

HY-8 Culvert Analysis Report

Crossing Discharge Data

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

Minimum Flow: 0 cfs

Design Flow: 514.2 cfs

Maximum Flow: 618.5 cfs

Table 1 - Summary of Culvert Flows at Crossing: Crossing 19

Headwater Elevation (ft)	Total Discharge (cfs)	Rt. Sta. 374+90 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
352.90	0.00	0.00	0.00	1
355.16	61.85	61.85	0.00	1
356.51	123.70	123.70	0.00	1
357.65	185.55	185.55	0.00	1
358.71	247.40	247.40	0.00	1
359.81	309.25	309.25	0.00	1
361.03	371.10	371.10	0.00	1
362.45	432.95	432.95	0.00	1
364.09	494.80	494.80	0.00	1
364.65	514.20	514.20	0.00	1
368.10	618.50	618.50	0.00	1
370.00	668.47	668.47	0.00	Overtopping

Rating Curve Plot for Crossing: Crossing 19

Total Rating Curve

Crossing: Crossing 19

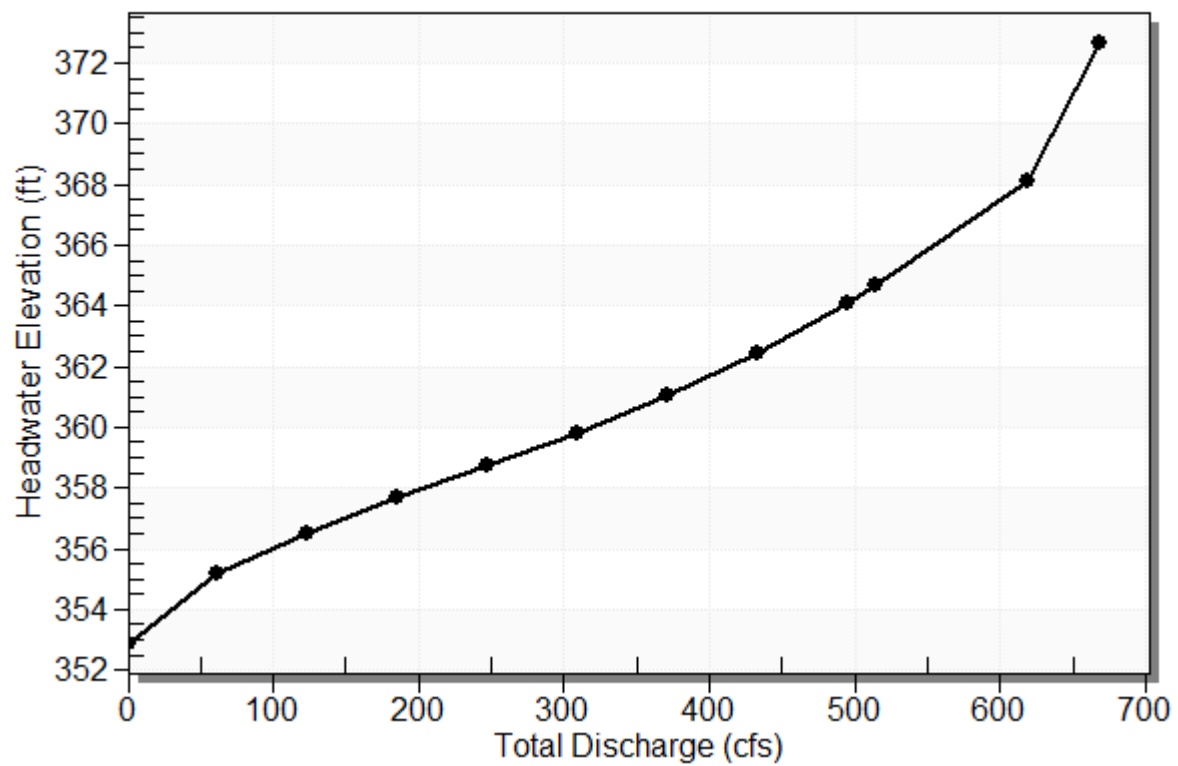


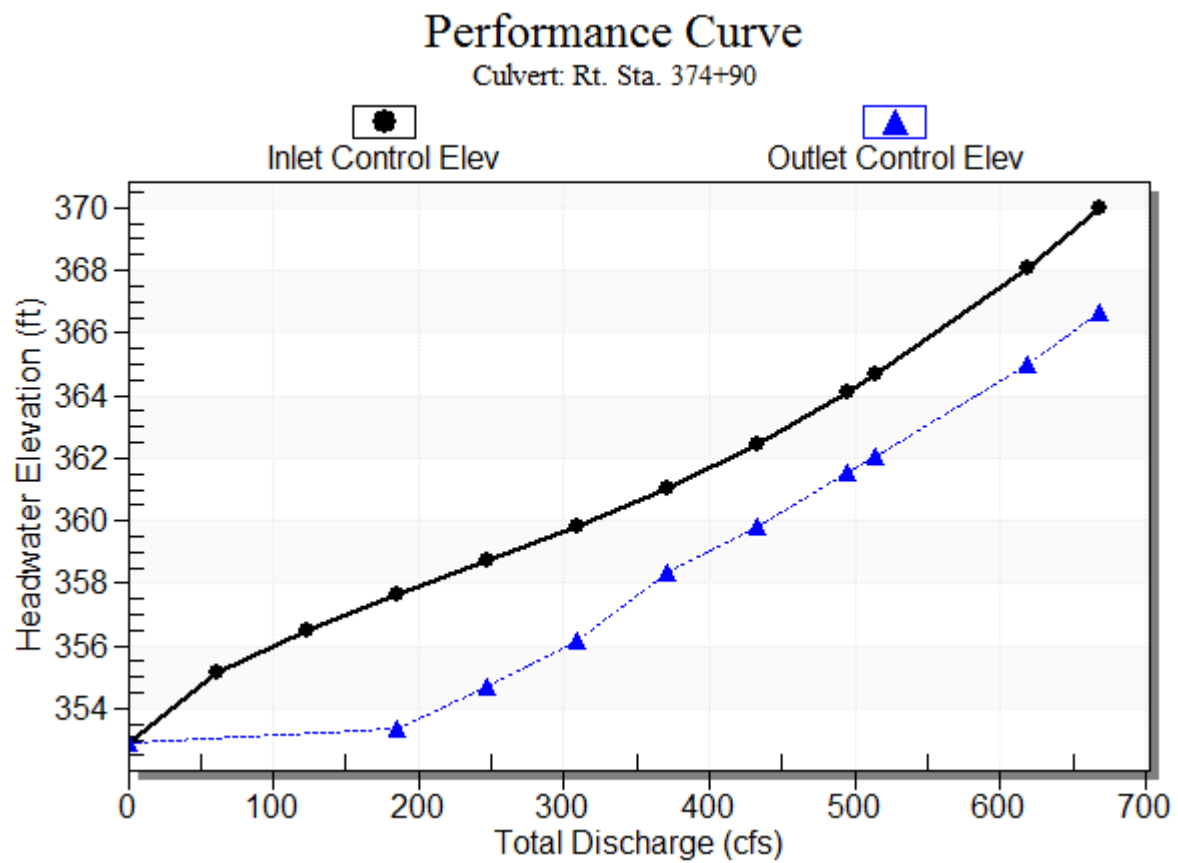
Table 2 - Culvert Summary Table: Rt. Sta. 374+90

