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STORMWATER DETENTION ANALYSIS PECULIAR ELEMENTARY SCHOOL PARKING LOT ADDITION

ALLOWABLE RELEASE RATE CALCULATION

Proposed Parking Lot Area = 0.38 Acres (C= 0.90)

Additional Drainage Area to Parking Lot:

Pavement -	0.10 Acres	(C=0.90)
Grass -	0.08 Acres	(C=0.30)
Total -	0.18 Acres	(C=0.63)

Allowable Pond Release Rate (APRR)= Area of Proposed Parking Lot times 1.8 c.f.s./acre plus additional flow from area adjacent to Proposed Parking Lot that flows through the Parking Lot.

For a Time of Concentration of 10 minutes, the 100-year rainfall intensity is 8.59 in./hr.

$$APRR = 1.8 \text{ c.f.s./acre} \times 0.38 \text{ acres} + 1.25 \times 0.63 \times 8.59 \times 0.18$$

$$APRR = 1.90 \text{ c.f.s.}$$

ORIFICE SIZE CALCULATION

Orifice size, based on the weir equation, $Q = cLH^{3/2}$ where $Q = 1.90 \text{ c.f.s.}$; $c = \text{Weir Coefficient} = 3.00$; $L = \text{Weir Length}$; $H = \text{Pond Depth} = 9 \text{ inches}$.

$$\text{Required Weir Length} = 0.98 \text{ feet}$$



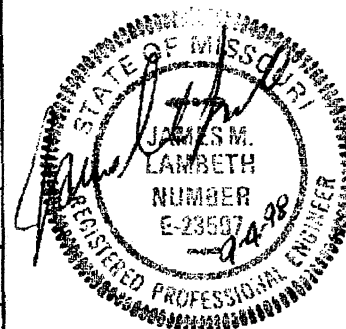
POND INFLOW CALCULATION

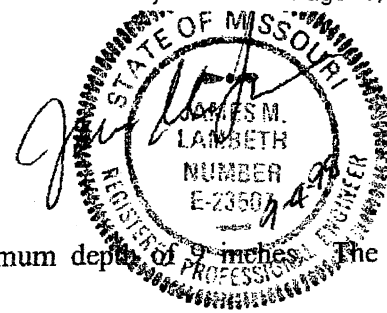
Total Drainage Area to Pond= 0.56 Acres (C=0.81)

100-year, 24 hour Direct Surface Runoff= 6.88 inches

TABULAR UNIT HYDROGRAPH (Tc= 10 min.):

TIME, min.	C.F./Acre/Inch	INFLOW, c.f.s.
0	0	0
10	7.26	0.05
20	14.52	0.09
30	18.15	0.12
40	25.41	0.16
50	32.67	0.21
60	50.82	0.33
70	79.86	0.51
80	203.28	1.31
90	500.94	3.22
100	580.80	3.73
110	399.30	2.56
120	118.76	0.76
130	101.64	0.65
140	72.60	0.47
150	58.08	0.37
160	54.45	0.35
170	47.19	0.30
180	25.41	0.16
190	7.26	0.05
200	0	0





DETENTION POND CHARACTERISTICS

The detention pond shall consist of parking lot storage with a maximum depth of 9 inches. The configuration of the pond shall be as shown on the accompanying sheet.

DEPTH, Feet	STORAGE, c.f.	OUTFLOW, c.f.s.	2S/DT + O, c.f.s.
0	0	0	0
0.75	4,341	1.90	16.37

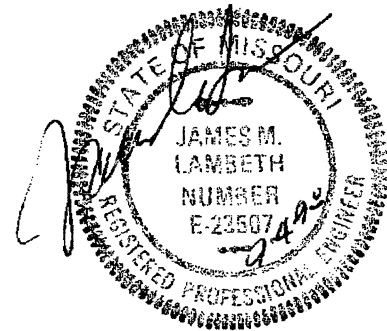
DETENTION POND ROUTING

TIME, min.	INFLOW, cfs	2S/DT - O, cfs	2S/DT + O, cfs	OUTFLOW, cfs
0	0	0	0	0
10	0.05	0.03	0.05	0.01
20	0.09	0.13	0.17	0.02
30	0.12	0.26	0.34	0.04
40	0.16	0.42	0.54	0.06
50	0.21	0.61	0.79	0.09
60	0.33	0.89	1.15	0.13
70	0.51	1.33	1.73	0.20
80	1.31	2.41	3.15	0.37
90	3.22	5.34	6.94	0.80
100	3.73	9.43	12.29	1.43
110	2.56	12.08	15.72	1.82
120	0.76	11.82	15.40	1.79
130	0.65	10.15	13.23	1.54
140	0.47	8.65	11.27	1.31
150	0.37	7.29	9.49	1.10
160	0.35	6.15	8.01	0.93
170	0.30	5.22	6.80	0.79
180	0.16	4.36	5.68	0.66

190	0.05	3.51	4.57	0.53
200	0	2.74	3.56	0.41
210	0	2.10	2.74	0.32
220	0	1.62	2.10	0.24
230	0	1.24	1.62	0.19
240	0	0.96	1.24	0.14
250	0	0.74	0.96	0.11
260	0	0.56	0.74	0.09
270	0	0.42	0.56	0.07
280	0	0.32	0.42	0.05
290	0	0.24	0.32	0.04
300	0	0.18	0.24	0.03
310	0	0.14	0.18	0.02
320	0	0.10	0.14	0.02
330	0	0.08	0.10	0.01
340	0	0.06	0.08	0.01
350	0	0.04	0.06	0.01
360	0	0.00	0.04	0.00

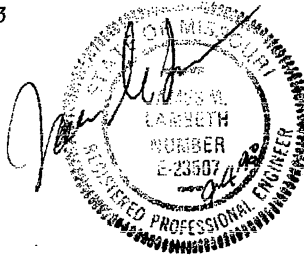
ACTUAL POND RELEASE RATE= 1.82 c.f.s.

ACTUAL POND DEPTH= 0.72 feet



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ELEMENTARY SCHOOL ENTRY DRIVE

SCALE: 1" = 20'

