HYDROLOGY M15/D22 1 PLAN

M15/D22

1 Plan

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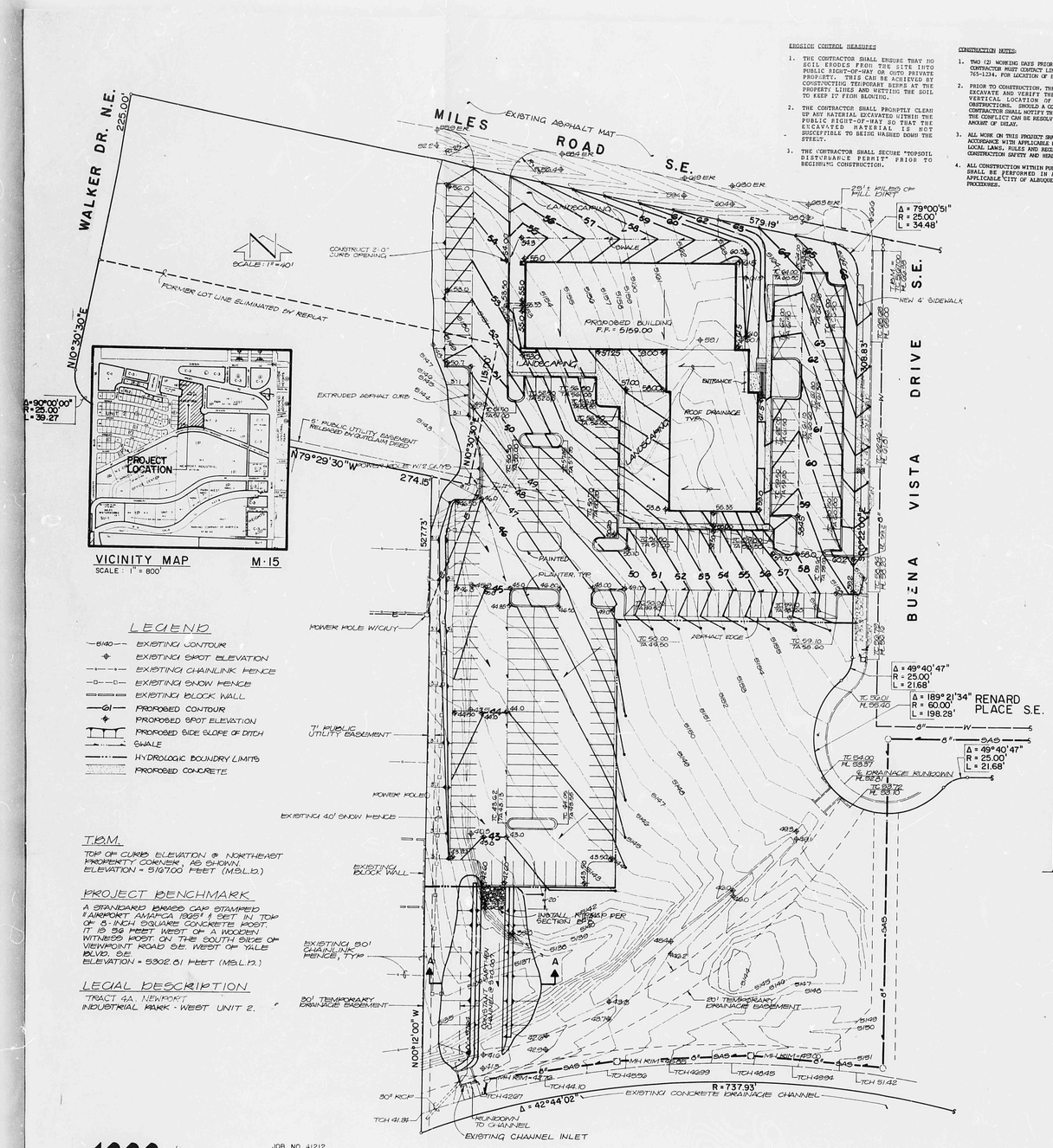


VICINITY MAP M-15
SCALE : 1" = 800'

LEGEND

- 5140 — EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- EXISTING CHAINLINK FENCE
- EXISTING SNOW FENCE
- EXISTING BLOCK WALL
- 61 — PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- PROPOSED SIDE SLOPE OF DITCH
- SWALE
- HYDROLOGIC BOUNDRY LIMITS
- PROPOSED CONCRETE

T.B.M.

TOP OF CURB ELEVATION @ NORTHEAST INGRESS/EGRESS CORNER AS SHOWN.
ELEVATION = 5167.00 FEET (M.S.L.D.)

PROJECT BENCHMARK

A STANDARD BRASS CAP STAMPED "AIRPORT AMMCA 1985" I SET IN TOP OF 6-INCH SQUARE CONCRETE POST. IT IS 56 FEET WEST OF A WOODEN WITNESS POST, ON THE SOUTH SIDE OF VIEWPOINT ROAD 5.5± WEST OF YALE BLVD. SE.
ELEVATION = 5302.61 FEET (M.S.L.D.)

LEGAL DESCRIPTION

TRACT 4A, NEWPORT INDUSTRIAL PARK - WEST UNIT 2.

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.

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.

