

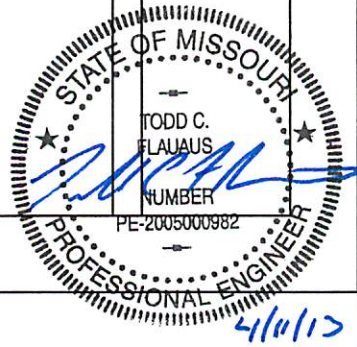


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Project Name: Mercer Parkway Lot 2 As-Built
Project No.: 12-15711

As-Built Detention Basin Volume Calculations

Elevation (Ft)	Area (Ft ²)	A1 + A2 +		Incremental	
		SQRT(A1*A2)		Volume*	
		(Ft.)		(Ft ³)	(Ft ³)
556	136	0		0	0
557	723	1,173		391	391
558	1,264	2,943		981	1,372
559	1,894	4,705		1,568	2,940
560	2,614	6,733		2,244	5,185
561	3,425	9,031		3,010	8,195
561.93	4,389	11,691		3,624	11,819



POND VOLUME EQUATIONS

Incremental volume computed by the Conic Method for Reservoir Volumes

$$\text{Volume} = (1/3) * (\text{EL2}-\text{EL1}) * (\text{Area1} + \text{Area2} + \text{sq.rt.}(\text{Area1}*\text{Area2}))$$

Where: EL1, EL2 = Lower and upper elevations of the increment

Area1, Area2 = Areas computed for EL1, EL2, respectively

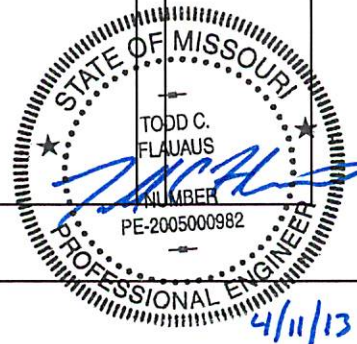
Volume = Incremental volume between EL1 and EL2



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Proposed Design Detention Basin Volume Calculations				
Elevation (Ft)	Area (Ft ²)	A1 + A2 + SQRT(A1*A2) (Ft.)	Incremental Volume* (Ft ³)	
556	260	0	0	0
557	711	1,401	467	467
558	1,233	2,880	960	1,427
559	1,828	4,562	1,521	2,948
560	2,495	6,459	2,153	5,101
561	3,230	8,564	2,855	7,955
562	4,018	10,851	3,617	11,572



POND VOLUME EQUATIONS

Incremental volume computed by the Conic Method for Reservoir Volumes

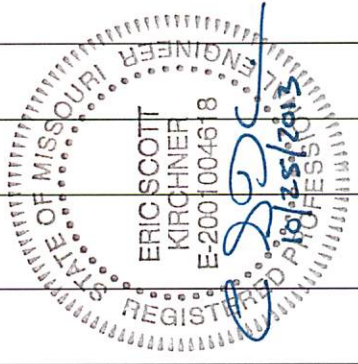
$$\text{Volume} = (1/3) * (\text{EL2}-\text{EL1}) * (\text{Area1} + \text{Area2} + \text{sq.rt.}(\text{Area1}*\text{Area2}))$$

Where: EL1, EL2 = Lower and upper elevations of the increment
Area1, Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

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St. Charles, MO 63301
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Hydraulic Grade Line Computations

Line Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check Ave Sf (%) Enrgy loss (ft)	JL coeff (K)	Minor loss (ft)				
		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Sf (%)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)				EGL elev (ft)	Sf (%)		
1	12	2.87	543.40	544.40	1.00	0.79	3.65	0.21	544.61	0.650	44.533	543.50	544.69	1.00	0.79	3.65	0.21	544.90	0.650	0.650	0.289	1.99	0.41
2	12	0.52	544.20	545.10	0.90	0.20	0.70	0.11	545.21	0.000	57.000	544.70	545.00	0.30**	0.20	2.64	0.11	545.11	0.000	0.000	n/a	0.59	n/a
3	8	0.05	545.47	545.55	0.08*	0.03	1.93	0.03	545.59	0.000	54.291	546.25	546.35	0.10**	0.03	1.50	0.03	546.39	0.000	0.000	n/a	1.00	n/a
4	12	0.21	544.90	545.11	0.21*	0.12	1.79	0.05	545.16	0.398	75.261	545.20	545.41	0.21	0.12	1.80	0.05	545.46	0.405	0.402	0.302	1.00	0.05
5	12	1.61	543.70	545.10	1.00	0.79	2.05	0.07	545.17	0.204	78.000	544.24	545.24	1.00	0.79	2.05	0.07	545.30	0.198	0.201	0.157	1.36	0.00
6	12	0.48	544.44	545.33	0.89	0.74	0.65	0.01	545.33	0.016	117.259	545.00	545.40	0.40	0.29	1.65	0.04	545.44	0.163	0.090	0.105	1.00	0.04
7	12	0.30	538.20	539.40	1.00	0.13	0.38	0.00	539.40	0.007	31.529	540.00	540.23 j	0.23**	0.13	2.26	0.08	540.31	0.571	0.289	n/a	1.00	0.08
8	12	2.12	528.20	529.20	1.00*	0.51	2.70	0.11	529.31	0.355	48.268	532.00	532.62 j	0.62**	0.51	4.13	0.27	532.89	0.706	0.530	n/a	0.65	n/a
9	12	1.24	532.20	532.62	0.42	0.31	3.94	0.18	532.80	0.000	122.000	533.90	534.37	0.47**	0.36	3.42	0.18	534.55	0.000	0.000	n/a	1.00	n/a



Project File: new storm 10-23-13.stm

Number of lines: 9

Run Date: 10/24/2013

Notes: * depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box