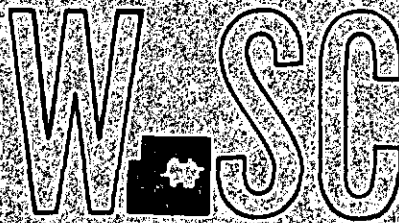


WICHITA - SEDGWICK COUNTY



METROPOLITAN AREA PLANNING
COMMISSION

CITY HALL - TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4561

October 22, 1976

Moehring & Associates
314 Brown Building
Wichita, Kansas 67202

Re: S/D 76-97 - Final plat of
KINKAID PARK FIFTH ADDITION

Gentlemen:

At the regular meeting of the Subdivision Committee of the Metropolitan Area Planning Commission, October 21, 1976, the above captioned plat was considered. The action of the Committee was to recommend that this plat be approved, subject to:

- A. The applicant shall guarantee the paving of all streets being platted in this addition.
- B. The applicant shall guarantee the extension of city sanitary sewer to serve each lot.
- C. The applicant shall guarantee the extension of City water to serve each lot.
- D. The applicant shall guarantee the construction of 4-foot sidewalks along both sides of all interior streets and along the south side of Marion Road.
- E. The applicant or his engineer shall contact Tim Cain of the Department of Public Works relative to a name for the street connecting Emporia and Greenway Boulevard. Also, Greenway Boulevard shall be labeled on the final plat.
- F. "Complete access control" shall be labeled adjacent to the north line of Marion Road and the west and south lines of St. Francis. The plat's text shall be amended to include the access controls on St. Francis.
- G. Block numbers shall be indicated on the face of the plat.

- H. Twenty-foot utility easements shall be shown between Lots 2 and 3, and 9 and 10 in the block on the west, and between Lots 2 and 3 in the block on the east.
- I. The 25-foot building setback from the cul-de-sac on Lot 19 may be reduced to 15 feet, thus creating more buildable lot areas. It is recommended that the property line between Lots 19 and 20 be moved north approximately 40 feet.
- J. The written dimension of the west property line of Lot 20 appears to be in error and should be checked.
- K. It is recommended that the design requirement pertaining to minimum lot widths be waived.
- L. The north-south utility easements on the east line of the plat shall be continuous through Lot 8.
- M. The date of the survey shall be shown on the final plat tracing.
- N. The applicant's engineer shall contact M. S. Mitchell of the Flood Control office relative to some of the dimensions shown on the plat.
- O. A drainage easement shall be provided between Lots 23 and 24 along the river. The Engineering Division of the Department of Public Works shall be contacted regarding this matter.
- P. Block numbers or letters shall be indicated on the face of the plat.
- Q. Recording of the plat within 30 days after approval by the Board of City Commissioners.

Enclosed with the applicant's copy of this letter is a list of the five methods which have been adopted as being acceptable for guaranteeing improvements required in the approval of plats. Forms for the bond and irrevocable letter of credit are available from this office.

The enclosed "marked" copy of the final plat is for your information and files.

S/D 76-97
October 22, 1976
Page 3

This matter will be forwarded to the Planning Commission for its consideration on Thursday, October 28, 1976, at 1:30 p.m. If you should have any questions concerning this matter, please call.

Sincerely,

Curtis L. Newby
Junior Planner

CLN:rme
Encl.

cc: Builders, Inc., 1000 Parklane, 67218
Karl Solomon, 800 S. Broadway, Suite 5, 67211
Dean Sellers, Assistant City Engineer

LAWRENCE E. WELLS

Architect

254 LAURA - SUITE 205
WICHITA, KANSAS 67211
PHONE (316) 262-3649

Oct. 7, 1980

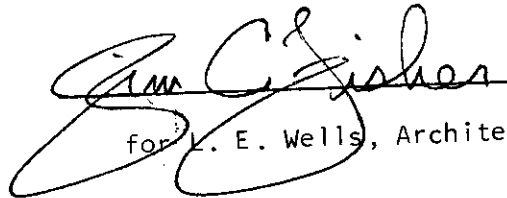
Chris Brentenstein
Engineering Division
City Hall - Seventh Floor
City of Wichita
455 N. Main Street
Wichita, Kansas 67202

RE: Kinkaid Park

Dear Mr. Brentenstein

With this letter we are delivering a copy of the drainage concept plan for Kinkaid Park along with the information needed for review of the plan. If additional copies of other information is needed, please let me know.

Sincerely,


for L. E. Wells, Architect

JF/jf

cc: Builders Inc.
1000 Parklane
Wichita, Kansas 67218

KINRAID PARK
 STORM SEWER CALCULATIONS - PHASE I

METHOD: AREAS FOR EACH CATCH BASIN ARE TO BE MEASURED WITH A PLANIMETER, TOTAL SITE AREA IS TO BE COMPARED WITH MEASUREMENTS AND A CORRECTION FACTOR USED TO FIND TRUE AREA MEASUREMENT. RATIONAL METHOD IS TO BE USED TO FIND Q MAX. TIME OF CONCENTRATION IS TO BE FOUND BY THE FORMULA $T_c = \frac{1.8(1.1-C)\sqrt{L}}{\sqrt[3]{S \times 100}}$
 T_c MINIMUM = 15 min.
 USE RAINFALL INTENSITY TABLE FOR SEDAWICK COUNTY TO FIND q_2 & q_{100} .
 PIPES WERE SIZED USING FIG. 184 INCLUDED VELOCITIES WERE DETERMINED BY MANNINGS FORMULA $V = \frac{1.49}{n} \left(\frac{D'}{4}\right)^{2/3} (s)^{1/2}$ WHERE $n > .015$.

