HYDROLOGY C13/D5 2 PLANS

C 13/D6

2 PLANS

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620 LOMAS, N.W.
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GERARD W. THOMSON,
PROBATE JUDGE

March 16, 1984

TO: Clyde Vigil, Assistant County Building Official

FROM: Bernie J. Montoya, Hydrologic Engineering Techincian, C.E. BJM

SUBJECT: DRAINAGE STUDY FOR J & 5 ENTERPRISES OFFICE BUILDING (C-13)

Based on the information provided on the resubmittal of the above referenced drainage plan, I recommend that final drainage approval be granted for permitting purposes.

It is important that the 10 mil pvc pond liner be installed according to specifications, and that the overall drainage concept must function as designed. Therefore, because of the critical drainage concept, I recommend that upon completion of construction, the Engineer Certify said approved drainage concept for compliance prior to issueing the final Certificate of Occupancy.

If you have any questions, feel free to contact me at your convenience.

BJM/ca

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PROBATE JUDGE

February 28, 1984

TO: Clyde Vigil, Assistant County Building Official

FROM: Bernie J. Montoya, Hydrologic Engineering Technician BJM

SUBJECT: DRAINAGE STUDY FOR J & S ENTERPRISES OFFICE BUILDING (C-13)

Based on the information provided on the above referenced drainage plan, certain concerns listed below will need to be addressed before final approval is granted:

1. Submittal will need a completed information sheet.

2. Professional's stamp with signature and date on plan.
   A. Engineer who prepared the drainage report or plan.

3. Soils investigation report will be required if they still propose to keep the ponding area within 15' of proposed structure.

4. Offsite flows will need to be analyzed and addressed.

5. Positive discharge of pond with required rate and outlet calculations. Also they need to analyze downstream conditions to see if it is capable of handling the developed controlled runoff. Also, they cannot drain across private property.

6. Pond emergency spillway calculations will be required.

7. Pond fencing will be required for depths greater than 18".

8. 100-year water surface elevation outlined and indicated on plan.

9. Benchmarks: Location, description and elevation of the:
   A. Albuquerque Control Survey Vertical Datum
   B. Temporary benchmark on-site to M.S.L.

10. Existing and proposed conditions will need to be addressed (Follow DPM Checklist).

11. Location and direction of roof downspouts.

12. Details of ponds, swales, emergency spillways, pond outlets, safety fences, and all other significant drainage structures with cross sections, spot elevations and supporting calculations when appropriate will be required.

If you have any questions, feel free to contact me at 766-4025

BJM:mrk

INFORMATION SHEET

PROJECT TITLE J&S Enterprises Office Building TYPE OF SUBMITTAL Grading and drainage

ZONE ATLAS PAGE NO. C-13 CITY ADDRESS Rupley Drive - Bernalillo County

LEGAL DESCRIPTION SW1/4 Section 18, Township 11 North, Range 3 East

ENGINEERING FIRM Resource Technology, Inc. CONTACT Elvidio V. Diniz

ADDRESS 7800 Marble NE, Albq. 87110 PHONE 2663320

OWNER J&S Enterprises CONTACT Jim Sheehan

ADDRESS 5113 Justin Drive NW, Albq. 871 PHONE 8987102

ARCHITECT Roger Cinelli & Assoc. CONTACT Roger Cinelli

ADDRESS 911 Fruit NW Albq.,NM PHONE 842-6899

SURVEYOR Denney-Gross & Assoc. Inc. CONTACT Fred Denney

ADDRESS 2400 Comanche Rd, NE Albq PHONE 884-0696

CONTRACTOR Raylee Homes CONTACT Scott Grady

ADDRESS 13305 Rebonito Rd NE Albq PHONE 892- 5533

PRE-DESIGN MEETING:

X YES
___ NO
___ COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
X GRADING/PAVING PERMIT APPROVAL
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 3/15/84

BY: Elvidio V. Diniz

RESOURCE TECHNOLOGY, INCORPORATED

7800 MARBLE AVENUE NE, SUITE 5
ALBUQUERQUE, NEW MEXICO 87110
(505) 266-3320

March 14, 1984

Mr. Clyde L. Vigil
Assistant Building Official
Bernalillo County
620 Lomas Blvd. NW
Albuquerque, NM 87102

RE: Response to comments on drainage study for J&S Enterprises Office Building (C-13)

Dear Mr. Vigil:

In response to your letter dated March 8, 1984 to Mr. James E. Sheehan regarding Mr. Bernie Montoya's comments on the drainage study for the J&S Enterprises Office Building, I am pleased to report as follows.

