FHWA REG NO.	STATE	PROJECT NO.	YEAR	SHEET NO	TOTAL SHEETS
7	KANSAS	STP-N012(901)	1999	98	131

DRAINAGE ANALYSIS SUMMARY
PAWNEE ROAD IMPROVEMENTS: OAK KNOLL TO WEBB ROAD

Area ID**	Classification	Area	Accum. Area	C5	C100	Flow	Flow	Tc5	Tc100	Tc5	Tc100	I5	I100	Q5	Q100	Inlet Size	Pipe Size	Min Slope	
		ac	ac			Length	Slope	Calc	Calc	min	min	in/hr	in/hr	cfs	cfs	ft	mm	%	
W: Drainage to West Box																			
W0: South ROW to E. End W2		0.41		0.69	0.80	360.00	0.00556	17.03	12.46	17	15	4.31	7.37	1.23	2.44	5.00			Inlet @ W1 + W2
W1: S. of Oak Knoll	Light Industrial	8.66		0.69	0.80	1250.00	0.00960	26.45	19.35	26	19	3.50	6.68	20.91	46.28	End Sect.	600	0.80%	End Section Intake @ Ditch Invert
W2: Apartments/Vacant Land	1/4 ac SF "D"	7.88		0.54	0.76	1066.00	0.00938	33.62	20.41	34	20	3.05	6.53	12.98	39.11	Local			Apartment Local System w/~10 Area Inlets
W1 + W2			16.541	0.62	0.78	1450.00	0.00966	33.39	22.13	33	22	3.05	6.26	31.20	80.86		900	0.60%	Pipe under Capri
W3: Capri St. Area	1/4 ac SF "D"	4.31		0.54	0.76	820.00	0.00976	29.10	17.67	29	18	3.30	7.00	7.67	22.91	Local	600	0.60%	1 - 5 ft inlet Each Side (Exist) Replace Capri System discharge
W1 thru W3			20.847	0.60	0.78	1500.00	0.01000	34.70	22.54	35	23	3.01	6.26	37.79	101.35		900	0.50%	Match Crown of Capri System Pipe
W4: Pawnee S. ROW	ROW	0.68		0.69	0.80	260.00	0.01000	11.90	8.71	15	15	4.56	7.37	2.13	3.99	5			N. End Dalton in Sump - Intercept intervening flow
W1 thru W4			21.524	0.61	0.78	1750.00	0.00971	37.63	24.53	38	25	2.88	6.01	37.51	100.56		900	0.50%	Match Crown of Dalton System
W5: Oak Knoll Area	1/4 ac SF "D"	16.58		0.54	0.76	1900.00	0.01000	43.94	26.68	44	27	2.64	5.79	23.63	72.94	Local			N. End Dalton in Sump
W1 thru W5			38.101	0.58	0.77	1900.00	0.01000	41.05	25.91	41	26	2.72	5.90	59.77	173.05		1050	0.20%	Match Invert of Dalton System
W6: Back Yards Dalton-Linden	1/4 ac SF "D"	4.05		0.54	0.76	1170.00	0.00940	35.20	21.37	35	21	2.98	6.39	6.52	19.68		DITCH		Special grading to ditch inlet in sump use 53 x 34= 0.95m
W7: Towne Parc Area	1/4 ac SF "D"	14.56		0.54	0.76	2000.00	0.01000	45.08	27.37	45	27	2.57	5.69	20.21	62.97	Local			Towne Parc System (Existing)
W8: South Right of Way	ROW	1.03		0.69	0.80	450.00	0.01000	15.66	11.46	16	15	4.56	7.37	3.23	6.04	5			Sump @ 7 x 4 Box US end
W6 thru W8			19.639	0.55	0.76	2000.00	0.01000	44.45	27.20	44	27	2.61	5.69	28.08	85.16				
W1 thru W8			57.740	0.57	0.77	2000.00	0.01000	42.91	26.79	43	27	2.68	5.79	87.73	256.48		7 x 4 RCB	0.50%	100-year design
W9: North Right of Way	ROW	1.44		0.69	0.80	820.00	0.00976	21.31	15.59	21	16	3.90	7.37	3.88	8.51	5	450	0.30%	
A: Webb Rd. S. of Pawnee N. to Co. Yard Drive																			
A1Ea: Co Yd Dr. S. to Pawnee	Light Industrial	3.27		0.69	0.80	650.00	0.00615	22.12	16.19	22	16	3.81	7.18	8.61	18.80	5			Back of inlet open
