

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 422.8 cfs

Maximum Flow: 537.1 cfs

Table 1 - Summary of Culvert Flows at Crossing: Crossing 2

Headwater Elevation (ft)	Total Discharge (cfs)	Lt. Sta. 340+46 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
305.00	0.00	0.00	0.00	1
306.84	53.71	53.71	0.00	1
307.91	107.42	107.42	0.00	1
308.82	161.13	161.13	0.00	1
309.63	214.84	214.84	0.00	1
310.38	268.55	268.55	0.00	1
311.08	322.26	322.26	0.00	1
311.75	375.97	375.97	0.00	1
312.32	422.80	422.80	0.00	1
313.05	483.39	483.39	0.00	1
313.71	537.10	537.10	0.00	1
330.00	1378.00	1378.00	0.00	Overtopping

Rating Curve Plot for Crossing: Crossing 2

Total Rating Curve

Crossing: Crossing 2

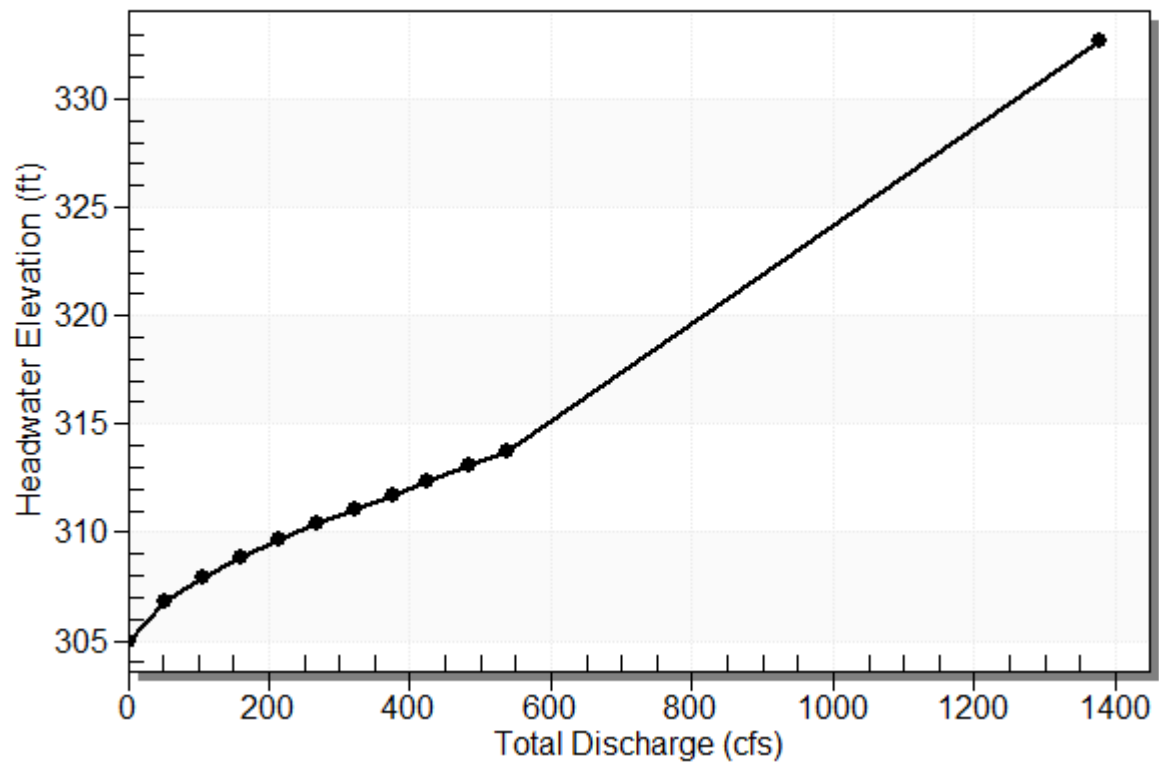


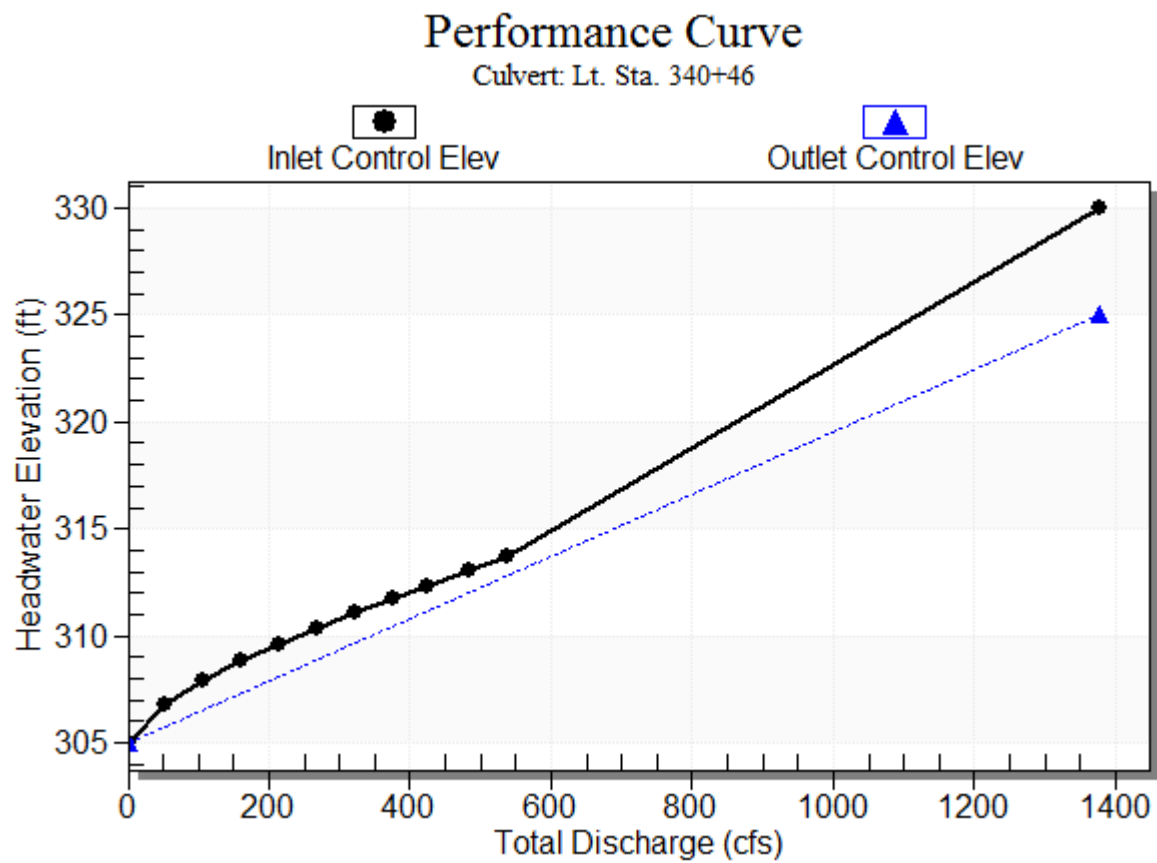
Table 2 - Culvert Summary Table: Lt. Sta. 340+46

