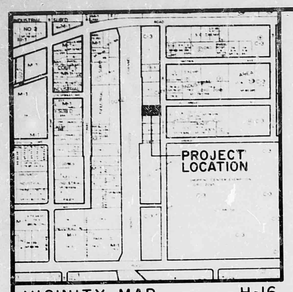
HYDROLOGY

H16/D66
1 PLAN

H16/D66

1 PLAN



VICINITY MAP H-16
SCALE 1" = 800'

·LEGEND·

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5115 EXISTING CONTOUR
- 15 PROPOSED CONTOUR
- PROPOSED CONCRETE
- EXISTING SWALE

T.B.M.:

A SQUARE 'D' ON TOP OF CURB @ THE SOUTHEAST PROPERTY CORNER, AS SHOWN.
ELEVATION = 5115.48 FEET (MSLD)

PROJECT BENCHMARK:

AMAFCA RIGHT-OF-WAY BRASS CAP SET IN CONCRETE POST FLUSH WITH GROUND, STAMPED "G-HIG, 1975, ACS." LOCATED @ THE NORTHWEST QUADRANT OF THE INTERSECTION OF CANDELARIA ROAD NE & THE AMAFCA NORTH DIVERSION CHANNEL.
ELEVATION 5112.02 FEET (MSLD)

LEGAL DESCRIPTION:

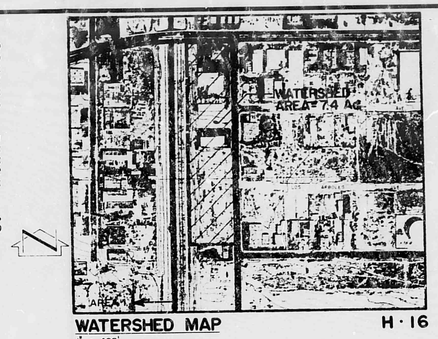
LOT 4-B-1-B, DUKE CITY INDUSTRIAL PARK, 0.4603 Ac

CONSTRUCTION NOTES:

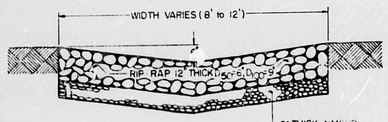
1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 765-1234, FOR LOCATION OF EXISTING UTILITIES.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, 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

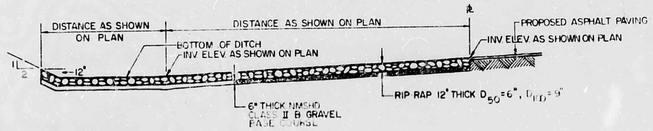
1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED 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.



WATERSHED MAP H·16
1" = 400'

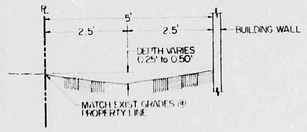


SECTION A·A
1/2" = 1'0"

