

# HY-8 Culvert Analysis Report

## Crossing Discharge Data

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

Minimum Flow: 0 cfs

Design Flow: 148.6 cfs

Maximum Flow: 194.6 cfs

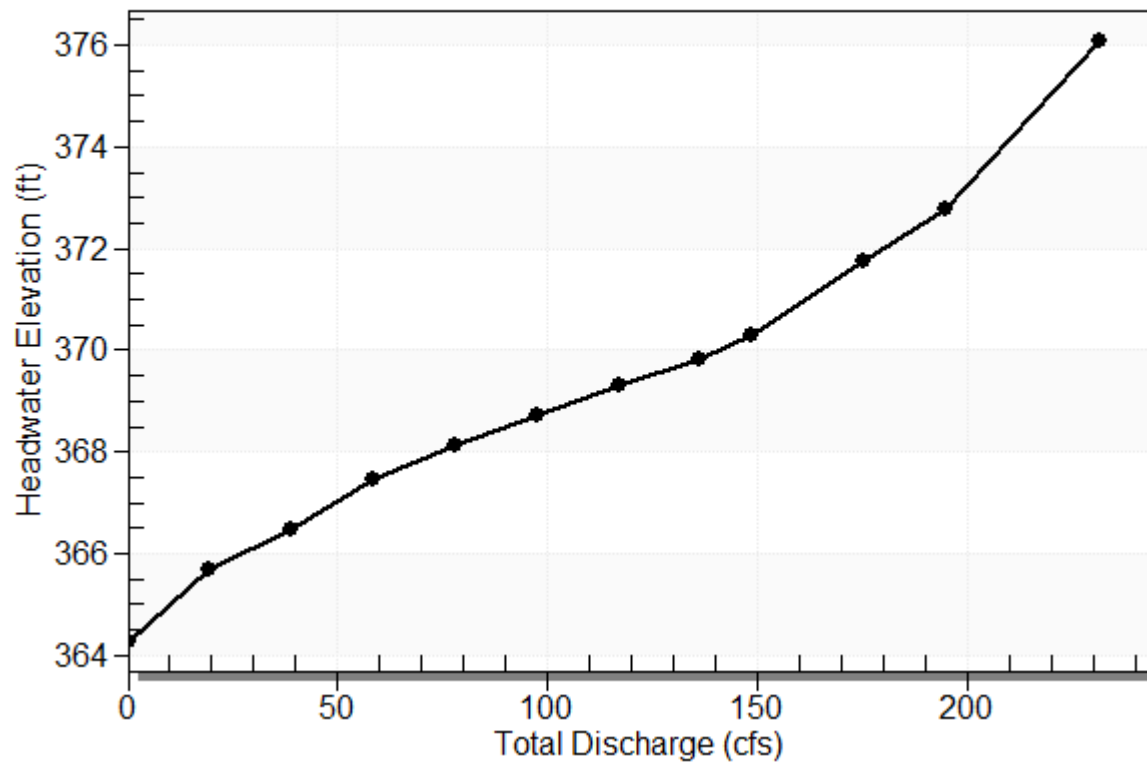
**Table 1 - Summary of Culvert Flows at Crossing: Crossing 6**

Headwater Elevation (ft)	Total Discharge (cfs)	Lt. Sta. 412+60 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
364.29	0.00	0.00	0.00	1
365.67	19.46	19.46	0.00	1
366.49	38.92	38.92	0.00	1
367.47	58.38	58.38	0.00	1
368.12	77.84	77.84	0.00	1
368.73	97.30	97.30	0.00	1
369.29	116.76	116.76	0.00	1
369.83	136.22	136.22	0.00	1
370.30	148.60	148.60	0.00	1
371.76	175.14	175.14	0.00	1
372.79	194.60	194.60	0.00	1
375.00	231.43	231.43	0.00	Overtopping

