 10 MINUTES (MIN)

F) RAINFALL INTENSITY (REF A, PLATE 22.2-D-2)

$I = R_6(6/T_c)^{1-D} = 2.15 \times 6/6^{0.4} = 2.76$ in/hr

II OFF-SITE FLOW

NO OFF-SITE FLOW (REF C)

III PEAK DISCHARGE

A) TOTAL SITE (RATIONAL METHOD Q=CIA)

$Q_{100} = 0.95 \times 2.76 \times 0.6590 = 1.77$ CFS

$Q_{10} = 0.667 \times 1.77 = 1.18$ CFS

B) DRAINAGE THROUGH CURBSIDE PIPE

UNDEVELOPED AREA	8406 SF
1/2 BLDG	2700 SF
TOTAL	10850 SF (0.2491)

% IMPERVIOUS

$2700/10850 = 0.2491 \approx 25\%$

C) FACTOR = 0.45

$Q_{100} = 0.45 \times 2.76 \times 0.2491 = 0.309$ CFS

$Q_{10} = 0.667 \times 0.309 = 0.206$ CFS

D) EFFICIENCY THROUGH SLOTTED

$Q_{100} = 1.77 - 0.45 = 1.32$ CFS

$Q_{10} = 1.18 - 0.206 = 0.97$ CFS

I CONCLUSION (AT FACILITY)

A) SIDEWALK PIPE TOP SURFACE ELEVATION 5.0 CA [illegible]

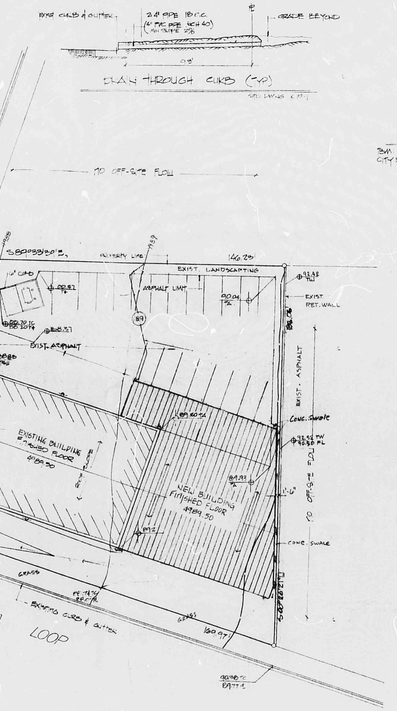
$\frac{1.32}{0.309} \times 0.45 = 1.92$ CFS

$Q_{100} = 0.45 + 0.309 \times 0.45 = 0.59$ CFS

$\frac{0.97}{0.206} \times 0.45 = 2.12$ CFS

$Q_{10} = 0.45 + 0.206 \times 0.45 = 0.53$ CFS

OK



TEMPORARY BERM FOR FLOODING CONTROL

THE WORK ALONG SOUTH AND EAST

NOTE TO CONTRACTOR

THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY EXCAVATED MATERIAL IN THE PUBLIC RIGHT OF WAY

TRANSITION
PROFILE
EXISTING
PROPOSED
CURB
PROPOSED CURB & GUTTER
EXISTING PAVEMENT
EXISTING GRADE
PROPOSED GRADE
EXISTING
PROPOSED
EXISTING
PROPOSED
EXISTING
PROPOSED

HYDROLOGY

C17/D1M

ONE PLAN

I PLAN FOR

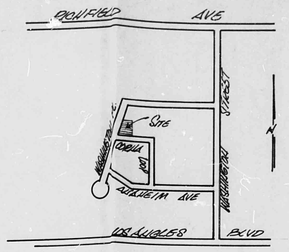
MACHINE SHOP FOR

DAN THOMPSON

CIN-DIM

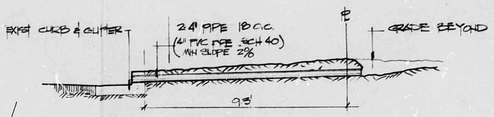
I PLAN

GRADING AND DRAINAGE PLAN



VICINITY MAP (NTS.)