AREAS BY PLANIMETER:

AREA	reading #1	#2	adv	x CORR FACTOR	AREA (Acres)
A	14.82	14.91	14.86	.0808	1.22 A
B	3.28	3.30	3.29	-	.27
C	1.69	1.87	1.78	-	.14
D	10.02	9.87	9.94	-	
off phase I	4.05	4.20	4.12	-	
Total D	14.07	14.07	14.07	-	1.14 A
E	6.70	6.30	6.50	-	.52
F	4.09	3.64	3.86	-	.31
G	8.40	8.25	8.32	-	.67
H	8.74	8.54	8.64	-	.70
I	4.20	4.24	4.22	-	
off phase I	4.40	4.28	4.34	-	
total I	8.60	8.52	8.56	-	.692 A
J	23.08	23.49	23.28	-	
off phase I	26.76	26.59	26.67	-	
total J	49.84	50.08	49.96	-	4.00 A

AREAS BY PLANIMETER:

AREA	reading #1	# 2	ADJ	x corr Factor	AREA (Acres)
K					
K	6.88	6.90	6.89	.0808	.56 A
L	9.80	9.79	9.80	-	.79
M	2.39	2.25	2.31	-	
off phase I	1.57	1.68	1.62	-	
total M	3.94	3.93	3.94	-	.27
N	1.60	1.19	1.40		
off phase I	10.32	10.00	10.16	-	.93
total N	11.92	11.19	11.56	-	.52
O	6.39	6.42	6.39	-	.32
P	4.00	3.92	3.96	-	.22
Q	2.85	2.55	2.70	-	.17
R	2.05	2.05	2.05	-	.64
S	7.87	8.10	7.98	-	1.10
T	13.64	13.67	13.66	-	
U	2.92	2.84	2.88	-	
off phase I	1.75	1.79	1.77	-	
total U	4.67	4.63	4.65	-	.38
V	3.81	3.83	3.82		
off phase I	1.35	1.23	1.29	-	
total V	5.16	5.06	5.11	-	.41
off phase I-W	27.10	27.28	27.19		
off phase I X	58.23	58.20	58.22		

CALCULATION OF CORRECTION FACTOR :

Total AREA KINKAID PARK = 22.13 ACRES

A	14.86
B	3.29
C	1.78
D	9.94
E	6.50
F	3.86
G	8.32
H	8.64
I	8.56
J	49.96
K	6.89
L	9.80
M	2.31
N	10.00
O	6.39
P	3.96
Q	2.70
R	2.05
S	17.98
T	13.66
U	2.88
V	3.82
W	27.19
X	<u>58.72</u>

total

$273.56 \text{ SQ in.} \times \text{CORR. FACTOR} = 22.13 \text{ ACRES}$

CORR. Factor .0808

AREA A into MARION STREET.

DA = 1.22 ACRES

C = .85

L = 420'

h = 100.3 - 96.71 = 3.59'

$T_c = \frac{1.8(1.1 - .85)\sqrt{420}}{\sqrt[3]{.85}} = \frac{1.8(.25)(20.5)}{.9473} = 9.1 \text{ min}$
 use 15 min

$T_c = 15 \text{ min.}$

$q_2 = \frac{4.06'}{1.22'}$

$Q = \frac{.85}{4.21} \text{ cfs}$

$q_{100} = \frac{8.98'}{1.22'}$
 $\frac{.85}{9.31} \text{ cfs}$

AREA D into St FRANCES St.

DA = 1.14 ACRES

C = .50 (60% open space 40% Paved AREAS)

L = 320'

h = 99.5 - 96.96 = 2.54'

$T_c = \text{use } 15 \text{ MIN.}$

$q_2 = \frac{4.06}{1.14}$

$Q = \frac{.50}{2.3} \text{ cfs}$

$q_{100} = \frac{8.98}{1.14}$
 $\frac{.50}{5.1} \text{ cfs}$

AREA B into STORM SEWER (1-2)

DA = .27 Acres

C = .85

L = 160'

h = 100.25 - 99.2

T_c = USE 15 MIN.

$q_2 = 4.06$
 .27

$q_{100} = 8.98$
 .27

Q = .9 cfs

.85
 2.1 cfs

(Fig. 184) USE 12" ϕ S.S. # 98.00 to 97.45 L=85'

$V = \frac{1.49}{.015} \left(\frac{1}{4}\right)^{2/3} (.005)^{1/2} = 2.78$ FPS.

PIPEFUL CAPACITY = 2.18 cfs

AREA C into S.S. (2-3)

DA = B+C = .27 + .14 = .41 ACRES

C = .85

L = 200

h = 100.25 - 98.65 = 1.6'

T_c = USE 15 MIN.

$q_2 = 4.06$
 .41

$q_{100} = 8.98$
 .41

Q = 1.4 cfs

.85
 3.1 cfs

(Fig 184) USE 15" ϕ SS # 97.45 to 97.25 L=40'

$V = \frac{1.49}{.015} \left(\frac{1.25}{4}\right)^{2/3} (.005)^{1/2} = 3.23$ FPS

PIPEFUL CAPACITY = 4 cfs

AREA E into S.S (4-5)

DA = .525 Acres

C = .5 (60% open space + 40% paving)

L = 200'

h = 100.5 - 98.45 = 2.05'

T_c = use 15 MIN.

$$q_2 = \frac{4.06}{.525}$$

$$q_{100} = \frac{8.98}{.525}$$

$$Q = \frac{.5}{1.1} \text{ cfs}$$

$$\frac{.5}{2.4} \text{ cfs}$$

(FIG. 184)

use 12" S.S. Φ 95.00 - 94.6 = .4 L = 30'

$$V = \frac{1.49}{.015} \left(\frac{1}{4}\right)^{2/3} (.0133)^{1/2} = 4.5 \text{ fps}$$

pipe full capacity = 3.5 cfs

AREA F into S.S. (5-8)

DA = E + F = .525 + .31 = .84 Acres

C = .6 (60% paving + 40% open space)

L = 200

h = 99.00 - 97.83 = 1.17'

T_c = use 15 MIN.

$$q_2 = \frac{4.06}{.84}$$

$$q_{100} = \frac{8.98}{.84}$$

$$Q = \frac{.6}{2.0} \text{ cfs}$$

$$\frac{.6}{4.5} \text{ cfs}$$

(fig 184) use 15" S.S. Φ 94.5 to 92.45 = 2.05 L = 145'

$$V = \frac{1.49}{.015} \left(\frac{1.25}{4}\right)^{2/3} (.0141)^{1/2} = 5.4 \text{ fps}$$

pipe full capacity = 6.6 cfs

X AREA G into S.S. (6-7)

DA = .67 Acre

C = .85

L = 195'

h = 100.5 - 97.0 = 3.5'

Tc use 15 MIN.

