HYDROLOGY

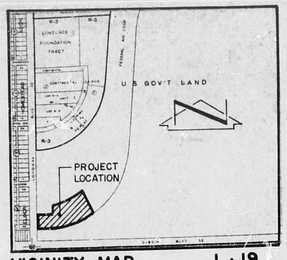
L19/D24

TWO PLANS

GROUP HOME FOR MENTALLY RETARDED ADULTS

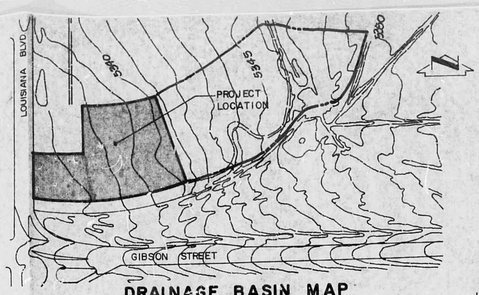
L19 / D24

2 PLANS



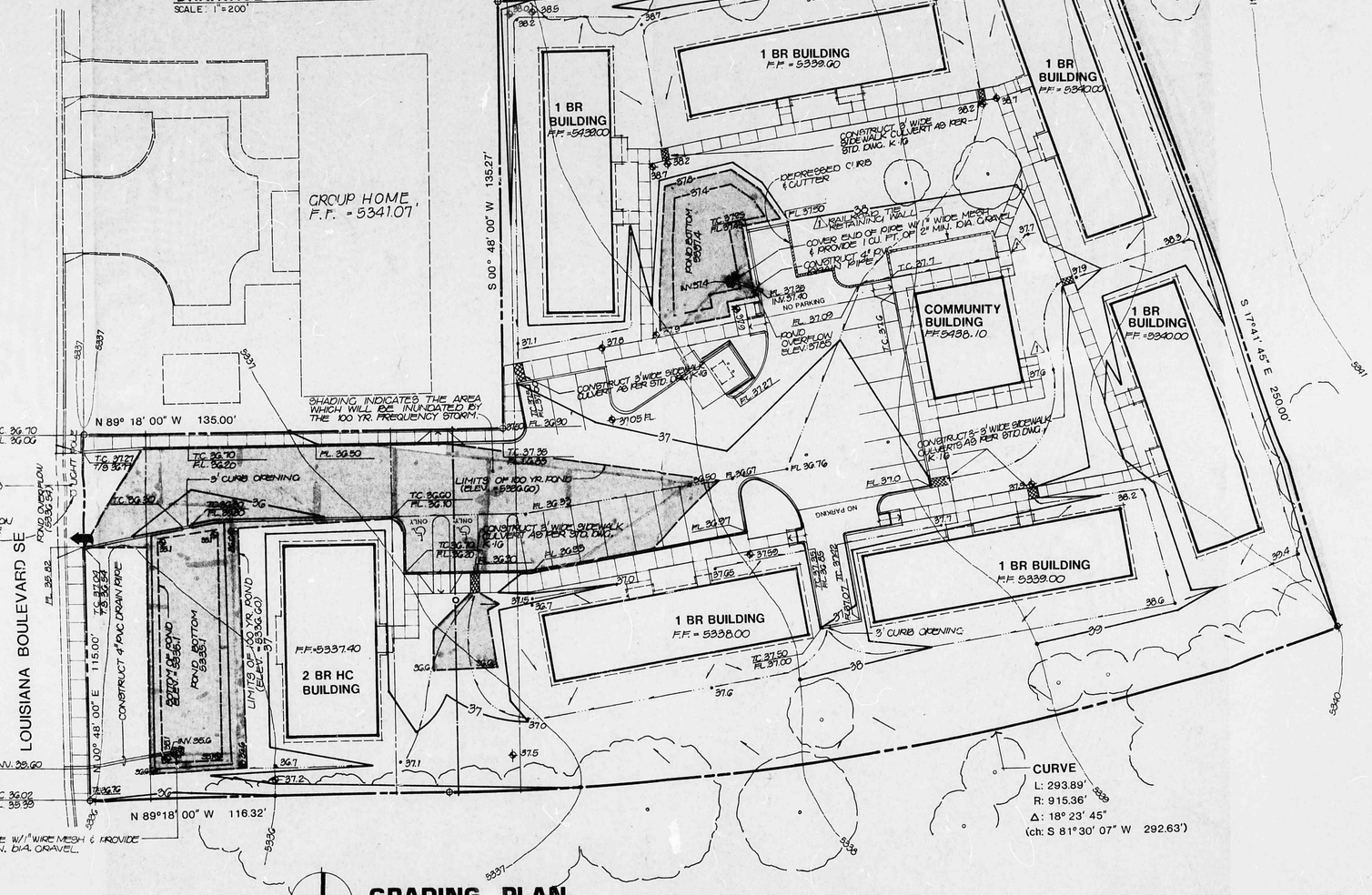
VICINITY MAP L-19

SCALE: 1" = 800'



DRAINAGE BASIN MAP

SCALE: 1" = 200'



GRADING PLAN
SCALE: 1" = 20'-0"

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 31:
WeB Wink-Embudo Complex
Hydrologic Soil Group B

Rational Method

Discharge: $Q = CiA$
where C varies

$i = P_6 (6.84)\ T_c^{-0.51} = 5.07$ in/hr
$P_6 = 2.4$ in (DPM Plate 22.2D-1)
$T_c = 10$ min (minimum)
A = area, acres

Volume: $V = CP_6A(1/12)$
where C varies
$P_6 = 2.4$ in (DPM Plate 22.2D-1)
A = area, acres

Existing Condition

$A_{total} = 74{,}065$ sf $= 1.70$ Ac
$A_{imp} = 0$ sf; % impervious = 0%
$C = 0.34$ (DPM Plate 22.2C-1)
$Q_{100} = CiA = (0.34)(5.07)(1.70) = 2.93$ cfs
$V_{100} = CP_6A = (0.34)(2.4/12)(74{,}065) = 5{,}040$ cf

Developed Condition

$A_{total} = 74{,}065$ sf $= 1.70$ Ac
A_{imp} = Bldg Area: (1600 x 6) + 1800 + 840 = 12,240
Parking Drive: 12,400
Sidewalk: 3,200
Total: 27,840

$A_{imp} = 27{,}840$
$A_{total} = 74{,}065 = 38\%$
$C = 0.51$ (DPM Plate 22.2C-1)
$Q_{100} = CiA = (0.51)(5.07)(1.70) = 4.4$ cfs
$V_{100} = CP_6A = (0.51)(2.4/12)(74{,}065) = 7550$ cf
V_{pond} required = 5900 cf (unit hydrograph analysis)
$V_{pond} = \frac{1}{2}[1650 + 2700](0.9) + \frac{1}{2}[2700 + 9200](0.6) + \frac{1}{2}[751 + 1370](0.45) = 1960 + 3570 = 6005$ cf > 5900 cf
