

HY-8 Culvert Analysis Report

Crossing Discharge Data

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

Minimum Flow: 0 cfs

Design Flow: 962.08 cfs

Maximum Flow: 1036.43 cfs

Table 1 - Summary of Culvert Flows at Crossing: Crossing 15 (Lt. Sta. 265+80) Post

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 15 Post Discharge (cfs)	Roadway Discharge (cfs)	Iterations
232.46	0.00	0.00	0.00	1
234.70	103.64	103.64	0.00	1
236.02	207.29	207.29	0.00	1
237.13	310.93	310.93	0.00	1
238.11	414.57	414.57	0.00	1
239.00	518.22	518.22	0.00	1
239.83	621.86	621.86	0.00	1
240.61	725.50	725.50	0.00	1
241.36	829.14	829.14	0.00	1
242.07	932.79	932.79	0.00	1
242.27	962.08	962.08	0.00	1
251.00	2184.27	2184.27	0.00	Overtopping

Rating Curve Plot for Crossing: Crossing 15 (Lt. Sta. 265+80) Post

Total Rating Curve

Crossing: Crossing 15 (Lt. Sta. 265+80) Post

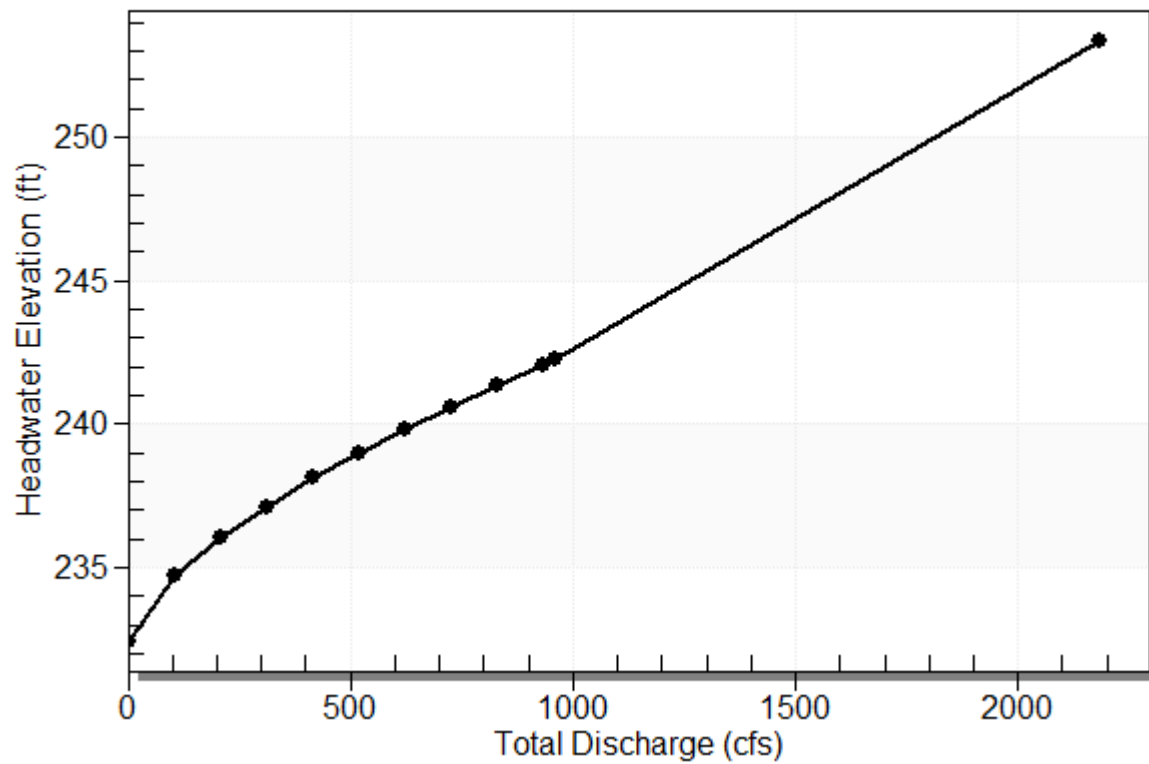


Table 2 - Culvert Summary Table: Culvert 15 Post