We met with Mr. Montoya and Mr. Billy Goolsby, City/County Flood Administrator and reviewed their comments and our proposed solutions. The decisions arrived at during that meeting are listed below; they are enumerated according to Mr. Montoya's comments.

1. A completed information sheet is attached.

2. I have applied my seal, and signed and dated the revised drainage plan.

3. A 10-mil PVC pond liner will be installed on the west side of the pond and will extend 10 feet into the pond. Details of this installation are shown on the revised drainage plan.

4. The only off-site flow area affecting this lot is on the west side of the lot. The contributing area cannot be exactly defined because there are no established channels and present overland flow is determined by traffic ruts in the unimproved dirt road along the PNM easement which is being used as a back road to the church adjacent to and south of the study lot. The 0.11 acre off-site area drains across the west side of the study lot, and into an existing detention pond in the northwest corner of the adjacent church parking lot. This off-site area will generate the following flow rates and volumes:

10-year	0.05 cfs	91 cu ft
100-year	0.09 cfs	142 cu ft

The proposed drainage plan includes a 3-inch high asphalt berm along the western property line to conduct the off-site water around the study lot, but still to its present destination. Therefore the existing drainage pattern is changed only to reduce the runoff to the church pond. All of the runoff that originated on the study lot and drained to the church pond will now drain into the on-site detention pond, thus reducing the flow to the off-site existing detention pond.

5. At present both Paradise Boulevard and Rupley Drive are paved but not curbed, and all area runoff drains to the lowest point in the vicinity of

these roads, which is the privately owned lot adjacent to and north of the subject lot. There is no outlet from this naturally existing ponding area which is a natural sump. It will require over 6 feet of fill, or curbs along the roads, to keep the runoff out of this sump area. Under present conditions, neither of these solutions is expected; therefore, runoff from the study lot will eventually drain to the sump area, just as it presently does.

6. The ponding system shown on this plan has a capacity of 1,458 cu ft and a total 100-year runoff volume of 1,504 cu ft is expected; consequently, the system will accomodate 97 percent of the runoff volume without any concurrent discharge through the outlet pipe. Therefore, the outlet will be used mainly to provide positive drainage out of the pond. At a full pond depth of 18 inches, the maximum outflow from the drain pipe will be approximately 0.5 cfs or 30 cubic feet per minute, which will easily accomodate the 46 cu ft difference between the runoff generated and ponding system capacity. Furthermore, the 23-foot wide driveway will act as an emergency spillway which will conduct flows in excess of pond capacity. The crest of the spillway is 0.64 feet lower than the building slab elevation. At a flow depth of 0.1 feet over the spillway the discharge will be 1.8 cfs which is twice as much as the 100-year runoff rate from the entire study lot. Therefore, the emergency spillway is quite capable of conveying far in excess of the expected 100-year flows.

7. Pond fencing is not required because the revised drainage plan is based on a ponding depth of 18 inches.

8. The 100-year ponding elevation is now delineated on the drainage plan.

9. In January 1984 the City Surveyor's Office informed us that only one survey control station, No. C-108, was available in the project vicinity; but, we could not find this station in the field. Therefore, we opted to use a temporary benchmark, and the rim elevation of an existing manhole along Paradise Boulevard near the project site was selected. This manhole is identified on the drainage plan. As agreed to during our meeting with City staff, we will establish the mean sea level elevation of project facilities within a reasonable time after construction has started.

10. We have reviewed the DPM checklist and all applicable items have been complied with. This project lot is only 0.25 acres in area, and some of the listed items are not feasible at this scale of development.

11. The location and direction of roof downspouts are shown on the revised drainage plan.

12. To provide details on the pond and outlet, cross-sections along the principal pond axes are shown on the revised drainage plan.