## Rating Curve Plot for Crossing: Crossing 6

### Total Rating Curve

Crossing: Crossing 6

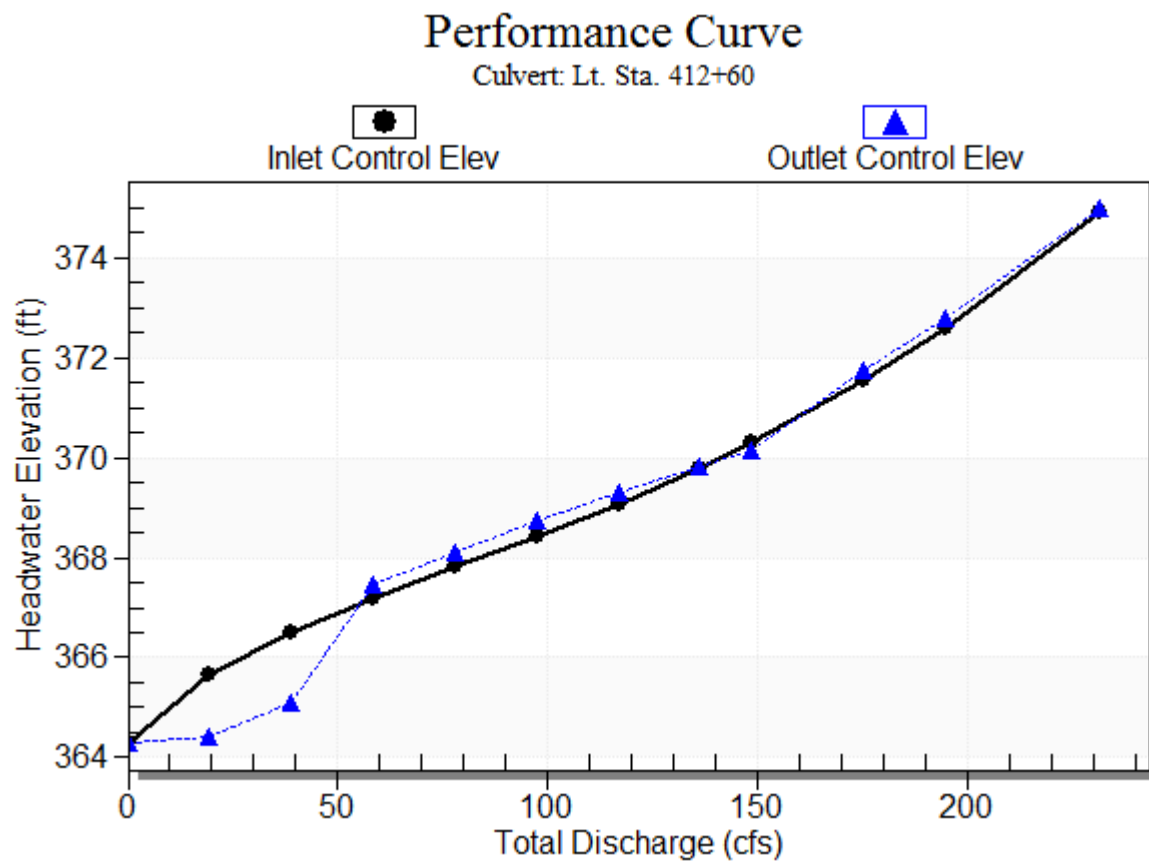


**Table 2 - Culvert Summary Table: Lt. Sta. 412+60**

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	364.29	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
19.46	19.46	365.67	1.382	0.106	1-S2n	0.873	0.902	0.873	0.637	5.570	3.694
38.92	38.92	366.49	2.201	0.796	1-S2n	1.429	1.433	1.429	0.947	6.807	4.624
58.38	58.38	367.47	2.894	3.176	2-M2c	1.924	1.877	1.877	1.188	7.775	5.242
77.84	77.84	368.12	3.517	3.832	2-M2c	2.392	2.274	2.274	1.392	8.557	5.715
97.30	97.30	368.73	4.129	4.435	7-M2c	2.845	2.639	2.639	1.572	9.218	6.103
116.76	116.76	369.29	4.777	5.003	7-M2c	3.288	2.980	2.980	1.734	9.796	6.434
136.22	136.22	369.83	5.498	5.543	7-M2c	4.000	3.302	3.302	1.882	10.312	6.724
148.60	148.60	370.30	6.006	5.875	7-M2c	4.000	3.500	3.500	1.971	10.615	6.891
175.14	175.14	371.76	7.247	7.472	7-M2c	4.000	3.905	3.905	2.148	11.213	7.217
194.60	194.60	372.79	8.299	8.495	6-FFc	4.000	4.000	4.000	2.269	12.163	7.431

\*\*\*\*\*  
Straight Culvert  
Inlet Elevation (invert): 364.29 ft, Outlet Elevation (invert): 363.44 ft  
Culvert Length: 222.00 ft, Culvert Slope: 0.0038  
\*\*\*\*\*

