HYDROLOGY K20/D17 AMERICAN TIRE SERVICE

K20-D17

AMERICAN

TIRE SERVICE

1 PLAN

R.J.V. 2-16-82
No OFFSITE
FLOWS

DRAINAGE CALCULATIONS

100 YEAR - 6 HOUR PRECIPITATION = 2.4 INCHES
t_c < 10 MIN.
$i = (2.4)(6.84)(10)^{-0.51} = 5.07$ INCHES/HOUR
HYDROLOGIC SOIL GROUP "B"

NORTH AREA

A = 8082 ft², 99% IMPERVIOUS
C = 0.98
VOL. OF RUNOFF = (0.98)(2.4/12)(8082) = 1584 ft³
USING RUNOFF HYDROGRAPH PLATE 22.2 E-1 DPM
q_p = (0.98)(5.07)(8082/43560) = 0.9219 cfs
$T = 2V/q_p$ = 2(1584)/0.9219 = 3436 SEC. = 57 MINUTES
OUTFLOW THROUGH 4" Φ PIPE:
H = 0.67 ft.
INLET CONTROL:
$1.2\ V^2/2g + 0.33/2 = 0.67$
V = 5.18 ft/sec.
Q = VA = (5.18)(0.0873) = 0.4522 cfs
OUTLET CONTROL:
n = 0.011, S = 0.02, D/d = 0.95 (USING MANNING'S)
Q = 0.3417 cfs ∴ OUTLET CONTROL CONTROLS
TOTAL OUTFLOW = (0.3417)(3436) = 1174 ft³

REQUIRED POND VOLUME = 1584 - 1174 = 410 ft³
POND VOLUME AS SHOWN = 625 ft³

SOUTH AREA

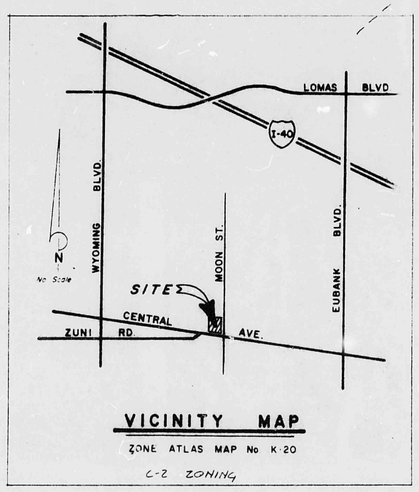
A = 11803 ft², 94% IMPERVIOUS
C = 0.90
VOL. OF RUNOFF = (0.90)(2.4/12)(11803) = 2125 ft³
USING RUNOFF HYDROGRAPH PLATE 22.2 E-1 DPM
q_p = (0.90)(5.07)((11803/43560) = 1.24 cfs

$T = 2V/q_p$ = 2(2125)/1.24 = 3427 sec = 57 MINUTES
OUTFLOW THROUGH 4" Φ PIPE:
H = 0.76
OUTLET CONTROL STILL CONTROLS Q = 0.3417 cfs
TOTAL OUTFLOW = (0.3417)(3427) = 1171 ft³

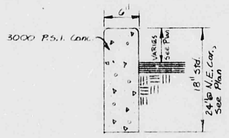
REQUIRED POND VOLUME = 2125 - 1171 = 954 ft³
POND VOLUME AS SHOWN = 1280 ft³

POND VOLUME CALCULATIONS

CONTOUR	Δh	AREA ft²	AREA(AVG)	VOL. ft³	Σ VOL	REMARKS
SOUTH POND						
25.34	0	0	0	0	0	INV. PIPE
25.40	0.06	88	—	2	2	VOL. AS PYRAMID
25.50	0.10	340	214	21	23	
25.60		748	544	54	77	
25.70		1288	1018	102	179	
25.80		1785	1536	154	330	
25.90		2737	2261	226	559	
26.00		3646	3192	319	878	
26.10	↓	4395	4021	402	1280	HIGH WATER
NORTH POND						
25.33	0	0	0	0	0	INV. PIPE
25.40	0.07	31	—	1	1	VOL. AS PYRAMID
25.50	0.10	198	115	12	13	
25.60		504	351	35	48	
25.70		844	674	67	115	
25.80		1285	1065	106	221	
25.90		2066	1675	168	389	
26.00	↓	2650	2358	236	625	HIGH WATER



