HYDROLOGY

K12/D17
ONE PLAN

K12/D17

1 Plan

VICINITY MAP K-12

SCALE: 1" = 800'

LEGEND

- EXISTING SPOT ELEVATION
- EXISTING CONTOUR
- EXISTING CONCRETE
- EXISTING CHAIN LINK FENCE
- EXISTING SWALE
- PROPOSED SPOT ELEVATION
- PROPOSED CONTOUR
- PROPOSED CONCRETE
- PROPOSED SWALE
- PROPOSED ASPHALT

PROJECT BENCHMARK

A 3 1/4" ALUMINUM TABLET SET IN CONCRETE 0.05' ABOVE ASPHALT PAVEMENT STATION AND IS STAMPED ACS, 15-L12, 1983 LOCATED IN THE INTERSECTION OF FIVE POINTS RD. & GOFF BLVD.

ELEVATION = 4942.50 ft. (M.S.L.D.)

TEMPORARY BENCHMARK

EXISTING SANITARY SEWER MANHOLE COVER LOCATED IN ATRISCO DRIVE S.W. AS SHOWN BELOW.

ELEVATION = 4943.54 ft. (M.S.L.D.)

LEGAL DESCRIPTION

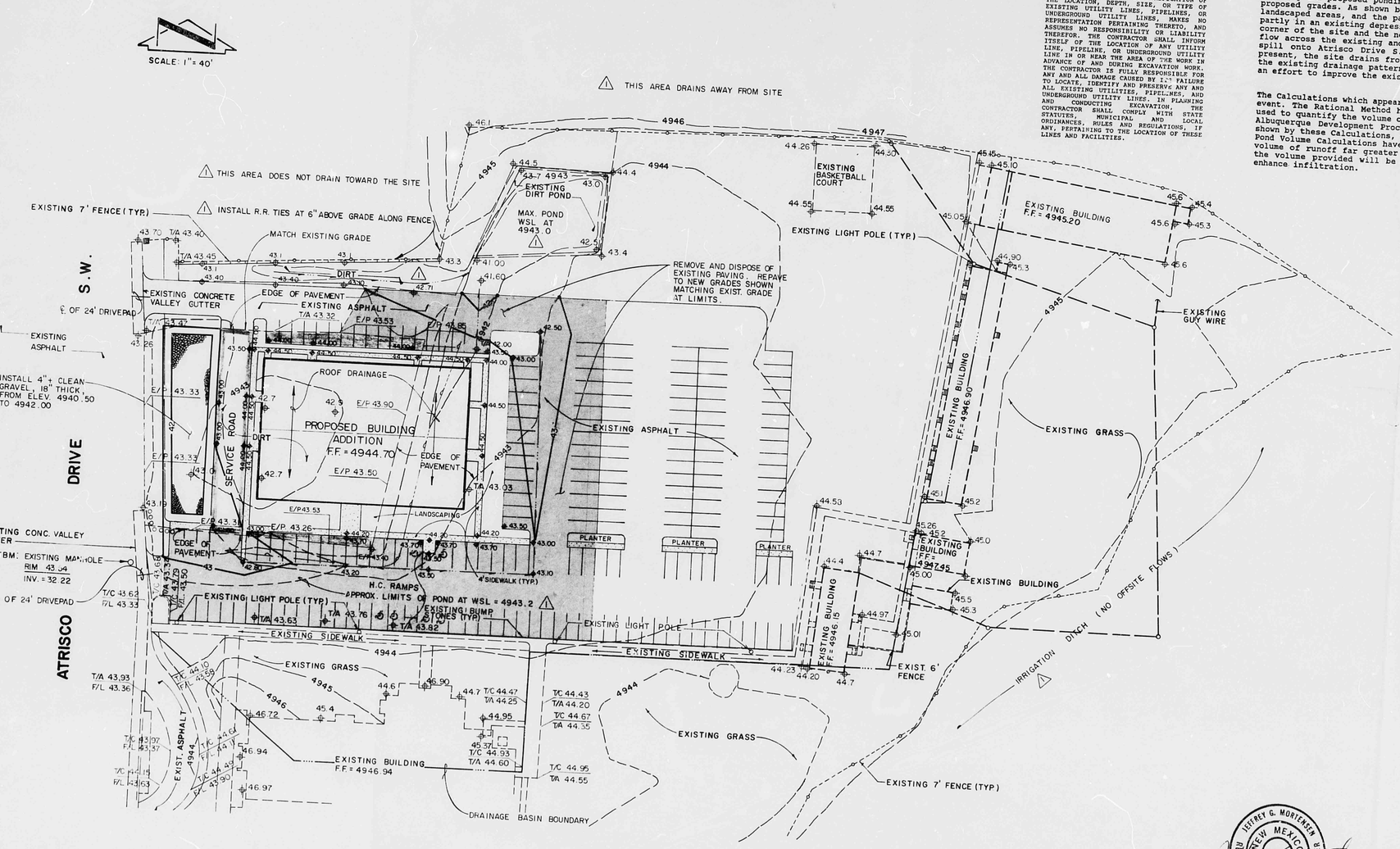
MRGCD TRACTS 41A, 42B, & 42C, MAP NO. 39

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.
5. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.



DRAINAGE PLAN

The following items concerning the Holy Family Parish Church Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

As shown by the Vicinity Map, this site is located in the northeast quadrant of the intersection of Atrisco Drive S.W. and Hooper Road S.W. At present, the site is developed as the Holy Family Parish Church and associated church facilities. The proposed improvements consist of removal of a portion of the existing asphalt paving and the construction of a new building along with associated landscaping. Although additional building area is being created, the impact of that additional impervious area is offset by the deletion of a portion of the existing asphalt paving.

