HYDROLOGY G17/D3 4 PLANS

G17/D3

4 Plans

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DRAINAGE REPORT & PLAN

FOR

CARLISLE PLAZA ADDITION

ALBUQUERQUE NEW MEXICO

ZONE ATLAS G-17

PREPARED BY:

LEVERTON ENGINEERING

MARCH 9, 1982

Drainage Management Report
Carlisle Plaza Addition
Albuquerque, New Mexico
March 9, 1982

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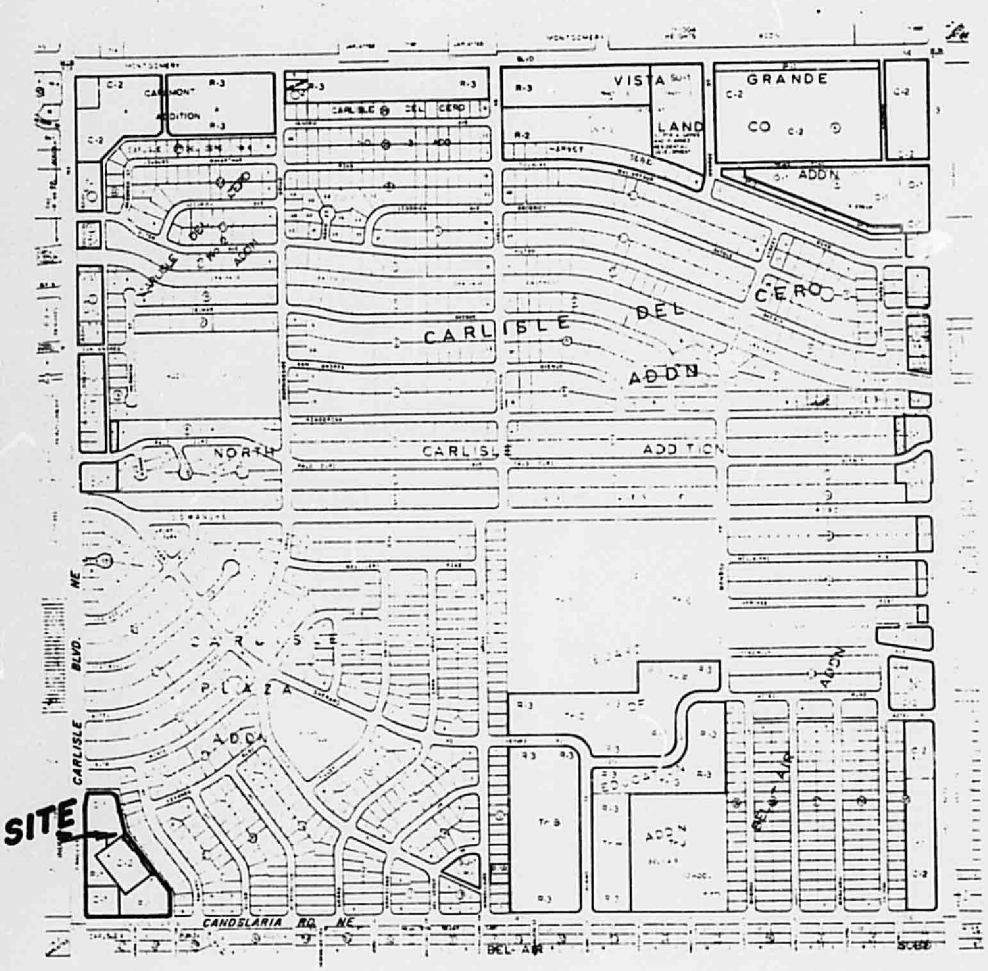


CARLISLE PLAZA ADDITION
City of Abq. Zone Atlas Map G-17

G-17-Z

Drainage Report

Carlisle Plaza Addition

Purpose:

To prepare a drainage management plan and site development plan necessary to obtain the building permit to construct a 3400 sq. ft. office building and the attendant drive and parking facilities on a site containing 6.2 acres located at the northeast corner of Candelaria Road @ Carlisle Blvd. NE.

This report will address the drainage plan for the construction of the above mentioned office building site and is intended to demostrate that the construction of these facilities will not preclude the design of a plan for the remaining and as yet undeveloped area of the total ownership sometime in the future.

General:

Two of the three buildings and uses were constructed prior to very much attention being placed on drainage management in Albuquerque. These are the the service station type facility at the southwest corner of the site and the dental office at the northwest corner. The office building and parking area just north of the service station was built employing the drainage concept contained in the 1975 drainage report prepared by Fred Denney which contemplated "All runoff from the site can be removed by infiltration alone." A copy of this report is attached. The infiltration pond and planter built in conjunction with the above mentioned building will be used to infiltrate a small portion of the runoff from the proposed site under consideration in this report.

Drainage Plan:

The plan will follow current City policy for this area which allows direct surface discharge onto Candelaria for capture by that street's storm drainage system. And, a significant amount of water will be retained and infiltrated on site. Attached is a copy of the letter referring to a discussion of this site with Chuck Easterling signed by Christopher Weiss, PE.

Narrative and Calculations:

3400 sq. ft. office building, parking, and drive:

Area:

1. Building - roof sloped to drain to scuppers discharging to planter - pond	3400 sf
2. Planter-pond-infiltration area	3530 sf
3. Drives, parking, and sidewalks	13,200 sf

Drainage:

1. The runoff from a 100 year storm will retained and infiltrated on site.

42' x 165' x 2.2/12 x 1.0 = 1270 cf

The pond volume, see plan for dimensions, will contain a volume of 2720 cf to capture this runoff and to infiltrate it. Even without considering infiltration the pond is adequate and provides a large factor of safety for reduction in volume caused by the build up of silt.

In the event of a catostrophic rain storm causing overfilling of the pond the runoff would discharge over the barrier curb on the marge of the pond onto land of the owner of the subject site and over the sidewalk to Candelaria Road.

2. Runoff from the northern portion of the parking and drive area will outfall to the west to discharge into the existing planter-retention pond - infiltration sump.

Volume = 50' x 68' x 2.2/12 x 1.0 = 620 cf

This will amount to increasing the loading infiltration pond by about 15%.(3400 sf/ 22,500 sf x 100)

If this increase in loading should result in unacceptable storm water dispersal rates the owner will have a problem that can be best dealt with by improvement of the existing infiltration pond.

3. Runoff from the remainder of the parking and drive area located immediately east of the building will discharge into Candelaria Road as clear water.

Volume (100) = 9800 sf x 2.2/12 x 1.0 = 1800 cf
Volume (10) = 1.8/2.2 x 1800 = 1470 cf

Q (100) = .23 acres x 0.95 x 6.3 = 1.4 cfs
Q (10) = .23 acres x 0.95 x 3.1 = 0.7 cfs

An approximation of the hydraulic capacity and the depth of flow in the swaled drive and parking area is obtained by resorting to the Manning formula. The section is triangular with a base width of about 27', a depth of 0.1', and a longitudinal slope of 0.005 ft/ft. This section produces a V of 1.4 f/s and a Q of 1.9 cfs which is adequate to contain the 100 year design flow. The consequence of exceeding the small design flow are not severe even if it should be proven somewhat larger than calculated.

The outfall from the drive at the back of the existing sidewalk may allow, by it's geometry, a small amount of runoff to flow across the sidewalk immediately downstream from the discharge point. However, the large increase in longitudinal gradient from the discharge point along the drive pad to the gutter line will cause most of the flow to remain in the drive pad.

Conclusions:

This drainage plan effectively conforms to the current storm water management guidelines and policy applicable to this site.

Future development involving the remainder and presently undeveloped land in Carlisle Plaza comprising 4.1 acres will require considerable site grading and possible importation of fill material in order to build in the grade to effect the drainage patterns indicated as "future". The concept proposed for the balance of the site allows direct discharge into Candelaria Road for capture by the storm sewer system therein with these flows restricted to the practicable minimum.

Respectfully submitted,

John G. Leverton
P.E. & L. S. No. 1874
New Mexico
March 9, 1982

STATE OF NEW MEXICO
PROFESSIONAL ENGINEER AND LAND SURVEYOR

Consultants terrasol inc.
P.O. Box 142 Sandia Park, New Mexico 87047 (505) 281-1991

July 18, 1981

Bill Shelton and Associates, Architects
1113 Rhode Island NE
Albuquerque, New Mexico 87110

RE: Site at Candelaria and Carlisle NE

Dear Bill:

On Monday, the 12th of July, I met with Chuck Easterling, the City Hydrologist, concerning the drainage requirements for the above project. In essence, because the site is not an SU-type zoned project, your client could proceed with the design of the proposed addition on a piecemeal basis. However, the City recommended that the overall site be analysed for ultimate drainage to preclude future development from causing problems with this phase of proposed expansion.

The drainage concept proposed for the ultimate, overall site would involve direct surface discharge onto Candelaria for capture by that street's storm drain system. Flows onto Carlisle would have to be restricted to a minimum by onsite final grading. The present drainage plan is not acceptable to the City due to policy changes for drainage that have occured since the report was prepared.

If I can be of further assistance, please call.

Thank you.