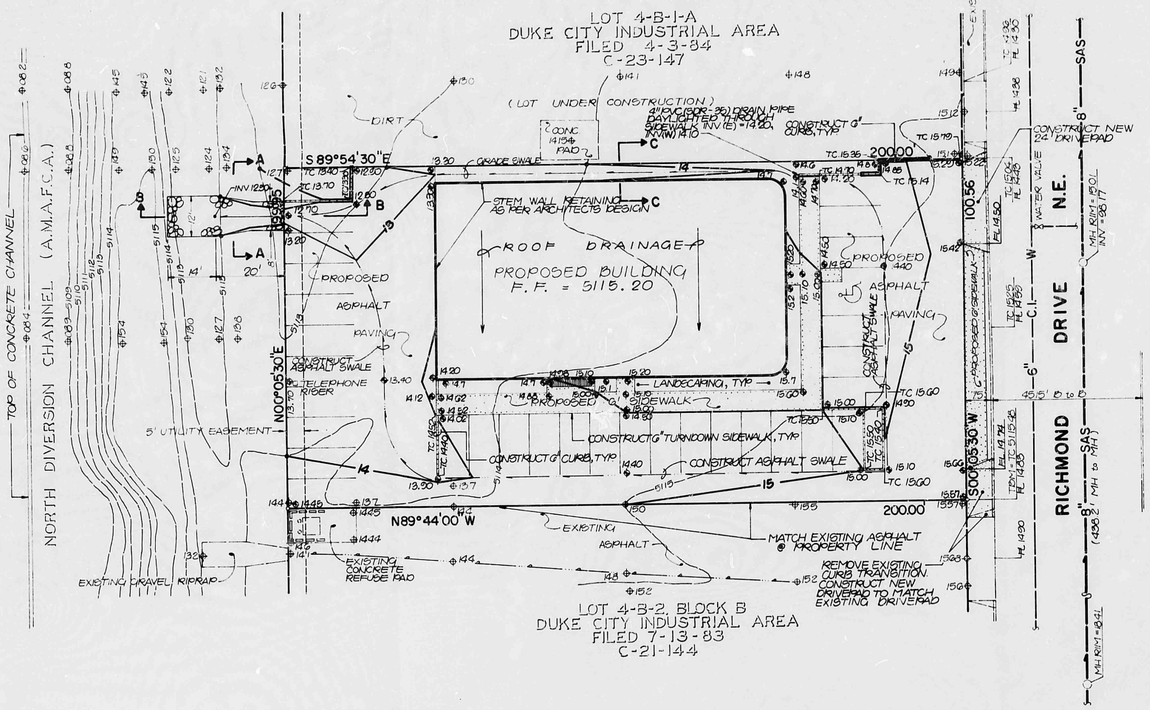


NOTE
ALL WORK WITHIN AMAFCA R.O.W. MUST BE INSPECTED AND APPROVED BY A REPRESENTATIVE OF AMAFCA. NOTIFY AMAFCA ONE WEEK IN ADVANCE OF ANY WORK IN AMAFCA RIGHT OF WAY

SECTION B·B
1/8" = 1'0"



SECTION C·C
1/2" = 1'0"



CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 21:
Kelly, Wink-Tabeole Complex, Fine Sandy Loam and Gravelly Fine Sandy Loam
Hydrologic Soil Group B

Rational Method

1. Charges: $Q = CIA$
where C varies
$I = T_R \times (6.84) \cdot T_c^{-0.51} = 4.65$ in/hr
$T_R = 2.2$ in (DPM Plate 22.20-1)
$T_c = 10$ min (minimum)
A = area, acres

Volume: $V = CI_{24}A(12)$
where C varies
$I_{24} = 2.2$ in (DPM Plate 22.20-1)
A = area, sf

Existing Condition

$A_{total} = 20{,}050$ sf = 0.46 Ac
$A_{imp} = 18{,}130$ sf; % impervious = 90%
$C = 0.89$ (DPM Plate 22.20-1)
$Q_{100} = CIA = 0.89\ (4.65)(0.46) = 1.9$ cfs
$V_{100} = CI_{24}A = 0.89\ (2.2/12)(20{,}050) = 3{,}270$ cf

Developed Condition

1. Total Site

$A_{total} = 20{,}050$ sf = 0.46 Ac
$A_{imp} = 18{,}130$ sf; % impervious = 90%
$C = 0.89$ (DPM Plate 22.20-1)
$Q_{100} = CIA = 0.89\ (4.65)(0.46) = 1.9$ cfs
$V_{100} = CI_{24}A = 0.89\ (2.2/12)(20{,}050) = 3{,}270$ cf

2. Area Contributing to Landscaped Swale

$A_{total} = 1010$ sf = 0.09 Ac
% Impervious = 100%
$C = 1.00$ (DPM Plate 22.20-1)
Q_{100}, contributing area $= CIA = 1.00\ (4.65)(0.09) = 0.4$ cfs

3. Watershed Peak Discharge

$A_{total} = 7.4$ acres
% Impervious = 90% (conservative estimate)
$C = 0.89$ (DPM Plate 22.20-1)
Q_{100}, watershed $= CIA = 0.89\ (4.65)(7.4) = 30.6$ cfs

Comparison

$Q_{100} = 1.9 - 0.7 = 1.2$ cfs (increase)
$V_{100} = 3{,}270 - 1{,}250 = 2{,}020$ cf (increase)

Hydraulic Capacity Computations

1. Gravel Rundown

$Q = 1.49/n\ R^{2/3}\ s^{1/2}\ A$ (Manning Equation)
where n = 0.040 (rip-rap)
A = 2.0 sf
WP = 8.0 ft
R = A/WP = 2.0/8.0 = 0.25 ft
s = 0.0100 ft/ft