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	352.90	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
61.85	61.85	355.16	2.262	0.0*	1-S2n	0.924	1.489	0.924	1.423	11.154	5.539
123.70	123.70	356.51	3.613	0.0*	1-S2n	1.496	2.363	1.541	2.034	13.379	6.705
185.55	185.55	357.65	4.753	0.462	1-S2n	1.994	3.097	2.070	2.489	14.936	7.472
247.40	247.40	358.71	5.810	1.790	1-S2n	2.457	3.752	2.570	2.862	16.043	8.059
309.25	309.25	359.81	6.906	3.257	5-S2n	2.900	4.353	3.048	3.185	16.911	8.541
371.10	371.10	361.03	8.131	5.420	5-S2n	3.329	4.916	3.510	3.471	17.621	8.954
432.95	432.95	362.45	9.546	6.936	5-S2n	3.746	5.448	3.959	3.730	18.226	9.317
494.80	494.80	364.09	11.187	8.632	5-S2n	4.155	5.955	4.397	3.968	18.757	9.641
514.20	514.20	364.65	11.752	9.146	5-S2n	4.283	6.000	4.532	4.039	18.911	9.736
618.50	618.50	368.10	15.203	12.116	5-S2n	4.958	6.000	5.203	4.394	19.814	10.207

* Full Flow Headwater elevation is below inlet invert.