We believe that these responses will resolve the concerns regarding drainage expressed by Mr. Montoya through your office, and we would appreciate your immediate attention to this matter, so that any further delay may be avoided. If you have any questions, please let me know.

Sincerely,

Elvidio V. Diniz

Elvidio V. Diniz, P.E.
Principal Engineer

EVD:ob
attachment - drainage plan

C13/D6

DRAINAGE STUDY FOR J&S ENTERPRISES OFFICE BUILDING BERNALILLO COUNTY, NEW MEXICO

prepared for
J&S Enterprises
and
Roger Cinelli Architecture-Construction

by
E. V. Diniz, P.E.
S. K. Dell
Resource Technology, Inc.
7800 Marble Avenue NE, Suite 5
Albuquerque, New Mexico 87110

February 1984

Elvidio V. Diniz
P.E. Number 7111

1. INTRODUCTION

This report presents an analysis of the existing and proposed drainage conditions for an office building site being planned by J&S Enterprises. The building will be constructed on Lot #5 of Summary Plat of Paradise Hills Block "A", Bernalillo County, New Mexico. Resource Technology, Inc. has conducted this analysis in accordance with the criteria presented in the City of Albuquerque Development Process Manual (DPM).

2. SITE LOCATION AND DESCRIPTION

The property is located in the northwest part of Bernalillo County near the southwest corner of Coors Boulevard, N.W. and Paradise Boulevard, N.W. The lot lies on the north side of Rupley Drive, N.W., which runs perpendicular to Paradise Boulevard and one block north of Coors Boulevard. A 7 ft. utility easement is located along the east side of the property. Figure 1 is a location map for the project area.

This lot slopes from west to east at approximately two percent (2%). The "Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico" states that soil in this area is in the Bluepoint soil series within Hydrologic Soil Group A. This soil consists of loamy, fine sand. Vegetation consists of typical mesa grasses and weeds. A copy of the soils map for the site is shown in Figure 2.

3. DRAINAGE ANALYSIS

Storm runoff was analysed for both the developed and undeveloped conditions using the Rational Equation, $Q = CiA$. Values for the runoff coefficient "C" were obtained from the Development Process Manual Plate C-1. The C value was determined to be 0.16 for the undeveloped lot, and 0.72 for the developed condition. Table 1 shows the proposed breakdown of pervious and impervious areas which was used to determine the C values.

The proposed development is expected to alter the time of concentration of runoff (Tc) from 4 minutes to 1 minute, approximately. Therefore, a default value of 10 minutes was used as specified in the Development Process Manual. Rainfall intensity corresponding to this Tc was obtained from the Development Process Manual Plates D-1 and D-2. For the 100-year storm, rainfall intensity was determined to be 4.84 in./hr.; and 3.08 in./hr. for the 10-year storm. All runoff computations are summarized in Table 2.

4. OFF SITE FLOWS

At present, no concentrated off site flows come onto the lot; however, a small amount of sheet flow along a Public Service Company of New Mexico easement affects the west side of the property. Runoff on the easement generally flows southwest, and a three inch (3 in.) water barrier berm is planned on the west side of the lot to confine the flow to the easement.

5. ON SITE FLOWS

On site storm runoff is presently in the form of sheet flow from west to east across the project site, where it drains to Rupley Drive, N.W. The peak runoff rate prior to development was determined to be 0.2 cfs for the 100-year rainfall. Development of the lot will increase the runoff rate to 0.9 cfs for the 100-year rainfall. The corresponding 10-year runoff rates are 0.1 cfs for the present condition and 0.6 cfs for the developed conditions.

The volume of runoff in the existing condition is 313 cubic feet in the 100-year storm. In the 10-year storm, 202 cubic feet of runoff would be generated. After development, during the 100-year storm, runoff volume will increase to 1,505 cubic feet. The volume for the 10-year storm will be 958 cubic feet.

The proposed drainage plan is to convey the developed condition runoff through a swale down the center of the lot to a detention pond in the southeast

corner of the site. The swale is to be constructed as a V-shaped channel with a longitudinal slope of 0.5%. This empties into the detention pond through three eight inch curb cuts formed in the curb along the north side of the pond.

