HYDROLOGY

G17/D16

ONE PLAN

MONTGOMERY OFFICE

PARK

G17/D16

1 PLAN

DRAINAGE PLAN

The following items concerning the Montgomery Office Park Phase II 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 Monroe Street N.E. between Montgomery Boulevard N.E. and Douglas MacArthur Road N.E. Presently, the site is about to undergo development with the Phase I construction. Much of the surrounding area is developed.

As shown by Plate G-17 of the Albuquerque Master Drainage Study (AMDS), the site does not lie within a designated Flood Hazard Zone. In accordance with the conceptual grading and drainage plan (G17-D16) prepared for the Montgomery Office Park by this office, the runoff will be discharged in a controlled fashion. The grading and drainage plan for the Phase I development (G-17/D16) has addressed the method of obtaining the controlled discharge of runoff for all three phases of development. From a field inspection, it has been determined that the construction of Monroe Street N.E. has been completed. In addition, Tract D-2 has recently been replatted in three distinct tracts. This plat has provided for cross-lot drainage via a "blanket" easement.

Monroe Street intercepts and diverts offsite flows from the east around Tract D-2. As presented in the previously mentioned conceptual grading and drainage plan, no offsite flows are anticipated from the north, south or west, hence offsite flows are not a concern.

The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1' 0" intervals, 2) the limit and character of Phase I and existing improvements, 3) the limit and character of the proposed improvements, 4) continuity between existing and proposed elevations, and 5) the limit and character of the future site improvements. As shown by this plan, the proposed Phase II improvements include the Bridgers and Paxton building, asphalt paving, and landscaping. A future building to be constructed as Phase III is also shown on the plan. The impervious area of the future building and the parking area have been included in the runoff calculations. It is realized that a separate grading and drainage plan will be required prior to the release of the building permit for Phase III. The Phase II project site will drain from east to west to an existing positive discharge pond located in the northwest corner of the parking lot. The runoff will then be conveyed through the Phase I curb opening and the 5-foot concrete drainage channel, and will ultimately discharge to Montgomery Boulevard N.E. as demonstrated by previously approved plans for this site.

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 analysis of pond release rate is based upon the downstream capacity and the Weir Equation. The downstream capacity has been determined based upon the Manning Equation applied to the concrete drainage channel. The analysis of the pond volume is based upon the Average End-Area Method. As shown by these calculations, the proposed improvements will increase the peak discharge from this site by approximately 0.2 cfs.

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.

LEGEND

- PROPERTY LINE
- PROPOSED CONCRETE
- 72 PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING CONTOUR
- SWALE
- FUTURE CONSTRUCTION
- PROPOSED ASPHALT

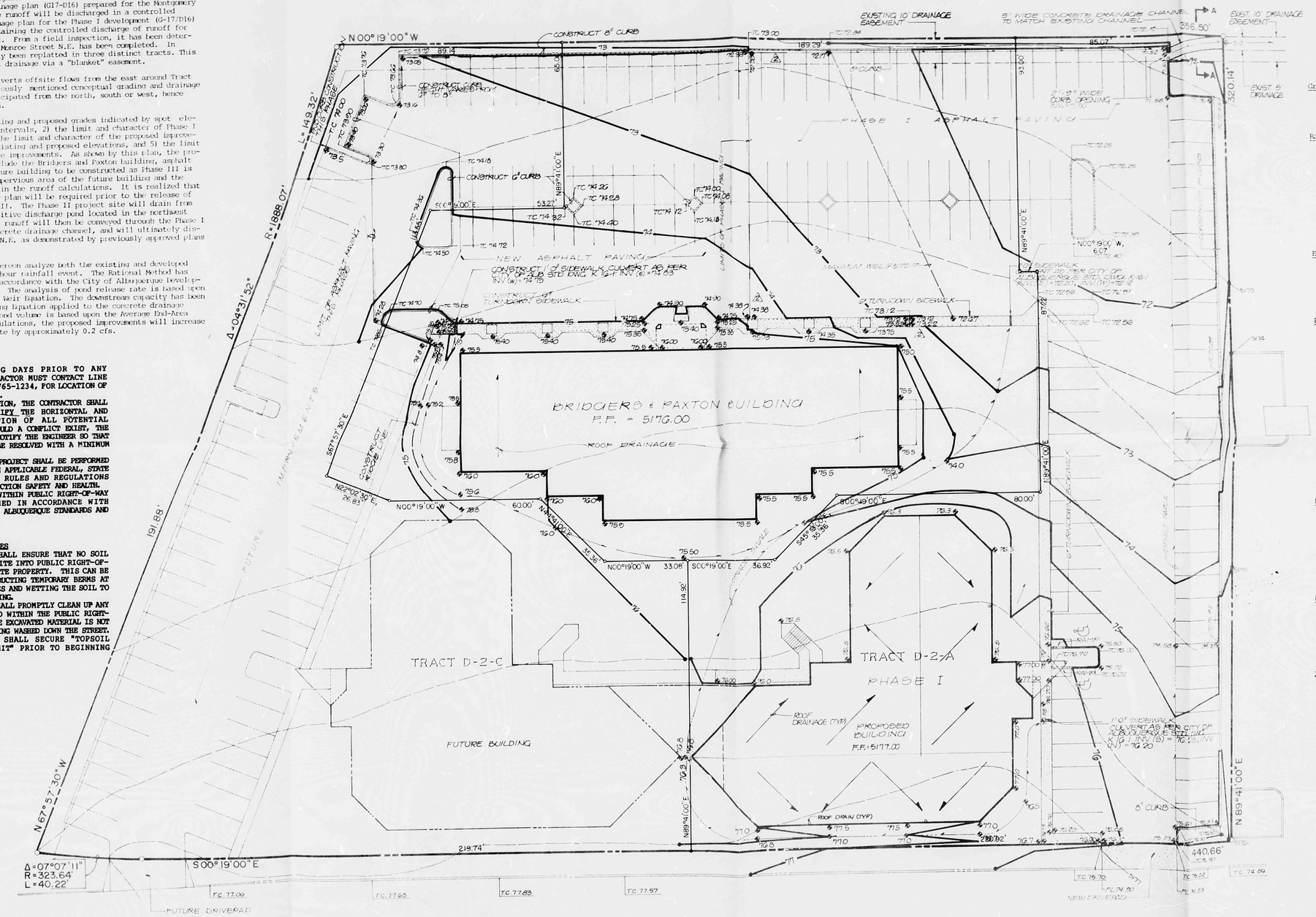
PROJECT BENCHMARK - T.B.M.

