HYDROLOGY F19/D6 TWO PLANS

F19/D6

2 Plans

DRAINAGE

TRIMINIUM

JULY 18, 1973

ENCHANTMENT
ENGINEERING

DESCRIPTION OF AREA

TRIMINIUM DEVELOPMENT SITE IS A 17.803 ACRE TRACT OF LAND LOCATED NORTH OF MONTGOMERY ON PENNSYLVANIA. THE LAND CONSISTS OF POOR GRASS AND HAS AN AVERAGE SLOPE FROM EAST TO WEST OF 3%.

STORM WATER RUNOFF FROM OUTSIDE PROPERTY EXISTS ON THE NORTH OF THE PROPERTY IN QUESTION. RUNOFF WILL NOT ENTER THE PROPERTY FROM THE EAST, SOUTH AND WEST DUE TO EXISTING STREETS AND THE TOPOGRAPHY OF THE SURROUNDING LAND.

IT IS THE PLAN OF THIS REPORT TO SHOW THAT RUNOFF AFTER DEVELOPMENT WILL NOT BE GREATER THAN THE NATURAL RUNOFF FROM THE LAND. THIS WILL BE ACCOMPLISHED BY PONDING THE RUNOFF FROM THE ROOFS, STREETS AND PARKING AREAS IN THE REMAINING GREEN AREAS. RUNOFF FROM OUTSIDE PROPERTY WILL BE TRANSFERED ACROSS THE PROPERTY IN SUCH A MANNER AS TO PRESERVE ITS PRESENT COURSE.

NATURAL RUNOFF

A = 17.8 ACRES
C = 0.283
I = 3.8 in/hr

Q = CIA = 19.14 CFS

RUNOFF AFTER DEVELOPMENT

PAVING - ROADS & PARKING = 4.44 ACRES
WALKS = 1.89
PATIOS = 0.809
OTHER = 0.469

A = 7.608 ACRES

C = 0.92
I = 5.2 in/hr

Q = CIA = 36.39 CFS

ROOFS
A = 4.19 ACRES
C = 0.92 (PITCHED)
I = 5.2 in/hr

Q = CIA = 20.04 CFS

GRASS

A = 6.07 ACRES
C = 0.22
I = 5.2 in/hr

Q = CIA = 6.94 CFS

TOTAL DEVELOPED RUNOFF = 63.37 CFS

INCREASED RUNOFF = 44.23 CFS.

Ponding on Property

Total Area = 17.803 acres

Total Paved and Roofed Area = 11.729 acres

Total Grassed Area = 6.074 acres

Required Ponding Volume

Paved & Roof = 2.6* × 1/12 × .92 × 11.729 × 43560
= 101,842 ft^3

Grassed = 2.6* × 1/12 × .22 × 6.074 × 43560
= 12,612 ft^3

Total Volume = 114,454 ft^3

Total Available Ponding Volume
= 106563 ft^3

With an average percolation rate, after saturation, of 1.in/hr in the ponding area the available ponding volume will increase to

