MEMO

TO: Chris Breitenstein, P.E.
Drainage Engineer
City Hall - 7th Floor
455 N. Main
Wichita, Kansas 67202

ATTN:

PROJECT NO. 36-81251-1338

PROJECT: Triple "J" Addition
FPS

DATE: September 30, 1981

COPIES TO:

FROM: Charles S. Brown, P.E.

REFERENCE: Revised Drainage Plan

PLEASE ADVISE IMMEDIATELY OF ANY MISCONCEPTIONS OR OMISSIONS YOU BELIEVE TO BE CONTAINED HEREIN.

As discussed by phone today, we are transmitting herewith 2 prints of the Revised Drainage Plan for Triple "J" Addition to Wichita.

The Revision consists of adding a 15' private drainage easement along the east property line of the plat to facilitate a future "V" ditch to drain northward to the proposed channel. A copy of our calculations are enclosed showing the hydraulic characteristics of this "V" ditch.

Also enclosed in a copy of our calculations showing the proposed channel size and the need for a 50' drainage easement at the northeast of the Triple "J" property.

Drainage O.K. Hold for O&M Comments

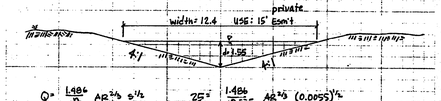
RECEIVED
SEP 30 1981
Dept. Of Engineering

Date Sept 30, 1981 Page 1 of 2
Project TRIPLE "J"
Item East PL Drainage Esm't.

Determine ditch size at east PL

c = 0.9
D.A. = 3.47 Ac
t_c = 250' pavement @ 1% avg slope = 5 min
I_5 = 8.00

$Q_5 = CI_5A$
= 0.9 × 8.00 × 3.47
= 25 cfs



$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}$ $\quad 25 = \frac{1.486}{0.055} AR^{2/3} (0.0055)^{1/2}$

$AR^{2/3} = \frac{25 \times 0.055}{1.486} = 7.30$

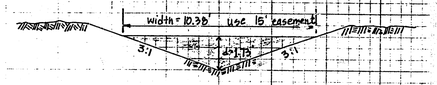
$\frac{1.486}{0.055} = 0.07453$

d	A	p	R	$R^{2/3}$	$AR^{2/3}$
1.0'	4.0 sf	8.246'	0.485	0.61735	2.469
1.2'	5.76	9.895'	0.582	0.65714	4.0156
1.4'	7.84	11.545	0.679	0.77260	6.057
1.6'	10.24	13.1939	0.776	0.84453	8.64
1.5	9.00	12.3693	0.7276	0.80896	7.28

← d = 1.55'

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Project Triple "J"
Item East PL Drainage Esm't

Alternate Section:



d	A	p	R	$R^{2/3}$	$AR^{2/3}$
1.6'	7.68 sf	10.119	0.75864	0.832	6.39
1.7'	8.67 sf	10.752	0.80638	0.866	7.51
1.8'	9.72	11.384	0.85381	0.900	8.748

← d = 1.73'

USE: 4:1 "V" Ditch, d = 1.5', w = 12.4', V = 26 cfs
15' Esm't

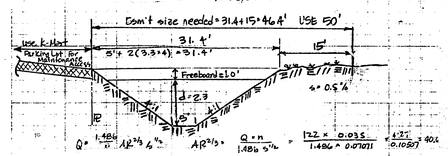
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Project TRIPLE "J"
Item

III Determine Runoff @ West End Extd. "K-Mart" Ditch

D.A. = 13.4 Ac
c = 0.9
t_c = 500' pavement @ 1% = 9 min.
+ 400' channel @ 3 fps = 2 min.
11 min.
OR 700' turf @ 0.7% = 33 min.
USE 11 min
I_{100} = 10.14

$Q_{100} = CI_{100}A$ = 0.9 × 10.14 × 13.4
= 122 cfs.

Esm't size needed = 31.4 + 15 + 46 A' USE 50'



$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}$ $\quad AR^{2/3} = \frac{Q \times n}{1.486 S^{1/2}} = \frac{122 \times 0.035}{1.486 \times 0.07071} = \frac{4.27}{0.10507} = 40.6$

d	A	p	R	$R^{2/3}$	$AR^{2/3}$
3'	51	27.74	1.715	1.432	73.07
2.8'	47.5	25.61	1.855	1.511	71.8
2.6'	43.9	23.48	1.870	1.514	66.48
2.5'	42.1	22.42	1.878	1.516	63.82
2.4'	40.3	21.35	1.887	1.518	61.17
2.3'	38.5	20.29	1.897	1.520	58.52
2.2'	36.7	19.22	1.909	1.522	55.87
2.1'	34.9	18.16	1.921	1.524	53.21
2.0'	33.1	17.09	1.936	1.527	50.56
1.9'	31.3	16.03	1.952	1.530	47.91
1.8'	29.5	14.96	1.972	1.534	45.25
1.7'	27.7	13.90	1.993	1.538	42.60
1.6'	25.9	12.83	2.018	1.543	39.95
1.5'	24.1	11.77	2.048	1.549	37.29
1.4'	22.3	10.70	2.084	1.556	34.64
1.3'	20.5	9.64	2.126	1.564	32.00
1.2'	18.7	8.57	2.182	1.575	29.45
1.1'	16.9	7.51	2.251	1.588	26.83
1.0'	15.1	6.44	2.345	1.607	24.27
0.9'	13.3	5.38	2.472	1.633	21.72
0.8'	11.5	4.31	2.668	1.674	19.25
0.7'	9.7	3.25	2.985	1.737	16.85
0.6'	7.9	2.18	3.624	1.888	14.92
0.5'	6.1	1.12	5.446	2.388	14.57

← d = 2.3'