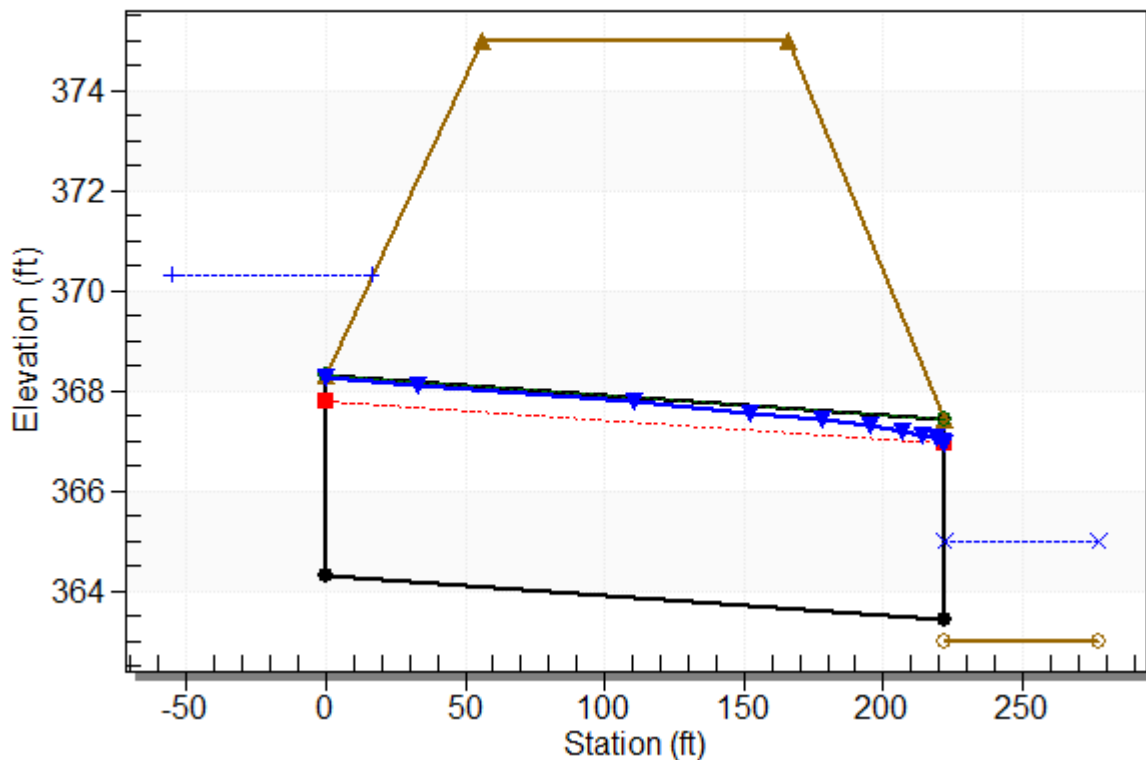
Culvert Performance Curve Plot: Lt. Sta. 412+60



## Water Surface Profile Plot for Culvert: Lt. Sta. 412+60

Crossing - Crossing 6, Design Discharge - 148.6 cfs

Culvert - Lt. Sta. 412+60, Culvert Discharge - 148.6 cfs



### Site Data - Lt. Sta. 412+60

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 364.29 ft

Outlet Station: 222.00 ft

Outlet Elevation: 363.44 ft

Number of Barrels: 1

### Culvert Data Summary - Lt. Sta. 412+60

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 (30-75° flare) Wingwall

Inlet Depression: NONE

**Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 6)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	363.00	0.00	0.00	0.00	0.00
19.46	363.64	0.64	3.69	0.79	0.88
38.92	363.95	0.95	4.62	1.18	0.92
58.38	364.19	1.19	5.24	1.48	0.95
77.84	364.39	1.39	5.72	1.74	0.97
97.30	364.57	1.57	6.10	1.96	0.98
116.76	364.73	1.73	6.43	2.16	0.99
136.22	364.88	1.88	6.72	2.35	1.00
148.60	364.97	1.97	6.89	2.46	1.01
175.14	365.15	2.15	7.22	2.68	1.02
194.60	365.27	2.27	7.43	2.83	1.03



### **Tailwater Channel Data - Crossing 6**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 7.00 ft

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

Channel Slope: 0.0200

Channel Manning's n: 0.0375

Channel Invert Elevation: 363.00 ft

### **Roadway Data for Crossing: Crossing 6**

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 375.00 ft

Roadway Surface: Paved

Roadway Top Width: 110.00 ft