$q_2 = 4.06$

$$Q = \frac{.85}{2.3} \text{ cfs}$$

$q_{100} = 8.98$

$$\frac{.67}{.85} = 5.1 \text{ cfs}$$

(fig 184) use 12" ϕ S.S. # 94.87 to 94.25 L = 67'

$V = \frac{1.49}{.015} \left(\frac{1}{4}\right)^{2/3} (.0094)^{1/2} = 3.82 \text{ fps}$

pipeful capacity = 3 cfs
 $T_T (6-7) = 67 \div 3.8 = 17.6 \text{ sec}$

X AREA H into S.S. (7-8)

DA = G + H = .67 + .70 = 1.37 Acres

C = .85

L = 195 + 67 = 262'

h = 100.5 - 96.75 = 3.75'

Tc = use 15 MIN

$q_2 = 4.06$

$q_{100} = 8.98$

$$Q = \frac{.85}{4.7} \text{ cfs}$$

$$\frac{1.37}{.85} = 10.4 \text{ cfs}$$

(fig 184) use 15" ϕ S.S. # 94.24 - 92.45 L = 140'

$V = \frac{1.49}{.015} \left(\frac{1.25}{4}\right)^{2/3} (.0128)^{1/2} = 5.17 \text{ fps}$

pipeful capacity = 6.34 cfs

$T_T (7-8) = 140 \div 5.17 = 27.1 \text{ sec.}$

X SIZE PIPE (8-9)

$$DA = E + F + G + H + I = .53 + .31 + .67 + .70 + .69 = 2.9 \text{ Acres}$$

$$C = (E + F + G + H) \cdot 85 + (I) \cdot 35 \div 2.9$$

$$= (.53 + .31 + .67 + .70) \cdot 85 + (.69) \cdot 35$$

$$= 1.88 + .24 \div 2.9$$

$$= .73$$

$$T_e = 15 \text{ MIN} + T_T (6-7) + T_T (7-8)$$

$$= 15 \text{ MIN} + 32 \text{ sec} + 36 \text{ sec}$$

$$= \text{USE } 16 \text{ MIN}$$

$$q_2 = \frac{3.96}{2.9}$$

$$q_{100} = \frac{8.76}{2.9}$$

$$Q = \frac{.73}{8.4} \text{ cfs}$$

$$\frac{.73}{18.5} \text{ cfs}$$

(Fig 144) 21" ϕ S.S. # 92.35 to 91.1 L = 200'

$$V = \frac{1.49}{.015} \left(\frac{1.75}{4} \right)^{2/3} (.00625)^{1/2} = 4.52 \text{ fps}$$

pipeful capacity = 10.87 cfs

$$T_T = 200 \div 4.52 = 44.2 \text{ sec.}$$

T_T over pond is negligible

Flow FROM WEIR STRUCTURE

$$DA = E + F + G + H + I + J = 2.9 + 4.0 = 6.9 \text{ Acres}$$

$$C = (E + F + G + H) \cdot .85 + (I + J) \cdot .35 \div 6.9$$

$$= (2.21) \cdot .85 + (4.69) \cdot .35 \div 6.9$$

$$= 1.878 + 1.642 \div 6.9$$

$$= .51$$

$$T_c = 15 \text{ MIN.} + 32 \text{ sec} + 36 \text{ sec} + 50 \text{ sec}$$

use 17 MIN

$$q_{100} = \frac{8.55}{6.9}$$

$$Q_{100} = \frac{.51}{.01} = 30 \text{ cfs}$$

Desired Max Flow	94.6
FL	93.6
depth H.W.	1'

Weir Flow

$$Q_{\text{MAX}} = 3.0 L H^{3/2}$$

$$= 3.0 L (1)^{3/2}$$

$$L = 10'$$

SIZE PIPE (10-11)

$$DA = E + F + G + H + I + J + K + L = 6.9 + .56 + .79 = 8.25 \text{ Acres}$$

$$C = (E + F + G + H + K + L) \cdot .85 + (I + J) \cdot .35 \div 8.25$$

$$= 3.03 + 1.64 \div 8.25$$

$$= .57$$

$$T_c = 15 \text{ min} + T_T \text{ to inlet 10 (3 MIN.)}$$

use 18 min

$$q_{100} = \frac{8.37}{8.25}$$

$$Q_{100} = \frac{.57}{39.4 \text{ cfs}}$$

Structure Size	Des	H.W	ELEV	93.5
		FE		90.0
		H.W.D.		3.5

from CONC. DESIGN MANUAL Pg. 222
 use 36" S.S.

AREA M into S.S. (12-13)

$$DA = .27 A$$

$$C = .35 \text{ (composite for GRASS AND ROOFS)}$$

$$T_c = \text{use 15 MIN.}$$

$$q_2 = \frac{4.06}{.27}$$

$$q_{100} = \frac{8.98}{.27}$$

$$Q_2 = \frac{.35}{.38 \text{ cfs}}$$

$$Q_{100} = \frac{.35}{.85 \text{ cfs}}$$

(Fig 184) use 12" ϕ S.S. FE 92.00 to 90.00

SIZE S.S. through Ark. River Dike For 100yr Flow

$$DA = E + F + G + H + I + J + K + L + M + N =$$

$$0.25 + .27 + .93 = 9.45 \text{ Acres}$$

$$C = (E + F + G + H + K + L) .85 + (I + J + M + N) .35 \div 9.45$$

$$= (3.03) .85 + (4.69 + .27 + .93) .35 \div 9.45$$

$$= 2.58 + 2.06 \div 9.45$$

$$= .49$$

$$T_c = 15 \text{ MIN} + T_T \text{ to inlet 14}$$

$$= 15 \text{ MIN} + 2 \text{ min (to pond)} + 1 \text{ MIN. (to inlet 10)} + 1 \text{ MIN (to inlet 14)}$$

$$= 19 \text{ MIN}$$

$$q_{100} = 8.19$$

$$9.45$$

$$.49$$

$$Q_{100} = 37.9 \text{ cfs}$$

Use 36" ϕ S.S.

