

HY-8 Culvert Analysis Report

Crossing Discharge Data

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

Minimum Flow: 0 cfs

Design Flow: 56.57 cfs

Maximum Flow: 63.6 cfs

Table 1 - Summary of Culvert Flows at Crossing: Crossing 13

Headwater Elevation (ft)	Total Discharge (cfs)	Rt. Sta. 275+80 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
259.19	0.00	0.00	0.00	1
259.90	6.36	6.36	0.00	1
260.32	12.72	12.72	0.00	1
260.67	19.08	19.08	0.00	1
260.98	25.44	25.44	0.00	1
261.27	31.80	31.80	0.00	1
261.54	38.16	38.16	0.00	1
261.79	44.52	44.52	0.00	1
262.03	50.88	50.88	0.00	1
262.24	56.57	56.57	0.00	1
262.49	63.60	63.60	0.00	1
280.00	325.63	325.63	0.00	Overtopping

Rating Curve Plot for Crossing: Crossing 13

Total Rating Curve

Crossing: Crossing 13

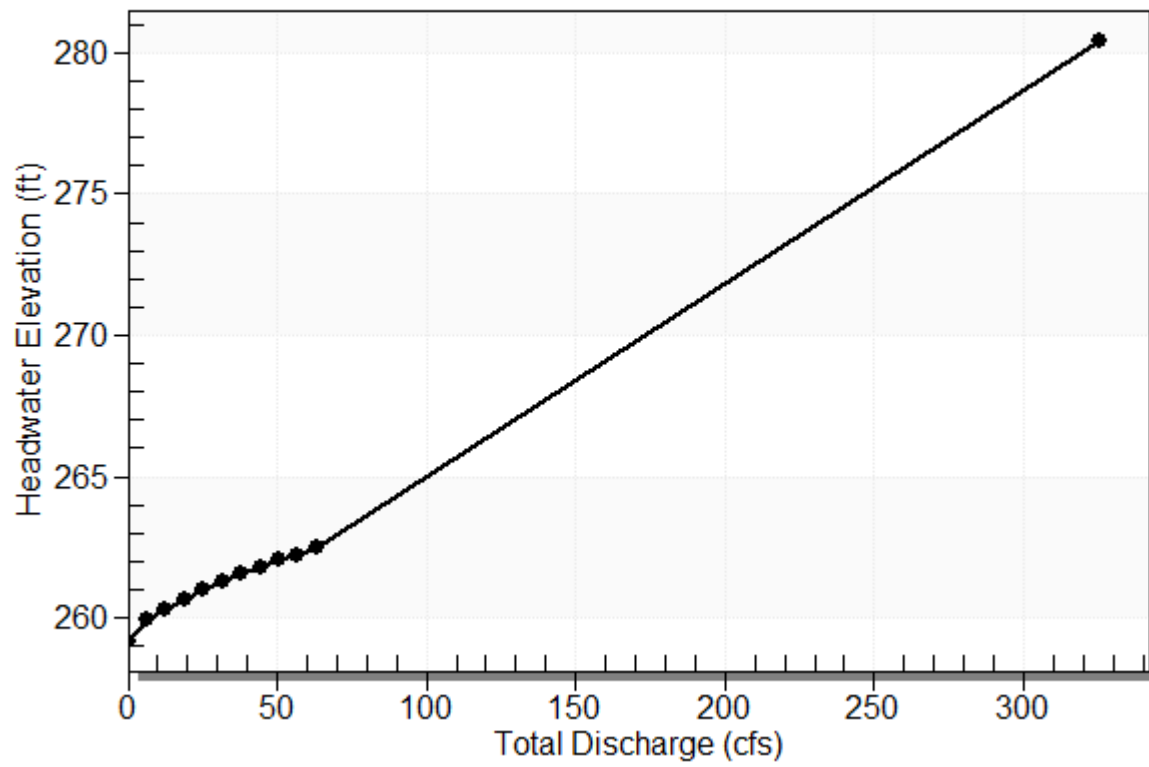


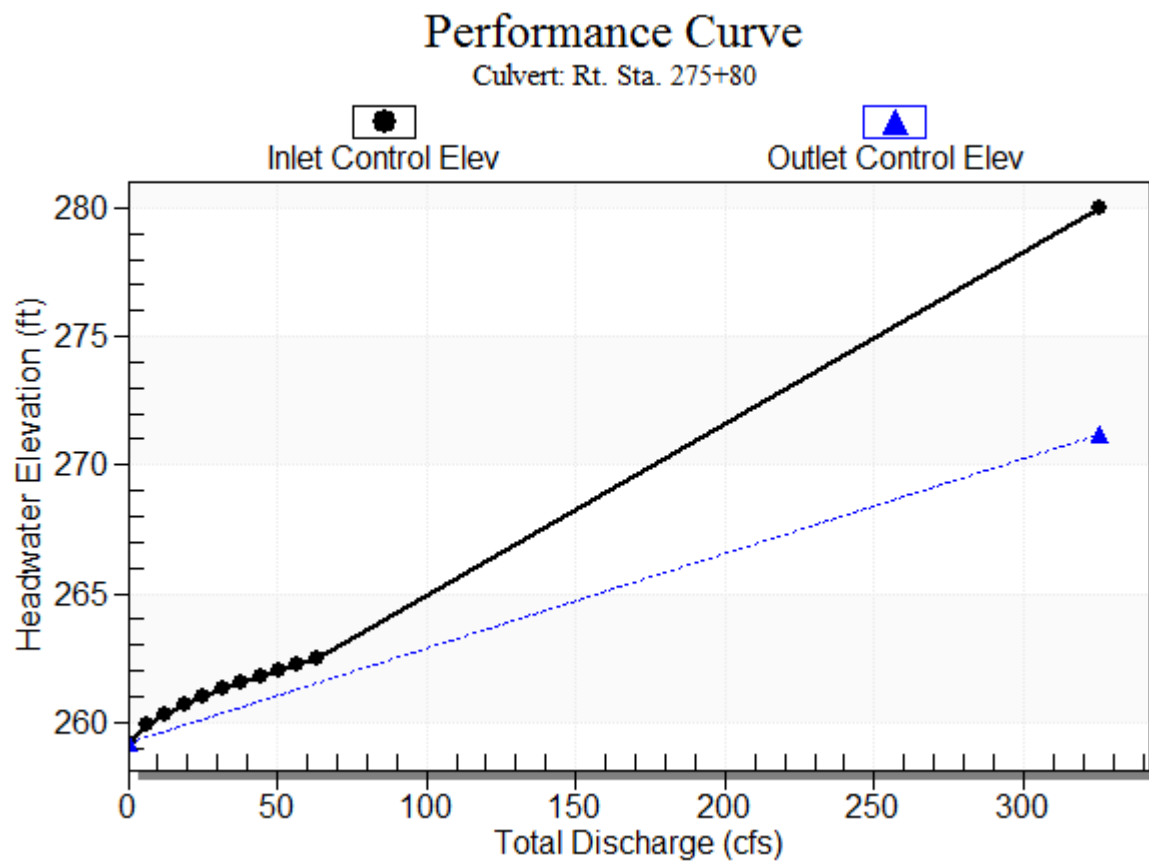
Table 2 - Culvert Summary Table: Rt. Sta. 275+80