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	305.00	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
53.71	53.71	306.84	1.835	0.0*	1-S2n	0.353	1.119	0.436	1.318	15.409	4.075
107.42	107.42	307.91	2.913	0.0*	1-S2n	0.705	1.776	0.735	2.092	18.264	5.134
161.13	161.13	308.82	3.818	0.0*	1-S2n	0.902	2.327	0.982	2.767	20.511	5.823
214.84	214.84	309.63	4.629	0.0*	1-S2n	1.089	2.819	1.218	3.392	22.040	6.334
268.55	268.55	310.38	5.376	0.0*	1-S2n	1.276	3.271	1.451	3.985	23.137	6.739
322.26	322.26	311.08	6.076	0.0*	1-S2n	1.462	3.694	1.675	4.557	24.051	7.072
375.97	375.97	311.75	6.745	0.0*	1-S2n	1.613	4.093	1.893	5.113	24.825	7.354
422.80	422.80	312.32	7.315	0.0*	1-S2n	1.745	4.427	2.082	5.588	25.387	7.567
483.39	483.39	313.05	8.048	0.0*	5-S2n	1.915	4.840	2.322	6.191	26.024	7.808
537.10	537.10	313.71	8.707	0.0*	5-S2n	2.066	5.192	2.530	6.717	26.533	7.996

* Full Flow Headwater elevation is below inlet invert.

