STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	52 U-1785-01	2003	37	143

	BY	DATE
REFERENCES NOTED	M Adams	9-01
REFERENCES CHECKED	R. Shipman	11-01

STORM SEWER DESIGN CALCULATION TABLE (50 YEAR RETURN FREQUENCY)

Line No.	Up-stream Node Location	Down-stream Node Location	Direct Area "A" (hectare)	Runoff Coef. "C"	A x C (hectare)	Total A x C (hectare)	Direct Inlet Time (min)	Total Flow Time (min)	Rainfall Intensity "i" (mm/hr)	Runoff "Q" Q=KCiA (cms)	Pipe Dia. "D" (mm)	Pipe Mat.	Slope "S" (%)	Length (m)	Capacity (Full flowing) (cms)	Velocity (Design flow) (mps)	Headwater HW (m)	Allowable Headwater AHW (m)
1	Sta. 3+560.000, Lt.	Sta. 3+560.000, Rt.	0.151	0.81	0.122	0.122	5.0	5.0	238.64	0.10	375	RCP	0.953	17.2	0.18	1.59		
	Sta. 3+560.000, Rt.	Sta. 3+470.000, Rt.	0.087	0.81	0.070	0.193	5.0	5.2	236.92	0.15	375	RCP	3.212	88.5	0.33	2.80		
	Sta. 3+470.000, Rt.	Sta. 3+410.000, Rt.	0.104	0.81	0.084	0.526	5.0	5.7	232.02	0.40	450	RCP	3.149	58.5	0.53	3.53		
	Sta. 3+410.000, Rt.	Sta. 3+384.943, Rt.	0.069	0.81	0.056	0.781	5.0	6.0	229.54	0.59	600	RCP	1.528	23.5	0.79	2.97		
	Sta. 3+384.943, Rt.	Sta. 3+384.943, Rt.		0.00	0.000	1.277	5.0	6.1	228.37	0.96	600	RCP	2.220	20.9	0.95	3.30		
2	Sta. 3+385.000, Lt.	Sta. 3+384.943, Rt.	0.613	0.81	0.496	0.496	5.0	5.0	238.64	0.39	450	RCP	1.096	22.8	0.31	2.38		
3	Sta. 3+410.000, Lt.	Sta. 3+410.000, Rt.	0.246	0.81	0.199	0.199	5.0	5.0	238.64	0.16	375	RCP	0.953	17.2	0.18	1.76		
4	Sta. 3+470.000, Lt.	Sta. 3+470.000, Lt.	0.103	0.81	0.083	0.083	5.0	5.0	238.64	0.07	375	RCP	1.130	4.6	0.19	1.54		
	Sta. 3+470.000, Lt.	Sta. 3+470.000, Rt.	0.205	0.81	0.166	0.249	5.0	5.0	238.16	0.20	375	RCP	1.488	17.2	0.22	2.20		
5	Sta. 3+905.989, Rt.	Sta. 3+905.989, Rt.	15.811	0.65	10.269	10.269	20.0	20.0	151.58	5.14	1500	RCP	1.343	6.7	8.54	4.87	0.16	2.93
	Sta. 3+905.989, Rt.	Sta. 3+905.989, Lt.	0.097	0.81	0.079	10.463	5.0	20.0	151.51	5.24	1500	RCP	1.163	17.2	7.95	4.65		
	Sta. 3+905.989, Lt.	Sta. 3+905.989, Lt.	0.118	0.81	0.096	15.224	5.0	20.1	151.32	7.61	1500	RCP	1.100	10.0	7.73	4.83		
6	Sta. 3+830.000, Rt.	Sta. 3+830.000, Rt.	2.692	0.81	2.179	2.179	5.0	5.0	238.64	1.72	900	RCP	1.189	5.3	2.06	3.50	0.12	1.41
	Sta. 3+830.000, Rt.	Sta. 3+830.000, Lt.	0.171	0.81	0.138	2.317	5.0	5.0	238.39	1.82	900	RCP	0.948	17.2	1.84	3.19		
	Sta. 3+830.000, Lt.	Sta. 3+905.989, Lt.	0.135	0.81	0.109	3.097	5.0	5.1	237.54	2.43	900	RCP	2.027	74.0	2.69	4.63		