The pond will be 23 feet wide, 24 feet long on the south side and 29 feet long on the north side. It will have a depth of 2.5 feet (including 6 inches of freeboard) and side slopes of 2H : 1V. These slopes will be stabilized with gravel and native plant landscaping. The detention pond will allow 779 cubic feet of storage or approximately half of the 1,504 cubic feet of storage required for the 100-year storm.

A two foot high, four inch diameter, slotted pipe drain will be installed in the northeast corner of the pond to provide controlled release of the water to Rupley Drive.

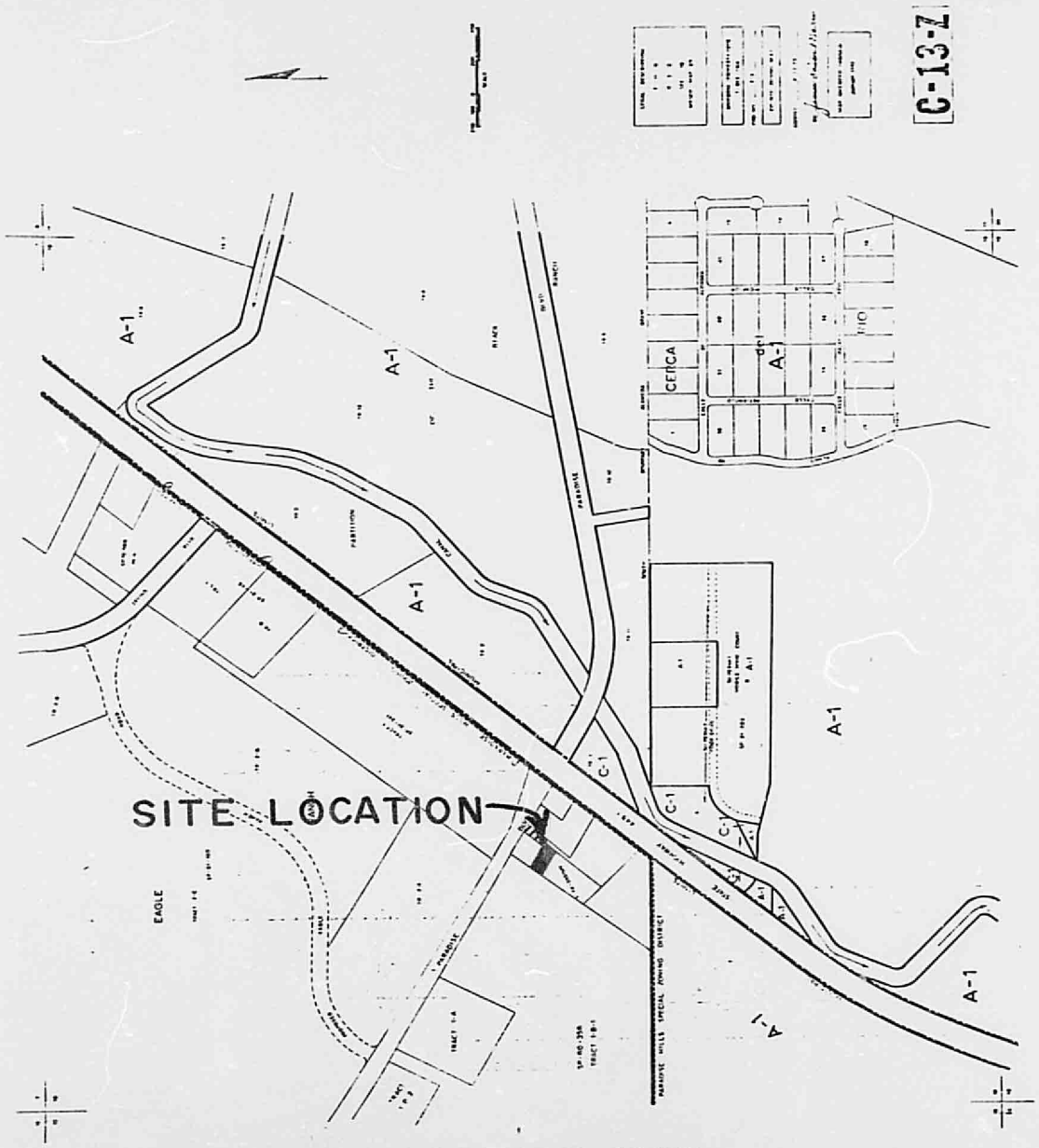
Six feet of landscaped area which separate the edge of the pond from the building will act as a buffer to protect the floor slab from the water saturated pond area. This buffer area will be graded to drain into the pond.

