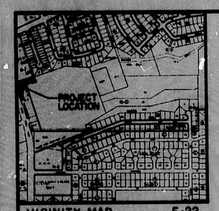
PUBLIC WORKS/HYDROLOGY

F22/D23



VICINITY MAP F-22
SCALE: 1" = 800'

· LEGEND ·

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED CONCRETE
- SWALE
- EXISTING CONCRETE

T.B.M. #1
TOP OF EXISTING FIRE HYDRANT
ELEVATION = 5764.20 FEET (M.B.L.D.)

T.B.M. #2
TOP OF EXISTING SIDEWALK @ N.W. PROPERTY CORNER.
ELEVATION = 5762.50 FEET (M.B.L.D.)

PROJECT BENCHMARK:
ACS STATION EE-F21. A SQUARE "C" CUT ON THE TOP OF CONCRETE CURB AT THE NWE RETURN AT THE INTERSECTION OF ERNU RD N.E. AND JUAN TABO BLVD. N.E. IN THE NORTHEAST QUADRANT OF THE INTERSECTION.
ELEVATION = 5746.62 FEET (M.G.L.D.)

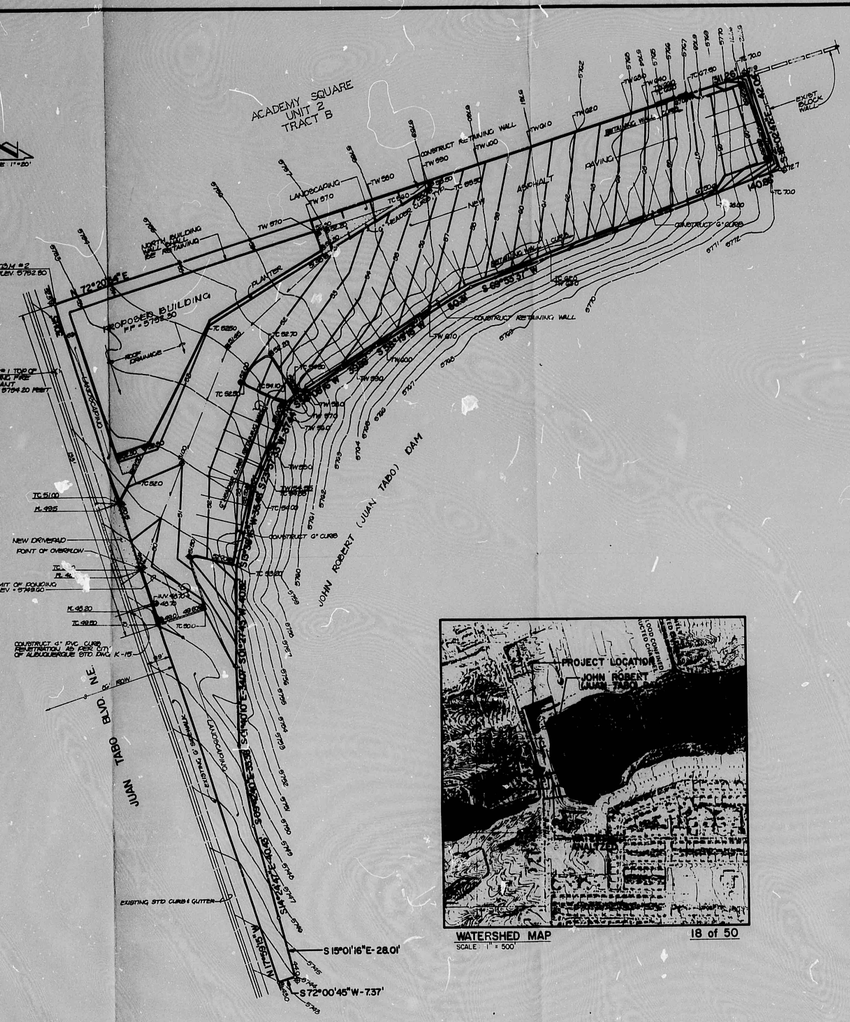
CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 765-1234, FOR LOCATION OF EXISTING UTILITIES.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.

EROSION CONTROL MEASURES

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.
3. △ THE CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" PRIOR TO BEGINNING CONSTRUCTION.

△ STREET ADDRESS:
5100 JUAN TABO BLVD. N.E.



WATERSHED MAP 18 of 50
SCALE: 1" = 500'

DRAINAGE PLAN

The following items concerning the Juan Tabo Office Building Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations
4. Watershed Map

The proposed improvements, as shown on the Vicinity Map, are located on the east side of Juan Tabo Boulevard N.E. between Spain Road N.E. and Osuna Road N.E. just below the John Robert (Juan Tabo) dam. At present, the surrounding area is developed.

