DRAINAGE REPORT

FOR

SOUTHWEST FILM
510 KINLEY AVENUE

ALBUQUERQUE, NEW MEXICO

To Lee

PREPARED FOR:

SOUTHWEST FILM
c/o JOHN VANDERPOL
10832 PROSPECT AVENUE
ALBUQUERQUE, NEW MEXICO

PREPARED BY:

A & E ENGINEERING, INC.
1330 SAN PEDRO NE
ALBUQUERQUE, NEW MEXICO

JUNE 15, 1981
REVISED SEPTEMBER 25, 1981

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR No. 2933 NEW MEXICO T. M. CONRARDY

THEODORE M. CONRARDY
REGISTERED PROFESSIONAL
ENGINEER NO. 2933

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A&E ENGINEERING INC.
CIVIL ENGINEERING, LAND PLANNING, AND SURVEYING

Mr. John Vanderpol
10832 Prospect Avenue NE
Albuquerque, New Mexico 87112

June 15, 1981

RE: SOUTHWEST FILM

Dear Sir:

We are transmitting this drainage report for Lot 6, of Block 6 of the Springer Transfer No. 1 Addition in Albuquerque, New Mexico. The control of the runoff shall comply with the requirements of the Albuquerque Metropolitan Arroyo Flood Control Authority and with the present City of Albuquerque drainage policies.

We do appreciate this opportunity to serve you and if any questions develop, we will be available to assist you in any response regarding this report.

Very truly yours,

A & E ENGINEERING, INC.

JFE:mhe

John F. Esquibel, President

1330 SAN PEDRO N.E.
SUITE 114 (505-266-8791)
ALBUQUERQUE, NEW MEXICO 87110

GENERAL:

This drainage report consists of a hydrologic study of a probable 100-year storm affecting the proposed development on Lot 6, of Block 6 of the Springer Transfer No. 1 Addition.

LOCATION AND DESCRIPTION:

The property under study is a parcel of land zoned M-1 and contains approximately 1.01 acres. It is located on the southwest corner of the the intersection of Kinley Avenue and Edith Boulevard. This property is more particularly described as Lot 6, of Block 6 of the Springer Transfer No. 1 Addition. The address of this lot is 500 Kinley Avenue.

The existing terrain for the parcel slopes to the west at about 1.80 grade.

PROPOSED DEVELOPMENT:

This parcel of land is to be developed into an office and warehouse to house the Southwest Film. It will be graded, paved and landscaped to shed storm water off the property, so that the runoff drains into proposed ponds and shall be controlled in a similar manner as existing conditions.

PROPOSED DRAINAGE PLAN

In order to control onsite runoff of this development, the area has been designed with grades, landscaped area and ponds to collect the runoff.

The drainage has been divided into two (2) drainage areas to prevent concentration of runoff at only one point. (See Plate 1 drainage plan).

Drainage area "A" is the onsite drainage area being the undeveloped portion directly south and east of the developed area. The drainage flows across the existing undeveloped lot in similar manner to the existing conditions. Drainage area "B" the developed portions of this project is the paved area west of the building and the building roofs drains into the pond located along the northwest corner of the parking lot.

There is no offsite runoff affecting this lot.

DISCUSSION OF METHOD

The development of this area will be controlled by the guidelines set forth in the recent resolution of the Albuquerque Metropolitan Arroyo Flood Control Authority and the City of Albuquerque.

The amount of storm water is computed by using a 100-year storm, this being a storm consisting of 100-year 6 hours precipitation as shown by the rainfall frequency maps for New Mexico, June 1967, published by the Special Studies Branch, Office of Hydrology, United States Weather Bureau.

The pond area was calculated so that the volume of water ponded would equal the volume of runoff produced by the development. The pond is sized to hold a 10-year sotrm and the pond and a portion of the parking lot for the 100-year storm.

ONSITE DRAINAGE CALCULATIONS

TOTAL UNDEVELOPED AREA

Area = 1.01 acres

Volume of runoff
Runoff factor = 0.4
Rainfall = 2.4 in.

Volume = $0.4 \times \frac{2.4}{12} \times 1.01$ acre x 43,560 sq. ft. = 3519.6 cfs.

Revised 10/14/82

Volume undeveloped = 3519.6 cu. ft.

AREA "A"

TOTAL DEVELOPED AREA = 15,492 sq. ft.

