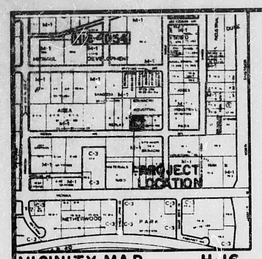
HYDROLOGY

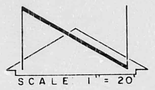
H16/D36A
1 PLAN

H16/D36A

1 PLAN



VICINITY MAP H-16
SCALE 1" = 800'



·LEGEND·

- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- 5G — PROPOSED CONTOUR
- 5565G — EXISTING CONTOUR
- SWALE
- PROPERTY LINE
- CONCRETE
- PROPOSED ASPHALT
- PROPOSED FENCE
- —x—x— EXISTING FENCE
- TC 02.00 — TOP OF CURB
- FL 01.65 — FLOW LINE
- BASIN BOUNDARY

PROJECT BENCHMARK:

ACS STATION 11-H16. A SQUARE CHISELED ON TOP OF CONC. CURB AT THE WNW CURB RETURN LOCATED AT THE INTERSECTION OF CANDELARIA RD. N.E. AND STANFORD DR. N.E. IN THE NORTHWEST QUADRANT OF THE INTERSECTION.
ELEVATION = 5095.13 FEET (M.S.L.D.)

T.B.M.

TOP OF A CONCRETE A CONCRETE CURB @ PROJECTION OF SOUTH EAST PROPERTY CORNER.
ELEVATION = 5078.42 FEET (M.S.L.D.)

LEGAL DESCRIPTION

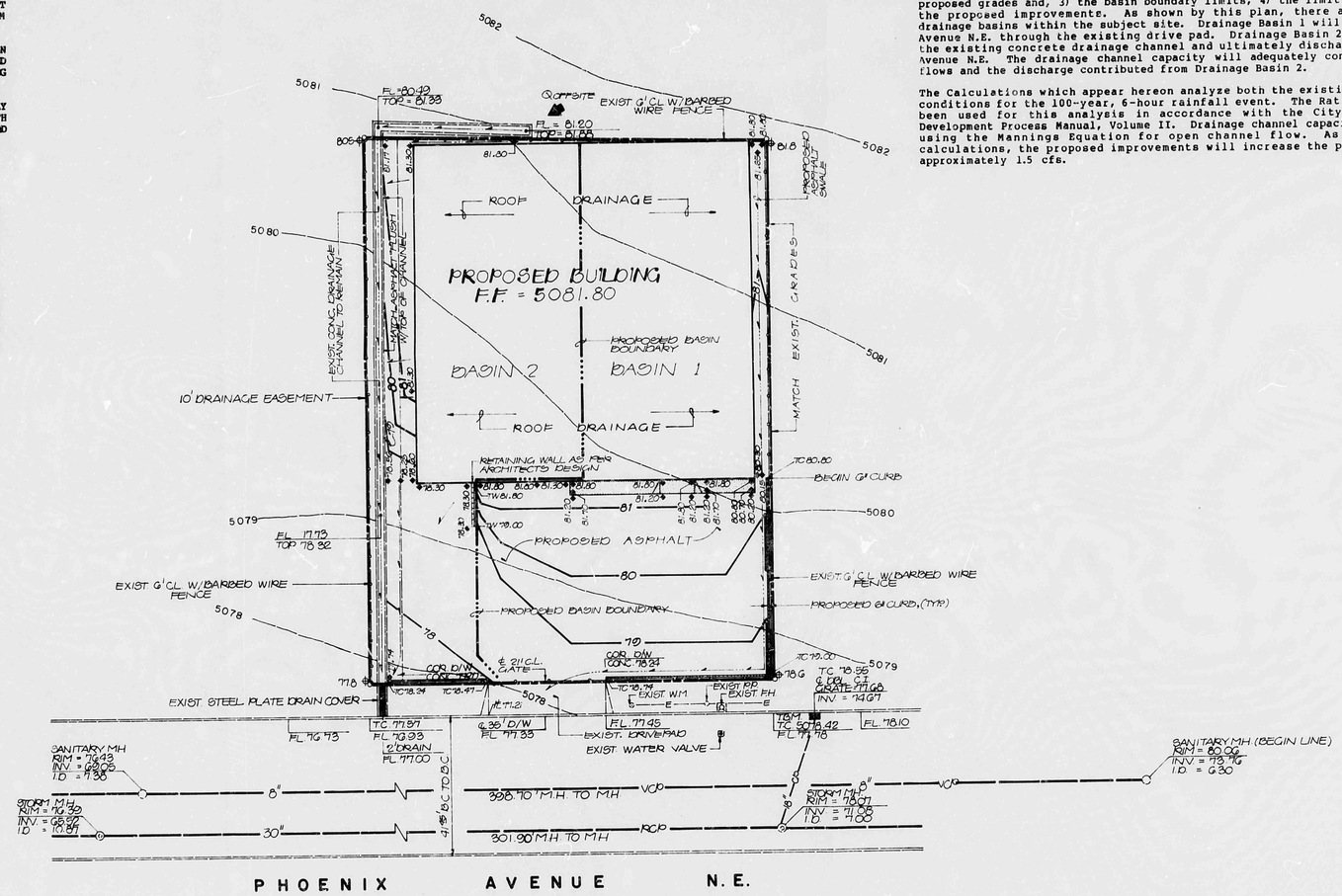
LOT 2, BRUNACINI INDUSTRIAL PARK, UNIT 6

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.