$Q_{release} = AC\sqrt{2gh} = 0.5$ cfs
where C = 0.65
A = 0.0873 sf (4" dia. pipe)
g = 32.2 ft/sec²
h = 1.10 ft

Comparison

$\Delta Q_{100} = 2.9 - 4.4 = 1.5$ cfs (increase)
$\Delta V_{100} = 7550 - 2510 = 1920$ cf (increase)

Offsite Flows

$Q_{100} = (0.34)(5.07)(2.[illegible]) = 6.4$ cfs
$V_{100} = (0.34)(2.4/12)(161{,}000) = 10{,}950$ cf

DRAINAGE PLAN

The following items concerning the N.M.A.R.C. Group Home are contained hereon:

1. Vicinity Map 2. Offsite Drainage Basin Map 3. Grading Plan 4. Calculations

The proposed site is located on the east side of Louisiana, approximately 180 feet north of Gibson Boulevard. The 1.70 acre parcel is currently undeveloped and plans call for the construction of six one-story residential structures and one community building. The facility will serve handicapped citizens. Associated parking and landscaping will also be provided.

The area is not included in the Albuquerque Master Drainage Study, however, the parcel is included in a master drainage study for Kirtland Air Force Base which is now under investigation by Gordon Herkenhoff and Associates. The existing drainage patterns indicate that a series of arroyos located east of the site intercept the majority of storm flows from the base and convey them south ward around the site, discharging them at the intersection of Gibson and Louisiana. Future drainage facilities recommended by the report should not impact the site.

