

Booker
Sedgwick County, Kansas

Booker Associates, Inc. of Kansas

Final Pg. No. _____

Client: BILL MORRIS Proj. No: K9544 Prel. Pg. No: 1052

Location: 47TH TURNPIKE Calc: J.W. Date: 5-13-94

Subject: DRAINAGE PLAN Chkd: NLR Date: 5-16-94

SHERWOOD ACRES MOBILE HOME SUB ADDITION Bkchkd: _____ Date: _____

NOTE: WATER FROM THE SITE WILL DRAIN TO EXISTING STORM DRAIN NO. 275. THERE ARE DRAINAGE STRUCTURES LOCATED AT THE SW AND SE CORNERS. DESIGN BASED ON 24R STORM.

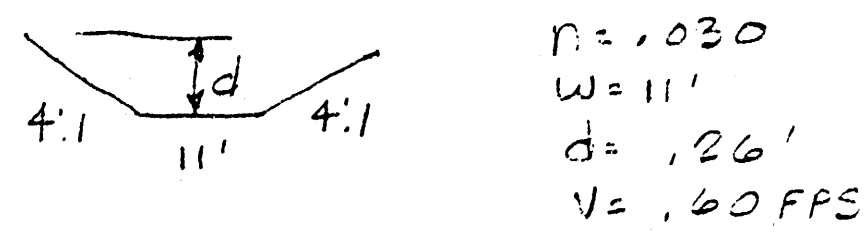
NODE A1

A = 2.34 AC C = .5 SLOPE = .1%
OVERLAND FLOW = .35 FPS (GRASSED CHANNEL)

$T_c = \frac{1350}{.35} = 3806 \text{ SEC OR } 63 \text{ MIN.}$

$I_2 = 1.63 \quad Q = CIA = 1.5 \times 1.63 \times 2.34 = 1.9 \text{ CFS}$

SWALE DEPTH



NODE B1

A = 4.53 AC C = .5 SLOPE = .2% (STREET)
OVERLAND FLOW = .77 FPS

$T_c = \frac{1270}{.77} = 1649 \text{ SEC OR } 27 \text{ MIN.}$

$I_2 = 2.84 \quad Q = 1.5 \times 2.84 \times 4.53 = 6.4 \text{ CFS}$
CHECKING EXISTING 18" RCP
 $A = 1.767 \quad K = .375 \quad R^{2/3} = .523 \quad S^{1/2} = .054$
 $Q = 6.2 \text{ CFS}$ WITH HEAD PIPE WILL WORK

EQUAL OPPORTUNITY EMPLOYER

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Client: BILL MORRIS Proj. No: K9544 Prel. Pg. No: 2052

Location: 47TH TURNPIKE Calc: J.W. Date: 5-13-94

Subject: DRAINAGE PLAN Chkd: NLR Date: 5-16-94

SHERWOOD ACRES MOBILE HOME SUB ADDITION Bkchkd: _____ Date: _____

NODE C1

A = 12 AC C = .5 SLOPE = .1%
OVERLAND FLOW = .35 FPS (GRASS WATERWAY)

$T_c = \frac{1350}{.35} = 3857 \text{ SEC OR } 64 \text{ MIN.}$

$I_2 = 1.61 \quad Q_2 = 1.5 \times 1.61 \times 12 = 9.66$

COMBINED FLOW AREA "B" & "C"