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	259.19	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
6.36	6.36	259.90	0.711	0.0*	1-S2n	0.154	0.428	0.154	0.360	10.337	3.379
12.72	12.72	260.32	1.128	0.0*	1-S2n	0.308	0.680	0.308	0.537	10.337	4.248
19.08	19.08	260.67	1.478	0.0*	1-S2n	0.415	0.891	0.415	0.675	11.480	4.828
25.44	25.44	260.98	1.791	0.0*	1-S2n	0.497	1.079	0.497	0.793	12.796	5.272
31.80	31.80	261.27	2.078	0.0*	1-S2n	0.579	1.252	0.579	0.897	13.740	5.636
38.16	38.16	261.54	2.345	0.0*	1-S2n	0.660	1.414	0.660	0.990	14.451	5.948
44.52	44.52	261.79	2.598	0.0*	1-S2n	0.739	1.567	0.739	1.076	15.062	6.220
50.88	50.88	262.03	2.839	0.0*	1-S2n	0.805	1.713	0.805	1.156	15.803	6.464
56.57	56.57	262.24	3.047	0.0*	1-S2n	0.864	1.838	0.864	1.223	16.371	6.662
63.60	63.60	262.49	3.296	0.0*	1-S2n	0.937	1.988	0.961	1.301	16.538	6.886

* Full Flow Headwater elevation is below inlet invert.