A1Eb: E Right of Way	ROW	1.01		0.69	0.80	200.00	0.00500	13.15	9.62	15	15	4.56	7.37	3.18	5.97	5			In sump along accel lane
A1E			4.286	0.69	0.80	650.00	0.00615	22.12	16.19	22	16	3.81	7.18	11.27	24.62		600	0.40%	5-year to Pawnee E box: excess east of Webb to Spring Creek
A1W: Co Yd Dr. S. to Pawnee	ROW	1.25		0.69	0.80	200.00	0.00500	13.15	9.62	15	15	4.56	7.37	3.92	7.35	5			In sump along accel lane
A1 Total			5.532	0.69	0.80	650.00	0.00615	22.12	16.19	22	16	3.81	7.18	14.54	31.78		750	0.40%	To Pawnee E System
A2E: Webb S.of Pawnee East	ROW	0.58		0.69	0.80	540.00	0.00444	22.47	16.44	22	16	3.81	7.18	1.51	3.31	5	450	0.30%	Sump
A2W: Webb S.of Pawnee West	ROW	1.08		0.69	0.80	540.00	0.00444	22.47	16.44	22	16	3.81	7.18	2.83	6.18	5			Sump
A2			1.653	0.69	0.80	650.00	0.00462	24.35	17.81	24	18	3.65	7.00	4.16	9.26		450	0.30%	
A			7.185	0.69	0.80	650.00	0.00615	22.12	16.19	22	16	3.81	7.18	18.89	41.27		750	0.30%	
E: Drainage to East Box																			
E1: North Right of Way	ROW	0.47		0.69	0.80	360.00	0.00833	14.88	10.89	15	15	4.56	7.37	1.48	2.78	5	450	0.40%	
E2a: Vacant Parcel	Commercial	3.94		0.69	0.80	700.00	0.01000	19.53	14.29	20	15	4.10	7.37	11.15	23.25	End Sect	600	0.50%	Grade ROW to drain
E2b: South Right of Way	ROW	0.47		0.69	0.80	360.00	0.00833	14.88	10.89	15	15	4.56	7.37	1.48	2.78	5			
E2			4.414	0.69	0.80	700.00	0.01000	19.53	14.29	20	15	4.10	7.37	12.49	26.03		750	0.40%	Pipe under Cypress
E1 + E2			4.886	0.69	0.80	700.00	0.01000	19.53	14.29	20	15	4.10	7.37	13.82	28.81				
A + E1- E2			12.071	0.69	0.80	1300.00	0.01000	26.61	19.47	27	19	3.50	6.68	29.15	64.51		750	0.70%	
E3: South Right of Way @ Laurel	ROW	0.26		0.69	0.80	200.00	0.01000	10.44	7.64	15	15	4.56	7.37	0.81	1.52	5			VG assumed
E4: Laurel S. of Pawnee	1/4 ac SF "D"	1.57		0.54	0.76	310.00	0.00968	17.94	10.89	18	15	4.31	7.37	3.66	8.81	Local			Local system on Laurel
E3 - E4			1.831	0.56	0.77	310.00	0.00968	17.26	10.71	17	15	4.31	7.37	4.43	10.33				
A + E1- E4			13.901	0.67	0.80	1500.00	0.01000	29.77	21.23	30	21	3.30	6.39	30.88	70.66		750	0.70%	
E5Sa: Rreserve Laurel to Cooper	1/4 ac SF "D"	2.39		0.54	0.76	520.00	0.00769	25.09	15.23	25	15	3.57	7.37	4.61	13.39	Local	600	0.10%	Reserve Area Discharge thru 600mm CMP. Constuct MH, Connect to System
A + E1- E4 + E5Sa			16.293	0.65	0.79	1500.00	0.01000	31.13	21.59	31	22	3.19	6.39	33.97	82.28		750	0.70%	
E5Sb: South Right of Way	ROW	0.54		0.69	0.80	280.00	0.01071	12.07	8.83	15	15	4.56	7.37	1.71	3.21	5			
E5N: North Right of Way	ROW	0.51		0.69	0.80	440.00	0.00909	15.98	11.69	16	15	4.56	7.37	1.62	3.03	5	450	0.20%	
E5 ROW			1.059	0.69	0.80	440.00	0.00909	15.98	11.69	16	15	4.56	7.37	3.33	6.24				
A + E1- E5			17.351	0.66	0.79	1940.00	0.00979	35.47	24.68	35	25	2.98	6.01	33.91	82.47		750	0.70%	