$EA = 16.53 \text{ AC} \quad C = .5 \quad T_c = 64 \text{ MIN} \quad I_2 = 1.61$

$Q_2 = 1.5 \times 1.61 \times 16.53 = 13.30$

CHECK CAP. EXISTING PIPE

$A = 3.3 \quad S = .2\%$
 $R = .49 \quad R^{2/3} = .624$
 $V = .612$

$Q = 1.486 \text{ A/R}^{2/3} S^{1/2} = 11.4 \text{ CFS}$

EXISTING PIPE CAN HANDLE FLOW WITH HEAD

EQUAL OPPORTUNITY EMPLOYER

ATTACHMENT E
DRAINAGE CRITERIA
CITY OF WICHITA, KANSAS

AVERAGE OVERLAND FLOW VELOCITY FOR USE WITH URBANIZED AREAS

Surface Type	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	20.0
Forest with Heavy Ground Cover or Meadow	0.03	0.04	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.16	0.21	0.28	0.33	0.39	0.46	0.53	0.60	0.72	1.10	
Fallow or Minimum Tillage Cultivation	0.06	0.08	0.10	0.12	0.13	0.14	0.16	0.17	0.18	0.19	0.29	0.40	0.51	0.66	0.78	0.91	1.05	1.20	1.41	2.10	
Short Grass Pasture or Lands	0.09	0.13	0.15	0.18	0.20	0.21	0.23	0.25	0.26	0.28	0.45	0.60	0.77	0.96	1.17	1.33	1.50	1.68	1.96	3.20	
Almost Bare Ground	0.16	0.22	0.28	0.31	0.35	0.38	0.41	0.44	0.46	0.49	0.70	0.85	1.05	1.26	1.50	1.75	2.03	2.32	2.79	4.40	
Grassed Waterway	0.35	0.48	0.58	0.67	0.77	0.84	0.91	0.98	1.05	1.12	1.54	1.82	2.10	2.38	2.78	3.20	3.66	4.14	4.55	7.00	
Paved Areas (Sheet Flow) or Shallow Gutter Flow	0.44	0.62	0.77	0.91	1.05	1.12	1.19	1.26	1.33	1.40	2.00	2.55	3.20	3.83	4.41	5.04	5.70	6.40	6.20	9.00	

Mikey
DRAINAGE CRITERIA
1- Blue line of Drainage Plan

April 15, 1986

ATTACHMENT A DRAINAGE CRITERIA MANUAL CITY OF WICHITA, KANSAS

RAINFALL INTENSITY TABLE FOR SEDGWICK COUNTY, KANSAS

The following tabulation contains rainfall intensity in inches per hour as derived from ESSA Weather Bureau Technical Paper # Modified to NWS Hydro-35, 1977 During First Hour

DURATION IN MINUTES	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5	4.18	5.57	6.53	7.41	8.52	9.48	10.32
6	3.99	5.32	6.25	7.09	8.16	9.09	9.83
7	3.81	5.09	5.99	6.81	7.84	8.74	9.50
8	3.66	4.89	5.75	6.55	7.55	8.42	9.15
9	3.52	4.70	5.54	6.31	7.28	8.13	8.83
10	3.39	4.52	5.34	6.09	7.04	7.86	8.54
11	3.27	4.36	5.16	5.89	6.81	7.61	8.27
12	3.18	4.21	4.99	5.71	6.60	7.38	8.02
13	3.05	4.08	4.84	5.53	6.41	7.17	7.79
14	2.96	3.95	4.69	5.37	6.23	6.97	7.57
15	2.87	3.83	4.56	5.22	6.06	6.78	7.37
16	2.78	3.72	4.43	5.08	5.90	6.60	7.18
17	2.71	3.61	4.31	4.95	5.75	6.44	7.00
18	2.63	3.51	4.20	4.83	5.61	6.29	6.84
19	2.56	3.42	4.10	4.71	5.47	6.14	6.68
20	2.50	3.33	4.00	4.60	5.35	6.00	6.53
21	2.44	3.25	3.90	4.50	5.23	5.87	6.39
22	2.38	3.17	3.81	4.40	5.12	5.75	6.26
23	2.32	3.10	3.73	4.31	5.01	5.63	6.13
24	2.27	3.03	3.65	4.22	4.91	5.52	6.01
25	2.22	2.96	3.57	4.13	4.81	5.41	5.90
26	2.20	2.90	3.50	4.05	4.72	5.31	5.79
27	2.16	2.84	3.43	3.98	4.63	5.21	5.69
28	2.14	2.78	3.37	3.90	4.55	5.12	5.59
29	2.11	2.72	3.30	3.83	4.47	5.03	5.49
30	2.08	2.67	3.24	3.76	4.39	4.94	5.40
31	2.05	2.62	3.19	3.70	4.32	4.86	5.32
32	2.02	2.57	3.10	3.63	4.25	4.79	5.22
33	1.99	2.52	3.05	3.57	4.18	4.71	5.14
34	1.96	2.48	3.01	3.51	4.11	4.63	5.07
35	1.93	2.44	2.98	3.46	4.05	4.56	5.00
36	1.91	2.39	2.93	3.41	3.99	4.50	4.93
37	1.89	2.35	2.88	3.36	3.93	4.43	4.86
38	1.87	2.32	2.84	3.31	3.87	4.37	4.79
39	1.85	2.28	2.80	3.26	3.82	4.31	4.73
40	1.83	2.24	2.76	3.22	3.76	4.25	4.66
41	1.81	2.21	2.72	3.17	3.71	4.19	4.60
42	1.79	2.18	2.68	3.13	3.66	4.13	4.54
43	1.77	2.14	2.64	3.09	3.61	4.08	4.49
44	1.75	2.11	2.61	3.05	3.57	4.03	4.43
45	1.73	2.08	2.57	3.01	3.52	3.98	4.38