The adjacent properties on the north, east and south are currently undeveloped. The land to the east is higher and contributes runoff to the site (see offsite drainage basin map). The site slopes from east to west at approximately 1%, discharging storm flows into Louisiana Boulevard.

The Grading Plan shows 1) existing contours at 1'0" intervals, 2) proposed grades indicated by spot elevations and contours at 1' 0" intervals, 3) swales that convey water away from the buildings, 4) that the majority of runoff will be conveyed into one or two ponds, 5) a 4" PVC pipe will drain the ponds, discharging the flows from the site through the curb in Louisiana Boulevard and. 6) an overflow for the pond is provided which will discharge flows into Louisiana Boulevard via the drive pad.

The pond is designed to detain 100 percent of runoff from the additional impervious area created by the construction of the building and parking areas, resulting from a 100-year frequency storm. It is so designed that low flows will be detained in the grassed area and high flows may be detained in a portion of the asphalt drive. Emergency overflow is provided at the drivepad. No storm water will be ponded in the 20-foot strip along Louisiana Boulevard, which is reserved for future right-of-way. Offsite flows are routed through the site and the pond before discharging into Louisiana Boulevard, however, the pond is not designed with sufficent volume to detain the offsite 100-year frequency runoff (6.4 cfs).

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 result in an increase in runoff, however, this runoff will not be allowed to leave the site. The four inch diameter PVC outlet will allow the pond to de-water, but the rate of runoff will be less than would discharge from a undeveloped lot of this size. This pattern of runoff is consistent with the predesign conference recap which accompanies this submittal.

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.

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HYDROLOGY SECTION

·LEGEND·

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5655 — EXISTING CONTOUR
- 5655 — PROPOSED CONTOUR
- SWALE
- T.C. 83.91 — TOP OF CURB ELEVATION
- F.L. 55.26 — FLOW LINE ELEVATION
- CONCRETE
- BASIN BOUNDARY
- EXISTING TREES TO REMAIN

THE BURNS PETERS GROUP
ARCHITECTS PLANNERS
8000 PENNSYLVANIA CIRCLE N.E. ALBUQUERQUE, NM 87110 (505) 265-3645

NOTES

Project Benchmark:

A standard N.M.S.C.H. brass tablet stamped "Sta. G-2", set in the top of a concrete post set flush with the ground located in the center of a median strip in Gibson Blvd. Located approximately 15.4 feet west of the nose of the median which is just West of Louisiana Blvd. (ALB. B.M. G-2).

Elevation = 5334.76 Feet MSL.

LEGAL DESCRIPTION

DESCRIPTION FOR 1.7003 ACRES OF A.N.M.R.C. PARCEL

A Tract of Land within the Southwest ¼ of Section 30, Township 10 North, Range 4 East, N.M.P.M., Albuquerque, Bernalillo County, New Mexico, within the Westerly Portion of Parcel 1 of New Mexico Project No. Loop 16 Federal Aid Primary Route No. 3 and being a Portion of that Parcel of Land described in the "Correction Deed to Deed Without Warranty, dated April 28, 1981" between the United States of America and the Albuquerque Association for Retarded Citizens, filed on August 24, 1981 in Volume D-148-A, Folio 727-730, records of Bernalillo County, New Mexico, and said Tract of Land being more particulary described as follows:

COMMENCING FOR A TIE at the West ¼ Corner of said Section 30, T. 10-N., R. 4-E., N.M.P.M., THENCE, S. 00 deg. 46' 41" E., 2220.59 feet, THENCE, S. 00 deg. 41' 00" W., 250.00 feet to the Point of Beginning and the Southwest Corner of the Tract herein described, being a point on the Easterly right-of-way line of Louisiana Blvd. SE which is identical with the Southwest Corner of said Parcel 1 of New Mexico Project No. Loop to Federal Aid Primary Route No. 3, and running:

THENCE, N. 00 deg. 41' 00" E., 115.00 feet along said Easterly Right-of-way line of Louisiana Blvd. SE;
THENCE, S. 89 deg. 18' 00" E., 133.59 feet to a point;
THENCE, N. 00 deg. 48' 00" E., 135.27 feet to the Northwest Corner of the Tract herein described, being a point on curve.
THENCE, Northeasterly along a curve to the left having a radius of 665.36 feet and a central angle of 16 deg. 44' 57", (Ch = N. 80 deg. 40' 43" E., 93.81 feet), 194.51 feet of arc to the Northeast Corner of the Tract herein described.
THENCE, S. 17 deg. 41' 45" E., 250.00 feet to the Southeast Corner of the Tract herein described, being a point on curve.
THENCE, Southwesterly along a curve to the right having a radius of 915.36 feet, (Ch = S. 81 deg. 30' 07" W., 292.63 feet), 293.89 feet of arc to a point of tangent.
THENCE, N. 89 deg. 18.00" W., 114.68 feet to the Point of Beginning, and Containing 1.7003 Acres, more or less.

NOTE: This sketch and description are based on a certificate of Survey of A.N.M.R.C. Parcel within the SW. of Sec. 30, T. 10-N., R. 4-E., N.M.P.M. prepared by Hall Engineering & Surveying Co., dated April 24, 1982 and the description appearing on the "Correction Deed to Deed Without Warranty, dated April 28, 1981" filed August 24, 1981, Vol. D-148A, fol. 727-730, records of Bernalillo County, New Mexico. This sketch and description do not constitute a boundary or corner survey.

△ REVISED SIDEWALK 4/23/85
REVISED 10 SEPT 84
REVISIONS

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEW MEXICO — THOMAS M. MANN — 8752 — ENGINEER — 4/24/85