DRAINAGE PLAN

The following items concerning the Phoenix Warehouse Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

As shown by the Vicinity Map, the site is located in the northwest quadrant of the intersection of Vassar Avenue N.E. and Phoenix Avenue N.E. Presently, the site is undeveloped. The adjacent sites to the west and east of the project site are also presently undeveloped. No offsite flows are expected to enter the site from these two adjacent sites. The adjacent site to the north will contribute offsite flows equal to 5.5 cfs. This was determined in a grading and drainage plan (H16-D36) prepared by Mr. Ray L. Harrison, P.E. An existing concrete drainage channel conveys these offsite flows through the subject site to Phoenix Avenue N.E. This channel has the capacity to adequately handle all offsite flows entering the subject site from the adjacent site to the north as calculated hereon.

As shown by Plate H-16 of the Albuquerque Master Drainage Study, (AMDS) the site does not lie within a designated Flood Hazard Zone. It has also been determined that downstream capacity does exist for this site. This has been determined based upon a telephone conversation between Mr. Jeffrey G. Mortensen, P.E. of Tom Mann & Associates and, Mr. Billy Goolsby, P.E. Civil Engineer/Hydrology on December 6, 1983 in conjunction with H-16 - D-54. The downstream facility cited by Mr. Goolsby is a series of catch basins located south of the subject site at the intersection of Phoenix Avenue N. E. and Princeton Drive N.E. These catch basins connect to an underground storm drain system which ultimately discharges to the Menaul detention pond. At present, runoff generated by the subject site flows from north to south towards Phoenix Avenue N.E. Offsite flows generated by the adjacent site to the north will be accepted and conveyed by the existing concrete drainage channel to Phoenix Avenue N.E.

The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1' 0" intervals, 2) continuity between existing and proposed grades and, 3) the basin boundary limits, 4) the limit and character of the proposed improvements. As shown by this plan, there are two proposed drainage basins within the subject site. Drainage Basin 1 will drain to Phoenix Avenue N.E. through the existing drive pad. Drainage Basin 2 will drain into the existing concrete drainage channel and ultimately discharge into Phoenix Avenue N.E. The drainage channel capacity will adequately control the offsite flows and the discharge contributed from Drainage Basin 2.

The Calculations which appear hereon 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. Drainage channel capacity is calculated using the Mannings Equation for open channel flow. As shown by these calculations, the proposed improvements will increase the peak discharge by approximately 1.5 cfs.

CALCULATIONS

Ground cover Information

From SCS Bernalillo County Soil Survey, Plate 21:
Cu: Cut and Fill Land
Hydrologic Soil Group A

Rational Method

Discharge: $Q = CiA$
where C varies
$i = P_6 (6.84) T_c^{-0.51} = 4.65$ in/hr
$P_6 = 2.2$ in (DPM Plate 22.2D-1)
$T_c = 10$ min (minimum)
A = area, acres

Volume: $V = CP_6A (1/12)$
where C varies
$P_6 = 2.2$ in (DPM Plate 22.2D-1)
A = area, sf

Existing Condition

$A_{total} = 19{,}165$ sf = 0.44 Ac
$A_{imp} = 486$ sf; % impervious = 3%
$'C' = 0.18$ (DPM Plate 22.2C-1)
$Q_{100} = CiA = 0.18 (4.65)(0.44) = 0.4$ cfs
$V_{100} = CP_6A = 0.18 (2.2/12)(19{,}165) = 630$ cf

Developed Condition

A. Basin 1
$A_{total} = 10{,}890$ sf = 0.25 Ac
$A_{imp} = 10{,}890$ sf; % impervious = 100%
$'C' = 1.00$ (DPM Plate 22.2C-1)
$Q_{100} = 1.00 (4.65)(0.25) = 1.2$ cfs
$V_{100} = 1.00 (2.2/12)(10{,}890) = 1995$ cf

B. Basin 2
$A_{total} = 8275$ sf = 0.19 Ac
$A_{imp} = 7790$ sf; % impervious = 94%
$'C' = 0.82$ (DPM Plate 22.2C-1)
$Q_{100} = 0.82 (4.65)(0.19) = 0.7$ cfs
$V_{100} = 0.82 (2.2/12)(8275) = 1245$ cf

Comparison

$\Delta Q_{100} = 1.9 - 0.4 = 1.5$ cfs (increase)
$\Delta V_{100} = 3240 - 630 = 2610$ cf (increase)

Drainage Channel Capacity

$Q_{capacity} = 1.49/n\ R^{2/3}\ S^{1/2}\ A$ (Manning Equation)
where n = 0.013 (concrete)
S = 0.0250 ft/ft
A = (2.0)(0.5) = 1.0 sf
W.P. = 2(0.5) + 2.0 = 3.0 ft
R = A/W.P. = 1.0/3.0 = 0.33 ft
$Q_{capacity} = 1.49/0.13\ (0.33)^{2/3}(.0250)^{1/2}(1.0)$
$Q_{capacity} = 8.6$ cfs $> Q_{actual} = 5.5 + 0.7 = 6.2$ cfs
$Q_{actual} = Q_{offsite} + Q_{Basin,\ 2}$

Offsite Flows

From Drainage Report (H16-D36) by Ray L. Harrison, P.E. for the tract to the north, the total offsite flow expected is 5.5 cfs.

RECEIVED
OCT 19 1984
HYDROLOGY SECTION

JEFFREY G. MORTENSEN
NEW MEXICO
9847
10/18/84
REGISTERED PROFESSIONAL ENGINEER

TOM MANN & ASSOCIATES, INC. ENGINEERS, 811 DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110	NO. / DATE / BY / REVISIONS	DESIGNED BY J.T.O. / DRAWN BY J.M.C. / APPROVED J.G.M.	JOB NO. 41451 / DATE 10-84	GRADING & DRAINAGE PLAN PHOENIX WAREHOUSE	FILE NO.	SHEET 1 OF 1