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	232.46	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
103.64	103.64	234.70	2.243	0.0*	1-S2n	0.649	1.323	0.817	1.250	10.574	5.718
207.29	207.29	236.02	3.560	0.074	1-S2n	1.201	2.100	1.315	1.852	13.133	7.127
310.93	310.93	237.13	4.665	0.792	1-S2n	1.545	2.752	1.771	2.319	14.630	8.060
414.57	414.57	238.11	5.652	1.467	1-S2n	1.889	3.334	2.196	2.712	15.732	8.773
518.22	518.22	239.00	6.545	2.122	1-S2n	2.224	3.869	2.600	3.057	16.611	9.357
621.86	621.86	239.83	7.370	2.769	1-S2n	2.502	4.369	2.986	3.368	17.357	9.854
725.50	725.50	240.61	8.151	3.415	1-S2n	2.780	4.842	3.358	3.652	18.006	10.291
829.14	829.14	241.36	8.896	4.066	1-S2n	3.059	5.293	3.718	3.915	18.585	10.680
932.79	932.79	242.07	9.614	4.725	1-S2n	3.330	5.725	4.067	4.161	19.111	11.033
962.08	962.08	242.27	9.814	4.913	1-S2n	3.401	5.844	4.165	4.227	19.250	11.127

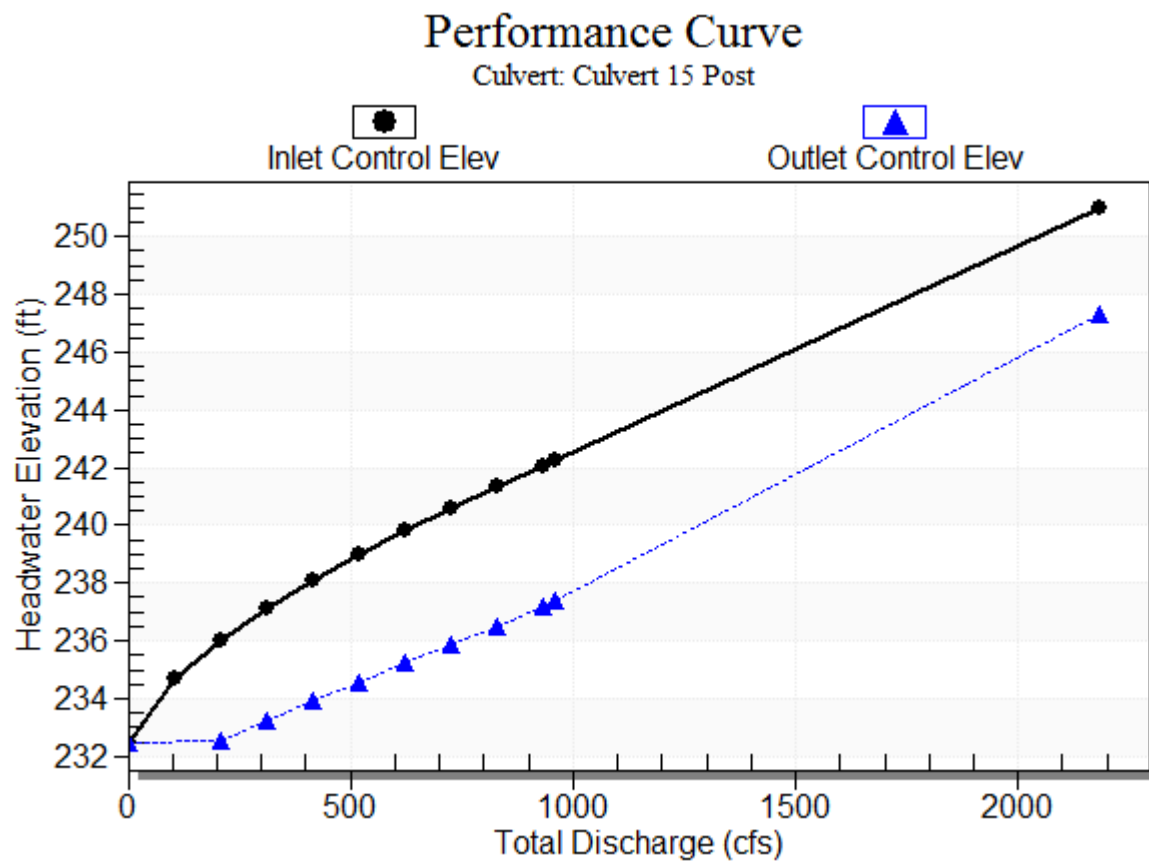
* Full Flow Headwater elevation is below inlet invert.

