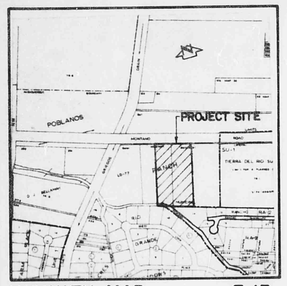
HYDROLOGY

F13/D9
ONE PLAN

F13/D9

1 Plan



VICINITY MAP F-13

SCALE 1" = 800'

· LEGEND ·

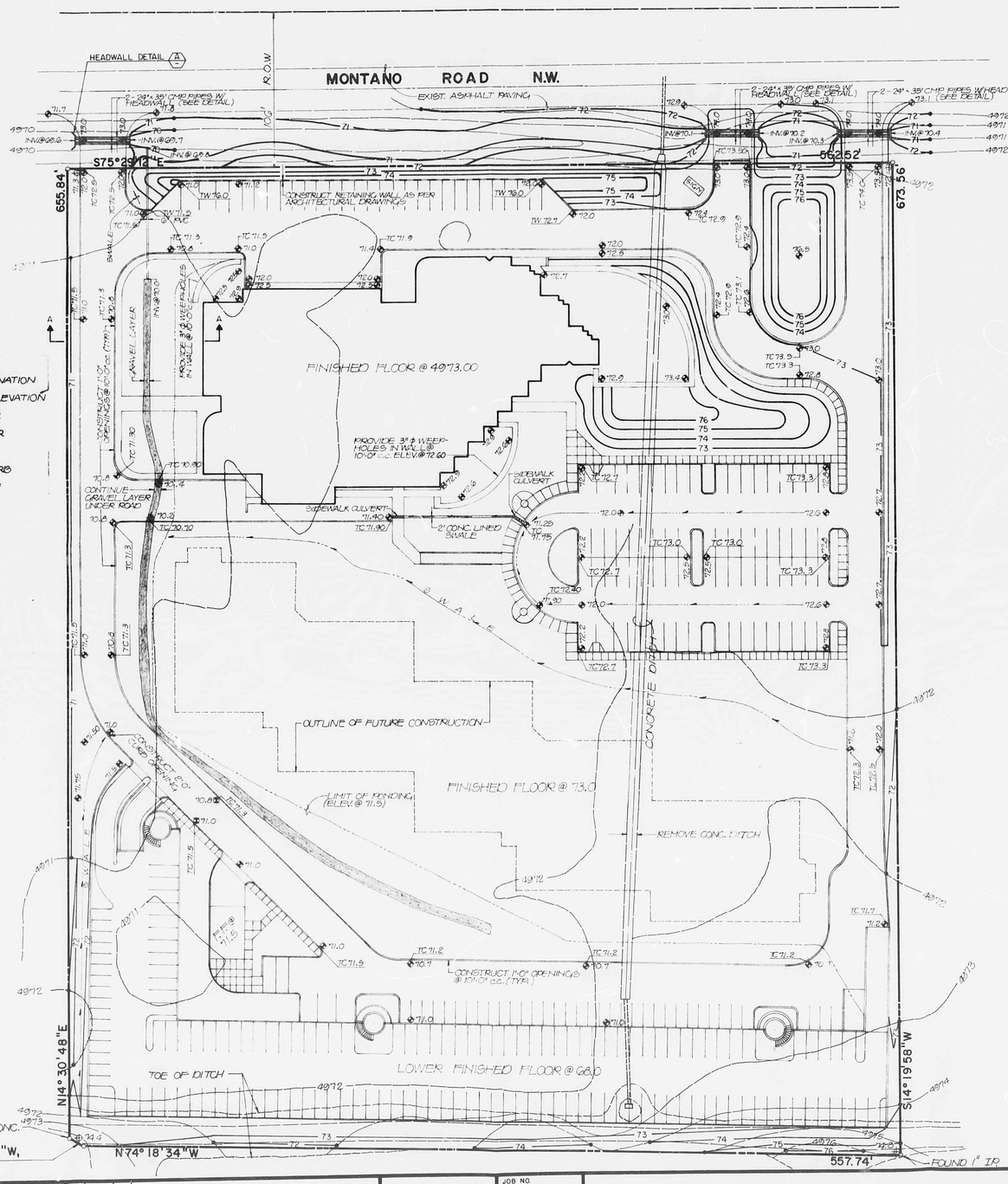
⊕	EXISTING SPOT ELEVATION
⊕	PROPOSED SPOT ELEVATION
5558G	EXISTING CONTOUR
5G	PROPOSED CONTOUR
	SWALE
T.C. 52.95	EXISTING TOP OF CURB
F.L. 52.55	EXISTING FLOW LINE

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 LOCATIONS 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.