A "SQUARE, ", CHISELED ON TOP OF THE CONCRETE CURB AT THE W.N.W. RETURN OF THE INTERSECTION OF MONTGOMERY BLVD. & JEFFERSON ST. N.E.
ELEVATION = 5162.25 FEET (M.S.L.D)

LEGAL DESCRIPTION

TRACT D-2-B, VISTA GRANDE LAND COMPANY'S ADDITION No. 2.

SCALE : 1" = 20'



VICINITY MAP
SCALE 1" = 800'

G-17

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 21:
UmB, Embudo: gravelly fine sandy loam
Hydrologic Soil Group B

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 (includes Phase I)

$A_{total} = 133,300$ sf $= 3.06$ Ac
$A_{imp} = 44,700$ sf; % impervious = 34%
$C_{100} = 0.50$ (DPM Plate 22.2D-1)
$Q_{100} = CiA = 0.50\ (4.65)(3.06) = 7.1$ cfs
$V_{100} = CP_6A = 0.50\ (2.2/12)(133,300) = 12,220$ cf

Pond Volume

$V_{pond} = 1/2\ (A_{top\ elev.} + A_{bottom\ elev.})$ (top elevation-bottom elevation)
$V_{pond} = 1/2\ (15,030 + 0)(72.17 - 71.5)$
$V_{pond} > V_{pond\ required}$ (determined by Hydrograph Analysis, $Q_{release} = 5.0$ cfs)
5035 cf > 4698 cf

Controlled Discharge

Dimension Curb Opening

$Q = 3.33\ LH^{3/2}$ (Weir Equation for rectangular weirs)
where Q = 5.0 cfs
H = 0.67 ft
L = unknown
Then L = 2.74 ft = 2' - 9"

Drainage Channel Capacity

$Q = 1.49/n\ AR^{2/3}\ s^{1/2}$ (Manning Equation)
where n = 0.015 (Concrete)
A = 1.7 sf
WP = 5 ft
R = 1.7/5 = 0.34 ft
s = 0.0200 ft/ft
$Q = 1.49/0.015\ (1.7)(0.34)^{2/3}\ (0.02)^{1/2}$
Q = 11.6 cfs > $Q_{release} = 5.0$ cfs

Developed Condition

1. Partial Development
   $A_{total} = 133,300$ sf $= 3.06$ Ac
   $A_{imp} = 68,130$ sf; % impervious = 51%
   $C_{100} = 0.58$ (DPM Plate 22.2D-1)
   $Q_{100} = CiA = 0.58\ (4.65)(3.06) = 8.3$ cfs
   $V_{100} = CP_6A = 0.58\ (2.2/12)(133,300) = 14,175$ cf
2. Full Development
   $A_{total} = 133,300$ sf $= 3.06$ Ac
   $A_{imp} = 101,800$ sf; % impervious = 76%
   $C_{100} = 0.73$ (DPM Plate 22.2D-1)
   $Q_{100} = CiA = 0.73\ (4.65)(3.06) = 10.4$ cfs
   $V_{100} = CP_6A = 0.73\ (2.2/12)(133,300) = 17,840$ cf

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G17/D16

GRADING & DRAINAGE PLAN

MONTGOMERY OFFICE PARK - PHASE II

Job No. 40964