As shown by Plate F-22 of the Albuquerque Master Drainage Study, the site does not lie within a designated Flood Hazard Zone. At present, the majority of runoff generated from this site flows from east to west onto Juan Tabo Boulevard N.E. The northerly portion of the site drains from east to west with a small portion of runoff draining onto Tract B. In addition, some offsite sheet flow enters the site along the north and southeast boundaries.

The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1'0" intervals, 2) the continuity between existing and proposed grades, and 3) the limit and character of the existing and proposed improvements. As shown by this plan, the proposed improvements consist of the construction of a new office building along with adjacent paving and landscaping. Runoff generated onsite will drain from east to west onto Juan Tabo Boulevard N.E. From that point, the runoff will flow south along the east edge of Juan Tabo Boulevard N.E. to catch basins which are the outfall for this site. These catch basins connect to the outlet works of the aforementioned AMAFCA dam. The offsite flows which have been quantified in the calculations will be accepted and conveyed to Juan Tabo Boulevard N.E.

The Calculations which appear below analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used for this analysis in accordance with the City of Albuquerque Development Process Manual, Volume II. As shown by these calculations, the development of this parcel will result in a total discharge of 2.9 cfs, including offsite flows to the outfall catch basins. Calculations performed for the 24-inch reinforced concrete pipe indicate a downstream capacity of 15 cfs, therefore the free discharge of runoff is appropriate. These calculations also appear below.

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HYDROLOGY SECTION

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 22:
ETC Embudo - Tijeras Complex
Hydrologic Soil Group B

Rational Method

Discharge: $Q = CIA$
where C varies
$i = P_6(6.84)T_c^{-0.51} = 5.28$ in/hr
$P_6 = 2.5$ in (DPM Plate 22.2 D-1)
$T_c = 10$ min. (minimum)
A = area, acres

Volume: $V = CP_6A(1/12)$
where C varies
$P_6 = 2.5$ in (DPM Plate 22.2 D-1)
A = area, sf

Existing Condition

A_{total} = 23,796 sf = 0.55 Ac
A_{imp} = 0 sf; % impervious = 0%
"C" = 0.34 (DPM Plate 22.2 C-1)
$Q_{100} = CiA = (0.34)(5.28)(0.55) = 1.0$ cfs
$V_{100} = CP_6A = (0.34)(2.5/1.)(23,796) = 1,685$ cf

Developed Condition

A_{total} = 23,796 sf = 0.55 Ac
A_{imp} = 18,480 sf; % impervious = 78%
"C" = 0.75 (DPM Plate 22.2 C-1)
$Q_{100} = CiA = (0.75)(5.28)(0.55) = 2.2$ cfs
$V_{100} = CP_6A = (0.75)(2.5/12)(23,796) = 3,270$ cf

Comparison

ΔQ_{100} = 2.2 - 1.0 = 1.2 cfs (increase)
ΔV_{100} = 3,270 - 1,685 = 1,585 cf (increase)

Offsite Flows

A = 16,800 sf = 0.4 Ac
A_{imp} = 0 sf; % impervious = 0%
"C" = 0.34
$Q_{100} = 0.34(5.28)(0.4) = 0.7$ cfs
$V_{100} = 0.34(2.5/12)(16,800) = 1,190$ cf

Downstream Capacity

Contributing area = 200,350 sf = 4.6 Ac
$Q_{100} = (0.48)(5.28)(4.6) = 11.7$ cfs
$V_{100} = (0.48)(2.5/12)(200,350) = 20,035$ cf

Based upon the use of "Feild's Hydraulics Calculator for Gravity Flow in Pipes."

$Q_{capacities,24"\ RCP} = 15$ cfs
for n = 0.044
n = 0.013
D = 24" (RCP)

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FEB 19 1985
HYDROLOGY SECTION

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
THOMAS P. HARN
8466
2/18/85

NO.	DATE	BY	REVISIONS
1	7-85	JGM	ADD NOTE 5 & STREET ADDRESS

BH DALLAS, N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS

DESIGNED BY: JGM; LRU
DRAWN BY: CGC; LBD
APPROVED: TPH
JOB NO. 40761
DATE 7-84

GRADING & DRAINAGE PLAN
JUAN TABO OFFICE BUILDING

FILE NO.
SHEET 1 OF 1

REV 2a DATE 3-26-90 BY
CITY OF ALBUQUERQUE
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The photographic process used meets the Basic Microfilm Standards of the National Micrographics Association (NMIS-1979)
DIRECTOR 11/15/82
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OFFICIAL SEAL
Roberta Duran
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 11/15/82