DRAINAGE PLAN

The following items concerning the Nuclear Pharmacy 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 south side of Montano Road N.W. just east of the Griegos Drain. At present, the site is developed as irrigated farm land. The surrounding parcels are developed in a similar fashion. In fact, an existing concrete drainage ditch runs through the center of the project. This ditch enables the land on either side of it to be gravity irrigated. The existing drainage trend in this area is one in which runoff flows away from the aforementioned concrete ditch and flows north toward Montano Road. There is also an existing ditch to the south of the project which serves to intercept any offsite flows from that direction. Based upon the information presented above, it can be stated that offsite flows do not enter the site. Furthermore, the site does not lie within a designated Flood Hazard Zone.

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, 3) the limit and character of existing and proposed improvements, and 4) the limit of future building improvements. As shown by this plan, the proposed improvements include the construction of a new building, adjacent landscaping and paving, and a parking structure. At present, the site does not really discharge its runoff due to the fact that it is a flood irrigated parcel. The proposed construction will discharge the runoff generated in the developed condition to the bar ditch which is located along the south side of Montano Road. This discharge will be via a 6-inch PVC pipe, and therefore represents a controlled discharge. Lastly, it should be realized that the future construction outlined on this plan will be performed under separate permit and will require a more detailed plan of that area prior to that permit approval.

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 proposed improvements will decrease the peak runoff from the site due to the controlled discharge of runoff. The proposed improvements will, however, increase the total volume of runoff generated by this site. It should also be noted that the calculations that have been performed considering that not only the proposed, but also the future improvements were to be in place. This method of analysis insures that the solution provided by this plan will be adequate to allow the future development planned for this site. The pond volume provided, as determined by the average end-area method, far exceeds the 100-year volume for the fully developed state. Because of this, an emergency spillway has not been provided.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 20:
Br Brazito Fine Sandy Loam
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 22.2 D-1)
$T_c = 10$ min (minimum)
A = area, acres

Volume: $CP_6A(1/12)$

where C varies
$P_6 = 2.2$ in (DPM Plate 22.2 D-1)
A = area, sf

Existing Condition

$A_{total} = 378{,}800$ sf = 8.7 Ac
$A_i = 0$ sf; % impervious = 0%
$C^{PP} = 0.16$ (DPM Plate 22.2 C-1)
$Q_{100} = CiA = 0.16(4.65)(8.7) = 6.5$ cfs
$V_{100} = CP_6A = 0.16(2.2/12)(378{,}800) = 11{,}110$ cf

Developed Condition

$A_{total} = 378{,}800$ sf = 8.7 Ac
$A_i = 235{,}600$ sf; % impervious = 62%
$C^{PP} = 0.50$ (DPM Plate 22.2 C-1)
$Q_{100} = CiA = 0.50(4.65)(8.7) = 20.2$ cfs
$V_{100} = CP_6A = 0.50(2.2/12)(378{,}800) = 34{,}720$ cf

$Q_{release} = CA\sqrt{2gh} = 1.2$ cfs (Orifice Equation)

where $C = 0.7$
$A = 0.1964$ sf (6" pipe)
$g = 32.2$ ft/sec^2
$h = 17.5 - 70 - 0.25 = 1.25'$

$V_{pond} = \frac{1}{2}(A_{71.5}+A_{71})(71.5-71) + \frac{1}{2}(A_{70}+A_{71})(71-70)$

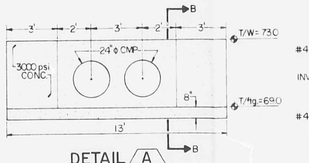
$= 48.5(40^2)(0.5) + 11.0(40^2)(1)$

$V_{pond} = 56{,}400 >> V_{100}$ (emergency spillway not needed)

Comparison

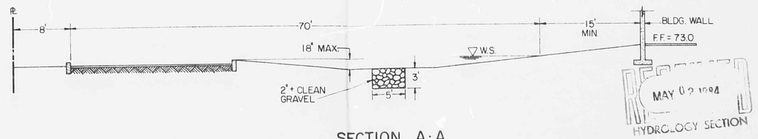
$\Delta Q_{100} = 6.5 - 1.2 = 5.3$ cfs (decrease)
$\Delta V_{100} = 11{,}110 - 34{,}720 = 23{,}610$ cf (increase)

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEW MEXICO — THOMAS A. MANN — 3782



DETAIL A
1/4" = 1'0"

SECTION B-B
1/4" = 1'0"



SECTION A-A
1" = 10' 0"

MAY 02 1984
HYDROLOGY SECTION

TOMMANN ASSOCIATES, INC. 811 DALLAS, N.E. · ALBUQUERQUE · NEW MEXICO · 87110 ENGINEERS	NO. / DATE / BY / REVISIONS	DESIGNED BY: J.G.M. / T.T.M.	JOB NO. 40221	GRADING & DRAINAGE PLAN NUCLEAR PHARMACY	FILE NO.
		DRAWN BY: J.M.C.	DATE 2·84		SHEET 1 OF 1
		APPROVED: T.T.M.			