Hydrology K18/D26 Arthritis Foundation

Z18/D26

ARTHRITIS FOUNDATION

1 PLAN

LOTS 15-18, 24-27
BLOCK 37
TIJERAS PLACE ADDITION

DRAINAGE DATA

A. OFFSITE FLOWS

1) BASIN C
a) AREA = 17.6 Ac.
b) TIME OF CONCENTRATION — LENGTH OF WATERSHED = 1050 ft. DIFFERENCE IN ELEVATION = 14 ft. SLOPE = 0.018 ft./ft.

$T_c = \frac{0.0078(1050)^{.77}}{(.018)^{.385}} = 8.72$ min.

c) C FACTOR = 0.60
RAINFALL FROM PLATE 22.2 D-1 = 2.5"
d) RAINFALL INTENSITY (I) FROM PLATE 22.2 D-2 = 4.86 in/hr.
e) FLOW = Q_{100} = CIA = (.6)×(4.86)×(17.6) = 51 cfs
Q_{10} = 34 cfs

FLOWS ENTER DRAINAGE EASEMENT AT VALENCIA AND INTO THE EXISTING 30" RCP IN ALVARADO.

2) BASIN B
a) AREA = 0.0768 Ac.
b) TIME OF CONCENTRATION — LENGTH OF WATERSHED = 150 ft. DIFFERENCE IN ELEVATION = 2.5 ft. SLOPE = 0.0192 ft./ft.

$T_c = \frac{0.0078(150)^{.77}}{(.0192)^{.385}} = 1.52$ min.

c) C FACTOR = 0.34
RAINFALL = 2.5"
d) RAINFALL INTENSITY = 4.86 in/hr.
e) FLOW = Q_{100} = CIA = (.34)×(4.86)×(.0768) = 0.1265 cfs
Q_{10} = .0823 cfs

B) ONSITE FLOWS - (DEVELOPED)

1) BASIN A_1
a) AREA = 0.1084 Ac.
b) TIME OF CONCENTRATION — LENGTH OF WATERSHED = 128 ft. DIFFERENCE IN ELEVATION = 2.42 ft. SLOPE = 0.0187 ft./ft.

$T_c = \frac{0.0078(128)^{.77}}{(.0187)^{.385}} = 1.61$ Min.

c) C FACTOR = 0.82
RAINFALL = 2.5"
d) RAINFALL INTENSITY = 4.86 in/hr.
e) FLOW = Q_{100} = CIA = (.82)×(4.86)×(.1084) = 0.412 cfs
Q_{10} = 0.271 cfs

2) BASIN A_2
a) AREA = 0.4941 Ac.
b) TIME OF CONCENTRATION — LENGTH OF WATERSHED = 267 ft. DIFFERENCE IN ELEVATION = 4.85 ft. SLOPE = 0.0188 ft/ft

$T_c = \frac{0.0078(267)^{.77}}{(.0188)^{.385}} = 2.58$ min.

c) C FACTOR = 0.82
RAINFALL = 2.5"
d) RAINFALL INTENSITY = 4.86 in/hr.
e) FLOW = Q_{100} = CIA = (.82)×(4.86)×(.4941) = 1.97 cfs
Q_{10} = 1.29 cfs

TOTAL ONSITE FLOW = 2.38 cfs

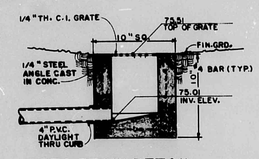
NOTE: TOTAL FLOWS ENTERING THE 30" RCP AT THE SOUTHWEST CORNER OF THE LOT ARE:
Q_{100} = 53.42 cfs
Q_{10} = 34.19 cfs

THE EXISTING STRUCTURE IS ADEQUATE FOR THESE FLOWS.