CITY OF ALBUQUERQUE
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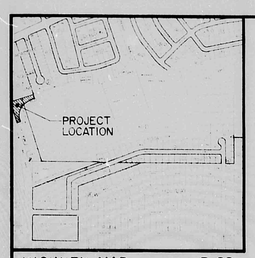
PLANS/PLATS ON FILE
FILE DESC: F22/D23
PLANS/PLATS 1



VICINITY MAP F-22

SCALE 1"=800'

· LEGEND ·

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED CONCRETE
- SCALE
- EXISTING CONCRETE

B.M. #1

THE TOP EXISTING FIRE HYDRANT ON THE EAST SIDE OF JUAN TABO BLVD.
ELEVATION = 5788.20 FEET (MSL)

B.M. #2

THE TOP EXISTING FIRE HYDRANT ON THE NORTH SIDE OF ALAMEDA BLVD. ELEVATION = 5788.50 FEET (MSL)

BENCHMARK:

THE BASIS OF BEARINGS IS A BOUNDARY LINE BETWEEN THE ALBUQUERQUE NATIONAL BANK PROPERTY AND THE PROPERTY OF THE CITY OF ALBUQUERQUE, AS RECORDED IN VOL. D, FOL. 125, THE ALBUQUERQUE BOUNDARY SURVEY.
ELEVATION = 5788.15 FEET (MSL)

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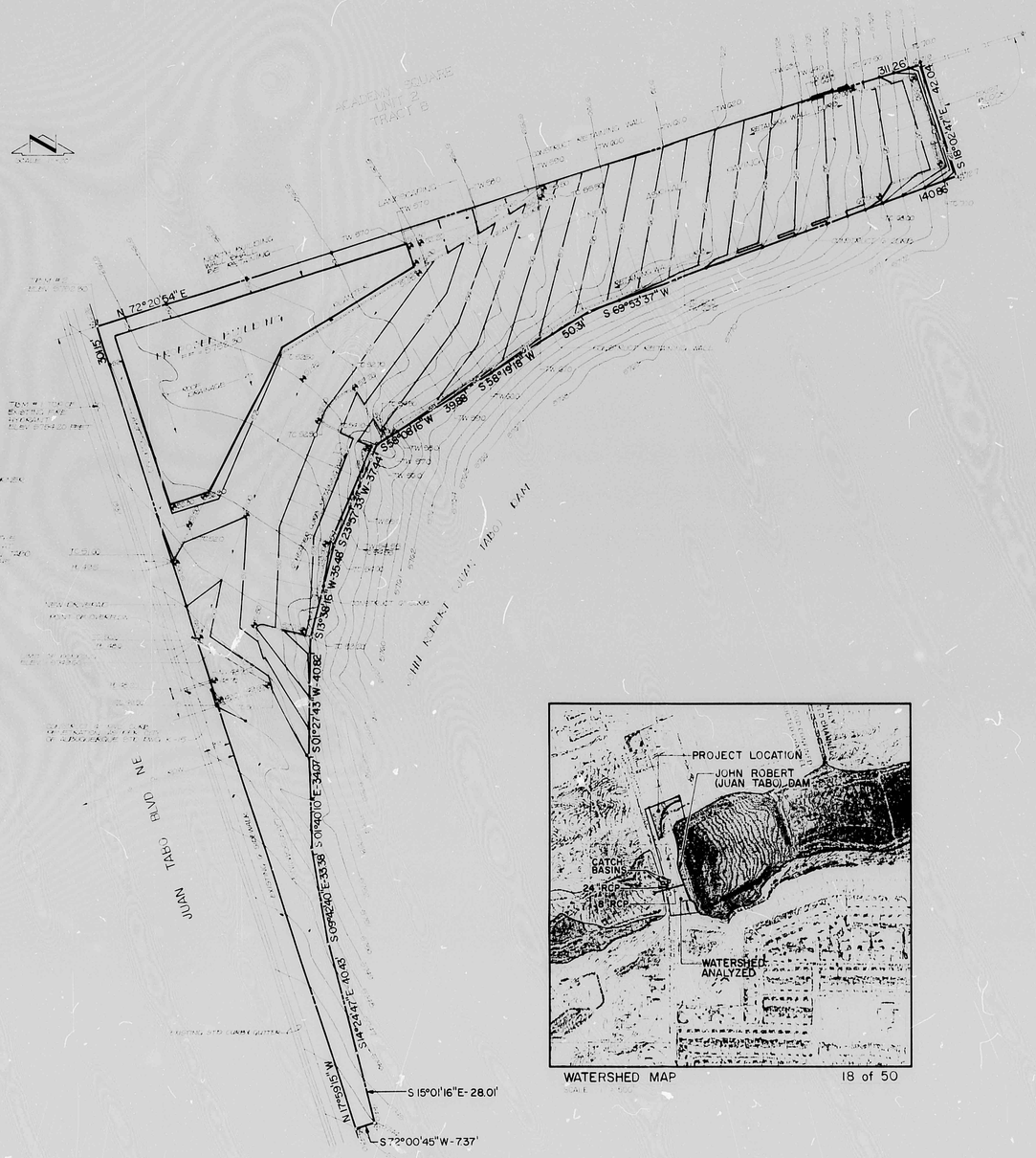