Volume

$0.9 \times \frac{2.4}{12} \times 15{,}492$ sq. ft. = 2788.6 cu. ft.

Volume undeveloped area where proposed development will occur

$0.4 \times (2.4) \times 15{,}492 = 1239.4$ cu. ft.

Runoff after developed = 2788.6
Runoff before developed = 1239.4
1549.2 cu. ft. for 100-year storm

AREA "B"

Will remain in its natural state and will not affect this development.

The portion of the parking lot that will be used for ponding will flood to elevation 60.1 under maximum design conditions.

The combined ponding conditions this being the pond 1109 cu.ft. and the parking lot having a ponding capacity of 728 cu. ft. for a combined total ponding capacity for a 100-year storm of 1576.0 cu. ft. This is (1837 - 1549) = 288cu. ft. in excess of the required amount.

CALCULATIONS

Area of parking lot to be used as ponding 5600 sq. ft. x 0.13 ft. = 728 cu. ft.

SUMMARY

It is recommended that this development be approved since the computations show that the proposed design is adequate to satisfactorily handle a 100-year storm.

50 year Storm pond Calculations

Revised 10/14/18

From: Noaa Atlas 2 Vol II
New Mexico

50 year storm
10 minute duration
i = intensity 4.85
$Q = CiA$

$C = 0.9$ for developed area
$C = 0.4$ for undeveloped area

$a_{undeveloped} = Area\ (acres) = 2802\ SF / 43560 = 0.064\ Acres$

$a_{developed} = Area\ (acres) = 15682 / 43560 = 0.36\ Acres$

$Q_{50\ developed} = 0.9\ (4.85)\ (0.36) = 1.57\ cfs$

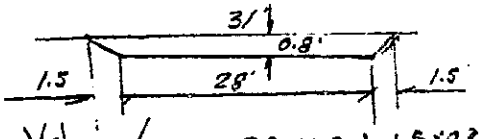
$Q_{50\ undeveloped} = 0.4\ (4.85)\ (0.064) = 0.12\ cfs$

$Volume_{50\text{-developed}} = 1.57\ ft^3/sec \times 10\ min \times 60\ sec/min = 942.\ ft^3$

$Volume_{50\ undeveloped} = 0.12\ ft^3/sec \times 10\ min \times 60\ sec/min = 72\ ft^3$

Total 50 year runoff flowing into pond
= 1014.0 ft^3 required

Pond Size or Capacity



W = 31'
L = 47'

$Volume/LF = 28 \times 0.8 + 1.5 \times 0.8 = 23.6\ ft^3/LF$

Total Capacity of Pond $= 23.6/LF \times 47\ LF = 1109\ ft^3$

From: Noaa. Atlas 2, Vol. IV New Mexico

10 year storm
10 minute duration
i - intensity = 3.94

$Q = c\,i\,a$

C = 0.9 for developed area
C = 0.4 for undeveloped area

$a_{undeveloped}$ area (in acres) = 2802 sf / 43560 = 0.064 acres

$a_{Developed}$ = 16000 / 43560 = 0.36 acres

$Q_{10\ developed}$ = 0.9 (3.94) (0.36) = 1.27 cfs 1.65

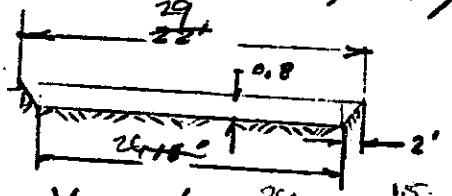
$Q_{10\ undeveloped}$ = 0.4 (3.94) (0.064) = 0.10 cfs 0.13

Volume $_{10\text{-developed}}$ = 1.27 ft³/sec. × 10 min × 60 sec/min = 762.0 ft³

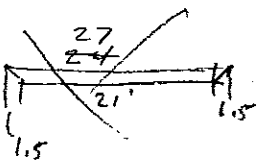
Volume $_{10\text{-undeveloped}}$ = 0.10 ft³/sec × 10 min × 60 sec/min = 60.0 ft³

Total 10-year runoff flowing into pond = 822.0 ft³

Pond Size or capacity:



L = 52'



Volume/Ft = 18 × 0.8 + (2 × 0.8) = 16.0 cuft/LF = 16.0 cuft/Ft

16.0 ft³/Ft × 52.0 Ft = 848.0 cu Ft.