Respectfully,

Christopher L. Weiss, P.E.
President

CLW/vw

CARLISLE PLAZA ADDITION

SOILS MAP

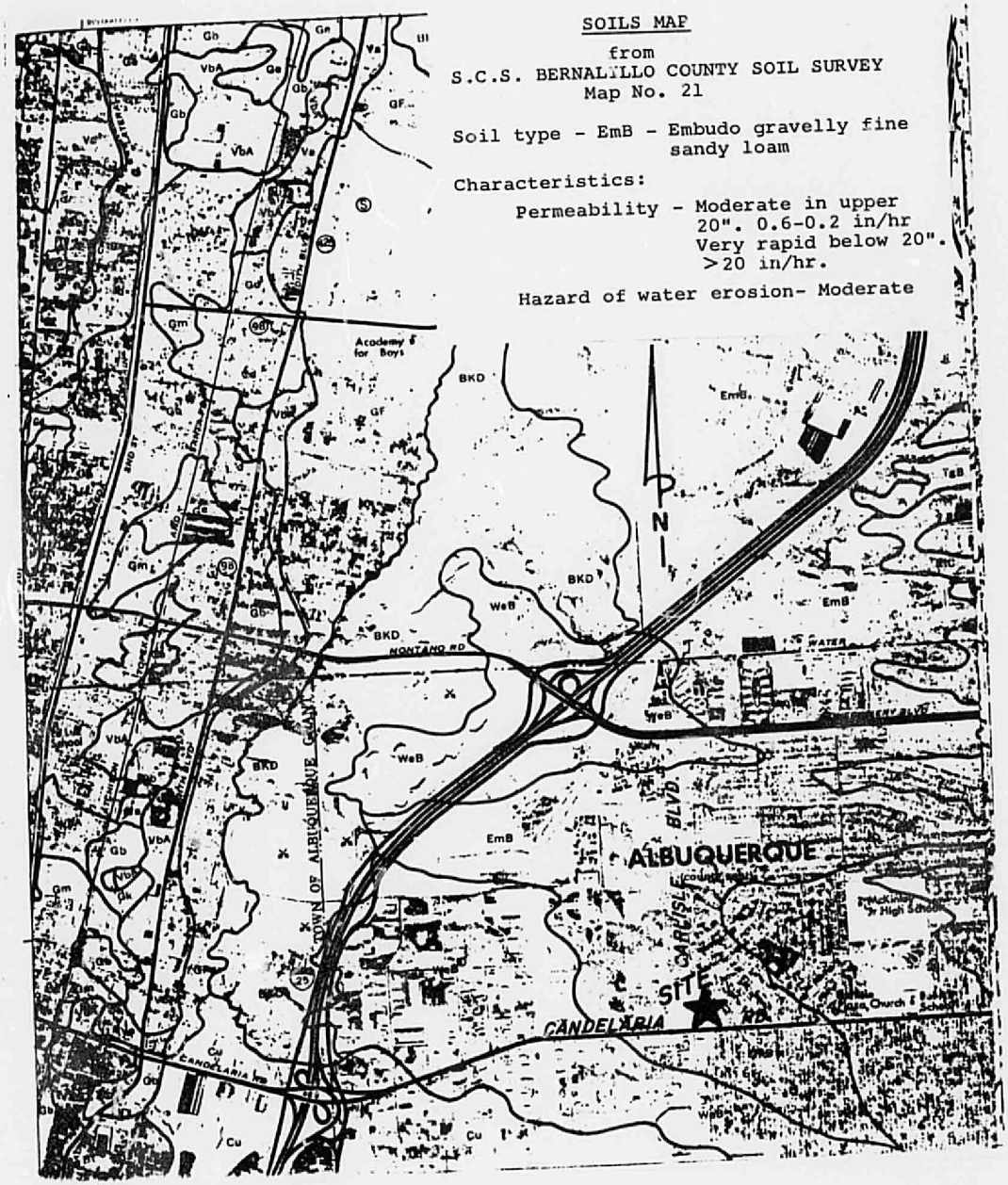
from
S.C.S. BERNALILLO COUNTY SOIL SURVEY
Map No. 21

Soil type - EmB - Embudo gravelly fine sandy loam

Characteristics:

Permeability - Moderate in upper 20". 0.6-0.2 in/hr
Very rapid below 20". >20 in/hr.

Hazard of water erosion- Moderate



DRAINAGE REPORT
FOR
CARLISLE PLAZA

Prepared By
Leverton-Denney Engineers, Inc.
Albuquerque, New Mexico
February, 1975

DRAINAGE REPORT

For

CARLISLE PLAZA

1. PURPOSE: The purpose of this report is to present the results of analyses performed to develop a drainage management plan for the proposed Carlisle Plaza Complex to be developed at the northeast corner of the intersection of Carlisle Boulevard, N.E. and Candelaria Road, N.E.

2. GENERAL: The development consists of four proposed office buildings in addition to an existing dental office and proposed surface parking for 435 cars. An additional 187 cars will be parked underground in the proposed high-rise building for a grand total of 622 parking spaces. A number of small planted areas are to be developed within the pavement and will be used as infiltration areas for runoff. All runoff from the site will go to these planted areas with the exception of that generated by 7218 s.f. of alley and the 2394 s.f. roof of the existing dental office which presently drains to Carlisle Boulevard. The total acreage of the site is 6.1938 acres.

For the purposes of this study the entire site, exclusive of that portion of alley and the roof which drain to Carlisle Boulevard, was considered to have the same runoff coefficient. Due to the small size of the landscaped areas it was not practical to separate them for runoff computations. However these areas are used to compute infiltration. The landscape strips along both Carlisle Boulevard and Candelaria Road were excepted from the infiltration computations as no runoff flows into these areas.

3. COMPUTATIONS FOR 2.2 INCH, 6 HOUR DURATION STORM: The site has been broken up into five watersheds labelled A thru D, with D being the roof and alley which drain to the street. This is shown on the accompanying site plan.

By depressing the surface of the landscaped infiltration areas two feet and by developing the maximum capacity for ponding water on the pavement, the site will retain all runoff from the 100 year design storm, exclusive of that falling on Unit D (the roof and alley draining to the street). A 4" perforated pipe connects the lowest landscaped infiltration areas within Units A, B and C and equalizes ponding within each unit.

A 4" overflow pipe connects the terminal infiltration area in Unit B with the storm sewer in Candelaria Road. This pipe is capped with a strainer and raised 18 inches above the

surface of the infiltration area. The purpose of the pipe is to provide a measure of additional protection for the site, as all runoff can be removed from the site by infiltration alone.

Table A itemizes the runoff computations for each watershed. Table B shows the time necessary for total dissipation of the runoff. Neither table considers the effect of the 4" overflow pipe as it is considered as an extra precautionary measure.

4. CONCLUSIONS & RECOMMENDATIONS: 100% of the runoff from the 100 year design storm can be retained on the site (exclusive of that generated by the aforementioned roof and portion of alley).

In order to insure infiltration, it is recommended that all landscaped infiltration areas be excavated to a depth of 5 feet and backfilled with 3 feet of coarse gravel. Specially prepared planting pockets should be prepared within the gravel bed for trees and assorted shrubbery. This recommendation doesn't apply to the aforementioned landscape strips along Carlisle and Candelaria which should be treated in the normal manner and finished approximately flush or slightly below the surrounding pavements.

We recommend that the site be developed as shown on the attached drawing. It should be noted that careful attention in development of the grading plan will be required to insure that the intent of this plan is effected.

REGISTERED PROFESSIONAL ENGINEER
NO.
NEW MEXICO
FRED N. DENNEY

TABLE A - RUNOFF COMPUTATIONS - 2.5 INCH, 6 HOUR DURATION STORM

UNIT	ACREAGE	TOTAL RATE OF ACCUMULATION	INFILTRATION AREA	INFILTRATION	NET RATE OF ACCUMULATION	6 HOUR ACCUMULATION	INFILTRATION AREA STORAGE VOLUME	PAVEMENT PONDING STORAGE VOLUME	TOTAL STORAGE VOLUME	EXCESS STORAGE CAPACITY	SPILLOVER	DESTINATION
		cu. ft./min.	s.f.	cu. ft./min.	cu. ft./min.	cu. ft.	cu. ft.	cu. ft.	cu. ft.	cu. ft.	cu. ft.	
A.	1.4011	31.08	1,944	10.80	20.28	7,301	3,888	4,600	8,488	1,187	0	
B.	3.1577	70.05	3,696	20.53	49.52	17,827	7,392	10,616	18,008	181	0	
C.	1.4143	31.37	2,632	14.62	16.75	6,030	5,264	4,048	9,312	3,282	0	
D.	0.2207	4.90	0	0	4.90	1,764	0	0	0	0	1,764	To Street

Accumulation Rate: 2.2" Storm/6 Hours = 22.183 cu. ft./acre/min.

Infiltration Rate: 4 inches/sq. ft./hr.

TABLE B - TIME NECESSARY FOR TOTAL RUNOFF DISSIPATION AFTER END OF STORM

UNIT	ACCUMULATION cu. ft.	DISSIPATION RATE cu. ft./min.	TIME
A.	7,301	10.80	11 hrs. 16 min.
B.	17,827	20.53	14 hrs. 39 min.
C.	6,030	14.62	6 hrs. 53 min.

NOTE - This Table does not consider effect of the 4" overflow pipe in Unit B.