VICINITY MAP
ZONE ATLAS MAP No K-20
C-2 ZONING



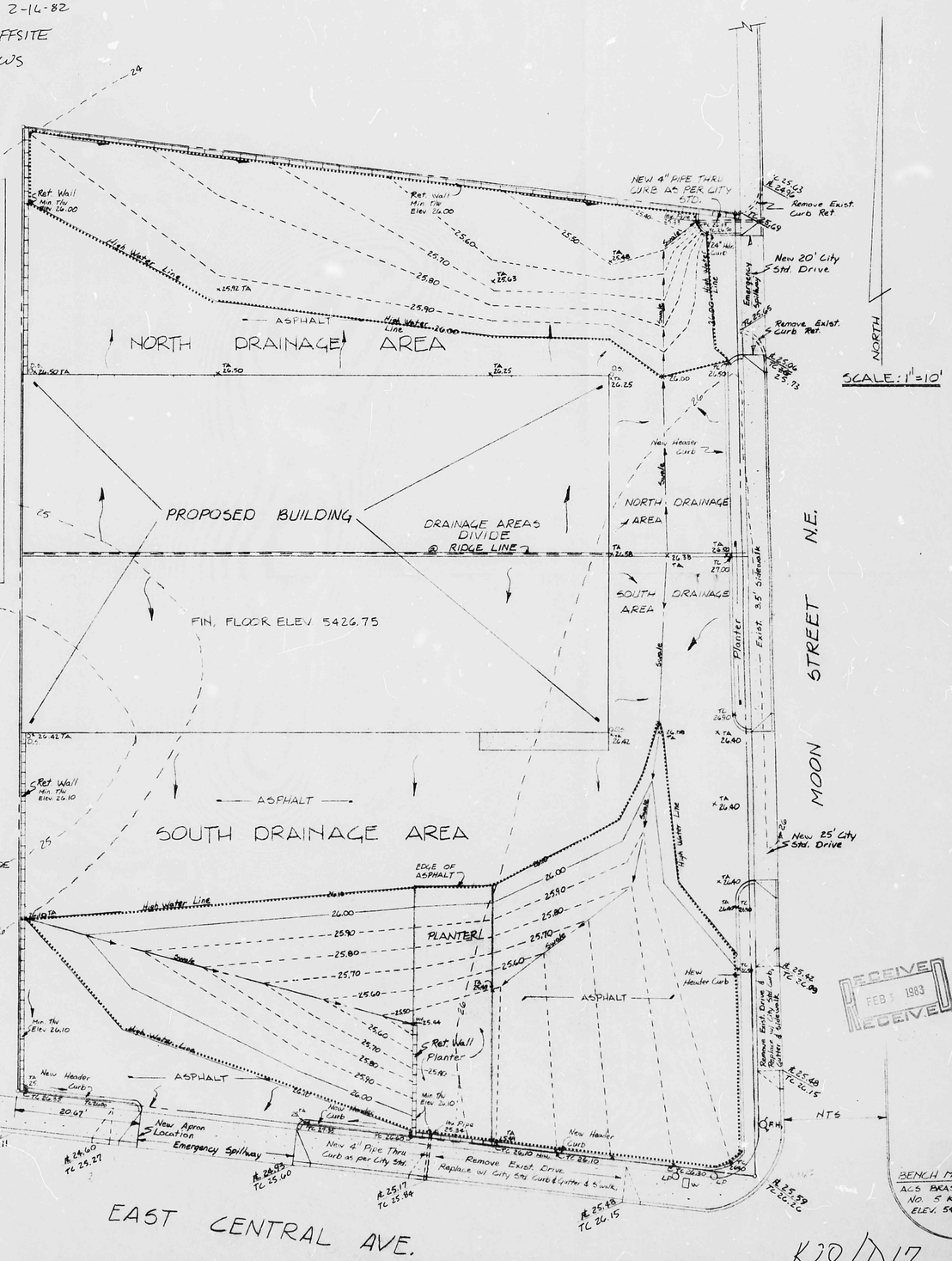
HEADER CURB DETAIL

LEGEND

- - - 24 - - EXIST. CONTOUR
x 26.42 PROPOSED TOP OF ASPHALT GRADE
..... PROPOSED POND LIMITS
—26.00— PROPOSED CONTOUR
- - 25.80 - - PROPOSED FINE CONTOUR
——— Property Line

NOTES:

SEE SHEET S-1 FOR RETAINING WALL DETAILS



A BUILDING FOR AMERICAN TIRE SERVICE
GRADING & DRAINAGE PLAN

FEB. 3, 1983

RECEIVED FEB 3 1983

DESIGNED:	BY:	SHEET	
CHECKED:	BY:		
DRAWN:	BY:		
CHECKED:	BY:		OF
APPROVED:	BY:		
PROJECT NO.			

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