7	4+978.743, Rt., 13th	Sta. 3+685.000, Lt.	0.065	0.81	0.053	0.053	5.0	5.0	238.64	0.04	375	RCP	0.995	43.2	0.18	1.29		
	Sta. 3+685.000, Lt.	Sta. 3+750.000, Lt.	0.131	0.81	0.106	0.159	5.0	5.6	233.37	0.12	375	RCP	2.954	63.5	0.31	2.58		
	Sta. 3+750.000, Lt.	Sta. 3+905.989, Lt.	0.210	0.81	0.170	0.670	5.0	6.0	229.65	0.51	450	RCP	3.164	78.5	0.53	3.67		
8	Sta. 3+750.000, Rt.	Sta. 3+750.000, Lt.	0.328	0.81	0.265	0.265	5.0	5.0	238.64	0.21	375	RCP	1.064	17.2	0.19	1.84		
9	Sta. 3+727.600, Lt.	Sta. 3+750.000, Lt.	0.094	0.81	0.076	0.076	5.0	5.0	238.64	0.06	375	RCP	1.467	21.2	0.22	1.64		
	Sta. 3+750.000, Lt.	Sta. 3+750.000, Lt.		0.00	0.000	0.076	5.0	5.2	236.58	0.06	375	RCP	1.621	9.5	0.23	1.70		
10	Sta. 3+765.800, Lt.	Sta. 3+750.000, Lt.	0.053	0.81	0.043	0.043	5.0	5.0	238.64	0.03	375	RCP	0.980	14.7	0.18	1.21		
11	5+019.039, Lt., Mt-Cal	5+019.039, Rt., Mt-Cal	0.064	0.81	0.052	0.052	5.0	5.0	238.64	0.04	375	RCP	1.000	9.8	0.18	1.29		
	5+019.039, Rt., Mt-Cal	Sta. 4+172.000, Rt.	0.137	0.81	0.111	0.163	5.0	5.1	237.42	0.13	375	RCP	1.725	12.0	0.24	2.12		
	Sta. 4+172.000, Rt.	Sta. 4+133.000, Rt.	0.014	0.81	0.011	0.174	5.0	5.2	236.53	0.14	375	RCP	4.061	37.5	0.37	2.99		
	Sta. 4+133.000, Rt.	Sta. 4+073.000, Rt.	0.117	0.81	0.095	0.269	5.0	5.4	234.57	0.21	375	RCP	5.009	58.5	0.41	3.59		
	Sta. 4+073.000, Rt.	Sta. 4+013.000, Rt.	0.463	0.81	0.375	0.643	5.0	5.7	232.07	0.49	450	RCP	5.444	58.5	0.69	4.58		
	Sta. 4+013.000, Rt.	Sta. 4+013.000, Lt.	0.694	0.81	0.562	1.205	5.0	5.9	230.15	0.92	600	RCP	1.709	17.2	0.84	3.14		
	Sta. 4+013.000, Lt.	Sta. 3+923.000, Lt.	0.276	0.81	0.223	1.429	5.0	6.0	229.34	1.08	750	RCP	1.218	88.0	1.28	3.15		
	Sta. 3+923.000, Lt.	Sta. 3+913.030, Lt.	0.146	0.81	0.118	1.547	5.0	6.5	225.27	1.15	750	RCP	1.067	7.5	1.20	2.99		
	Sta. 3+913.030, Lt.	Sta. 3+905.989, Lt.	0.027	0.81	0.022	1.569	5.0	6.5	224.91	1.17	750	RCP	1.000	4.6	1.16	2.56		
12	Sta. 3+923.000, Rt.	Sta. 3+913.030, Rt.	0.121	0.81	0.098	0.098	5.0	5.0	238.64	0.08	375	RCP	1.707	7.5	0.24	1.87		
	Sta. 3+913.030, Rt.	Sta. 3+905.989, Rt.	0.022	0.81	0.018	0.116	5.0	5.1	237.99	0.09	375	RCP	1.000	4.6	0.18	0.80		
13	Sta. 4+339.266, Rt.	Sta. 4+339.266, Rt.	2.174	0.40	0.869	0.869	15.0	15.0	170.06	0.49	900	RCP	3.333	1.8	3.45	3.68	0.72	2.52
	Sta. 4+339.266, Rt.	Sta. 4+339.266, Lt.	0.197	0.81	0.159	1.028	5.0	15.0	168.54	0.57	900	RCP	3.198	17.2	3.38	3.76		