DRAINAGE PLAN
CARLISLE OFFICE PLAZA

LOT: A BLOCK: 22

CARLISLE PLAZA ADDITION

ALBUQUERQUE, NEW MEXICO

PARKING REQUIREMENTS

PROPOSED 1 & 2 STORY OFFICES AT CORNER	= 74
FUTURE HI-RISE	= 470
FUTURE MEDICAL PLAZA	= 55
FUTURE PHARMACY	= 9
EXISTING DENTAL OFFICES	= 10
TOTAL	= 618

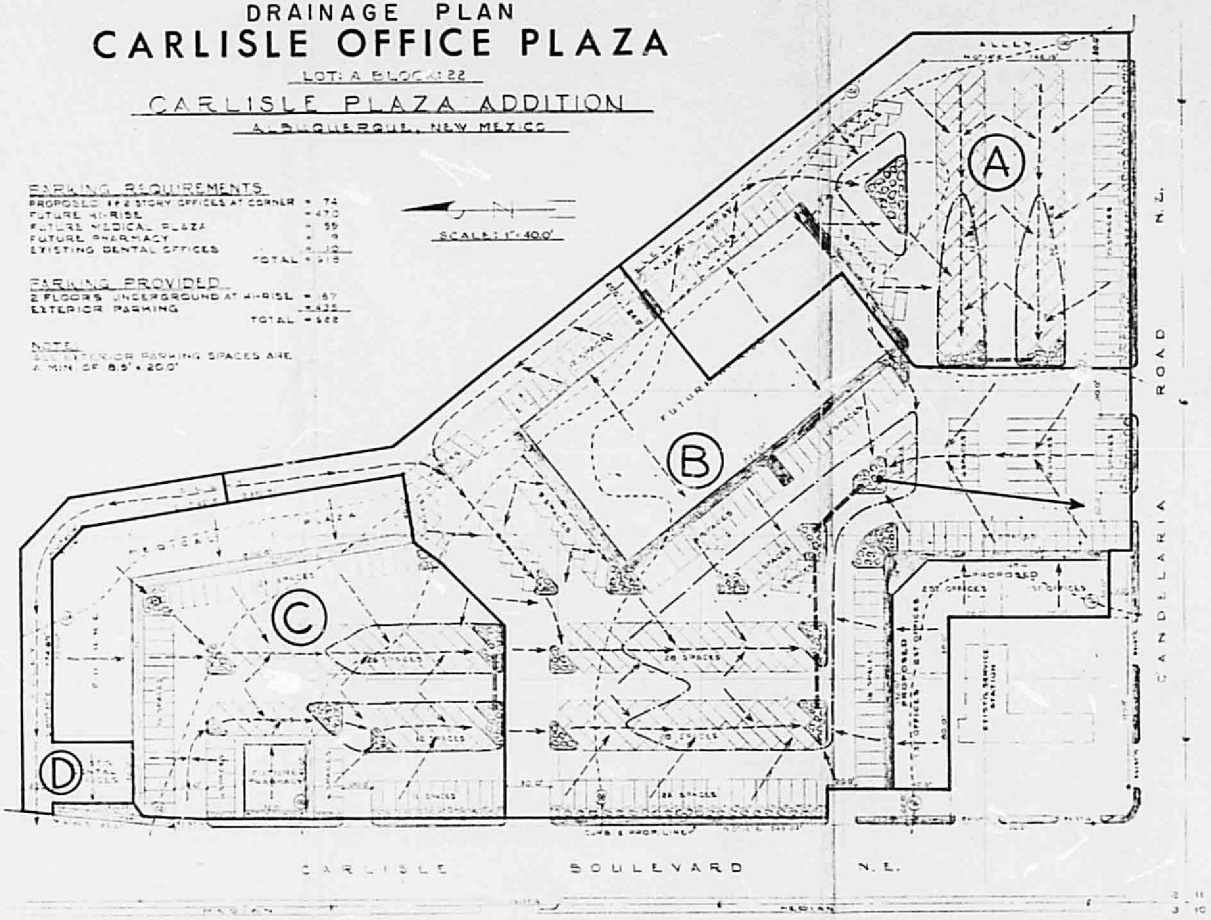
PARKING PROVIDED

2 FLOORS UNDERGROUND AT HI-RISE	= 67
EXTERIOR PARKING	= 495
TOTAL	= 562

NOTE:
ALL EXTERIOR PARKING SPACES ARE A MIN OF 8.5' x 20.0'

N

SCALE: 1" = 40.0'



LEGEND

- (A) WATERSHED
- DIRECTION OF RUNOFF
- 4" PIPE TO STORM SEWER - SEE DETAIL BELOW
- RUNOFF PONDED ON PAVEMENT - 25 N. STORM - 6 HOUR DURATION
- 4" PERFORATED PIPE

Z-74-54

CERTIFY THAT A PORTION OF THIS AREA IS CONFORMING AND THAT THIS PLAN IS CONSISTENT WITH THE SPECIFIC DEVELOPMENT PLAN REQUIRED BY THE PARKING OVERLAY SUBDISTRICT OF THE ZONING ORDINANCE AND APPROVED PRIOR TO THE INDIVIDUAL PLAN TO COMMISSION LAND DEVELOPMENT BOARD ON SEPTEMBER 19, 1974

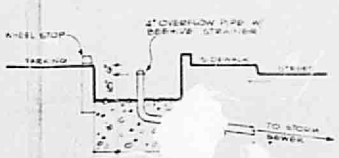
PLANNING DIRECTOR DATE

APPROVED AS TO REQUIREMENTS

TRAFFIC ENGINEER DATE

CITY ENGINEER DATE

SWMCA DATE



SWITCH DETAIL - 4" PIPE OVERFLOW
NO SCALE

LEVERTON - DENNEY ENGINEERS, INC

REVISED (2-1-74) 5-5-75

OFFICE BUILDING PLOT PLAN

LOT A OF BLOCK 22

The Vacated East 15' of Carlisle Blvd. NE [illegible]ous to Lot A

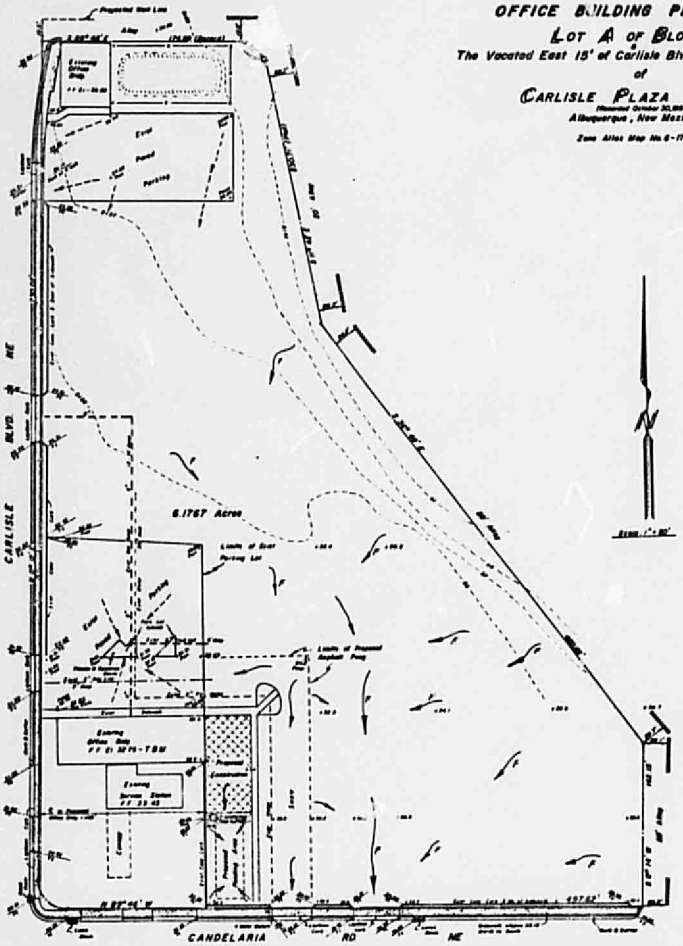
of

CARLISLE PLAZA ADDITION

(Recorded October 30, 1951)

Albuquerque, New Mexico

Zone Atlas Map No. 6-17



LEGAL DESCRIPTION

Lot A of Block 22 of CARLISLE PLAZA ADDITION, an addition to the City of of Albuquerque, New Mexico, as the same is shown and designated on the plat of said addition, filed in the Office of the County Clerk of Bernalillo County, New Mexico on October 30, 1951

Legend

- Masonry Wall, Existing
- Property Line, Existing
- Sidewalk & Curb & Gutter, Exist
- Proposed Construction
- x 52.3 Ground Elevation
- 52.34 TC Elevation on Conc.
- Exist Flow Patterns
- Proposed Direction of Flow
- Future Development

Notes

1. For details of Proposed Construction, see Architectural Drawings.
2. The water & sewer lines shown are from As-Built plans furnished by owner.
3. Contour lines based from a grading based by Lawrence-Berney Eng. and adjusted to City Datum.