FE 89.00

$$V = 5.36 \text{ fps}$$

$$S = 0.45\%$$

$$L = 1290' \quad H = 100.5 - 89.00 = 11.5'$$

$$1290' \div 19 \text{ MIN} = 1.13 \text{ FPS Adv. Velocity Through DRAINAGE BASIN.}$$

AREA O into S.S. (16-17)

DA = .52 Acres

C = .5 (composite for Roofs, PLAYGROUND, & Open Space)

L = 140'

h = 100.3 - 96.11 = 4.19'

T_c = use 15 MIN. ✓

$$q_2 = \begin{array}{r} 4.06 \\ .52 \\ \hline .50 \end{array}$$

$$q_{100} = \begin{array}{r} 8.98 \\ .52 \\ \hline .50 \end{array}$$

Q₂ = 1.06 cfs

Q₁₀₀ = 2.33 cfs

(fig 148) use 12" φ S.S. FE 94.00 - 93.35 L = 100'

$$V = \frac{1.49}{.015} \left(\frac{1}{4}\right)^{2/3} (.0075)^{1/2} = \frac{1.49}{.015} (.3969)(.0866) = 3.4 \text{ fps}$$

pipeful capacity = 2.17 cfs

T_T 16-17 = 100 ÷ 3.4 = 29 sec

AREA P into S.S. (17-18)

DA = O + P = .52 + .32 = .84 Acres

$$C = O(.5) + P(.35) = (.52)(.5) + (.32)(.35) \div .84$$

$$= .3720 \div .84$$

$$= .44$$

L = 140 + 100 = 240'

h = 100.3 - 95.6 = 4.7'

T_c = 15 MIN. + 29 sec = use 15 MIN.

$$q_2 = \begin{array}{r} 4.06 \\ .84 \\ \hline .44 \end{array}$$

$$q_{100} = \begin{array}{r} 8.98 \\ .84 \\ \hline .44 \end{array}$$

Q₂ = 1.5 cfs

Q₁₀₀ = 3.3 cfs

(fig 148) use 15" φ S.S. FE 93.25 to 92.75 L = 130'

$$V = \frac{1.49}{.015} \left(\frac{1.25}{4}\right)^{2/3} (.0038)^{1/2} = \frac{1.49}{.015} (.4605)(.0616)$$

= 2.8 fps

pipeful capacity = 3.4 cfs

T_T = 130 ÷ 2.8 = 46 sec.

AREA Q into S.S. (18-19)

$$DA = O + P + Q = .84 + .22 = 1.06 \text{ Acres}$$

$$C = (O + Q) \cdot .5 + (P) \cdot .35 \div 1.06 = (.74 \cdot .5) + (.22) \cdot .35 \div 1.06 = .45$$

$$L = 240 + 130 = 370'$$

$$h = 100.3 - 95.6 = 4.7'$$

$$T_c = 15 \text{ MIN} + 29 \text{ sec (16-17)} + 46 \text{ sec (17-18)} = 16 \text{ MIN.}$$

$$g_2 = \frac{3.96}{1.06}$$

$$g_{100} = \frac{8.76}{1.06}$$

$$Q_{100} = \frac{.45}{1.89} \text{ cfs}$$

$$Q_{100} = \frac{.45}{4.18} \text{ cfs}$$

(Fig 184) use 15" ϕ S.S. FE 92.75-91.88 L = 140'

$$V = \frac{1.49}{.015} \left(\frac{1.25}{4}\right)^{2/3} (.0062)^{1/2} = 3.6 \text{ fps}$$

pipeful capacity = 4.4 cfs.
 $T_T = 140 \div 3.6 = 39 \text{ sec.}$

AREA R into S.S. (19-24)

$$DA = O + P + Q + R = 1.06 + .17 = 1.23 \text{ Acres}$$

$$C = (O + Q + R) \cdot .5 + (P) \cdot .35 \div 1.23 = (.74 + .17) \cdot .5 + (.32) \cdot .35 \div 1.23 = .46$$

$$L = 370' + 140' = 510'$$

$$h = 100.3 - 95.3 = 5'$$

$$T_c = 15 \text{ MIN} + 29 \text{ sec (16-17)} + 46 \text{ sec (17-18)} + 39 \text{ sec (18-19)} = 17 \text{ min.}$$

$$g_2 = \frac{3.86}{1.23}$$

$$g_{100} = \frac{8.55}{1.23}$$

$$Q_2 = \frac{.46}{2.2} \text{ cfs}$$

$$Q_{100} = \frac{.46}{4.8} \text{ cfs}$$

(Fig 184) use 15" ϕ S.S. FE 91.88 to 91.21 L = 120'

$$V = \frac{1.49}{.015} \left(\frac{1.25}{4}\right)^{2/3} (.0056)^{1/2} = 3.42 \text{ fps}$$

pipeful capacity = 4.2 cfs

$$T_T = 120 \div 3.42 = 35 \text{ sec.}$$

AREA S into S.S. (20-21)

DA = .64 Acres

C = .85

L = 220'

h = 99.89 - 96.38 = 3.5'

T_c = use 15 MIN.

$$q_2 = \begin{array}{r} 4.06 \\ .64 \end{array}$$

$$q_{100} = \begin{array}{r} 8.98 \\ .64 \end{array}$$

$$Q_2 = \frac{.85}{2.21} \text{ cfs}$$

$$Q_{100} = \frac{.85}{4.88} \text{ cfs}$$

(Ag 184) use 15" φ S.S. # 94.00 - 93.4 L = 80'

$$V = \frac{1.49}{.015} \left(\frac{1.25}{4}\right)^{2/3} (.0095)^{1/2} = 3.96 \text{ fps}$$

pipeful capacity = 4.86 cfs

AREA T into S.S. (21-24)

DA = S + T = .64 + 1.10 = 1.74 A.

C = .85

T_c = 15 MIN.

$$q_2 = \begin{array}{r} 4.06 \\ 1.74 \end{array}$$

$$q_{100} = \begin{array}{r} 8.98 \\ 1.74 \end{array}$$

$$Q_2 = \frac{.85}{6.04}$$

$$Q_{100} = \frac{.85}{13.36}$$

(Ag 184) use 18" φ S.S. # 93.4 - 91.2 = L = 140'

$$V = \frac{1.49}{.015} \left(\frac{1.5}{4}\right)^{2/3} (.0157)^{1/2} = 6.47 \text{ fps.}$$

pipeful capacity = 11.4 cfs

AREA U into S.S (22-23)

DA = .38 Acres

C = .35 (composite roof & open space)

L = 100'

T_c use 15 MIN.