Form Drain Pipe)

Calculations

L = 20.0

H = (59.20 - 59.10) = 0.10

Orfice opening ½ diameter hole

d = 2½" or $\frac{2.5}{12}$ = 0.208 ft.

Volume generated into pond is equal to 1,549.2 ft³ by a 100 year storm.

Orfice Design

$Q = Ca\sqrt{2gh}$

C = 0.64

$a = \frac{\pi\left(\frac{0.5}{12}\right)^2}{4} = 0.0014\ ft^2$

$Q = 0.64(0.0014)\sqrt{64.4\ (0.10)}$

Q = 0.0023 cfs

Volume per day = 0.0023 cfs x 86,400 sec/day = 198.7 $ct/day/orfice$

Therefore based on this calculations the will drain out into the street curb and gutter by using 8-1½" diameter holes in a day.

8 x 198.7 = 1582.4 cubic feet

The pond will be drained in one day.

Revision 10/13/81

Emergency spillway calculations

The pond has been designed as a changing rate orfice retention basin for a 100 year frequency storm. The storm water will drain from the pond of a maximum rate equivalent to a - 5-year Q_s storm calculated for developed condition.

$Q = CIA$

Total area (A in acres) = 15,492 SF or 0.36 Acres

$C = 0.9$

$I = 3.43$

$Q_s = 0.9\ (3.43)\ (0.36) = 1.11$ cfs

Therefore the flow of $Q_s = 1.11$ cfs will be used to design the emergency outlet (spillway)

By using the weir approach

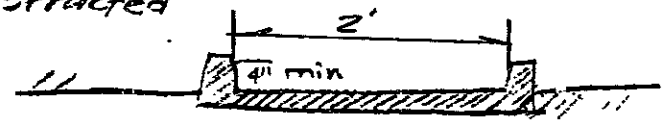
$$Q = 3.33\ L\ H^{3/2}$$

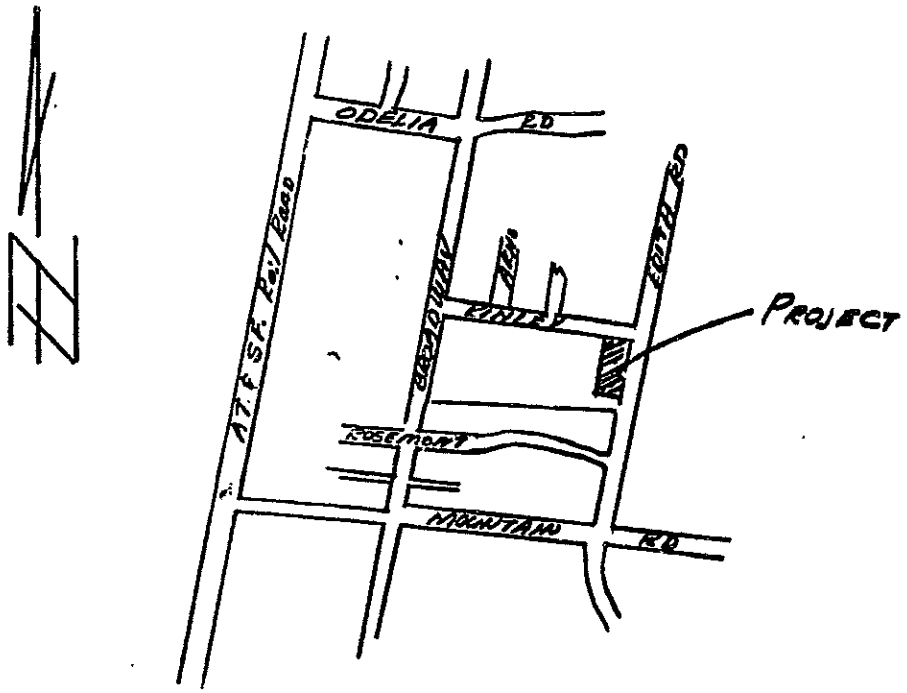
where $H = 0.5'$ maximum.

$$L = \frac{Q}{3.33\ H^{3/2}}$$

$$L = \frac{1.11}{3.33\ (0.5)^{3/2}} = \frac{1.11}{1.18} = 0.94 \text{ feet}$$

Therefor we recommend a spillway of asphalt 2.0' wide and 4" in height to be constructed





VICINITY OR LOCATION MAP

Zone Atlas No J-14-Z