

Pre-Developed Condition:
 Total Site Area= 7.63 Acres
 Soil Group B
 Average slope of ground=0.20%

Developed Condition:
 Total Site Area= 7.63 Acres
 Building Area= 1.85 Acres
 Parking and other
 ImperVIOUS Area= 2.08 Acres
 Grass Area=3.70 Acres

Area Type	Acres	C-Value				
		2-yr	5-yr	10-yr	50-yr	100-yr
Building area	0.77	0.80	0.85	0.90	0.92	0.93
Finish pvt.	0.65	0.87	0.87	0.88	0.88	0.89
Playground	0.28	0.33	0.35	0.42	0.51	0.55
Grass	5.93	0.16	0.18	0.24	0.32	0.37
Weighted 'C'		0.29	0.31	0.37	0.44	0.48

Area Type	Acres	C-Value				
		2-yr	5-yr	10-yr	50-yr	100-yr
Building area	1.85	0.80	0.85	0.90	0.92	0.93
Finish pvt.	2.08	0.87	0.87	0.88	0.88	0.89
Grass	3.70	0.20	0.22	0.28	0.36	0.41
Weighted 'C'		0.53	0.55	0.59	0.64	0.67

Pre-Developed Drainage Calculations													
Area #	Acres	Tc min	C2	I2	C5	I5	C10	I10	C50	I50	C100	I100	Remark
Total Site	7.63	75	0.29	1.50	0.31	1.95	0.37	2.31	0.44	3.08	0.48	3.42	Draining in to southeast corner of the property.

Developed Drainage Calculations													
Area #	Acres	Tc min	C2	I2	C5	I5	C10	I10	C50	I50	C100	I100	Remark
A	3.50	22.7	0.53	3.10	0.55	3.73	0.59	4.31	0.64	5.63	0.67	6.13	North portion
B	4.13	17.4	0.53	3.61	0.55	4.31	0.59	4.95	0.64	6.44	0.67	7.00	South portion

Area #	Existing Q, cfs				
	Q2	Q5	Q10	Q50	Q100
Total Site	3.32	4.61	6.52	10.34	12.53

Area #	Proposed Q, cfs					*Qout, cfs					Remark
	Q2	Q5	Q10	Q50	Q100	Q2	Q5	Q10	Q50	Q100	
A	5.75	7.18	8.90	12.61	14.37	3.25	4.11	4.77	5.97	6.47	Detention through 12" RCP
B	7.90	9.79	12.06	17.02	19.37						

Critical Duration for Peak outflow=90 mins

Calculation for channel protection Volume (CPV)
 Distance between pipe and road: 1.2 ft
 Post-Developed (14": 24")
 Pre-Developed (14": 24")
 Drainage Area = 7.63 acres
 24hr 1-yr storm = 2.88 inches
 Channel = 0.51
 Water Volume = 0.95 ac-ft
 Water Volume needs to be detained for channel protection: 0.42 ac-ft
 Pipe elevation to detain 1-yr 24 hr storm = 1279.98
 or pool level for channel protection = 1279.98

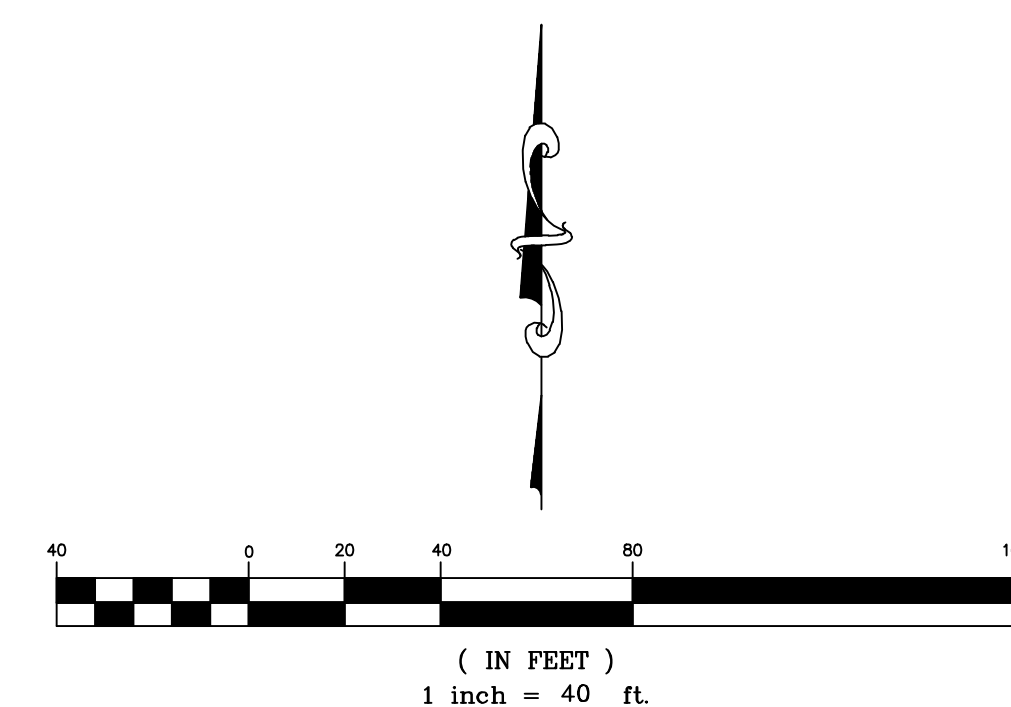
Calculation for water quality volume (WQV=PPV*AVT)
 60th percentile storm event (12 inches): 1.2 inches
 Total area, A = 7.63 acres
 Rational Coef. C = 0.564
 Required Vol. for Water Quality = 0.43 ac-ft
 Pipe elevation for Water Quality = 1280.02
 or pool level for Water Quality = 1280.02

Soil Group: W
 Calculation of R_u
 Coef. for unstructured area, R_{u1} = 0.10
 Coef. for lot cover structures, R_{u2} = 0.20
 Coef. for impervious area, R_{u3} = 3.30
 Weighted R_u = 0.554

Engineer's Note:
 Site drainage calculations developed using the Rational Method for peak runoff. "C" & "I" values established from the City of Wichita Design Criteria and Documentation.

Benchmarks:

- City of Wichita disc on the southwest corner of traffic signal light pole base at the northeast corner of 31st Street South and Seneca. Elevation=1283.22
- 2" steel rod in curb @ east end of the southeast return at Osage and 29th Street South. Elevation=1285.75



**Lewis Magnet School Addition
 Drainage plan
 Wichita, Kansas**

PROJECT NUMBER

kemiller engineering	KEM NO. 09148	FILE drainage	DATE 10/2010	SHEET 1
	DESIGN GP	DRAWN GP	REVISED 11/09/2010	OF 1

516 S. Market, Wichita, KS 67202 316/264-0242