Straight Culvert
Inlet Elevation (invert): 352.90 ft, Outlet Elevation (invert): 349.40 ft
Culvert Length: 287.02 ft, Culvert Slope: 0.0122

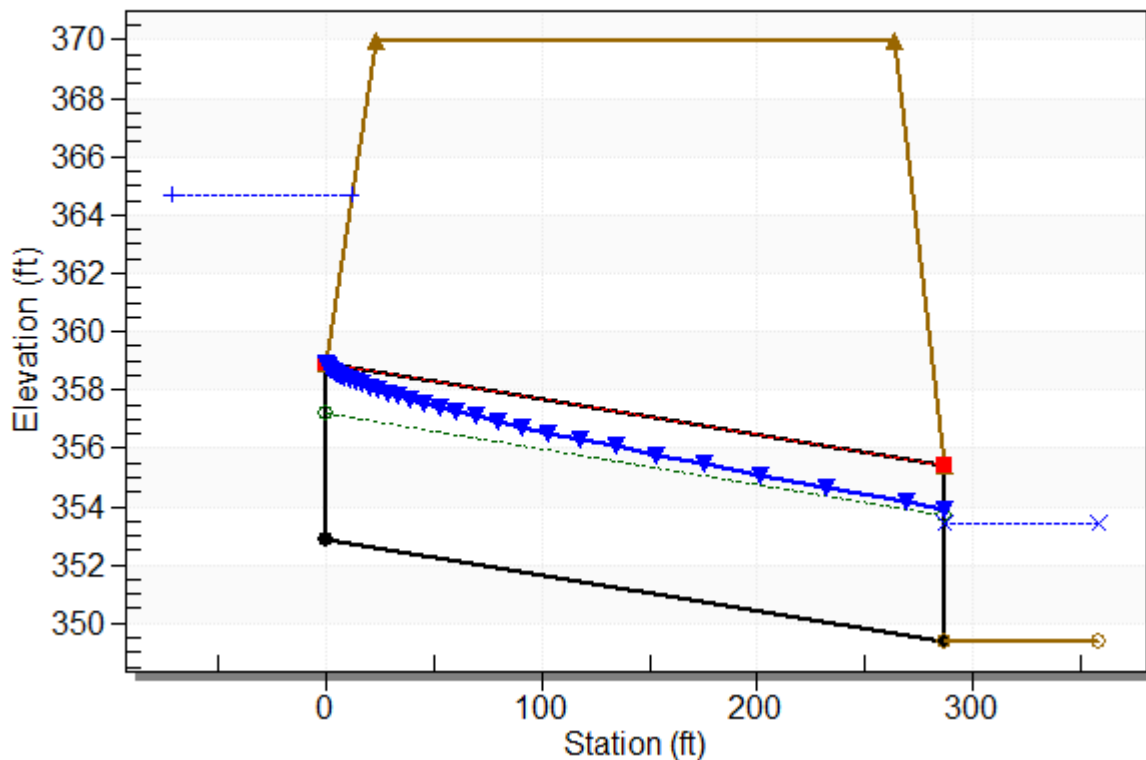
Culvert Performance Curve Plot: Rt. Sta. 374+90



Water Surface Profile Plot for Culvert: Rt. Sta. 374+90

Crossing - Crossing 19 , Design Discharge - 514.2 cfs

Culvert - Rt. Sta. 374+90, Culvert Discharge - 514.2 cfs



Site Data - Rt. Sta. 374+90

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 352.90 ft

Outlet Station: 287.00 ft

Outlet Elevation: 349.40 ft

Number of Barrels: 1

Culvert Data Summary - Rt. Sta. 374+90

Barrel Shape: Concrete Box

Barrel Span: 6.00 ft

Barrel Rise: 6.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (30-75° flare) Wingwall

Inlet Depression: NONE

Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 19)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	349.40	0.00	0.00	0.00	0.00
61.85	350.82	1.42	5.54	1.78	0.96
123.70	351.43	2.03	6.71	2.54	1.00
185.55	351.89	2.49	7.47	3.11	1.02
247.40	352.26	2.86	8.06	3.57	1.04
309.25	352.58	3.18	8.54	3.97	1.05
371.10	352.87	3.47	8.95	4.33	1.07
432.95	353.13	3.73	9.32	4.65	1.07
494.80	353.37	3.97	9.64	4.95	1.08
514.20	353.44	4.04	9.74	5.04	1.09
618.50	353.79	4.39	10.21	5.48	1.10

Tailwater Channel Data - Crossing 19

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 5.00 ft

Side Slope (H:V): 2.00 (2:1)

Channel Slope: 0.0200

Channel Manning's n: 0.0375

Channel Invert Elevation: 349.40 ft

Roadway Data for Crossing: Crossing 19

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 370.00 ft

Roadway Surface: Paved

Roadway Top Width: 240.00 ft