Project B.M. : Finish Floor of existing office building adjacent to proposed construction Fin Floor Elev. - 5132.70

BENCH MARK: ACS BM 4-617, X curb return ENE Candelaria & Aliso Dr. NE. El. 5144.953

SURVEYOR'S CERTIFICATION

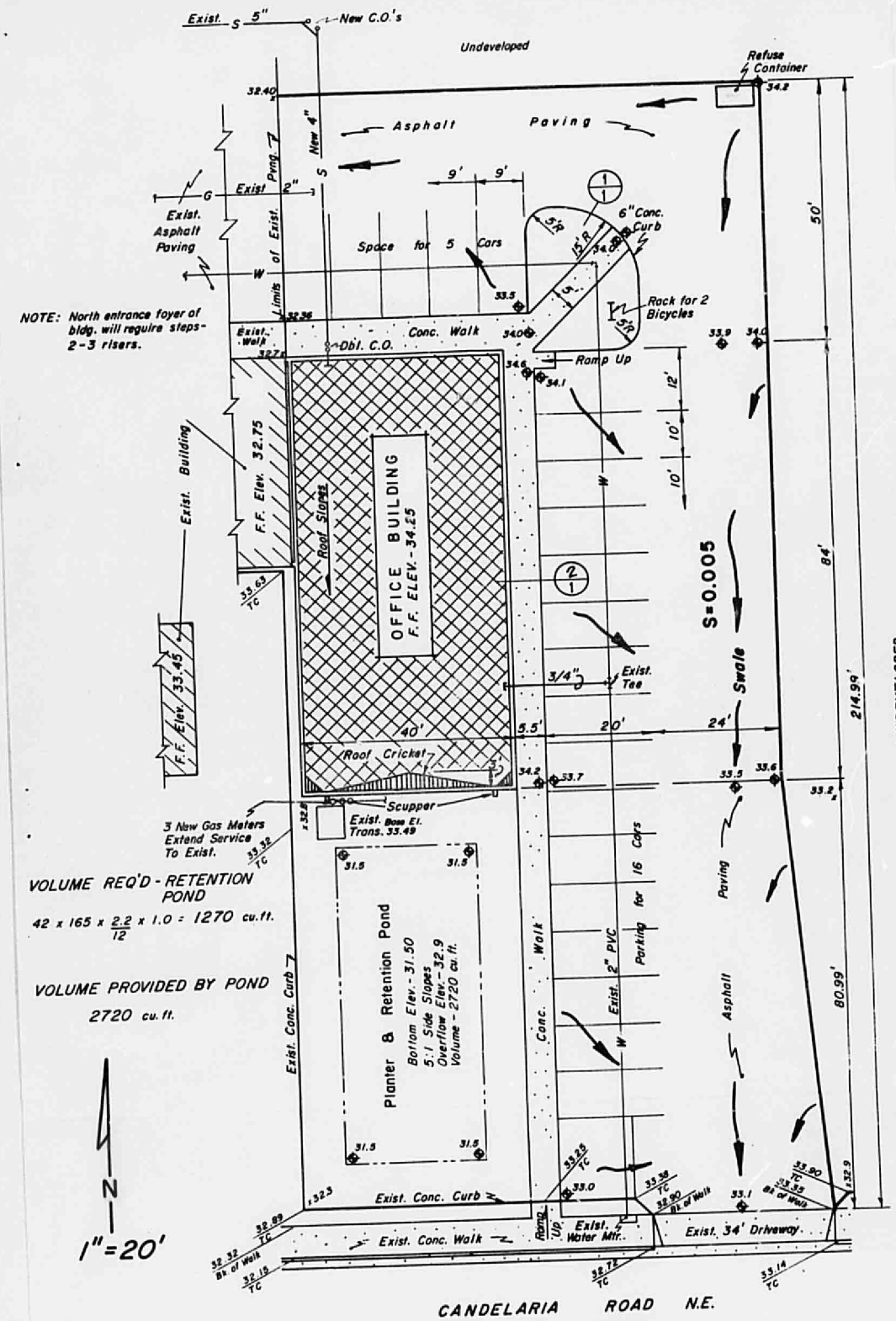
This is to certify that this plat was prepared under my direct supervision and is true and correct to the best of my knowledge and belief, that all easements of record are shown, and that it meets City Detailed Design Standards for surveying.

JOHN B. LEWIS No. 1874 REGISTERED PROFESSIONAL ENGINEER NEW MEXICO

John B. Lewis
John B. Lewis
PE & L.S. No. 1874
New Mexico

Revised Nov. 6, 1981 to include Proposed Office Bldg. Pad Pavm. Info

December 7, 1979



CARLISLE PLAZA ADDITION
SITE & GRADING PLAN

DRAINAGE REPORT
FOR
CARLISLE PLAZA COMPLEX

Prepared for

Lawrence Garcia & Assoc.

March 1979

August F. Mosimann, P.E.

for

Engineering Associates, Inc.

2819 Claremont Pl., N.E.

Albuquerque, N. M. 87110

(505) 883-1181

The site is the proposed Carlisle Plaza Complex, Lot A, Block 22 on the Northeast corner of Carlisle Blvd., N.E. and Candelaria Rd., N.E., and is approximately 64 acres.

Design Guidelines

The following formulas are used throughout this study:

Rational Formula $Q = CIA$

and

Runoff Volume Formula $V = CPA$

Where

Q = Runoff Rate (CFS)

I = Intensity (IN/HR)

A = Area (Acres or ft^2)

V = Volume (Cu. Ft.)

C = Runoff Coefficient

P = Precipitation

The precipitation amount for this area is 23 in. for 100 year 6-hour storm (see Figure 1).

Area Type	C
Paved	.90
Roof	.90
Landscaped	.40
Unimproved	.40

Existing Site Study -

The existing site is undeveloped and slopes from North to South. Offsite flows are intercepted by a masonry wall along the East bounadry. Offsite flow on the North side of property is insignificant.

The existing undeveloped site includes .64 Ac. (28,000 S.F.) and the runoff calculations for this site are the following:

The runoff coefficient is .40
The slope is less than 1%
The runoff length is 245' (ft.)
The concentration time is 14 min. (see Figure 3)
The intensity is 189/(14 + 25) = 4.85 in./hr. (see Figure 2)
The area is .64 Ac. (28,000 S.F.)

The runoff flow is

$$Q = CIA = .40 \times 4.85 \times .643 = 1.25 \text{ C.F.S.}$$

The runoff volume is

$$V = CPA = .40 \times \frac{2.3}{12} \times 28{,}000 = 2147 \text{ Cu. Ft.}$$

Developed Site Study - The developed site will consist of 5120 S.F. of restaurant and lease area.

The composite runoff coefficient "C" for the new development is as follows:

Portion	Area	C	C X Area (S.F.)
Paving	20,834	.9	18,751
Roof	5,120	.9	4,608
Landscape	2,046	.4	818
Totals =	28,000		24,177

$$C = \frac{24{,}177}{28{,}000} = .86$$

The land slope is less than 1%
The length of runoff is 245 ft.
The concentration time is 10 min. (see Figure 4)
The intensity is 189/ (10 + 25) = 5.4 in./hr. (see Figure 2)

The runoff flow is

$$Q = CIA = .86 \times 5.4 \times \frac{28{,}000}{43{,}560} = 2.99 \text{ CFS}$$

The runoff volume

$$V = CPA = .86 \times \frac{2.3}{12} \times 28{,}000 = 4{,}615 \text{ Cu.Ft.}$$

The quantity of water required to be ponded and dispersed on the developed site is:

Developed Site Runoff	4615
Less Undeveloped Site Runoff	2147
Ponding Required	2468 Cu. Ft.

Recommendations

The ponding requirement due to excess runoff arising from newly created impervious surfaces is 2419 Cu. Ft. for the 100 year - 6 hour storm. We recommend routing the runoff into four ponding areas.

The volume of ponding area No. 1 to the West of the building is 512 Cu. Ft. We recommend routing the roof runoff through this ponding area.

Ponding areas No. 2, 3, and 4 are in the parking area to the North of the building and have volumes of 1514 Cu. Ft., 376 Cu. Ft., and 158 Cu. Ft., respectively.

The total ponding provided is 2500 Cu. Ft.

It should be noted that ponding area No. 2 covers part of the parking area. Proper grading of the site will insure that this condition will occur only during the 100 year - 6 hour storm. This can be done by grading the site so that the parking lot runoff flows into ponding areas No. 3 and No. 4 and spills into ponding area No. 2. The landscaped portion of ponding area No. 2 can hold 687 Cu. Ft. Ponding areas No. 3 and No. 4 together can hold 474 Cu. Ft. This gives a total of 1161 Cu. Ft. ponding available to hold day-to-day runoff.

The actual runoff due to a 3/4" day-to-day rain in the parking lot is calculated below:

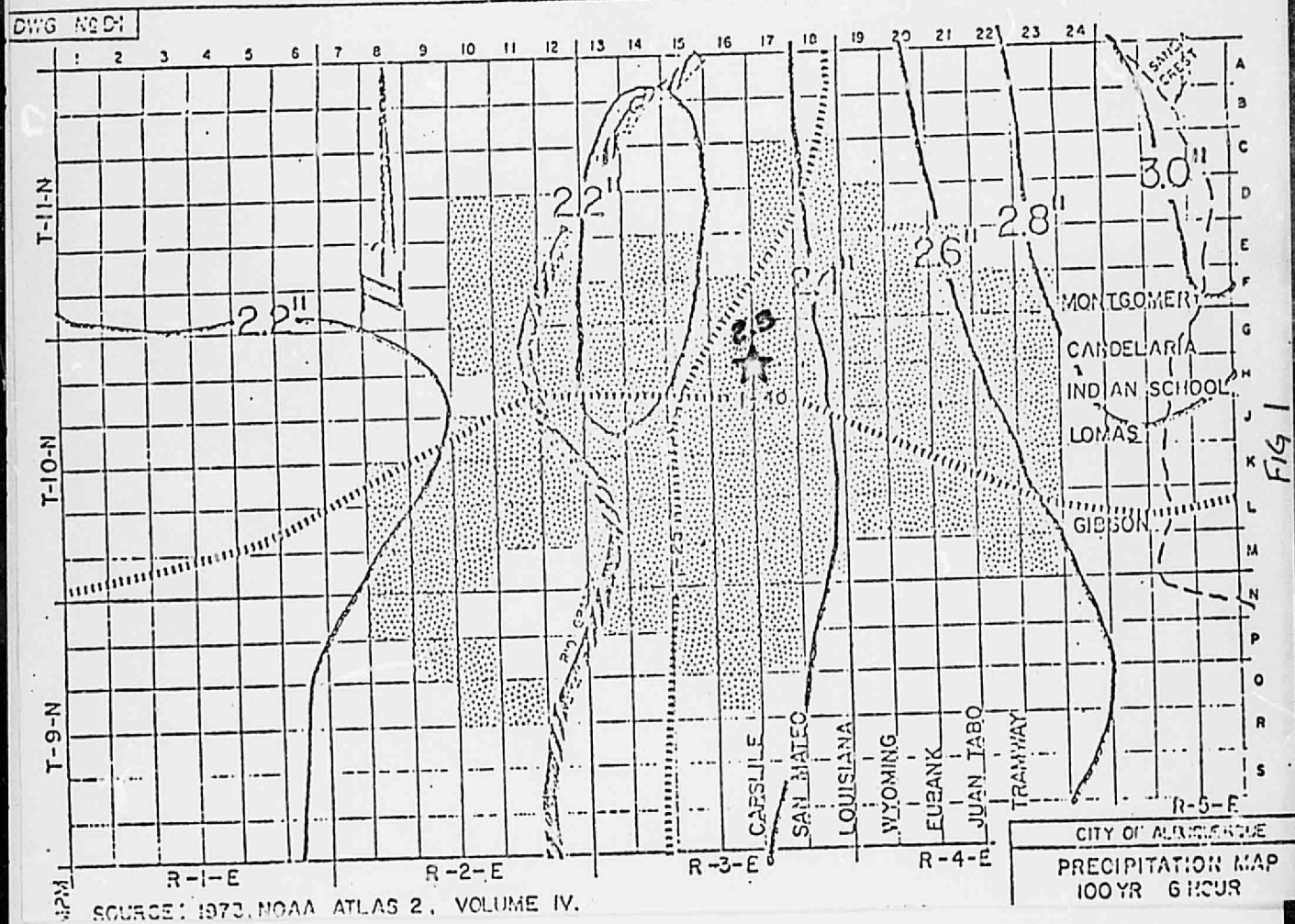
Portion	Area	C	C X Area
Parking	17342 S.F.	.9	15608
Landscaped	1728 S.F.	.4	511
Totals	18620		16119

$$C = \frac{16119}{18620} = .87$$

The runoff volume is $V = CPA = .87 \cdot \frac{75}{12} \cdot 18620 = 1012$ Cu.Ft.

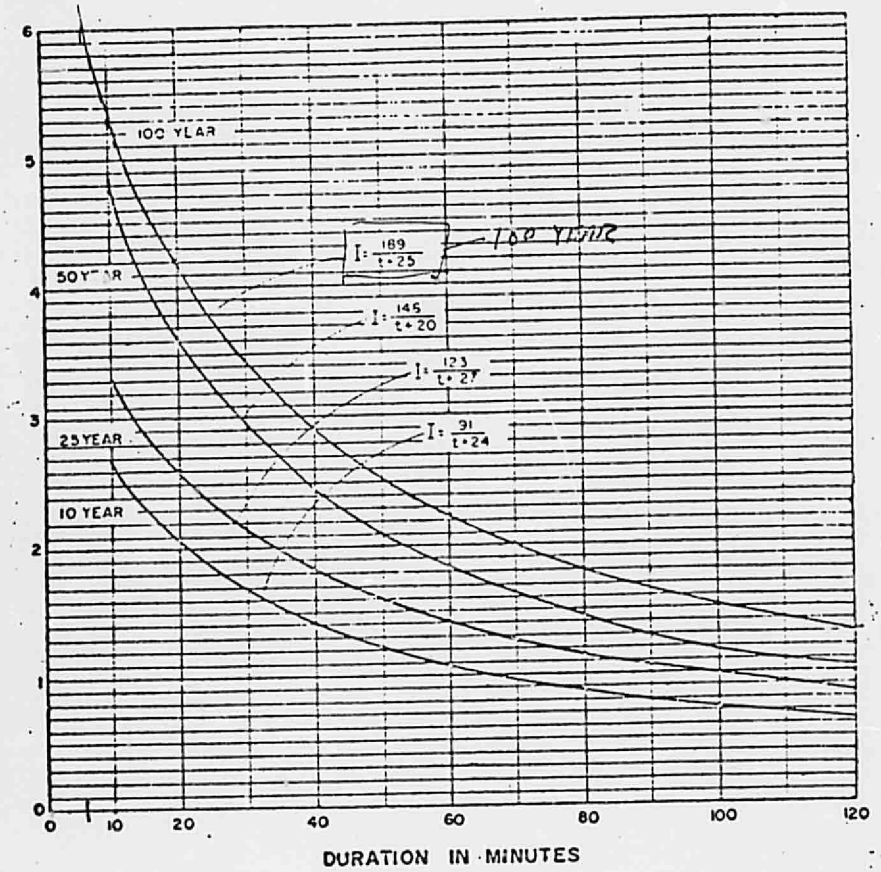
Conclusions:

Providing 2500 Cu. [illegible] of ponding will insure that the development will contri[illegible] any new runoff to existing drainage facilities. In a[illegible]ion, the depressed planting areas are of sufficient size t[illegible]old day-to-day runoff. This will insure that large quanti[illegible]es of water will not collect in the paved areas during nor[illegible] conditions.



SOURCE: 1973, NOAA ATLAS 2, VOLUME IV.

FIG 1



MASTER PLAN OF DRAINAGE
CITY OF ALBUQUERQUE - NEW MEXICO
AND ENVIRONS

INTENSITY DURATION
FREQUENCY CURVES

(ALBUQUERQUE AREA - 1951)

GORDON HERKENHOFF & ASSOC
CONSULTING ENGINEERS
ALBUQUERQUE, NEW MEXICO

CHART 1

FIG 2

DRAINAGE — RUNOFF — I

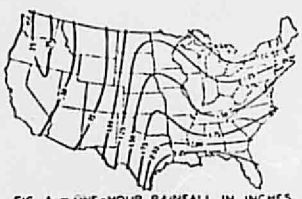


FIG A. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 2 YEARS.

FIG B. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 10 YEARS.

FIG C. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 50 YEARS.

FIG D. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 5 YEARS.

FIG E. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 25 YEARS.

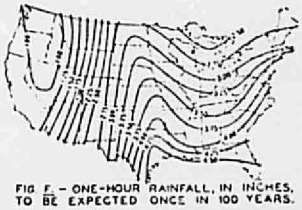


FIG F. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 100 YEARS.

COMPUTATION OF i IN RATIONAL FORMULA.

EXAMPLE: Assume expectancy period = 5 years. See Fig. D, assume locality, find 1 hour intensity = 1.75 in. per hour.

FIG. G-INTENSITY EXPECTATION FOR ONE-HOUR RAINFALL.*

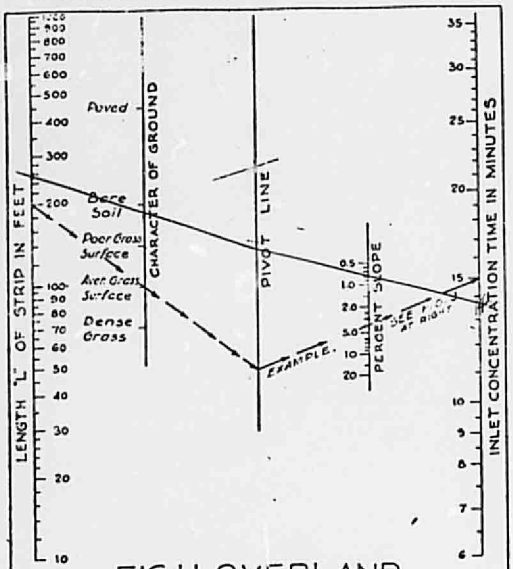


FIG. H-OVERLAND FLOW TIME.

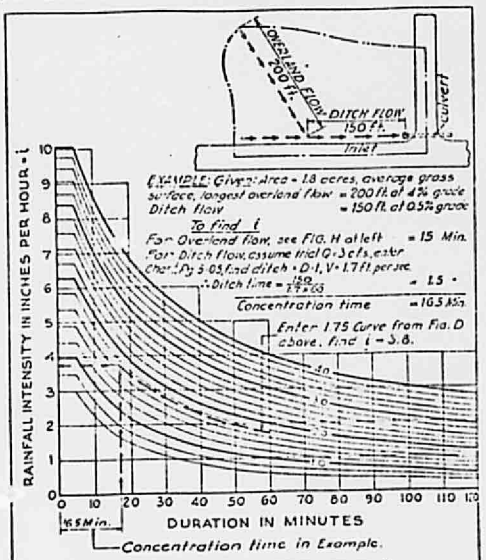


FIG. J-VALUES OF i
RAINFALL INTENSITY-DURATION.+

*Reproduced from Miscellaneous Publication No 204, U.S. Dept. of Agriculture, by Davie L. Yarnell.
+Adapted from Engineering Manual of the War Department, Part XIII Chap I, Dec. 45.