Runoff in excess of pond capacity will be stored in the front parking lot whose surface will be depressed into a trapezoidal shape. The side slopes will be 10H : 1V with 0.6 feet of depression. The bottom of the trapezoid will be 26 feet wide. The width will be 46 feet and 825 feet cubic feet of storage will be available in this area. It will also drain into the pond such that during the more frequent runoff events, the detention pond, whose capacity is slightly ess than the 10-year runoff volume, will fill up first.

A total storage of 1,604 cubic feet will be available in the pond and parking lot combined. This will be in excess of the 1,505 cubic feet of storage required to control the 100-year storm. Another safety factor in the proposed system is the slotted pipe which will be draining water to the road even as the pond is filling with runoff water. This volume of discharge during the runoff event will increase the amount of availabie storage in the pond.

To insure that all flows will be contained on the site, retaining walls will be constructed on both sides of the property. At the west end of the south side,

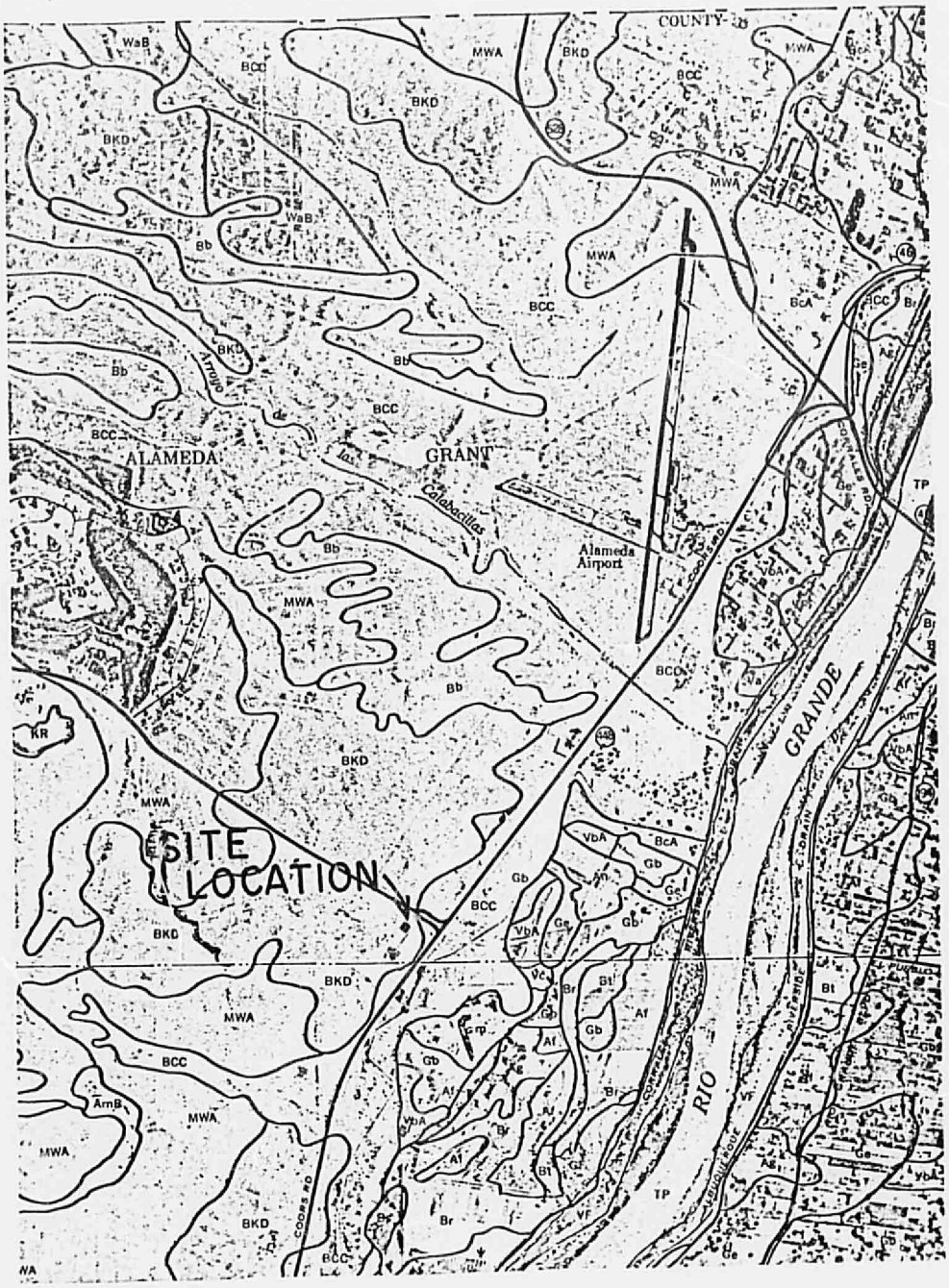
the wall will be a concrete cut-off wall as shown in the City of Albuquerque standard drawings. This wall will also function as a curb. The concrete block wall on the north side of the property and around the detention pond will be designed as a retaining wall so that no off-site impacts will occur as a result of this development.