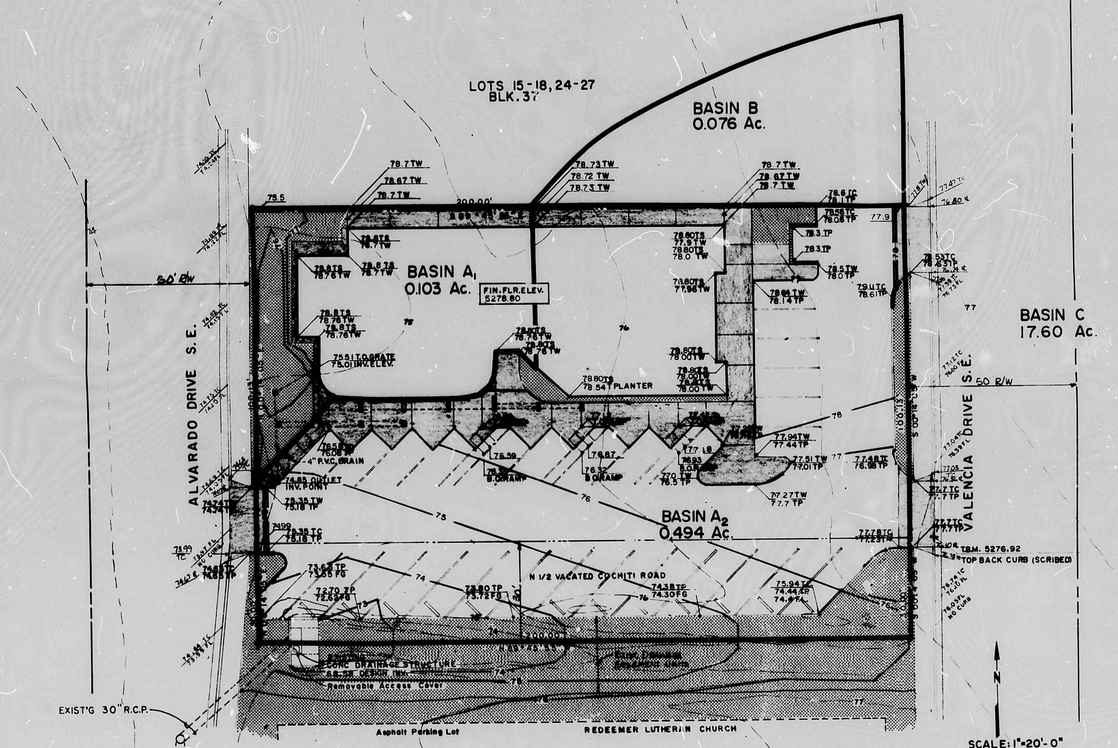
$Q = CA\sqrt{2gh}$
$A = (.125)^2\pi = .4911\ ft^2$
$Q = .6(19.64)\sqrt{(2)(32.2)(6)}$
= 57.89 cfs = Orifice Capacity

PIPE CAPACITY:
n = .015, C_{2FULL} = 7.86', S_f = .02
$A = \pi r^2 = .4911\ ft^2$
$R = \frac{A}{P} = .6252$ ft.
$Q = \frac{1.49}{n} AR^{2/3} S_f^{1/2}$
Q = 58.03 cfs

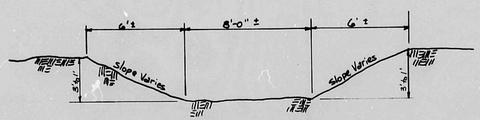
CHANNEL CAPACITY:
n = .03, perimeter = 14.52', S_f = .02
$A = 11\ ft^2$
$R = A/P = .7682'$
Q = 64.63 cfs



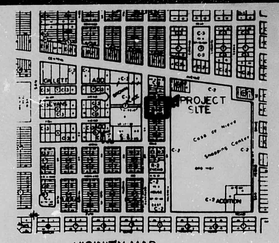
AREA DRAIN DETAIL
SCALE: 1 1/2" = 1'-0"



DRAINAGE & GRADING PLAN



EXISTING DRAINAGE CHANNEL TYPICAL SECTION
1" = 4' ±



VICINITY MAP
K-18-Z

ABREVIATIONS

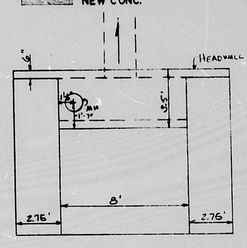
T.C.	TOP OF CURB
T.P.	TOP OF PAVEMENT
F.L.	FLOW LINE
TW	TOP OF WALK
T.S.	TOP OF SLAB
B.O.	BOTTOM OF
F.G.	FINISH GRADE
T.O.	TOP OF
FIN.	FINISH
FLR.	FLOOR
ELEV.	ELEVATION

NOTE: 1) OWNER WILL REPLAT PRIOR TO OCT. 9, 1986 BY AGREEMENT LETTER FILED WITH CITY ENGINEER.
2) THIS PARCEL LIES IN A DESIGNATED FLOOD PLAIN. THE FINISHED FLOORS ARE 2' ABOVE THE HIGHEST EXISTING FLOWLINE ELEVATION.

Gilbert D. Gardner 842-5653
GILBERT D. GARDNER

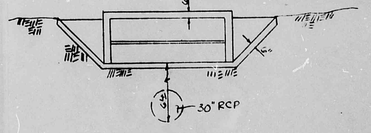
LEGEND

- EXISTING CONTOUR
- NEW CONTOUR
- EXISTING GRADE
- NEW GRADE
- PAINTED STRIPE
- CONC. BUMPER
- C.M.U. WALL
- LANDSCAPED AREA
- NEW CONC.



PLAN

DRAINAGE APPROVED FOR FOUNDATION ONLY
5/21/85



ELEVATION

EXISTING DRAINAGE STRUCTURE DETAIL
NOT TO SCALE

GILBERT D. GARDNER
NEW MEXICO
5653
LAND SURVEYOR
REGISTERED PROFESSIONAL ENGINEER

Drainage Plan Prepared May 6, 1985

K18/026

REVISION	DATE	BY

FIRST PLAZA GALERIA
ALBUQ., N.M. 87102
505/842-0755

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ARCHITECTS PLANNERS

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HYDROLOGY SECTION

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