$$q_2 = \frac{4.06}{.38}$$

$$q_{100} = \frac{8.98}{.38}$$

$$Q_2 = \frac{.35}{.54} \text{ cfs}$$

$$Q_{100} = \frac{.35}{1.29} \text{ cfs}$$

(Fig 184) use 12" φ S.S. # 92.75 to 91.95 L = 180'
 $V = \frac{1.49}{.015} \left(\frac{1}{4}\right)^{2/3} (.0044)^{1/2} = 2.61 \text{ fps}$

pipeful capacity = 2 cfs

Size Pipe from Inlet 24 to 5x5 RCBC

DA = O + P + Q + R + S + T + U + V = 3.76 Acres

$$C = (O + Q + R) \cdot .5 + (P + U + V) \cdot .35 + (S + T) \cdot .85 \div 3.76$$

$$= (.52 + .22 + .17) \cdot .5 + (.32 + .38 + .41) \cdot .35 + (.64 + 1.10) \cdot .85 \div 3.76$$

$$= (.91) \cdot .5 + (1.11) \cdot .35 + (1.74) \cdot .85 = 3.76 = .61 = C$$

T_c = 15 MIN + 29 sec (16-17) + 46 sec (17-18) + 39 sec (18-19) + 35 sec (19-24)
 = 17 min

$$q_{100} = \frac{8.55}{3.76}$$

$$\frac{.61}{19.6} \text{ cfs}$$

(Fig 184) use 24" φ # 90.7 L = 25' to RCBC
 min slope for pipe full capacity of 24" φ S.S. @ 20 cfs
 = .012 slope # out into 5x5 RCBC .012 x 25' = .3

$$V = \frac{1.49}{.015} \left(\frac{2}{4}\right)^{2/3} (.012)^{1/2} = \frac{1.49}{.015} (.63)(.110) = 6.9 \text{ fps}$$

L = 510' + 60' + 55' + 25' = 650' h = 100.3 to 95.3 = 5'
 650 ÷ (17 x 60) = .63 fps adv velocity through Basin

RAINFALL INTENSITY TABLE

SEDWICK COUNTY
KANSAS

FOLLOWING TABULATION CONTAINS RAINFALL IN INCHES PER HOUR AS COMPUTED FROM THE RAINFALL INTENSITY CURVE EQUATIONS.

Time of Concentration
~~DURATION~~

MINUTES	1-YR	2-YR	RETURN 5-YR	PERIODS 10-YR	OF 25-YR	50-YR	100-YR
5	4.67	6.23	8.00	9.34	10.67	12.23	13.79
6	4.38	5.80	7.45	8.70	9.94	11.39	12.84
7	4.09	5.46	7.02	8.19	9.36	10.72	12.09
8	3.88	5.18	6.66	7.77	8.89	10.18	11.48
9	3.71	4.95	6.36	7.43	8.49	9.72	10.96
10	3.56	4.75	6.11	7.13	8.15	9.33	10.52
11	3.43	4.58	5.89	6.87	7.85	8.99	10.14
12	3.32	4.43	5.69	6.64	7.59	8.69	9.80
13	3.21	4.29	5.51	6.43	7.35	8.42	9.50
14	3.12	4.17	5.36	6.25	7.14	8.18	9.23
15	3.04	4.06	5.21	6.08	6.95	7.97	8.98
16	2.96	3.96	5.09	5.93	6.78	7.77	8.76
17	2.89	3.86	4.97	5.79	6.62	7.59	8.55
18	2.83	3.78	4.85	5.67	6.48	7.42	8.37
19	2.77	3.70	4.76	5.55	6.34	7.27	8.19
20	2.72	3.63	4.66	5.44	6.22	7.12	8.03
21	2.67	3.56	4.57	5.34	6.10	6.99	7.88
22	2.62	3.49	4.49	5.24	5.99	6.86	7.74
23	2.57	3.43	4.41	5.15	5.89	6.74	7.60
24	2.53	3.38	4.34	5.07	5.79	6.63	7.48
25	2.49	3.32	4.27	4.99	5.70	6.53	7.36
26	2.45	3.28	4.21	4.91	5.61	6.43	7.25
27	2.42	3.23	4.15	4.84	5.53	6.33	7.14
28	2.38	3.18	4.09	4.77	5.45	6.25	7.04
29	2.35	3.14	4.02	4.68	5.38	6.16	6.95
30	2.32	3.09	3.92	4.56	5.31	6.08	6.79
31	2.29	3.02	3.82	4.44	5.19	6.00	6.62
32	2.26	2.95	3.73	4.33	5.07	5.87	6.45
33	2.24	2.88	3.64	4.23	4.95	5.73	6.30
	2.19	2.82	3.55	4.13	4.83	5.60	6.16
	2.14	2.57	3.47	4.04	4.73	5.47	6.02
	2.09	2.51	3.40	3.95	4.62	5.35	5.89
	2.05	2.46	3.33	3.87	4.52	5.23	5.76
38	2.00	2.41	3.26	3.79	4.43	5.13	5.64
39	1.95	2.36	3.19	3.71	4.34	5.02	5.53
40	1.92	2.32	3.13	3.64	4.26	4.92	5.42
41	1.89	2.27	3.07	3.57	4.18	4.83	5.32
42	1.86	2.23	3.01	3.51	4.10	4.74	5.22
43	1.82	2.19	2.96	3.44	4.02	4.65	5.13
44	1.78	2.15	2.91	3.38	3.95	4.56	5.03
45	1.75	2.11	2.86	3.32	3.88	4.48	4.95