FIG. 3 EXISTING

DRAINAGE — RUNOFF — I

FIG A. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 2 YEARS.

FIG B. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 10 YEARS.

FIG C. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 50 YEARS.

FIG D. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 5 YEARS.

FIG E. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 25 YEARS.

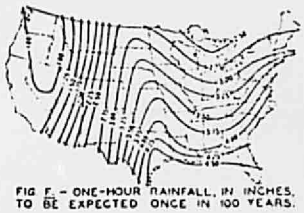


FIG F. – ONE-HOUR RAINFALL, IN INCHES, TO BE EXPECTED ONCE IN 100 YEARS.

COMPUTATION OF i IN RATIONAL FORMULA.

EXAMPLE: Assume expectancy period = 5 years, See Fig. D, assume locality, find 1 hour intensity = 1.75 in. per hour.

FIG. G-INTENSITY EXPECTATION FOR ONE-HOUR RAINFALL.*

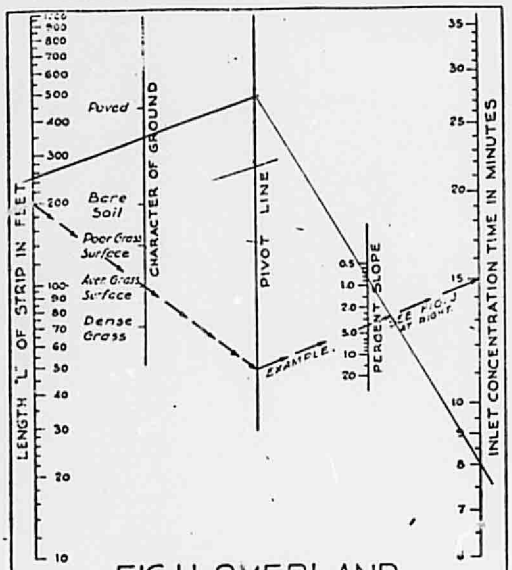


FIG. H-OVERLAND FLOW TIME.

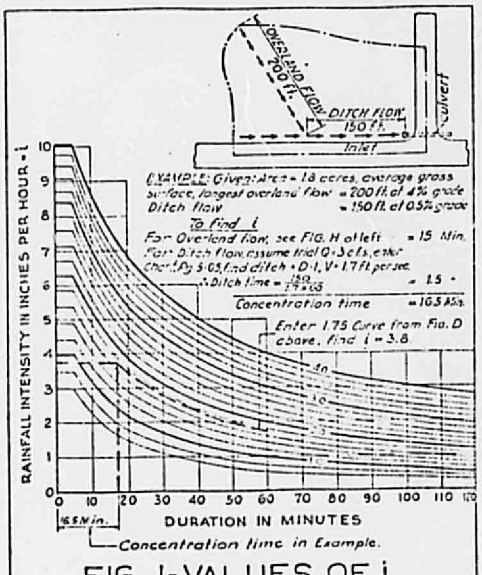


FIG. J-VALUES OF i RAINFALL INTENSITY-DURATION.+

*Reproduced from Miscellaneous Publication No 204, U.S. Dept. of Agriculture, by David L. Yarnell.
+Adapted from Engineering Manual of the War Department, Part XIII, Chap I, Dec 45.

Fig 4

DRAINAGE REPORT SUPPLEMENT

FOR

CARLISLE PLAZA COMPLEX

RECEIVED
MAR 26 19
CITY ENGINEERS

Prepared for

Lawrence Garcia & Assoc.

March 1979

AUGUST F. MOSIMANN
STATE OF
No. 6148
NEW MEXICO
REGISTERED PROFESSIONAL ENGINEER

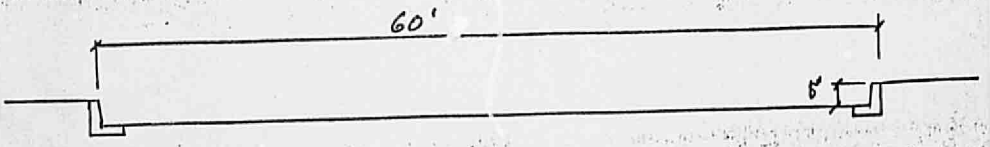
August F. Mosimann, P.E.
for
Engineering Associates, Inc.
2819 Claremont Pl. N.E.
Albuquerque, N.M. 87110
(505) 883-1181

This supplenent is a study of the effects on the Carlisle Plaza Complex from a flood runoff of 600 C.F.S. in Candelaria Boulevard. The building will have a finished floor elevation of 5134 Ft.

The cross section of Candelaria in the vicinity of the office has a flow capacity of 345 C.F.S. This cross section and flow calculation are shown in Fig. 1. Candelaria Blvd. would overflow if it were to experience a flow of 600 C.F.S. with a runoff excess of 345 C.F.S. being carried by adjacent land as a flood plain. See Fig. 3.

The cross section of the adjacent land is shown in Fig. 2. The width of the adjacent strip is roughly 200 Ft.(see Fig. 2&3). This strip is capable of carrying 303 C.F.S. with a depth of 4 inches above the curb as shown in the calculations in Fig. 2. Tle flood plain and street total capacity is 649 C.F.S.

The building floor elevation of 5134 Ft. is a minimum of 1 Ft. above the curb, so it will be more than 8 inches above the 600 C.F.S. flood level.



STREET SECTION (NTS)

STREET FLOW

MANNING EQUATION:

$$Q = \frac{1.49}{n} R_h^{2/3} S^{1/2} A \quad , \quad R_h = A/P$$

A = Area = 60 × .67 = 40 Sq. Ft.

P = Wetted Perimeter = 61.33 Ft

$R_h = 40/61.33 = .652$

$R_h^{2/3} = .752$

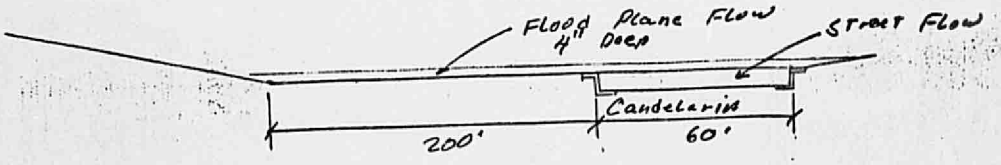
S = Slope = .01

$S^{1/2} = .1$

n = Coefficient = .013 (Paved)

$$Q = \text{flow} = \frac{1.49}{.013}(.752)(.1)(40) = 345 \text{ CFS}$$

Fig 1



Flood Plane Section

FLOOD PLANE FLOW:

MANNING EQUATION

$Q = \frac{1.49}{n} R_h^{2/3} S^{1/2} A$; $R_h = A/P$

A = Area = .33 200 = 67 S.F. Earth, .33 60 = 20 S.F. Street

P = Wetted Perimeter = 200 Ft Earth, 60 Ft Street

$R_h = A/P$ = .33 Earth, .33 Street

$R_h^{2/3}$ = .481 Earth and street

S = .01

$S^{1/2}$ = .1

n = .03 (Bare Earth)

n = .01 (over Street)

$Q = \frac{1.49}{.03}(.481)(.1)(67) + \frac{1.49}{.01}(.481)(.1)(20) = .303$ CFS

Fig 2

SIERRA
RD.
HOYLE
DR.
MORNINGSIDE
DR.
CANDELARIA
MONTE
VERANDA
ALISO
DR.
SOLANO
ALTA
Slope
.01
Boundary
BUILDING F.F.
5134
5134 F.F.
IG 3

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

December 17, 1985

Chuck Easterling, P.E.
Easterling & Associates
5643 Paradise Blvd., NE
Albuquerque, New Mexico 87114

RE: DRAINAGE & GRADING PLAN FOR CARLISLE OFFICE PLAZA, PHASE II
SUBMITTED DECEMBER 5, 1985 FOR BUILDING PERMIT APPROVAL
(G-17/D3)

Dear Chuck:

The referenced submittal dated December 4, 1985, is approved for Building Permit.

Please revise construction notes No. 1 and No. 10 to reference "City of Albuquerque Interim Standard Specifications, Public Works Construction, 1985."

If you have any questions regarding this project, call me at 766-7644.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Design Hydrology

cc: Dr. Charles Walker
3208 Carlisle Blvd., NE

RAG/bsj

DRAINAGE INFORMATION SHEET

PROJECT TITLE: CARLISLE OFFICE PLAZA PHASE II ZONE ATLAS/DRNG. FILE #: G-17-D3

LEGAL DESCRIPTION: LOT A, BLOCK 20 OF CARLISLE OFFICE PLAZA ADDITION

CITY ADDRESS:

ENGINEERING FIRM: EASTERLING & ASSOC. CONTACT: C. M. EASTERLING

ADDRESS: 5643 PARADISE BLVD. N.E PHONE: 898-8021

OWNER: DR. CHARLES WALKER CONTACT: DR. WALKER

ADDRESS: 3208 CARLISLE BLVD. N.E PHONE: 881-9404

ARCHITECT: ROBERTO BILBAO CONTACT: MR BILBAO

ADDRESS: P.O. BOX 2105 87103 PHONE: 842-5061

SURVEYOR: LEVERTON-DENNY CONTACT: FRED DENNY

ADDRESS: 2400 COMANCHE RD. N.E. PHONE: 884-0696.