115443 ft^3

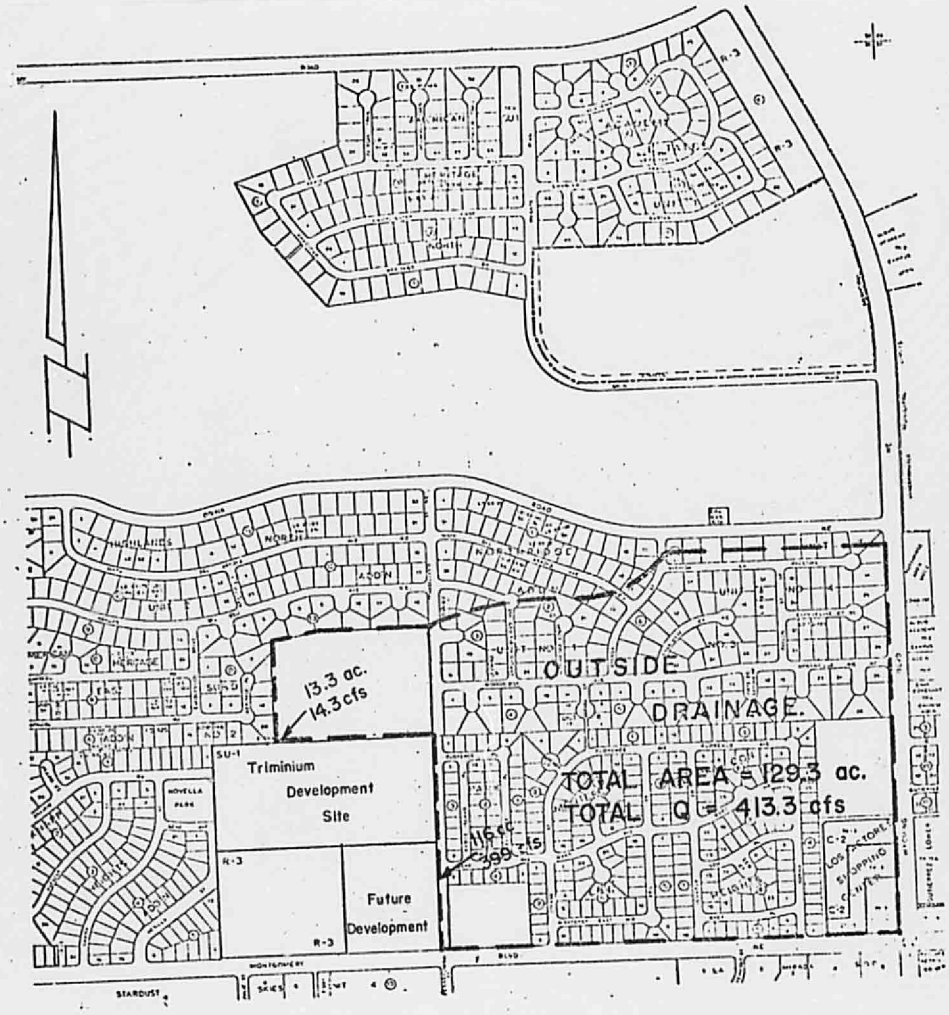
which will contain the developed runoff.

* 100 year - 6hr precipitation (MWRFCA)

OUTSIDE DRAINAGE

DRAINAGE AREAS FROM OUTSIDE THE PROPERTY ARE SHOWN ON THE ACCOMPANYING SKETCH. THE DRAINAGE AREA TO THE NORTH IS A 13.5 ACRE UNDEVELOPED TRACT AND WAS COMPUTED AS SUCH. ?

ENTRANCE OF THE OUTSIDE DRAINAGE ONTO THE PROPERTY IS SHOWN ON THE DRAINAGE PLAT, AND THE ACCOMPANYING SKETCH.



RESIDENTIAL

TYPE OF SURFACE	PERCENT OF TOTAL SURFACE	RUNOFF COEFFICIENT
Roof	21 %	0.920
Paving	42 %	0.920
Unwalled Lawns	11 %	0.150
Unclassified	26 %	0.250

I = 5.2 in/hr

DRAINAGE AFTER DEVELOPMENT

DRAINAGE AFTER DEVELOPMENT WILL BE SIMILAR TO THAT SHOWN ON THE DRAINAGE PLAT. IT IS ASSUMED THAT ONLY THE WESTERLY 200 FT. WILL DRAIN OFF THE PROPERTY. THIS RESULTS IN A 5.14 CFS DISCHARGE FROM THIS AREA. LETTING THIS AREA DRAIN OFF PROVIDES FOR AN EXCEPTABLE WAY OF TRANSFERING THE OUTSIDE DRAINAGE, FROM THE NORTH, ACROSS THE PROPERTY AS SHOWN ON THE DRAINAGE PLAT. THIS DRAINAGE ENTERS MESSILLA, WHICH HAS A CAPACITY OF 69.65 CFS, AND PROCEEDS SOUTH ON MESSILLA. ALL OTHER AREAS ARE TO BE PONDED.

Bibliography

1. Data Book for Civil Engineers, Design Vol. 1; Seelye, Elwin E. 1948 p 5-00, 5-25

2. 1963 Master Plan of Drainage for City of Albuquerque and its Environs; Herrenhoff and Associates, Gordon, 1963

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