Review of the National Flood Insurance Program Flood Boundary and Floodway Maps for the City of Albuquerque, this site does not lie within a designated Flood Hazard Zone. Furthermore, there does not appear to be any outfall for the runoff generated by this site. This is because Atrisco Drive S.W. does not have any curb and gutter with which to contain any flows. At present, the site drains to two small depressions which contain a small amount of runoff. The existing pond at the northwest corner of the site will be retained. A small retention pond will be created along the east side of Atrisco Drive S.W. at the west edge of the project. This pond will retain slightly greater than 1 foot of runoff above gravel subsurface storage. The gravel will be 18" thick and will retain nuisance flows below grade. Although the new pond volume is less than the 100-year volume anticipated, it is far in excess of the volume of ponding displaced by the new building.

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 the existing improvements, 3) the limit and character of the proposed improvements, 4) existing and proposed ponding areas, and 5) continuity between existing and proposed grades. As shown by this Plan, the proposed improvements consist of the construction of a new building, new proposed grades. As shown by this Plan, the proposed improvements consist of the construction of a new building, new landscaped areas, and the paving and/or repaving of portions of the parking lot. Because the proposed building is sited partly in an existing depression, runoff will need to be routed around the building to the existing pond at the northwest corner of the site and the new retention pond located along the west property line. Overflow from the existing pond will spill onto Atrisco Drive S.W. in a manner which is consistent with the existing drainage pattern of the site. At present, the site drains from east to west toward and onto Atrisco Drive S.W. The proposed scheme of grading maintains the existing drainage pattern of the site and actually provides more onsite ponding than is presently available. This is an effort to improve the existing situation.

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 to quantify the discharge of runoff from this site. The SCS Method has been used to quantify the volume of runoff generated by this site. Both Methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II, along with the Mayor's Emergency Rule dated January 14, 1986. As shown by these Calculations, the proposed development will not increase the amount of runoff generated by this site. The Pond Volume Calculations have been performed based upon the Average End Area Method. As shown by these Calculations, a volume of runoff far greater than the displace volume of runoff is being provided by this project. Approximately 30% of the volume provided will be subsurface storage within an 18" gravel layer to attempt to conceal nuisance flows and enhance infiltration.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey,
Plate 30: VbA - Vinton Sandy Loam
Hydrologic Soil Group: B
Existing Pervious CN = 61 (DPM Plate 22.2 C-2
Pasture or Range Land: good condition)
Developed Pervious CN = 61 (DPM Plate 22.2 C-2
Pasture or range land: good condition)

Time of Concentration/Time to Peak

$T_C = 0.0078\ L^{0.77}/S^{0.385}$ (Kirpich Equation)

$T_p = T_C = 10$ min.

Point Rainfall

$P_6 = 2.2$ in. (DPM Plate 22.2 D-1)

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

SCS Method

Volume: $V = 3630(DRO)\ A$

Where DRO = Direct runoff in inches
A = area, acres

Existing Condition

A_{total} = 198,000 sf = 4.55 Ac
Roof area = 11,300 sf (0.06)
Paved area = 136,600 sf (0.69)
Pervious area = 50,100 sf (0.25)
C = 0.81 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = 0.81(4.65)(4.55) = 17.1$ cfs
% impervious = 75 %
Composite CN = 88 (DPM Plate 22.2 C-3)
DRO = 1.2 in (DPM Plate 22.2 C-4)
$V_{100} = 3630\ (DRO)A = 19{,}820$ cf

Developed Condition

A_{total} = 198,000 sf = 4.55 Ac
Roof area = 26,300 sf (0.13)
Paved area = 122,600 sf (0.62)
Pervious area = 49,100 sf (0.25)
C = 0.81 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = 0.81(4.65)(4.55) = 17.1$ cfs
% impervious = 75 %
Composite CN = 88 (DPM Plate 22.2 C-3)
DRO = 1.2 in (DPM Plate 22.2 C-4)
$V_{100} = 3630\ (DRO)\ A = 19{,}820$ cf

Comparison

ΔQ_{100} = 17.1 - 17.1 = 0 cfs (no change)
ΔV_{100} = 19,820 - 19,820 = 0 cf (no change)

Pond Volumes

1. Existing Pond Volume Displaced

   V = 0.3' (6400 sf) = 1920 cf

2. Proposed Pond Volume

   $V_T = V_{subsurface} + V_{surface}$

   $V_{subsurface} = 1/3(25x125)(1.5) = 1560$ cf

   $V_{surface} = 1/2(A_{42} + A_{43})(43 - 42)$
   $= 1/2(3125 + 4725)(1) = 3925$ cf

   $V_T = 1560 + 3925 = 5485$ cf

JEFFREY G. MORIENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

10-03-86
10-21-86

RECEIVED OCT 21 1986 HYDROLOGY SECTION

Tom Mann Associates, Inc.
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ENGINEERS

NO.	DATE	BY	REVISIONS
1	10/86	JGM	ADDRESS OFFSITE FLOWS, POND LIMITS & ADD R.R. TIES.

DESIGNED BY: J.G.M.
DRAWN BY: C.J.W.
APPROVED: J.G.M.

JOB NO. 61031
DATE 07·86

GRADING & DRAINAGE PLAN
HOLY FAMILY PARISH

FILE NO.

SHEET 1 OF 1