Straight Culvert
Inlet Elevation (invert): 305.00 ft, Outlet Elevation (invert): 296.00 ft
Culvert Length: 200.20 ft, Culvert Slope: 0.0450

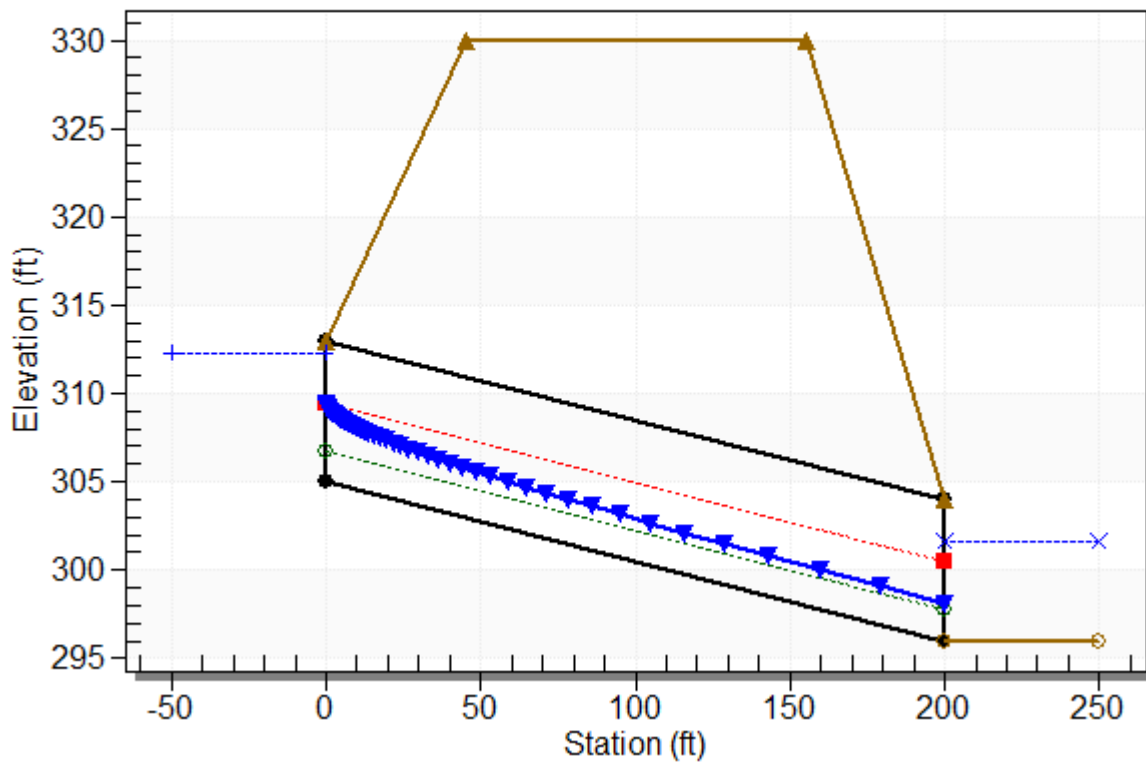
Culvert Performance Curve Plot: Lt. Sta. 340+46



Water Surface Profile Plot for Culvert: Lt. Sta. 340+46

Crossing - Crossing 2, Design Discharge - 422.8 cfs

Culvert - Lt. Sta. 340+46, Culvert Discharge - 422.8 cfs



Site Data - Lt. Sta. 340+46

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 305.00 ft

Outlet Station: 200.00 ft

Outlet Elevation: 296.00 ft

Number of Barrels: 1

Culvert Data Summary - Lt. Sta. 340+46

Barrel Shape: Concrete Box

Barrel Span: 8.00 ft

Barrel Rise: 8.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (90°) Headwall

Inlet Depression: NONE

Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 2)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	296.00	0.00	0.00	0.00	0.00
53.71	297.32	1.32	4.08	0.82	0.63
107.42	298.09	2.09	5.13	1.31	0.63
161.13	298.77	2.77	5.82	1.73	0.62
214.84	299.39	3.39	6.33	2.12	0.61
268.55	299.99	3.99	6.74	2.49	0.59
322.26	300.56	4.56	7.07	2.84	0.58
375.97	301.11	5.11	7.35	3.19	0.57
422.80	301.59	5.59	7.57	3.49	0.56
483.39	302.19	6.19	7.81	3.86	0.55
537.10	302.72	6.72	8.00	4.19	0.54

Tailwater Channel Data - Crossing 2

Tailwater Channel Option: Rectangular Channel

Bottom Width: 10.00 ft

Channel Slope: 0.0100

Channel Manning's n: 0.0375

Channel Invert Elevation: 296.00 ft

Roadway Data for Crossing: Crossing 2

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 330.00 ft

Roadway Surface: Paved

Roadway Top Width: 110.00 ft