C-17



DRAIN THROUGH CURB (TYP)

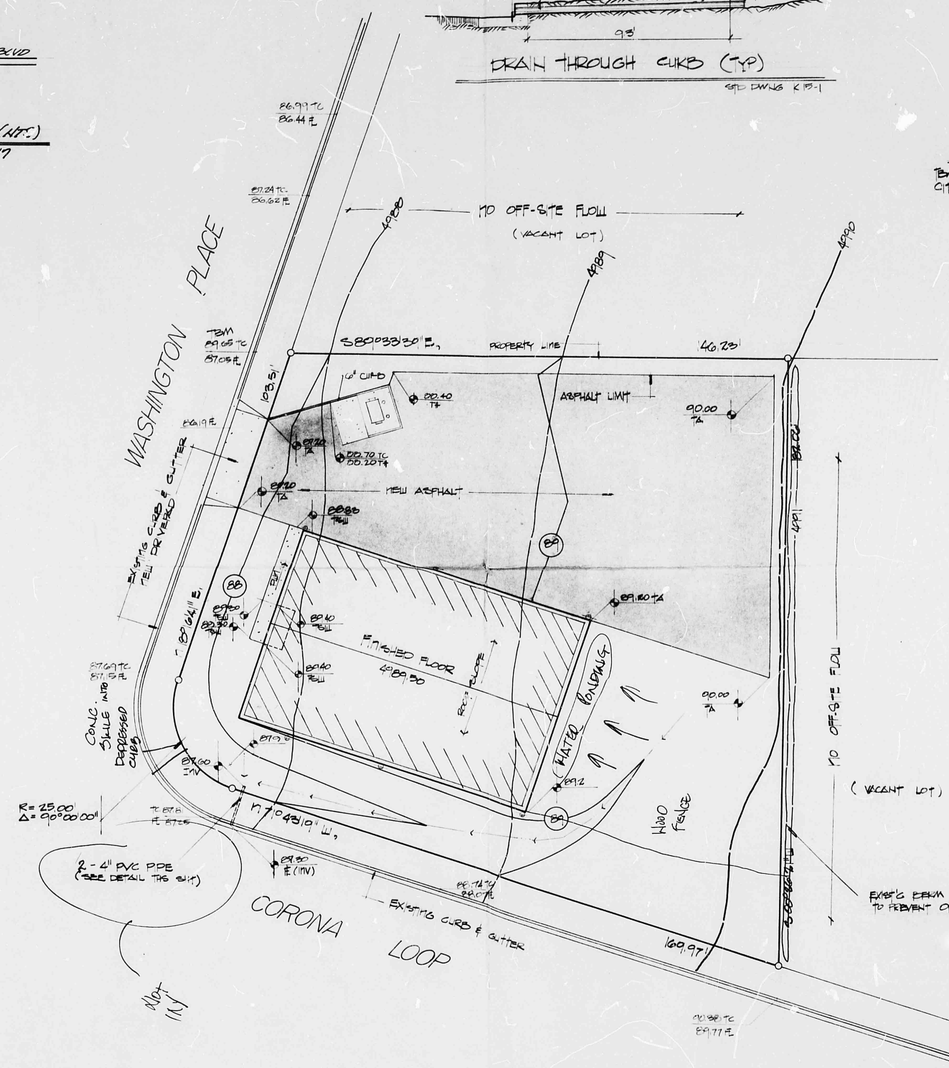
SEE DRWG K 13-1

LEGAL

LOT 22, CLIFFORD INDUSTRIAL PARK

BENCH MARK DATUM

BM: TOP OF CURB @ NW COR OF PROPERTY
CITY BM "ACS" B-C17 ELEVATION 5111.029



LEGEND

EXISTING CONTOUR
DESIGNED CONTOUR
EXISTING SPOT ELEV. 89.26
DESIGN SPOT ELEV.
FLOW DIRECTION
ROOF DRAIN
ABBR.
TC: TOP OF CURB
TA: TOP OF ASPHALT
FL: FLOWLINE