STATE OF NEW MEXICO — RONALD L. PETERS NO. 789 — REGISTERED ARCHITECT — ARCHITECT

LOUISIANA PROJECT

ALBUQUERQUE ASSOCIATION OF RETARDED CITIZENS

#116-EH050-WDD-NP-L8/NM16-T821-009

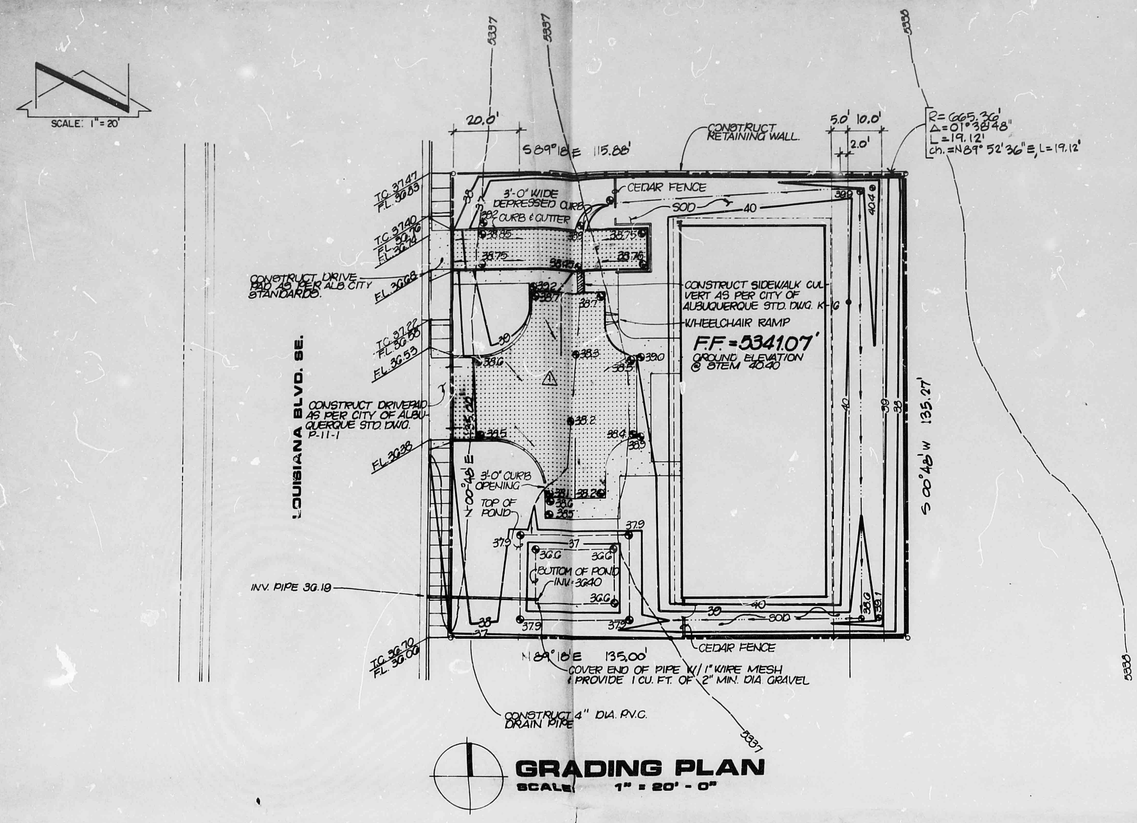
PROJECT NO. 82-17

DATE DECEMBER 5, 1983

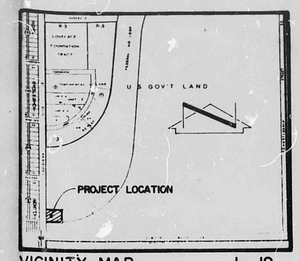
C2

SHEET 4 OF 19

L19/D24



GRADING PLAN
SCALE 1" = 20' - 0"



VICINITY MAP L-19
SCALE 1" = 800'

PROJECT BENCHMARK:
A STANDARD N.M.S.H.C BRASS TABLET STAMPED "STA. G-2", SET IN THE TOP OF A CONCRETE POST SET FLUSH WITH THE GROUND LOCATED IN THE CENTER OF A MEDIAN STRIP IN GIBSON BLVD. LOCATED APPROXIMATELY 15.4' FEET WEST OF THE NOSE OF THE MEDIAN WHICH IS JUST WEST OF LOUISIANA BLVD. (ALB. B.M. G-2)
ELEV. = 5334.76 FEET MSL.

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- DIRECTION OF FLOW
- TOP OF CURB AND FLOW LINE ELEVAT'ONS

DRAINAGE PLAN

The following items concerning the NMARC Group Home are contained hereon:

1. Vicinity Map
2. Offsite Drainage Basin Map
3. Grading Plan
4. Calculations

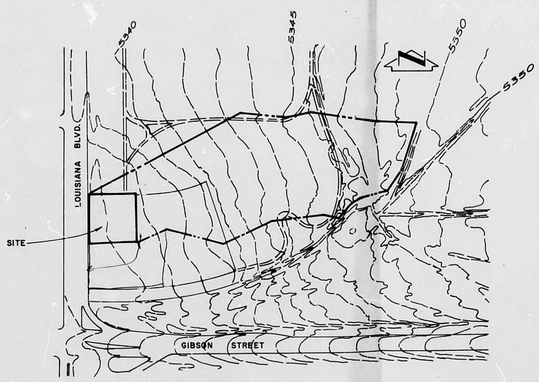
The proposed site is located on the east side of Louisiana, approximately 200 feet north of Gibson Boulevard. The 0.42 acre parcel is currently undeveloped and plans call for the construction of a one-story residential structure which will serve as a group home for retarded citizens. Associated parking and landscaping will also be provided.

The area is not included in the Albuquerque Master Drainage Study, however, the parcel is included in a master drainage study for Kirtland Air Force Base which is now under investigation by Gordon Herkenhoff and Associates. The existing drainage patterns indicate that a series of arroyos located east of the site intercept the majority of storm flows from the base and convey them southward around the site, discharging them at the intersection of Gibson and Louisiana. Future drainage facilities recommended by the report should not impact the site.

The adjacent properties on the north, east and south are currently undeveloped. The land to the east is higher and contributes runoff to the site (see offsite drainage basin map). The site slopes from east to west at approximately 1%, discharging storm flows into Louisiana Boulevard.

The Grading Plan shows (1) existing contours at 1'-0" intervals, (2) proposed grades indicated by spot elevations and contours at 1'-0" intervals, (3) swales that convey water away from the building, (4) that the majority of runoff will be conveyed into a pond, (5) a 4" PVC pipe will drain the pond, discharging the flows through the curb in Louisiana Boulevard, (6) an overflow for the pond is provided which will discharge flows into Louisiana Boulevard via the drive pad, and (7) a retaining wall will be required along the north property line.