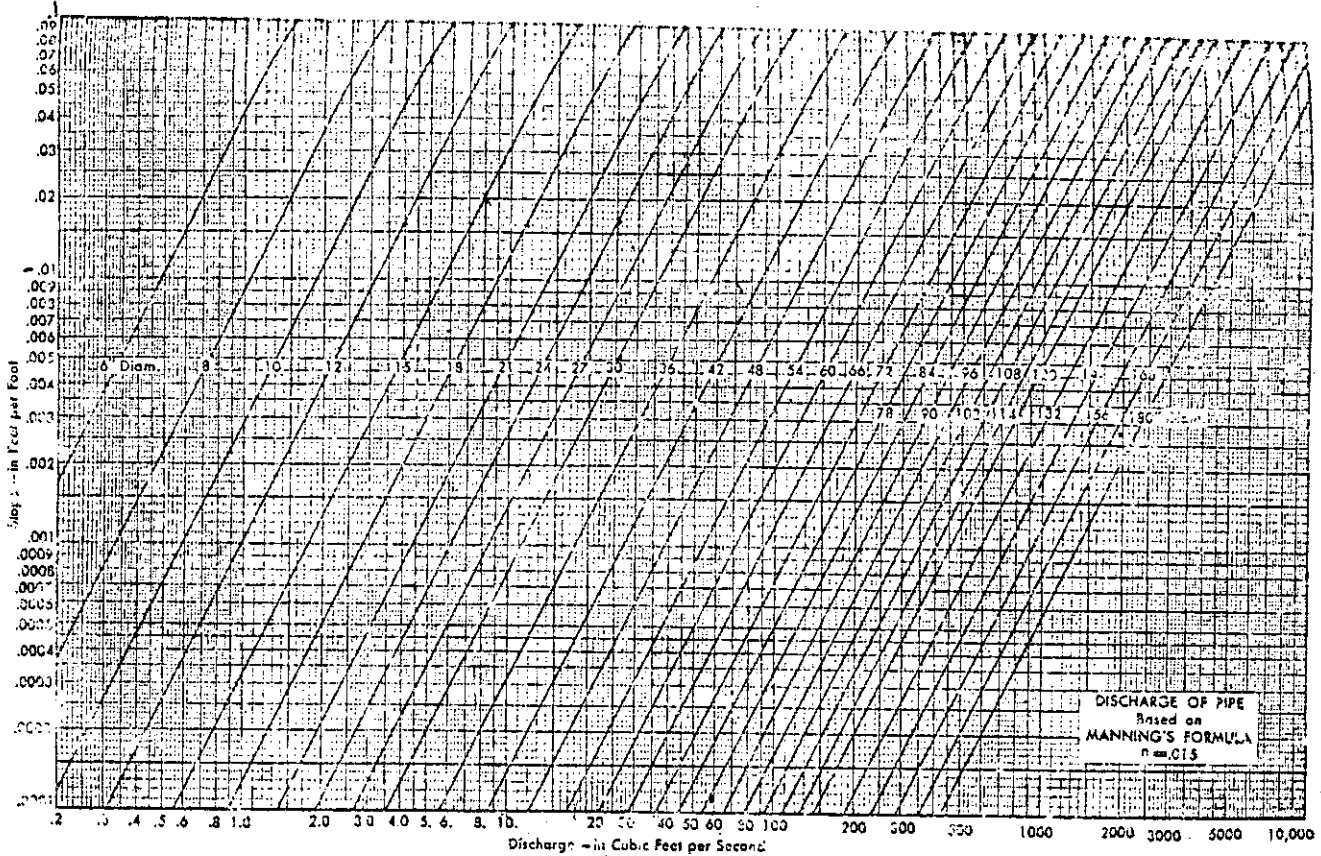
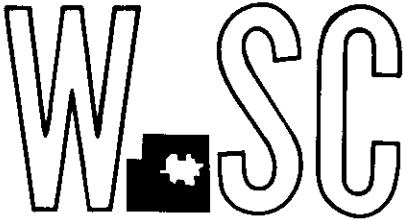


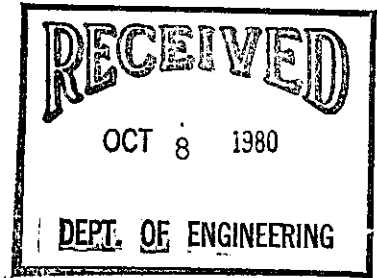
Fig. 184. Discharge for circular pipe sewers flowing full, based on Manning's formula, for $n = .015$.

WICHITA - SEDGWICK COUNTY



METROPOLITAN AREA PLANNING
COMMISSION

CITY HALL - TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4561



October 3, 1980

Moehring and Associates
433 S. Hydraulic
Wichita, Ks. 67211

Re: S/D 80-78 - Final plat of Kinkaid Park Fifth Addition

Gentlemen:

At the regular meeting of the Subdivision Committee of the Metropolitan Area Planning Commission, October 2, 1980, the above captioned plat was considered. The action of the Committee was to recommend that this plat be approved subject to:

- A. Prior to the MAPC meeting of October 9, 1980, the applicant shall submit the required drainage information to City Engineering for review. If the drainage plan has not been approved by 10-9-80, then this plat shall be deferred by the MAPC. Any drainage easements, guarantees, or minimum pads required by an approved plan shall be satisfactorily taken care of as a condition of plat approval.
- B. On the final plat tracing, the Engineer's text shall be amended to reference the fact that street rights-of-way, lots, building setbacks, and easements are being vacated by virtue of K.S.A. 12-512 (b).
- C. The applicant shall guarantee the reconstruction of Marion Rd., where it enters this property, to a private driveway entrance.
- D. The applicant shall contact Darrell Brewer of Sewer Maintenance and make satisfactory arrangements for access to the lift station and for adequate easements for the lift station.
- E. The applicant shall guarantee the paving of St. Francis Avenue.
- F. The applicant shall provide the Water Department with a copy of the site plan so that the Water Department can determine if sufficient access to existing water lines will exist.
- G. Recording of the plat within 30 days after approval by the Board of City Commissioners.

Moehring and Associates

10-3-80

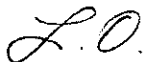
Page 2

Enclosed with the applicant's copy of this letter is a list of the five methods which have been adopted as being acceptable for guaranteeing improvements required in the approval of plats. Forms for the bond and irrevocable letter of credit are available from this office. The enclosed certificate is required if petitions are submitted.

The enclosed "marked" copy of the plat is for your information and files.

This matter will be forwarded to the Planning Commission for its consideration on Thursday, October 9, 1980, at 1:30 p.m. If you have any questions concerning this matter, please call.

Sincerely,


Louise Olivarez
Senior Planner

LO:bh

cc:

Builders, Inc., Attention: Alexander Dean, Vice-President, 1000 Parklane
67218

Lawrence Wells, Architect, 254 Laura, 67211

X R. W. Bruggeman, Director, Engineering

THE CITY OF WICHITA

OFFICE OF DEPARTMENT OF ENGINEERING DATE October 8, 1980

TO Jack Galbraith, Chief Planner

FROM Chris J. Breitenstein, Acting Drainage Design Engineer

SUBJECT Kinkaaid Park 5th Addition
Drainage Plan

The above referenced drainage plan is approved.


Chris J. Breitenstein
Acting Drainage Design Engineer

CJB:md

cc: Louise Olivarez
Don Moehring
Lawrence Wells
Alex Dean

"C" ZONING

1125' S NW COR
SEC. 4-285-1E

PAWNEE PLAZA SHOPPING CENTER
KINKAID PARK ADDITION
"C"

BROADWAY

MARION CT

MARION

TOPEKA

EMPORIA

ST. FRANCIS

KINKAID Park 3rd

NOTES:

THE RESERVE IS DEDICATED TO THE PUBLIC FOR DRAINAGE, BANK MAINTENANCE, FLOOD CONTROL, RIVER BEAUTIFICATION, AND RECREATION.