	Sta. 4+339.266, Lt.	Sta. 4+339.266, Lt.	0.251	0.81	0.203	1.231	5.0	15.1	168.26	0.68	900	RCP	1.028	10.7	1.91	2.66		
14	Sta. 4+473.074, Rt.	Sta. 4+473.074, Rt.	3.111	0.40	1.243	1.243	15.0	15.0	170.06	0.70	900	RCP	2.941	1.7	3.24	3.90	0.94	2.33
	Sta. 4+473.074, Rt.	Sta. 4+473.074, Lt.	0.135	0.81	0.109	1.353	5.0	15.0	168.55	0.75	900	RCP	2.442	17.2	2.95	3.73		
	Sta. 4+473.074, Lt.	Sta. 4+473.074, Lt.	0.164	0.81	0.133	1.969	5.0	15.1	168.26	1.09	900	RCP	1.075	9.3	1.96	3.05		
15	Sta. 4+423.000, Rt.	Sta. 4+423.000, Lt.	0.247	0.81	0.200	0.200	5.0	5.0	238.64	0.16	375	RCP	0.977	17.2	0.18	1.79		
	Sta. 4+423.000, Lt.	Sta. 4+473.074, Lt.	0.131	0.81	0.106	0.306	5.0	5.2	237.10	0.24	375	RCP	1.744	48.1	0.24	2.42		
16	Sta. 4+526.000, Rt.	Sta. 4+526.000, Lt.	0.223	0.45	0.100	0.100	5.0	5.0	238.64	0.08	375	RCP	1.064	17.2	0.19	1.58		
	Sta. 4+526.000, Lt.	Sta. 4+473.074, Lt.	0.096	0.81	0.078	0.178	5.0	5.2	236.90	0.14	375	RCP	2.096	50.9	0.26	2.34		
17	Sta. 4+733.423, Rt.	Sta. 4+733.423, Rt.	4.551	0.40	1.819	1.819	15.0	15.0	170.06	1.02	900	RCP	2.778	1.8	3.15	4.27	1.65	1.77
	Sta. 4+733.423, Rt.	Sta. 4+733.423, Lt.	0.146	0.81	0.118	1.937	5.0	15.0	168.55	1.08	900	RCP	3.198	17.2	3.38	4.52		
	Sta. 4+733.423, Lt.	Sta. 4+733.423, Lt.	0.146	0.81	0.118	3.357	5.0	15.1	168.31	1.87	900	RCP	1.125	8.0	2.00	3.46		
18	Sta. 4+658.000, Rt.	Sta. 4+658.000, Lt.	0.633	0.45	0.285	0.285	5.0	5.0	238.64	0.22	375	RCP	2.483	17.2	0.29	1.97		
	Sta. 4+658.000, Lt.	Sta. 4+698.000, Lt.	0.115	0.81	0.093	0.378	5.0	5.1	237.65	0.30	375	RCP	2.135	38.5	0.27	2.60		
	Sta. 4+698.000, Lt.	Sta. 4+733.423, Lt.	0.052	0.81	0.042	0.578	5.0	5.3	235.32	0.45	450	RCP	1.154	33.2	0.32	2.74		
19	Sta. 4+698.000, Rt.	Sta. 4+698.000, Lt.	0.352	0.45	0.158	0.158	5.0	5.0	238.64	0.12	375	RCP	1.006	17.2	0.18	1.10		
20	Sta. 4+838.000, Rt.	Sta. 4+838.000, Lt.	0.575	0.45	0.259	0.259	5.0	5.0	238.64	0.20	375	RCP	1.948	17.2	0.26	1.79		
	Sta. 4+838.000, Lt.	Sta. 4+788.000, Lt.	0.259	0.81	0.210	0.468	5.0	5.1	237.53	0.37	375	RCP	3.111	48.5	0.32	3.22		
	Sta. 4+788.000, Lt.	Sta. 4+733.423, Lt.	0.081	0.81	0.066	0.724	5.0	5.4	235.16	0.56	600	RCP	0.987	52.6	0.64	2.46		
21	Sta. 4+788.000, Rt.	Sta. 4+788.000, Lt.	0.423	0.45	0.190	0.190	5.0	5.0	238.64	0.15	375	RCP	1.006	17.2	0.18	1.79		

Plotted : 4/6/2004
Drawn By : rsteaman Section : $$$$KDOTGRP$$$$
File : p:\01541\01541 drainage data sheet.dgn

Cook, Flatt & Strobel ENGINEERS, P.A.

KANSAS DEPARTMENT OF TRANSPORTATION

DRAINAGE DATA SHEET