The pond is designed to detain 100 percent of runoff from the additional impervious area created by the construction of the building and parking areas, resulting from a 100-year frequency storm. It is so designed that low flows will be detained in the grassed area and high flows may be detained in a portion of the asphalt drive. No storm water will be ponded in the 20-foot strip along Louisiana Boulevard, which is reserved for future right-of-way.



DRAINAGE BASIN MAP
SCALE 1" = APPROX. 200'

Calculations

⚠ Drainage Conditions

1. From SCS Bernalillo County Soil Survey, Plate 31, Soil Type Wink-Embudo Complex (WeB), Hydrological Soil Group 'B'.
2. P_{100} = 2.35" (DPM Plate 22.2D-1)
3. i_{100} = 2.35 x 6.84 x (10)-0.51 = 4.97 in/hr

Existing State

Offsite Basin:

Area = 5.38 ac.

C = 0.34 (DPM Plate 22.2C-1)

L = 1020 ft.

Slope = 0.0127 ft/ft

Velocity = 0.65 ft/sec (Plate 22.2B-1)

T_c = (L/(Vx60))(60) = 4.3 min; use 10 min

Q = CiA = (0.34)(4.97)(5.38) = 9.1 cfs

Vol = PCA = (2.35)(0.34)(5.38)(43560)/12 = 15,600 c.f.

Onsite Basin

Area: 0.42 ac

C = 0.34 (DPM Plate 22.2C-1)

T_c = 10 min.

Q = CiA = (0.34)(4.97)(0.42) = 0.7 cfs

Vol = PCA = (2.35)(0.34)(0.42)(43560)/12 = 1200 c.f.

Developed State

Offsite Basin

Area: 5.38 ac

C = 0.70 (Assuming 71% Impervious, using DPM Plate 22.2C-1)

T_c = 10 min

Q = CiA = (0.70)(4.97)(5.[illegible]) = 18.7 cfs

Vol = PCA = (2.35)(0.70)(5.38)(43560)/12 = 32,000 c.f.

Onsite Basin

Area:	Impervious:	0.27 ac	(64%)
	Pervious:	0.15 ac	(36%)
	Total:	0.42 ac	(100%)

C = 0.65 (DPM. Plate 22.2C-1)

T_c = 10 min

Q = CiA = (0.65)(4.97)(0.42) = 1.4 cfs

Vol = PCA = (2.35)(0.65)(0.42)(43560)/12 = 2330 c.f.

Required Pond Volume, using dimensionless hydrograph

$q_p = q_{100}$ = 1.4 cfs = 84 cfm

$t_p = T_c$ = 10 min

$Vol_1 + Vol_2 = Vol_{100}$ = 2330 cf

$Vol_2 = V_{100} - Vol_1$ = 2330 - (84 x 10 x 0.5) = 1910 cf

$T_r = (2)(Vol_2)/q_p$ = (2)(1910) 184 = 45.5 min.

Q release = $CA\sqrt{2gh}$ = 0.71 cfs

Where C = 0.8 (Cameron Hardbook)

A = 0.09 S_f (4" pipe)

g = 32.2 ft/sec^2

h = 1.5'

Vol release = $Q(T_r + t_p) - \frac{Q^2 t_p}{2q_p} - \frac{Q^2 T_r}{2q_p}$

Vol required = 565 cf.

21001

THE BURNS PETERS GROUP
ARCHITECTS PLANNERS
ALBUQUERQUE, NEW MEXICO

NOTES

⚠ REVISED FRONT PARKING, FRONT GRADES, FRONT PONDING & CALCULATIONS 1/26/83 S.C

REVISIONS

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEW MEXICO — THOMAS MANOUSOS — 3782 — NEW MEXICO — ENGINEER AND LAND SURVEYOR

STATE OF NEW MEXICO — RONALD L. PETERS NO. 765 — REGISTERED ARCHITECT — ARCHITECT

GROUP HOME FOR MENTALLY RETARDED ADULTS

ASSOCIATION FOR RETARDED CITIZENS OF NEW MEXICO

ALBUQUERQUE, NEW MEXICO

PROJECT NO. 82-28 | DATE 30 SEPT 82

C2

SHEET 3 OF 14

L19 / D24

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