Straight Culvert

Inlet Elevation (invert): 232.46 ft, Outlet Elevation (invert): 230.38 ft

Culvert Length: 162.62 ft, Culvert Slope: 0.0128

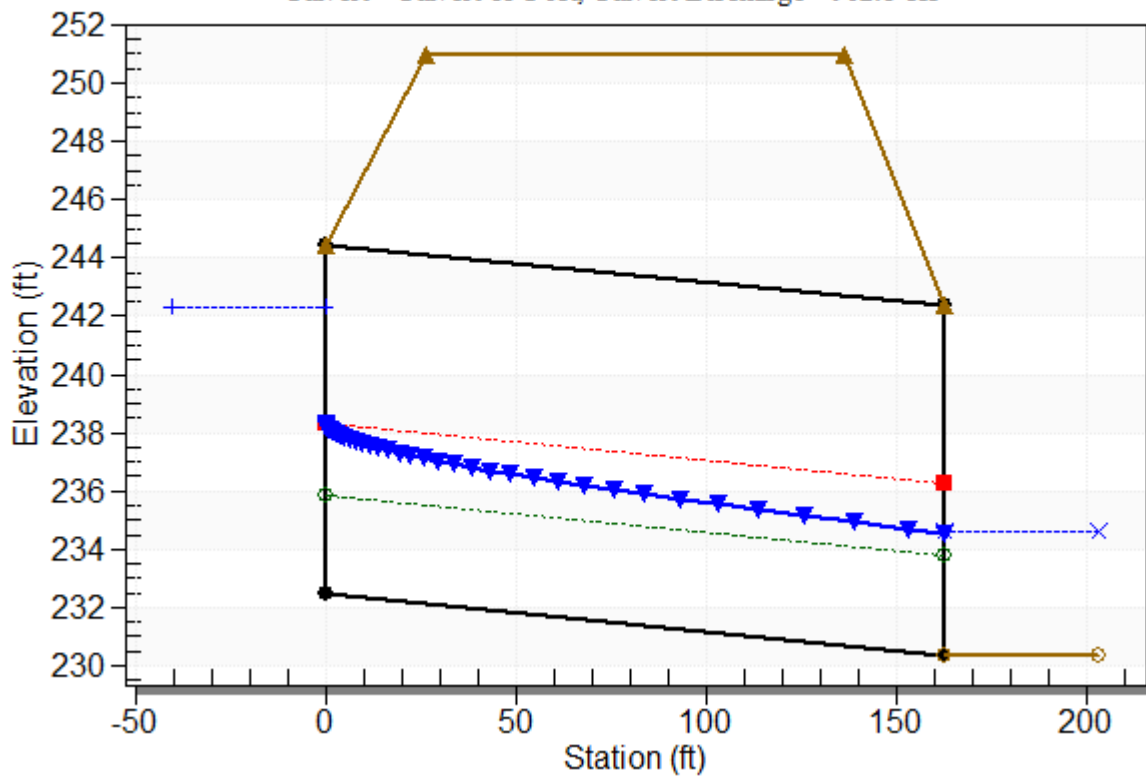
Culvert Performance Curve Plot: Culvert 15 Post



Water Surface Profile Plot for Culvert: Culvert 15 Post

Crossing - Crossing 15 (Lt. Sta. 265+80) Post, Design Discharge - 962.1 cfs

Culvert - Culvert 15 Post, Culvert Discharge - 962.1 cfs



Site Data - Culvert 15 Post

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 232.46 ft

Outlet Station: 162.61 ft

Outlet Elevation: 230.38 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 15 Post

Barrel Shape: Concrete Box

Barrel Span: 12.00 ft

Barrel Rise: 12.00 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 15 (Lt. Sta. 265+80))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	230.38	0.00	0.00	0.00	0.00
103.64	231.63	1.25	5.72	1.56	0.98
207.29	232.23	1.85	7.13	2.31	1.03
310.93	232.70	2.32	8.06	2.89	1.05
414.57	233.09	2.71	8.77	3.38	1.07
518.22	233.44	3.06	9.36	3.82	1.09
621.86	233.75	3.37	9.85	4.20	1.10
725.50	234.03	3.65	10.29	4.56	1.11
829.14	234.29	3.91	10.68	4.89	1.12
932.79	234.54	4.16	11.03	5.19	1.13
962.08	234.61	4.23	11.13	5.28	1.13

Tailwater Channel Data - Crossing 15 (Lt. Sta. 265+80) Post

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 12.00 ft

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

Channel Slope: 0.0200

Channel Manning's n: 0.0375

Channel Invert Elevation: 230.38 ft

Roadway Data for Crossing: Crossing 15 (Lt. Sta. 265+80) Post

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 251.00 ft

Roadway Surface: Paved

Roadway Top Width: 110.00 ft