E6: Southeast Turtle Run	1/4 ac SF "D"	38.42		0.54	0.76	2130.00	0.01080	45.35	27.53	45	28	2.57	5.69	53.32	166.14	Local			Possible problem area. Use existing local system
A + E1- E6			55.771	0.58	0.77	2130.00	0.01080	42.43	26.75	42	27	2.68	5.79	86.09	248.51		1050	1.56%	
E7: Cypress	1/4 ac SF "D"	2.67		0.54	0.76	230.00	0.01000	15.29	9.28	15	15	4.56	7.37	6.58	14.96				Interior area to box Culvert (2.44 x 1.52)
E8: Southeast Towne Parc	1/4 ac SF "D"	31.58		0.54	0.76	2130.00	0.01080	45.35	27.53	45	28	2.57	5.69	43.82	136.54				Interior area to box Culvert (2.44 x 1.52)
E7 - E8			34.246	0.54	0.76	2130.00	0.01080	45.35	27.53	45	28	2.57	5.69	47.53	148.09				Interior area to box Culvert (2.44 x 1.52)
A + E1- E8			90.017	0.56	0.77	2130.00	0.01080	43.54	27.05	44	27	2.64	5.69	133.63	392.32				Partial flow to RCB
E9: South Right of Way	ROW	1.15		0.69	0.80	460.00	0.01000	15.83	11.58	16	15	4.56	7.37	3.62	6.78	5			
E10: South Right of Way	ROW	0.71		0.69	0.80	270.00	0.01111	11.71	8.57	15	15	4.56	7.37	2.24	4.20	5			
E9 - E10			1.864	0.69	0.80	740.00	0.01081	19.56	14.31	20	15	4.10	7.37	5.27	10.99				
E11: North Right of Way	ROW	0.85		0.69	0.80	740.00	0.01081	19.56	14.31	20	15	4.10	7.37	2.41	5.03	5	450	0.15%	
E9 - E11			2.717	0.69	0.80	740.00	0.01081	19.56	14.31	20	15	4.10	7.37	7.69	16.02		750	0.20%	To west side Cypress
E12: Portion of Towne Parc	1/4 ac SF "D"	10.55		0.54	0.76	1260.00	0.01032	35.41	21.50	35	21	2.98	6.39	16.97	51.22				
E9 - E12			13.264	0.57	0.77	1260.00	0.01032	33.47	20.98	33	21	3.05	6.53	23.09	66.54		750	0.80%	To east side Cypress
A + E1 - E12			103.281	0.56	0.77	2130.00	0.01080	43.45	27.03	43	27	2.64	5.69	153.61	450.29		2.44 x 1.52	**E9 - E10**	100-year design
E13: North Right of Way	ROW	0.56		0.69	0.80	260.00	0.01000	11.90	8.71	15	15	4.56	7.37	1.77	3.31	5			Sump at box
A + E1 - E13			103.843	0.56	0.77	2130	0.01080	43.40	27.01	43	27	2.64	5.69	154.64	452.85			**E9 - E11**	Total D.S. of Pawnee
Total Area		163.03	163.026														**E12:**		

General Watershed Parameters

Soil Classification	HSG	Avg. Calc.	% Slope	% Used	Estimated % of Tot.
Ia	D	0.6	0	0	15
Rd	D	1.72			43
Ta	D	1.68		0	42
	Avg =				100
	Use HSG				

Runoff Coefficients by Land Use

Classification	Description	C5
ROW		0.69
Light Industrial		0.69
Schools		0.51
SF 1/2 ac "D"		0.48
SF 1/3 ac "D"		0.50
SF 1/4 ac "D"		0.51
MF Attached "D"		0.68
HSG "D" 1-4%		0.35

Tc Calculated Using City of Wichita Procedure

Extent of offsite watersheds north of site visually checked. See assumptions in report text.

NO.	DATE	REVISIONS	BY	APP'D
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

PAWNEE AVE.
DRAINAGE ANALYSIS SUMMARY

PROJ. NO. 87 STP-N-0129-01 SEDGWICK COUNTY

MID-KANSAS ENGINEERING CONSULTANTS, INC.
WICHITA, KANSAS

DESIGNED BY: TKM	CHECKED BY: JTC	
DRAWN BY: GJR	DATE: JUNE 1999	SHEET 98 OF 131

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