

page 1 of 3

Station	Meridian Outlet Mall	Area (acres)	Area (sq. ft.)	C	T ₀ (min)	L ₀ (ft)	L ₁₀₀ (ft)	Q ₅ (cfs)	Q ₁₀ (cfs)	Q ₁₀₀ (cfs)	Area Slope	Pipe Size	Inlets
1	A	7.00		0.95	15	5.21	6.08	8.98	36.7	40.8	59.7	0.16%	42"
2	B	0.40		0.70	15	5.21	6.08	8.98	1.5	1.7	2.5		
3	C	0.39		0.70	15	5.21	6.08	8.98	1.8	2.1	3.2		
4	D	0.82	0.79	0.82	17	4.97	5.79	8.55	3.1	3.7	5.4	0.24%	15"
5	E	0.37	7.79	0.93	20	4.66	5.44	8.23	39.8	39.4	58.2	0.16%	42"
6	F	0.54	8.16	0.93	22	4.49	5.24	8.08	1.7	2.0	3.0		
7	G	8.76		0.70	15	5.21	6.08	8.98	2.0	2.3	3.4		
8	H	7.06		0.62	28	4.09	4.77	7.04	17.3	20.2	29.8	0.12%	36"
9	I	1.12	8.24	0.61	28	4.09	4.77	7.04	20.6	24.0	35.4	0.12%	36"
10	J	8.54	16.78	0.60	30	3.92	4.56	6.79	39.5	45.9	68.4	0.20%	42"
11	K	12.60	23.59	0.60	32	3.73	4.33	6.45	31.4	36.7	54.1	0.26%	48"
12	L	9.19	92.19	0.60	28	4.09	4.77	7.04	30.9	36.1	53.2	0.28%	36"
13	M	3.90		0.70	19	4.76	5.55	8.19	13.0	15.2	22.4		
14	N	7.16		0.70	24	4.34	5.07	7.48	21.8	25.4	37.5		
15	O	4.79		0.80	15	5.21	6.08	8.98	24.0	28.3	41.6		
16			84.46	0.18	35	3.55	4.13	6.16	24.4	27.8	35.6		

Detention basin

Per KHB memo of 5/30/87, Calculations are as follows:
 The proposed lake has a planned surface area of 5.5 acres.
 A 100 year 6 hour storm event is stated as 5.95" of rainfall.
 The C.U.P. contains 2535' x 1290' = 73.6 acres.
 5.95"/12" x 73.6 = 36.5 acre-ft of water if all the storm water were to be contained with no runoff.
 The lake would contain approximately 36 acre-feet along with storage in parking lot, apartment site, and internal street. However, the system is not "closed". Depending on the soil conditions and ground cover, water does percolate. Up to 10% in a development such as proposed.

*NOTE: Present Drainage Plan shows a surface area of 4.8 acres

Per FBN drainage calc's, it will take approximately 35 min. for the peak runoff to arrive at the detention basin.
 A = 84.7 acres
 T₀ = 35 min.
 I₀ = 6.16"/hr
 Q_{peak} 0.18 x 616 x 84.7 = 934.8 cfs
 Total Rainfall 6.16"/hr x 35 min = 3.59 inches?
 Ignore infiltration & other losses
 Q₀ = 84.7 acres x 2.5"/hr = 211.75 acre-feet runoff volume to detention pond

Meridian Outlet Mall
FBN 1/14/85

Box Culverts - 1

Design Date

Q_{max} = 600 cfs

L = 110 feet

z₀ = 0.0012 feet per foot

Allowable HW = 5'

A. Inlet Control

For Q = 600 cfs, R_{sc} = 3.8, HW/Rise = 1.67

Figure 3 indicates Q/Spn = 27. ∴ Spn = 22.2'

Assuming 3 8'x3' culverts. Spn = 24' A Q/Spn = 25

From Fig. 3, HW/Rise = 1.60 ⇒ HW = 4.8' < 5' OK

B. Outlet Control

From Table 5, K_e = 0.2 A = 24' x 3' x 72.4'

For Rise = 3', Spn = 24', Q = 600 cfs, K_e = 0.2, Fig. 4.5 H = 1.5'

TW = 4' Rise = 3' ∴ Culverts are Outlet Controlled

HW/Rise = 1.5' ∴ H = 1.5' + 1.0(0.0012) = 1.57'

Try 3 8'x3', A = 24' x 3' = 72' ∴ H = 1.1'

HW = 1.1' + 4' = 5.1' < 5' OK

Meridian & I-235

The area served by the detention basin and the area draining to the Big Slough will not contribute to the peak flow in the Big Slough since they will all have flap gates.

Meridian Outlet Mall
FBN 1/14/85

Box Culverts - 2

Meridian & I-235 (cont.)

Additional flow will be added by Areas 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 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MERIDIAN OUTLET MALL
(Drainage)