ATTACHMENT A CONTINUED Page 2

DURATION IN MINUTES	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
46	1.70	2.05	2.54	2.97	3.48	3.93	4.33
47	1.67	2.02	2.50	2.93	3.44	3.88	4.28
48	1.66	2.00	2.47	2.90	3.39	3.84	4.23
49	1.64	1.97	2.44	2.86	3.35	3.79	4.18
50	1.61	1.95	2.41	2.83	3.32	3.75	4.13
51	1.59	1.92	2.38	2.79	3.28	3.71	4.09
52	1.56	1.89	2.35	2.76	3.24	3.67	4.05
53	1.54	1.86	2.33	2.73	3.20	3.63	4.00
54	1.52	1.84	2.30	2.70	3.17	3.59	3.96
55	1.50	1.81	2.27	2.67	3.14	3.55	3.92
56	1.47	1.79	2.25	2.64	3.10	3.51	3.88
57	1.45	1.76	2.22	2.61	3.07	3.48	3.84
58	1.43	1.74	2.20	2.59	3.04	3.44	3.81
59	1.42	1.72	2.18	2.56	3.01	3.41	3.77
60	1.40	1.69	2.15	2.53	2.98	3.37	3.73
61	1.38	1.67	2.13	2.51	2.95	3.34	3.70
62	1.36	1.65	2.11	2.48	2.92	3.31	3.67
63	1.34	1.63	2.09	2.46	2.89	3.28	3.63
64	1.33	1.61	2.07	2.44	2.86	3.25	3.60
65	1.31	1.59	2.05	2.41	2.84	3.22	3.57
66	1.30	1.57	2.03	2.39	2.81	3.19	3.54
67	1.28	1.56	2.01	2.37	2.79	3.16	3.51
68	1.26	1.54	1.99	2.35	2.76	3.13	3.48
69	1.25	1.52	1.97	2.33	2.74	3.10	3.45
70	1.24	1.50	1.95	2.31	2.71	3.08	3.42
71	1.22	1.49	1.93	2.28	2.69	3.05	3.39
72	1.21	1.47	1.92	2.26	2.67	3.02	3.36
73	1.20	1.46	1.90	2.25	2.64	3.00	3.34
74	1.18	1.44	1.88	2.23	2.63	2.98	3.31
75	1.17	1.43	1.86	2.21	2.61	2.95	3.29
76	1.16	1.41	1.85	2.19	2.58	2.93	3.26
77	1.15	1.40	1.83	2.17	2.55	2.90	3.24
78	1.13	1.38	1.82	2.15	2.53	2.88	3.22
79	1.12	1.37	1.80	2.14	2.50	2.86	3.19
80	1.11	1.36	1.79	2.12	2.48	2.84	3.16
81	1.10	1.34	1.77	2.10	2.46	2.82	3.13
82	1.09	1.33	1.76	2.08	2.43	2.79	3.10
83	1.08	1.32	1.74	2.06	2.41	2.76	3.07
84	1.07	1.31	1.73	2.04	2.39	2.74	3.04
85	1.06	1.30	1.72	2.02	2.37	2.71	3.01
86	1.05	1.28	1.70	2.00	2.34	2.69	2.99
87	1.04	1.27	1.69	1.99	2.32	2.66	2.96
88	1.03	1.26	1.68	1.97	2.30	2.64	2.93
89	1.02	1.25	1.66	1.95	2.28	2.62	2.91
90	1.01	1.24	1.66	1.93	2.26	2.59	2.88

Wichita, Sedgwick County, Kansas



DRAINAGE DIRECTIONAL ARROW
DRAINAGE BASIN
DRAINAGE NODE
DRAINAGE AREA

NODE A1

DRAINAGE AREA = 2.34 A
RUNOFF COEFF. = .5
RETURN PERIOD = 2 YRS.
INTENSITY = 1.63 IN/HR.
Q2 = 1.9 CFS

NODE B1

DRAINAGE AREA = 4.53 AC
RUNOFF COEFF. = .5
RETURN PERIOD = 2 YRS.
INTENSITY = 2.84 IN/HR.
Q2 = 6.2 CFS

NODE C1

AREA "B"+"C" = 16.53 Ac
RUNOFF COEFF. = .5
RETURN PERIOD = 2 YRS.
INTENSITY = 1.61 IN/HR.
Q2 = 13.3 CFS



BENCH MARK
Chiseled "B" on the top of a 5'x5' KTA drop inlet
located 20' east of the S.E. property corner.
Elev. = 182.28 (City of Wichita Datum)