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

RECEIVED DEC 05 1985 HYDROLOGY SECTION

PRE-DESIGN MEETING:

___ YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. _____

EPC NO. _____

PROJ. NO. _____

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

X BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER _____ _____ (SPECIFY)

DATE SUBMITTED: 12-4-85

BY: David L. Smith

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

November 25, 1985

Mr. Charles Easterling
Easterling & Associates
5643 Paradise Bouelvard NW
Albuquerque, NM 87114

REF: DRAINAGE PLAN FOR CARLISLE OFFICE PLAZA (G17-D3) RECEIVED 11/20/85

Dear Chuck:

A preliminary review of your submittal for Building Permit approval has shown that the following information is lacking for this section to begin the review process:

Plan Drawing:

1. T.B.M. location, description and elevation.

2. Please submit a copy of the City approved alley grades.

Please provide this information so that we may process your request as expediently as possible.

Cordially,

Roger A Green, PE
City Design/Hydrology Section

BJM:mrk

DRAINAGE INFORMATION SHEET

PROJECT TITLE: CARLISLE OFFICE PLAZA PHASE II ZONE ATLAS/DRNG. FILE #: G-17 /P3

LEGAL DESCRIPTION: LOT A, BLOCK 22 OF CARLISLE OFFICE PLAZA ADDITION

CITY ADDRESS:

ENGINEERING FIRM: EASTERLING & ASSOC. CONTACT: C.M. EASTERLING

ADDRESS: 5643 PARADISE BLVD. N.W. PHONE: 898-8021

OWNER: DR. CHARLES WALKER CONTACT: DR. WALKER.

ADDRESS: 3208 CARLISLE BLVD. N.E. PHONE: 881-4404

ARCHITECT: ROBERTO BILBAO CONTACT: MR. BILBAO

ADDRESS: P.O. BOX 2105 87103 PHONE: 842-5061

SURVEYOR: LEVERTON-DENNY CONTACT: FRED DENNY

ADDRESS: 2400 COMANCHE RD. N.E. PHONE: 884-0696

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

___ YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 83-412 7/23/85

EPC NO. 2-83-40 6/16/83

PROJ. NO. _____

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

X BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 11-20-85

BY: Wayne L. Smith

Address 3615 ~~Eisle~~ N.E. Candelaria NE Engr/Arch

Plans Approved _____ Cond. _____

Comments: G 17-D3

Inspection Requested 3/3/83 Contractor Terry Higgins

Appr. 4/30/83 Disappr. 3/9/83 30 Day Temp. _____

Comments: Non-compliance of drainage plan, roof downspouts are suppose to drain towards ponding area on the South. Downspouts are located to the East of building, instead of towards the South. 3/30/83 talked to Mr. Higgins concerning the runoff routing He will talk to the architect

Reinspection and/or comments:

Revised plan approved 4/30/82 .. GREEN TAG ISSUED.

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

G17 - D3A

April 27, 1983

Mr. Charles Easterling
Leverton-Easterling & Associates
5629 Paradise Blvd. N.W.
Albuquerque, N.M. 87114

RE: CARLISLE PLAZA CONCEPTUAL GRADING AND DRAINAGE PLAN

Dear Chuck:

I have reviewed the referenced plan and I concur with your assessment that the site should be allowed free discharge. Therefore, the plan is approved and will serve as the development guidelines for any construction. Please advise your client that a drainage plan, showing compliance with the master plan, will be required for each structure prior to release of a building permit.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

LEVERTON - EASTERLING, INC.

5629 PARADISE BLVD., N.W.
ALBUQUERQUE, NEW MEXICO 87114
(505) 898-8021

April 14, 1983

Bernie Montoya
Drainage Inspector
City Engineer's Office
City of Albuquerque
P O Box 1293
Albuquerque, New Mexico 87103

re: Carlisle Plaza Addition Drainage Plan

Dear Bernie:

Transmitted herewith are copies from our files of the recent correspondence pertaining to the site drainage on the Carlisle Plaza addition and two copies of the approved April 28,1983 Revised Drainage Plan which must have been misplaced in your files.

I hope that this information will clarify the situation and allow the issuance of the outstanding Certificate of Occupancy on the site. If we can be of further assitance please do not hesitate to call me or Chuck Easterling.

Sincerly

John Leverton

John Leverton

RECEIVED
APR 13 1983

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 26, 1982

Mr. John Leverton
Leverton Engineering, Inc.
5629 Paradise Blvd. N.W.
Albuquerque, N.M. 87114

RE: DRAINAGE REPORT FOR CARLISLE PLAZA ADDITION

Dear John:

I have reviewed the referenced report and forward the following comments:

a) I am a bit concerned about placing a scupper directly across from the existing transformer. It appears from the site and grading plan that if the location of the scupper was altered, the roof pattern would require modification. How do you feel about this?

b) Current guidelines prohibit a pond being placed within 15 feet of a structure. Since there is excess capacity available, I suggest moving the pond limits southward so that runoff will not be next to the building.

c) Please provide the following information on the grading plan:

1. Note indicating that the pond will be covered with gravel.

2. Finished floor elevation indicated with mean sea level designation.

If you have any questions concerning these matters, please call.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

LEVERTON ENGINEERING, INC.

5629 Paradise Blvd. N.W.
Albuquerque, New Mexico 87114
(505) 898-8021

April 28, 1982

Mr. Brian G. Burnett
Civil Engineer/Hydrology
Office of City Engineer
P. O. Box 1293
Albuquerque, New Mexico 87103

Re: Drainage Report for Carlisle Plaza Addition

Dear Brian;

I have reviewed your letter containing your comments on the subject drainage report and am in agreement with your concerns and suggestions contained in your paragraphs a) and b). The plans have been revised to reflect this.

The information you asked be shown on the plans in your paragraph c) has been added.

The client, Charles Walker, Dentist, agrees with these revisions and additions to the plans.

Attached are two sets of prints of these plans for your file. The plans will be incorporated into the drawings which will be presented at some later date in application for the building permit for this facility.

I appreciate your consideration of this matter and would like to receive your letter of approval based on the report and the revised plans.

John Leverton, PE

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 30, 1982

Mr. John Leverton
Leverton Engineering, Inc.
5629 Paradise Blvd. NW
Albuquerque, NM 87114

RE: Drainage Report for Carlisle Plaza Addition

Dear John:

The referenced report is approved. Please see that the revised plans (dated 4/28/82) are placed in the City construction sets.

Very truly yours,

Brian G. Burnett
Civil Engineer, Hydrology

BGB/br

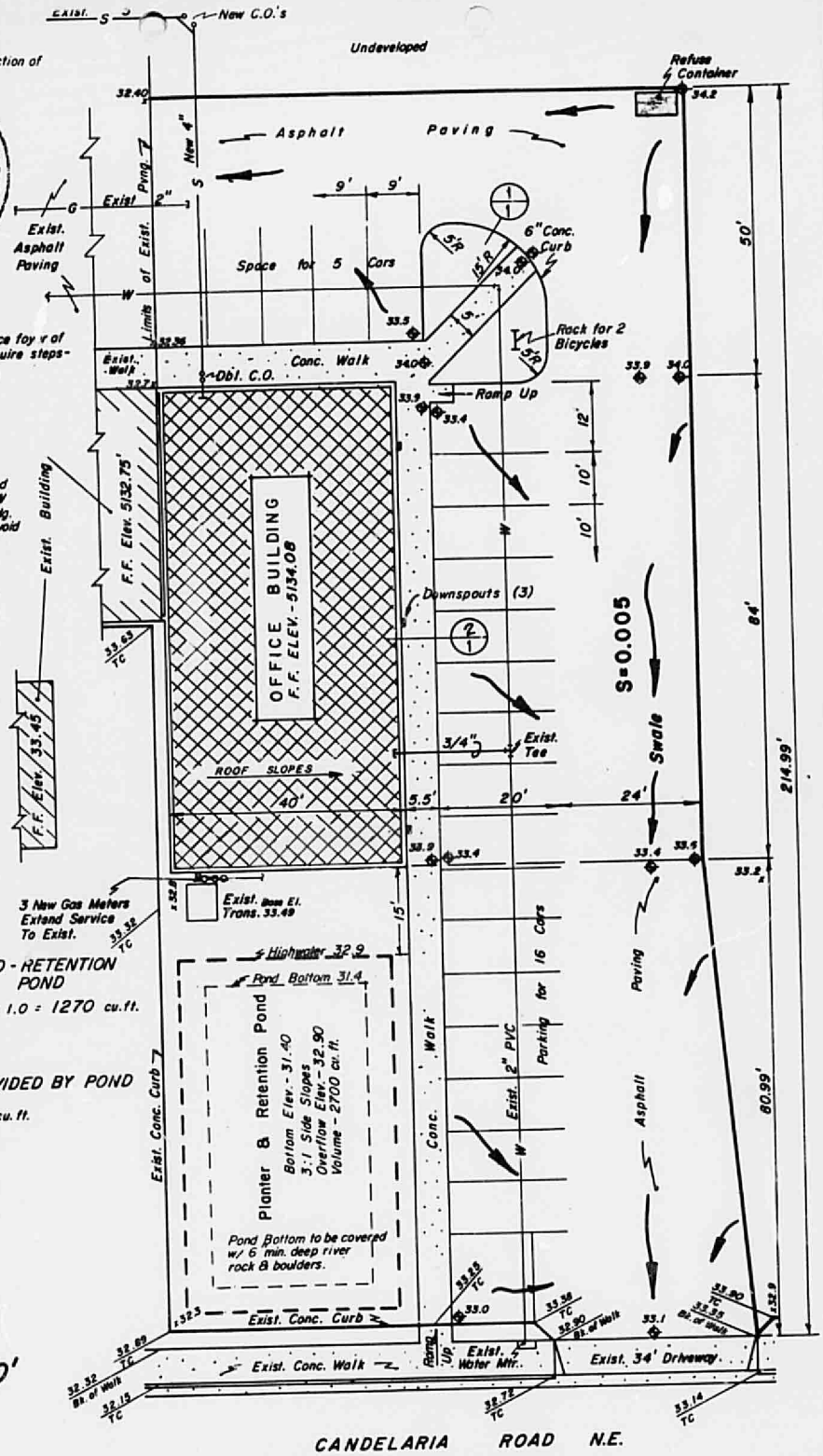
Plans Prepared Under Direction of

STATE OF NEW MEXICO
JOHN G. LEVERTON
No. 1874
REGISTERED
PROFESSIONAL ENGINEER AND LAND SURVEYOR

John G. Leverton
N.M. PE & LS No. 1874
April 28, 1982

NOTE: North entrance foyer of bldg. will require steps - 2-3 risers.