WATERSHED MAP 18 of 50

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4. Watershed Map

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The calculations which appear below analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used for this analysis in accordance with the City of Albuquerque Development Process Manual, Volume II. As shown by these calculations, the development of this parcel will result in a total discharge of 2.9 cfs, including offsite flows to the outfall catch basins. Calculations performed for the 24-inch reinforced concrete pipe indicate a maximum capacity of 15 cfs, therefore the free discharge of runoff is appropriate. These calculations also appear below.

RECEIVED
FEB 19 1985
HYDROLOGY SECTION

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 22:
Hydrologic Soil Group: B
Hydrologic Soil Group

Rational Method

Discharge: Q = CIA
where C varies
$C = P_1(0.858) + P_2(0.91) - 1.28 \text{ min}$
$P_1 = 2.5$ in (DPM Plate 22.2 D-1)
$P_2 = 10$ min. (minimum)
A = area, acres
Volume: $V = (Q)(T)/12$
where C varies
$P_1 = 2.5$ in (DPM Plate 22.2 D-1)
A = area, ac

Existing Condition

$A_{total} = 23.7$ac at = 0.55 Ac
$A_{imp} = 0$ cfs (impervious = 0%)
$A_{pervious} = 23.7$
$C_{pervious} = 0.25$ (DPM Plate 22.2 D-1)
$Q_{100} = (C)(A) = (0.25)(1.5)(1.0) = 3.0$ cfs
$V_{100} = (Q)(T)/12 = (3.0)(1.0)/12 = 0.25$ ac-ft

Developed Condition

$A_{total} = 23.7$ac at = 0.55 Ac
$A_{imp} = 18.4$ac at (impervious = 78%)
$C_{imp} = 0.95$ (DPM Plate 22.2 D-1)
$Q_{100} = (C)(A) = (0.95)(1.5)(18.4) = 26.2$ cfs
$V_{100} = (Q)(T)/12 = (26.2)(1.0)/12 = 2.2$ ac-ft

Offsite Flows

A = 16.800 ac = 0.5 Ac
A_{imp} = 0.00 = impervious = 0%
C_{imp} = 0.95
Q_{100} = (0.95)(1.5)(0.5) = 0.7 cfs
V_{100} = (0.7)(1.0)/12 = 0.07 ac-ft
Q_{100} = (C)(A) = (0.95)(1.5)(16.800) = 23.9 cfs
V_{100} = (C)(A) = (0.95)(1.5)(16.800) = 1.99 ac-ft

Offsite Flows

A = 16.800 ac = 0.5 Ac
A_{imp} = 0.00 = impervious = 0%
C_{imp} = 0.95
Q_{100} = (0.95)(1.5)(0.5) = 0.7 cfs
V_{100} = (0.7)(1.0)/12 = 0.07 ac-ft
Q_{100} = (C)(A) = (0.95)(1.5)(16.800) = 23.9 cfs
V_{100} = (C)(A) = (0.95)(1.5)(16.800) = 1.99 ac-ft

Downstream Capacity

Contributing area = 24.200 ac = 0.04 Ac
A_{imp} = 18.4 = impervious = 76%
C_{imp} = 0.95
Q_{100} = (0.95)(1.5)(18.4) = 26.2 cfs
V_{100} = (0.2)(1.0)/12 = 0.02 ac-ft

Based upon the use of "Tables Hydraulics Calculations for Gravity Flow in Pipes"

Capacities of RCP
for S = 0.015
n = 0.013
24" = 15 cfs

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FEB 19 1985
HYDROLOGY SECTION

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
THOMAS J. MANN, JR.
NEW MEXICO
PROFESSIONAL ENGINEER
AND LAND SURVEYOR

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

CITY OF ALBUQUERQUE
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R# 26 DATE 3-26-90 OP

CITY OF ALBUQUERQUE

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DIRECTOR

NOTARY PUBLIC

OFFICIAL SEAL
Roberta Duran
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires
8/08/02

THOMAS J. MANN, JR. ENGINEER	NO. / DATE / BY / REVISIONS	DESIGNED BY J.M.M.	40761	GRADING & DRAINAGE PLAN JUAN TABO OFFICE BUILDING	FILE NO.
		DRAWN BY	DATE 7-84		SHEET 1 OF 1
		APPROVED			

D24 C20 B16 A12 | CITY OF ALBUQERQUE C D