Straight Culvert
Inlet Elevation (invert): 259.19 ft, Outlet Elevation (invert): 249.68 ft
Culvert Length: 284.78 ft, Culvert Slope: 0.0334

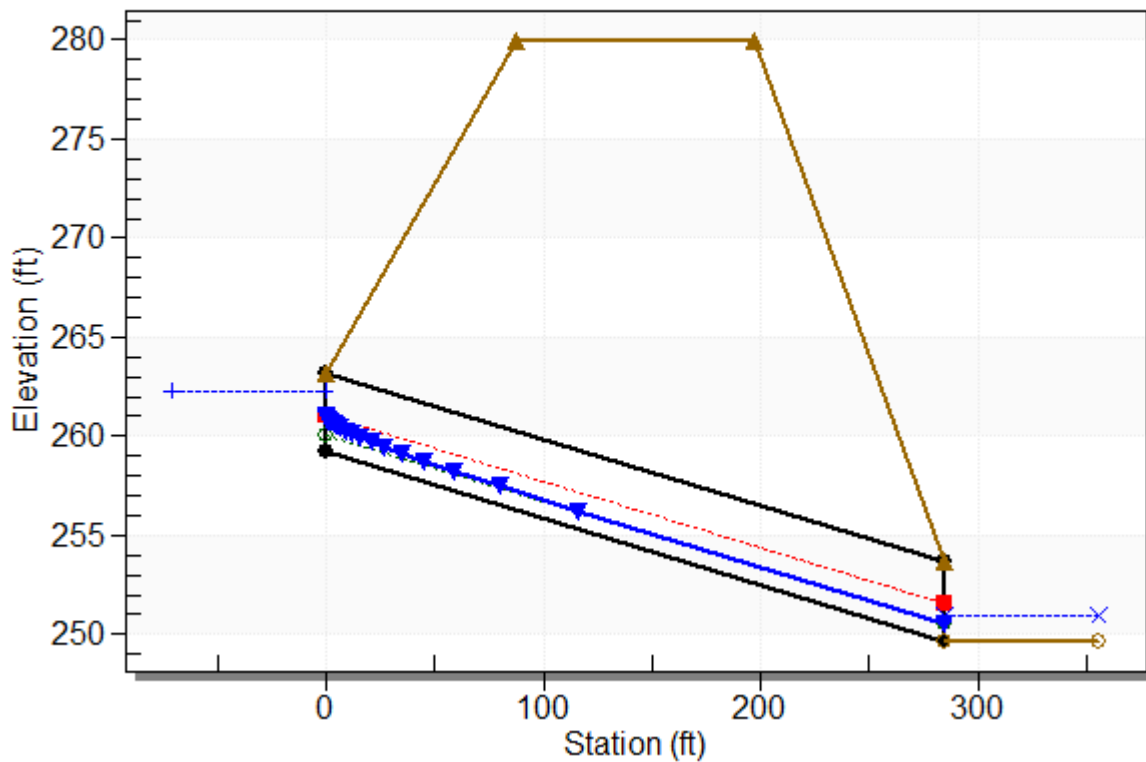
Culvert Performance Curve Plot: Rt. Sta. 275+80



Water Surface Profile Plot for Culvert: Rt. Sta. 275+80

Crossing - Crossing 13, Design Discharge - 56.6 cfs

Culvert - Rt. Sta. 275+80, Culvert Discharge - 56.6 cfs



Site Data - Rt. Sta. 275+80

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 259.19 ft

Outlet Station: 284.62 ft

Outlet Elevation: 249.68 ft

Number of Barrels: 1

Culvert Data Summary - Rt. Sta. 275+80

Barrel Shape: Concrete Box

Barrel Span: 4.00 ft

Barrel Rise: 4.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (90 & 15° flare) Wingwall

Inlet Depression: NONE

Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 13)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	249.68	0.00	0.00	0.00	0.00
6.36	250.04	0.36	3.38	0.79	1.06
12.72	250.22	0.54	4.25	1.17	1.12
19.08	250.36	0.68	4.83	1.48	1.15
25.44	250.47	0.79	5.27	1.73	1.17
31.80	250.58	0.90	5.64	1.96	1.19
38.16	250.67	0.99	5.95	2.16	1.20
44.52	250.76	1.08	6.22	2.35	1.22
50.88	250.84	1.16	6.46	2.52	1.23
56.57	250.90	1.22	6.66	2.67	1.23
63.60	250.98	1.30	6.89	2.84	1.24

Tailwater Channel Data - Crossing 13

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 4.50 ft

Side Slope (H:V): 2.00 (1:1)

Channel Slope: 0.0350

Channel Manning's n: 0.0375

Channel Invert Elevation: 249.68 ft

Roadway Data for Crossing: Crossing 13

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 280.00 ft

Roadway Surface: Paved

Roadway Top Width: 110.00 ft