* NOTE:
Storm water discharged from scupper at the SW corner of proposed bldg. shall be diverted to avoid exist. transformer.



CARLISLE PLAZA ADDITION
SITE & GRADING PLAN

Plans Prepared Under Direction of

STATE OF NEW MEXICO
JOHN G. LEVERTON
No. 1874
REGISTERED
PROFESSIONAL ENGINEER AND LAND SURVEYOR

John G. Leverton
N.M. PE & LS No 1874
April 28, 1982

NOTE: North entrance foyer of bldg. will require steps - 2-3 risers.

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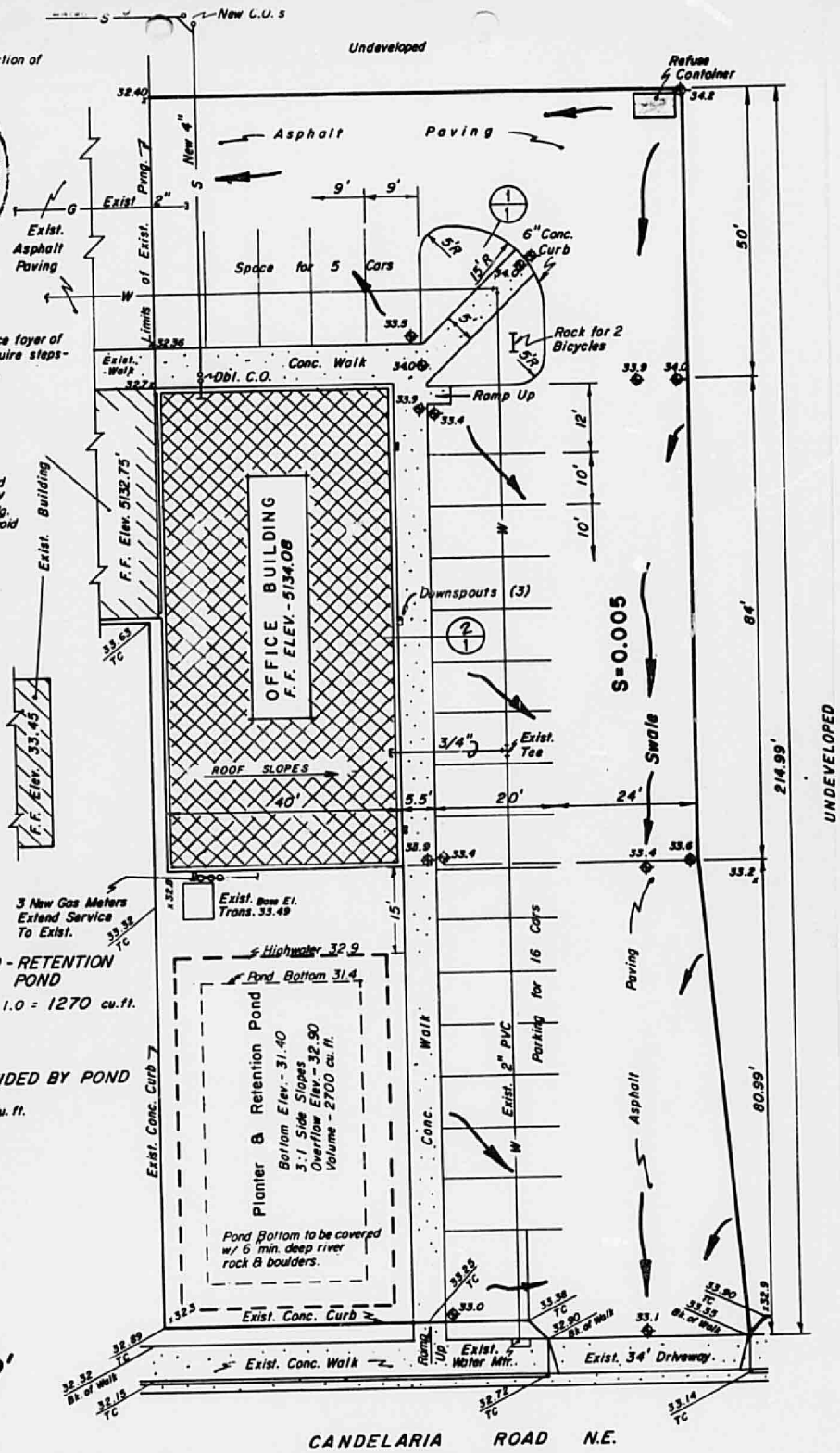

VOLUME REQ'D - RETENTION POND

$42 \times 165 \times \frac{2.2}{12} \times 1.0 = 1270$ cu.ft.

VOLUME PROVIDED BY POND

2700 cu. ft.

CARLISLE PLAZA ADDITION
SITE & GRADING PLAN

LEVERTON ENGINEERING, INC.

5629 Paradise Blvd. N.W.
Albuquerque, New Mexico 87114
(505) 898-8021

April 19, 1982

Brian;

Attached are the full sized prints of the property at Candelaria @ Carlisle you asked for. This is in connection with the review of the drainage report here you are now working on.

I notice there was no mention of offsite or upland drainage contributing storm water runoff to this area. The site is relatively free of any offsite contribution. The R-1 properties abutting the subject site are all built up and all have a concrete block fence along the rear which is along the alley which is a part of the subject land.

In the matter of positive drainage from the proposed retention pond. The required volume is less than ½ of the volume provided in order to allow the owner to place a heavy (deep) rock or boulder cover over the ground as a part of his landscaping effort. I believe this will effectively hide whatever free water remainins after a storm.

It would not be too big a chore to relieve this pond by an outlet piped to discharge to the gutter some 18' to the south along Candelaria. The only problem I have with this is just how can the inlet to such a pipe be configured so as to prevent clogging, or what would the design of an inlet structure be in order to minimize clogging?

I guess my point is the rock landscaping should mitigate the problem of water with a free surface remaining after a rain and therefore is a reasonable solution. Please consider this.

Thanks,

Joe

RECEIVED
APR 19 1982
ENGINEERING

LEVERTON ENGINEERING, INC.

5629 Paradise Blvd. N.W.
Albuquerque, New Mexico 87114
(505) 898-8021

March 11, 1982

RECEIVED
MAR 15 1982
ENGINEERING

The City Engineer
Albuquerque, New Mexico

Attention: Mr. C. Easterling, Principal Asst. City Engineer

Re: Drainage Report and Plan
Carlisle Plaza Addition
Zone Atlas Map G-17

Dear Mr. Easterling;

Attached are two copies of our drainage management report and plan for the subject development.

I respectfully request your review, comments, and subsequent approval of the report and plan.

John G. Leverton

John G. Leverton, PE

G17-D3

Attachments

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

March 30, 1979

Mr. August F. Mosimann, P.E.
Engineering Associates, Inc
2819 Claremont Pl. N.E.
Albuquerque, N.M. 87110

G17-D3

Re: Drainage Report Supplement for
Carlisle Plaza Complex

Dear Mr. Mosimann:

The ammendment to the drainage report for the captioned development has been reviewed and found acceptable.

The drainage report is therefore hereby approved.

Very truly yours,

Bruno Conegliano
Assistant City Engineer-Hydrology

BC/ms

cc - Rich Leonard
Dick Heller
Drainage File
Reading file

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

March 16, 1979

G17-03

Mr. August F. Mosimann, P.E.
Engineering Associates, Inc.
2819 Claremont Place N.E.
Albuquerque, New Mexico 87110

Re: Carlisle Plaza Drainage Report

Dear Mr. Mosimann:

The drainage report submitted covers only a small portion of the Carlisle Plaza Complex. The following review, therefore, covers exclusively the portion of the parcel being developed at this time.

During the storm of August 10, 1963, some 600cfs were estimated to have flown westward down Candelaria Blvd. The finished floors of the proposed buildings must be shown to be above the potential flood level associated with a flooding occurrence of that type. A site grading plan to the scale 1" = 10' must be submitted showing the existing topography and the proposed grading of the site. The areas contributing their runoff to the individual ponds must be identified and must be congruent with the ponding volumes provided. The construction plans will be approved as soon as the information requested is submitted to this office.

Very truly yous,

Bruno Conegliano
Assistant City Engineer/Hydrology

BC/fs

cc - Dick Heller
Rich Leonard
Drainage File