CALCULATIONS

I REFERENCES:

A) CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL (DPM) VOL II, DESIGN CRITERIA, CHAPTER 22, DRAINAGE FLOOD CONTROL & EROSION CONTROL

B) SOIL SURVEY OF BERNALILLO COUNTY & PARTS OF SANDOVAL AND VALENCIA COUNTIES, NEW MEXICO (SCS)

C) MASTER DRAINAGE REPORT FOR CLIFFORD INDUSTRIAL PARK BY BOHANNON HUSTON

II GENERAL INFORMATION:

A) SOIL TYPE (REF B, SHT 11) EMB, EMBUDO GRAVELLY FINE SANDY LOAM, HYDROLOGIC SOIL GROUP B

B) IMPERVIOUSNESS

BUILDING	8400 SF
SIDEWALK	866 SF
ASPHALT	9856 SF
PERVIOUS	10 285 SF
TOTAL	25 705 SF (0.590 AC)

% IMPERVIOUSNESS

25705 - 10285 / 25705 = 0.60 OR 60%

C) "C" FACTOR (REF A, PLATE 22.2, D-1)

UNDEVELOPED - CURVE 30% IMPERVIOUS C = 0.34
DEVELOPED - " 100% " C = 0.63

D) RAINFALL 100 YR 6 HR (R_6) (REF A, PLATE 22.2 D-)

R_6 = 2.25 in.

E) TIME OF CONCENTRATION: USE 10 MINUTES (MIN)

F) RAINFALL INTENSITY (REF A, PLATE 22.2 D-2)

$I = R_6(0.64)T_c^{-0.78} = 2.25 \times 0.64 / 10^{0.78} = 4.76$ in/hr

III OFF-SITE FLOW

NO OFF-SITE FLOW (REF. C)

IV PEAK DISCHARGE

A) TOTAL SITE (RATIONAL METHOD Q = CIA)

Q_{100} = 0.63 x 4.76 x 0.590 = 1.77 cfs
Q_{10} = 0.37 x 1.77 = 1.16 cfs

B) DISCHARGE THROUGH SIDEWALK PIPE

UNPAVED AREA = 8466 SF
1/2 PAVED " = 2700 SF

TOTAL	10866 SF (0.2495)

% IMPERVIOUS

2700 / 0866 = 0.26 OR 26%

C" FACTOR = 0.45

Q_{100} = 0.45 x 4.76 x 0.2495 = 0.53 cfs
Q_{10} = 0.37 x 0.53 = 0.20 cfs

C) EXCHANGE THROUGH OR OVERFLOW

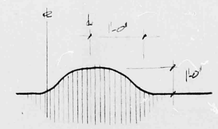
Q_{100} = 1.77 - 0.53 = 1.24 cfs
Q_{10} = 1.16 - 0.20 = 0.81 cfs

V CAPACITY (4" PVC PIPE)

A) SIDEWALK PIPE BY ORIFICE EQUATION $Q = CA\sqrt{2gH}$

C = 0.60 A = 0.0873² H = 0.4'

$Q = 0.60 \times 0.0873 \sqrt{64.4 \times 0.4}$
= 0.87 cfs USE TWO PIPES 2 x 0.77 = 0.54 cfs > 0.53 OK



TEMPORARY BERM FOR EROSION CONTROL

TOPS LOCATE ALONG SOUTH AND WEST PL

NOTE TO CONTRACTOR

THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY EXCAVATED MATERIAL IN THE PUBLIC RIGHT-OF-WAY

RECEIVED
MAR 05 1985
HYDROLOGY SECTION

C-2

C17/DIM