JOB NO. 41212

MAC MARTIN ASSOCIATES
ENGINEERS

DRAINAGE PLAN

The following items concerning the Office Building 9 Drainage Plan are contained hereon:

1. Vicinity Map 2. Grading Plan 3. Calculations

As shown by the Vicinity Map, the site is located at the southwest corner of the intersection of Miles Road S.E. and Buena Vista Drive S.E. The site lies within the Newport Industrial Park - West, and is owned by Craddock Development Company. Craddock Development Company is also the developer of this parcel.

As shown by Plate M-15 of the Albuquerque Master Drainage Study, this site does not lie within a designated Flood Hazard Zone. Furthermore, this site has been granted a free discharge of runoff directly to the existing concrete-lined drainage channel which lies to the south of the project. In January, 1980, an agreement was reached between the City of Albuquerque and Craddock Development Company to resolve the drainage requirements for portions of the Newport Industrial Park - West. This parcel is included in this agreement which provides for direct discharge of runoff from the site to the existing downstream facility. This free discharge is consistent with the plans which have been previously prepared for adjoining sites.

The grading Plan shows 1) existing grades indicated by spot elevations and contours at 1'-0" intervals, 2) proposed grades indicated by spot elevations and random contours, 3) drainage flow arrows, and 4) drainage swales. This plan also shows the limits of the proposed improvements and the limits of fill slopes. As shown by this plan, the developed runoff from the proposed construction will be discharged via an earthen channel to the existing channel inlet. This inlet drains via a 30-inch RCP culvert which connects to the existing concrete-lined channel. If this pipe should, for any reason, be incapable of handling this runoff, the inlet is provided with an existing overflow rundown to the channel.

Offsite flows will not impact this site due to the presence of Buena Vista Drive S.E. and Renard Place S.E. These streets intercept the majority of the runoff generated to the east of this site, and convey that runoff by previously constructed improvements to the existing concrete-lined drainage channel. Miles Road lies to the north of the site, and it is an elevated asphalt mat section with bar ditches. Due to this section, any flows which may originate to the north of the project will be intercepted by the north bar ditch and, therefore, will not enter this site. In addition, the section of Miles Road from Buena Vista Drive to Walker Drive will be designed and the south half built prior to the issuance of a Certificate of Occupancy in accordance with the minutes of the DRB hearing for this project (DRB-85-361).

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. As shown by these calculations, the proposed improvements will generate just under 10 cfs developed runoff. The earthen channel proposed for this project is capable of handling this flow. The hydraulics of that channel have been analyzed based upon the Manning Equation. These calculations demonstrate that the estimated 10 cfs will flow at a depth of 0.3 feet, and a velocity of 1.6 feet per second. 1.6 feet per second is considered to be a non-erosive velocity, therefore, an earthen channel is appropriate as an interim facility until the remainder of this parcel develops.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 41:
BKD Bluepoint-Kokan Association
BCX Bluepoint Loamy Fine Sand
Hydrologic Soil Group A

Rational Method

Discharge: $Q = CiA$
where C varies

$$i = P_6(6.84)T_C^{-0.51} = 4.86 \text{ in/hr}$$

$P_6 = 2.3$ in (DPM Plate 22.2 D-1)
$T_C = 10$ min (minimum)
A = area, acres

Volume: $V = CP_6A(1/12)$
where C varies
$P_6 = 2.3$ in (DPM Plate 22.2 D-1)
A = area, sf

Existing Condition

$A_{total} = 137{,}450$ sf = 3.15 Ac
$A_{imp} = 0$ sf; % impervious = 0%
'C' = 0.16 (DPM Plate 22.2 C-1)
$Q_{100} = CiA = (0.16)(4.86)(3.15) = 2.4$ cfs
$V_{100} = CP_6A = (0.16)(2.3/12)(137{,}450) = 4{,}215$ cf

Developed Condition

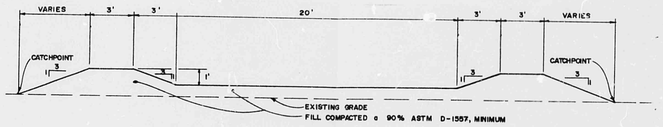
$A_{total} = 137{,}450$ sf = 3.15 Ac
$A_{imp} = 105{,}450$ sf; % impervious = 77%
'C' = 0.61 (DPM Plate 22.2 C-1)
$Q_{100} = CiA = (0.61)(4.86)(3.15) = 9.3$ cfs
$V_{100} = CP_6A = (0.61)(2.3/12)(137{,}450) = 16{,}070$ cf

Comparison

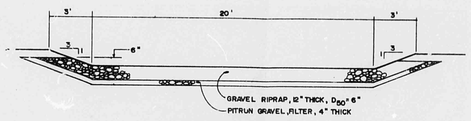
$\Delta Q_{100} = 9.3 - 2.4 = 6.9$ cfs (increase)
$\Delta V_{100} = 16{,}070 - 4{,}150 = 11{,}920$ cf (increase)

Channel Hydraulic Analysis

$Q = (1.49/n)\,AR^{2/3}s^{1/2}$ (Manning Equation)
where n = 0.035
A, R = f (channel geometry)
w = channel bottom width = 20'
M = channel side slope ratio = 3
s = 0.007
Q = 9.3 cfs ≈ 10 cfs
then d = 0.3 ft
v = 1.6 fps (non-erosive)



SECTION A-A
SCALE : 1" = 4'



SECTION B-B
SCALE : 1" = 4'

Craddock Development Company

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