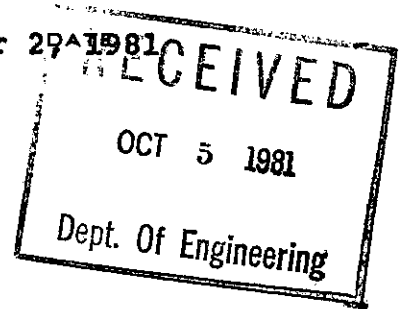
LOTS 9 THRU 14, 27, 28 & 44 BLK 1, LOT 10, BLK 2, & 10 LOTS 7, 8, 9, 11, BLK 3 ARE PROPOSED 4-FAMILY LOTS. THE REMAINDER OF THIS DEVELOPMENT IS PROPOSED 2-FAMILY.



WICHITA-SEDGWICK COUNTY

October 27th 1981

METROPOLITAN AREA PLANNING DEPARTMENT



Donald C. Gisick, City Clerk

TO Forrest L. Nagley, Junior Planner

FROM

SUBJECT Release of letter of credit associated with Kinkaid
Park Fifth Addition (credit number C-1225)

We have been advised by the Department of Operations and Maintenance that the reconstruction of the Marion Street intersection, within the above-referenced addition, has been satisfactorily completed. On February 10, 1981, the Board of City Commissioners "received and filed" a letter of credit in the amount of \$1000.00 from First National Bank for the account of Builders, Inc., as guarantee that this work would be performed. The letter of credit may now be released at the request of either Builders, Inc. or the bank.

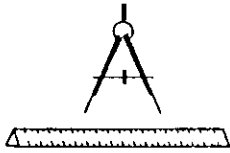
Forrest L. Nagley
Forrest L. Nagley
Junior Planner

FLN:bh

cc: C. A. Whitney, Jr., First National Bank, 105 N. Main, 67202
Builders, Inc., Atten: Alex Dean, 1000 Parklane, 67218
Mike Lindebak, Project Development Engineer, City Engineering

COPY

THE CITY OF WICHITA



CITY ENGINEER'S OFFICE
CITY HALL — SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4501

July 10, 1984

Mr. Lawrence Wells, A.I.A.
Suite 205
254 Laura
Wichita, KS 67211

Subject: Sanitary Sewer Service for the Shores Apartment
Complex in Kinkaid Park 5th Addition

Dear Mr. Wells:

Adequate and proper sanitary sewer service will be available for the above noted development upon completion of the proposed project for the lift station modification, force main modification and collection system extension which I understand is in the process of being designed by a consulting engineer.

Sincerely,

A handwritten signature in cursive script, appearing to read 'D. E. Schneider'.

Don E. Schneider, P.E.
Design Engineer

DES:gf

cc: Chris Breitenstein, P.E., Civil Engineer III

PARK

KINKAID

PARK

SECOND

ADDN.

SCOTT AVE.

ST. FRANCIS

ADDN.

- 283.73±
- 271.3±
- 5
- 249.59±
- 6
- 227.86±
- 7
- 203.66±
- 8
- 183.79±
- 9
- 161.65±
- 10
- 143.88
- R=60 6391±

- 11
- 100
- 125

ST. FRANCIS AVE.	511±	174.15	BELL'S	
	127.62	57.2	REPLAT	
	4	3	2	
	62.7	52	52	

RESERVE "A"

60'

100'

125'

1156.41'

30'

491.58'

427.22'

380.56'

624.50'

553.59'

367.83

554.89

1040.7

125



Proposed Private Project

MOEHRING & ASSOCIATES

CONSULTING ENGINEERS

July 27, 1984

Mr. Don Schneider, Design Engineer
City Hall
455 N. Main
Wichita, Kansas 67202

Re: Proposed Lift Station
THE SHORES-Multi-Family Development
Part of Kinkaid Park 5th Addition

Dear Don:

A system of gravity sanitary sewers has been designed to serve THE SHORES, a multi-family development located in part of Kinkaid Park 5th Addition.

The system as designed, incorporates 8" PVC lines with 0.30% gradients throughout.

Generally speaking, the natural ground within this and adjacent development areas are South sloping toward the Arkansas River, while the system of sewers are graded generally to the North for ultimate conveyance and discharge into the existing 36" main in Pawnee.

The depth of sewers near the South end of the development were designed to be as high as possible and yet provide service for the lowest building in that area.

Initially, we intended to connect the new system of sewers to the existing manhole, from which gravity flow would carry the discharge North, to the existing lift station located at 425 E. Marion. This lift station discharges through a 4" force main and an 8" gravity sewer to a 36" sewer main in Pawnee.

The existing manhole that we had intended to connect into, has a flow line elevation of 88.50', while the new system of sewers designed for THE SHORES would have reached that manhole at an elevation of approximately 85.90', or some 2.6' below existing grade.

Even if a new gravity line were constructed from this manhole North to the existing lift station, the inflow elevation would be approximately 84.35'. With the combined active and dead storage requirements, this would place the bottom of the suction pipe

at an approximate elevation of 78.12' or approximately 23.0' below the pump base elevation as modified a year or two ago. This is some 3 feet greater static suction lift than the maximum recommended by the manufacturer and therefore it becomes apparent that the conditions of elevation preclude the modification and re-use of this lift station to serve the proposed system of sewers as designed for THE SHORES. Of interest, we evaluated the modification requirements for the existing station, as follows: The combined design flow for the existing system and THE SHORES plus a small allowance for the remaining undeveloped area that could be served by the lift station would be approximately 375 to 400 gpm. Using available S. & L. friction loss tables and pump performance curves, it would require a 7-1/2 HP, 1760 RPM-4B2B pump, operating with a TDH of approximately 40 feet. Then, to modify the existing station would require new pumps and motors, station wiring, motor starters, circuit breakers, and some of the internal wiring with in the control panel. Virtually all that would be reuseable would be the base plate, the fiberglass cover and the framework of the control panel. S. & L. has estimated that the cost of the required components, together with field installation might well equal or exceed that of a comparable factory assembled unit.

Additionally, the power cost of running the existing 1-1/2 HP (existing) pump and the proposed 2 HP pump as required for the proposed lift station, would be approximately 58% of the power cost to operate the 7-1/2 HP pump motor (operating @ 6 HP).

Therefore, since gravity connection to the existing lift station is not feasible, attention has been turned to the installation of a new lift station at the location as shown on the plans.

Based on the information from the City that the existing 8" gravity sewer along the West side of St. Francis does not have the reserve capacity to receive additional discharges, we have planned a new 6" force main, crossing under St. Francis Street, and then North behind the East curb of St. Francis discharging into an existing manhole in the 36" main in Pawnee Street.