C-13-7

LOCATION MAP

FIGURE 1



SOILS MAP

FIGURE 2

TABLE 1

BREAKDOWN OF AREA
(pervious & impervious)

EXISTING CONDITIONS

Total area is undeveloped 10,796 ft^2

% Impervious 0%

PROPOSED CONDITIONS

IMPERVIOUS

Building	1794	Total 9728 ft^2
Sidewalks	390	
Parking Lot	7544	

PERVIOUS

Front Landscaping & Pond	682	Total 1068 ft^2
Small Island	86	
Large Island	300	

Total area 10,796 ft^2

% Impervious 90%

TABLE 2

Time of Concentration

	Area (Ac)	Len. of flow path	Max. El.	Min. El.	Slope	Computed Tc (min)	Computed Vel. (ft/sec)	Plate B-1 or 2 Overland or Street Flow Vel. (ft/sec)	Actual Tc (min)
UNDEVELOPED	0.258	170'	96.20	93.20	0.018	1.93	0.61	0.80	3.54
DEVELOPED	0.258	164'	96.55	95.20	0.008	2.51	1.09	2.40	1.14

Intensities and "C"

	Flow Depth (in) D-1		Intensity Factor (D-2)	Intensities (in/hr) D-2		% Impervious	"C" (C-1)
	100 yr	10 yr		100 yr	10 yr		
UNDEVELOPED	2.2	1.4	2.2	4.84	3.08	0%	0.16
DEVELOPED	2.2	1.4	2.2	4.84	3.08	90%	0.76

Flow Rates & Volume

	Area (Ac)	"C"	i (Intensity) 100 yr	i (Intensity) 10 yr	Q (cfs) 100 yr	Q (cfs) 10 yr	Volumes 100 yr	Volumes 10 yr
UNDEVELOPED	0.248	0.16	4.84	3.08	0.19	0.12	313	202
DEVELOPED	0.248	0.76	4.84	3.08	0.91	0.58	1505	958

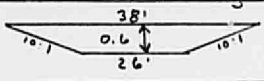
Storage Volume in Pond depth - 2' side slopes - 2H:1V

Top Area 25.16 x 21.66 = 545 ft²

Bottom Area 17.16 x 13.66 = 234 ft²

Pond Storage = 779 ft³

Storage Volume in Parking Lot - trapazoid shaped, depth - 0.6', side slopes - 10H:1V



$A = \frac{38 \times 26}{2} \times .6 = 19.2\ ft^2$

VOL = 19.2 x 43' (width) = 825 ft³