$Q = 1.49/0.040\ (0.25)^{2/3}\ (0.0100)^{1/2}\ (2.0)$
$Q = 2.9$ cfs $> Q_{100}$ (site)
Q_{100} (site) = 1.9 cfs

2. Landscaped Swale

$Q = 1.49/n\ R^{2/3}\ s^{1/2}\ A$ (Manning Equation)
where n = 0.030 (earthlined)
A = 0.63 sf
WP = 5 ft
R = A/WP = 0.13 ft
s = 0.0100 ft/ft

$Q = 1.49/0.030\ (0.13)^{2/3}\ (0.0100)^{1/2}\ (0.63)$
$Q = 0.8$ cfs $> Q_{100}$, contributing area

3. AMAFCA R.O.W. Ditch Capacity

$Q = 1.49/n\ R^{2/3}\ s^{1/2}\ A$ (Manning Equation)
where n = 0.030 (earthlined)
A = 14.0 sf
WP = 12.0 ft
R = A/WP = 14.0/12.0 = 1.17 ft
s = 0.0075 ft/ft

$Q = 1.49/0.030\ (1.17)^{2/3}\ (0.0075)^{1/2}\ (14.0)$
$Q = 66.9$ cfs $> Q_{100}$, watershed

DRAINAGE PLAN

The following items concerning the Richmond Partnership No. 2 Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located on the west side of Richmond Drive N.E. just east of the AMAFCA North Diversion Channel. Presently, the site is undeveloped. The adjacent site to the north is presently under construction. The adjacent site to the south is presently developed as Richmond Partnership No. 1 (H16-D42).

As shown by Plate H-16 of the Albuquerque Master Drainage Study (AMDS), the site does not lie within a designated Flood Hazard Zone. Further investigation reveals that an adequate downstream facility exists adjacent to the site. This facility is the AMAFCA North Diversion Channel located directly west of the subject site. Runoff generated by this site presently drains from east to west and discharges to an existing ditch located within the AMAFCA Right-of-Way. This ditch conveys the runoff north to an existing rundown located on the east side of the channel south of Candelaria Boulevard N.E. The watershed which contributes runoff to the ditch is shown on the Watershed Map. The runoff generated by this watershed and the capacity of the ditch to carry that runoff are quantified in the Calculations. Based upon these calculations, the AMAFCA Right-of-Way Ditch has the capacity to control the runoff generated by the subject site and subsequent development within the watershed. Offsite flows will not enter the project site from the south due to the fact that an existing asphalt swale intercepts these offsite flows and conveys the flows west to the AMAFCA Right-of-Way Ditch. Offsite flows will not enter the project site from the east because it is a fully improved street, Richmond Drive N.E. with no designated flooding as per AMDS Plate H-16. Offsite flows will not enter the project site from the north due to the fact that the topography of that site is parallel to the project site.

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 elevations, and 3) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements include an office building, asphalt paving and landscaping. The site will drain from east to west to a gravel rip-rap rundown which will discharge runoff into the previously mentioned AMAFCA Right-of-Way Ditch. An additional concern of this drainage plan, is the landscaped swale that is proposed on the north side of the building. The swale has been adequately sized to control the runoff generated by the contributing area; that area consisting of the east portion of the parking lot. The runoff generated by the contributing area and the capacity of the landscaped swale are quantified in the calculations.

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. The capacity of the gravel rip-rap rundown, the landscaped swale and the AMAFCA Right-of-Way Ditch have been analyzed based upon the Manning Equation. As shown by these calculations, the proposed improvements will increase the peak discharge from this site to the AMAFCA Right-of-Way Ditch by approximately 1.2 cfs. This will not adversely affect the downstream capacity of the AMAFCA channel, therefore the free discharge of runoff from this site in the manner discussed above is appropriate.

RECEIVED
FEB 28 1985
HYDROLOGY SECTION

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ENGINEERS

NO.	DATE	BY	REVISIONS

DESIGNED BY J.T.O.
DRAWN BY L.D.D.
APPROVED JGM

JOB NO 50011
DATE 1·85

GRADING & DRAINAGE PLAN
RICHMOND PARTNERSHIP #2

FILE NO.
SHEET 1 OF 1