The decision to build the new force main on the East side of St. Francis, was based in part upon the lack of available utility easements along the West side of St. Francis, together with 10' separation requirement from the existing water main.

Enclosed is a copy of the calculation sheets used to determine wet well sizing and control elevations, together with data compiled to establish system performance curves from which pump selection, impeller diameter and HP requirements were determined for the proposed new lift station.

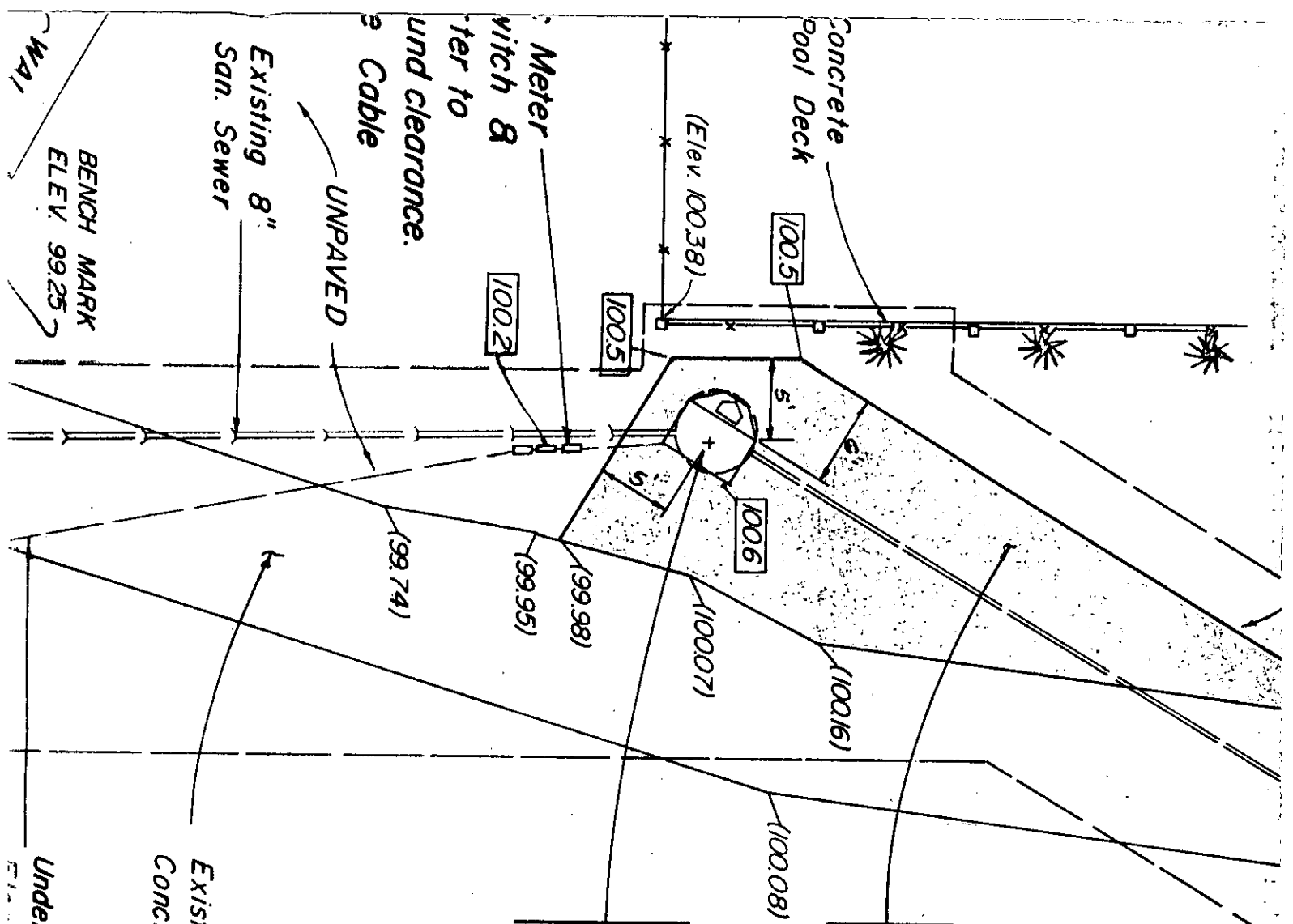
Should there be further questions, please do not hesitate to contact this office.

Very truly yours,

MOEHRING & ASSOCIATES
CONSULTING ENGINEERS


Don C. Moehring II

DCM:om



Construct 7" Concrete Slab
 Match Elevation at Existing
 Drive (See Reinforcement
 Plan)

Existing Sewage Pumping
 Station. Raise 2.5'
 Finished Base Elev. 101.10
 Finished Slab Elev. 100.60
 (See Sheet 2)

Note: Station must be reconnected
 to City of Wichita Alarm System

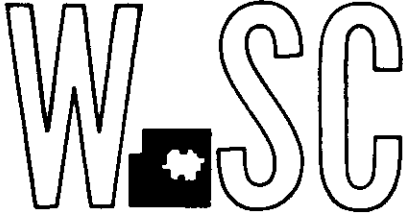
Existing 10' Wide
 Concrete Drive

Underground

BENCH MARK
 ELEV. 99.25

W1

WICHITA—SEDGWICK COUNTY



METROPOLITAN AREA PLANNING
COMMISSION

CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4561

October 29, 1976

Moehring & Associates
314 Brown Building
Wichita, Kansas 67202

Re: S/D 76-97 - Final Plat of
KINKAID PARK FIFTH ADDITION

Gentlemen:

At the regular meeting of the Metropolitan Area Planning Commission on October 28, 1976, the above-captioned plat was considered. The action of the Commission was to recommend that the plat be approved as recommended by the Subdivision Committee, subject to the conditions stated in our letter of October 22, 1976.

In addition to complying with those conditions, it is necessary that you meet the following requirements before this plat can be forwarded to the Board of City Commissioners for consideration:

1. Compliance with the requirements of the Metropolitan Area Planning Commission.
2. Submission of the fully completed and signed tracing of the subdivision to the Metropolitan Area Planning Department.
3. Submission of a title report by an abstract or title insurance company, or an attorney's opinion that fee title is vested in the plattor.
4. Certification that all taxes due and payable for 1975 and prior years have been paid.

Please call if you have any questions.

Sincerely,


Jack H. Galbraith
Chief Planner

JHG:ber

cc: Builders, Inc., 1000 Parklane 67218
Karl Solomon, 800 South Broadway, Suite 5 67211
x Dean Sellers, Assistant City Engineer