

# HY-8 Culvert Analysis Report

## Crossing Discharge Data

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

Minimum Flow: 0 cfs

Design Flow: 13.3 cfs

Maximum Flow: 14.99 cfs

**Table 1 - Summary of Culvert Flows at Crossing: Crossing 14**

Headwater Elevation (ft)	Total Discharge (cfs)	Rt. Sta. 271+07 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
258.85	0.00	0.00	0.00	1
259.39	1.50	1.50	0.00	1
259.63	3.00	3.00	0.00	1
259.82	4.50	4.50	0.00	1
260.01	6.00	6.00	0.00	1
260.18	7.50	7.50	0.00	1
260.33	8.99	8.99	0.00	1
260.47	10.49	10.49	0.00	1
260.61	11.99	11.99	0.00	1
260.73	13.30	13.30	0.00	1
260.89	14.99	14.99	0.00	1
263.00	29.68	29.68	0.00	Overtopping

## Rating Curve Plot for Crossing: Crossing 14

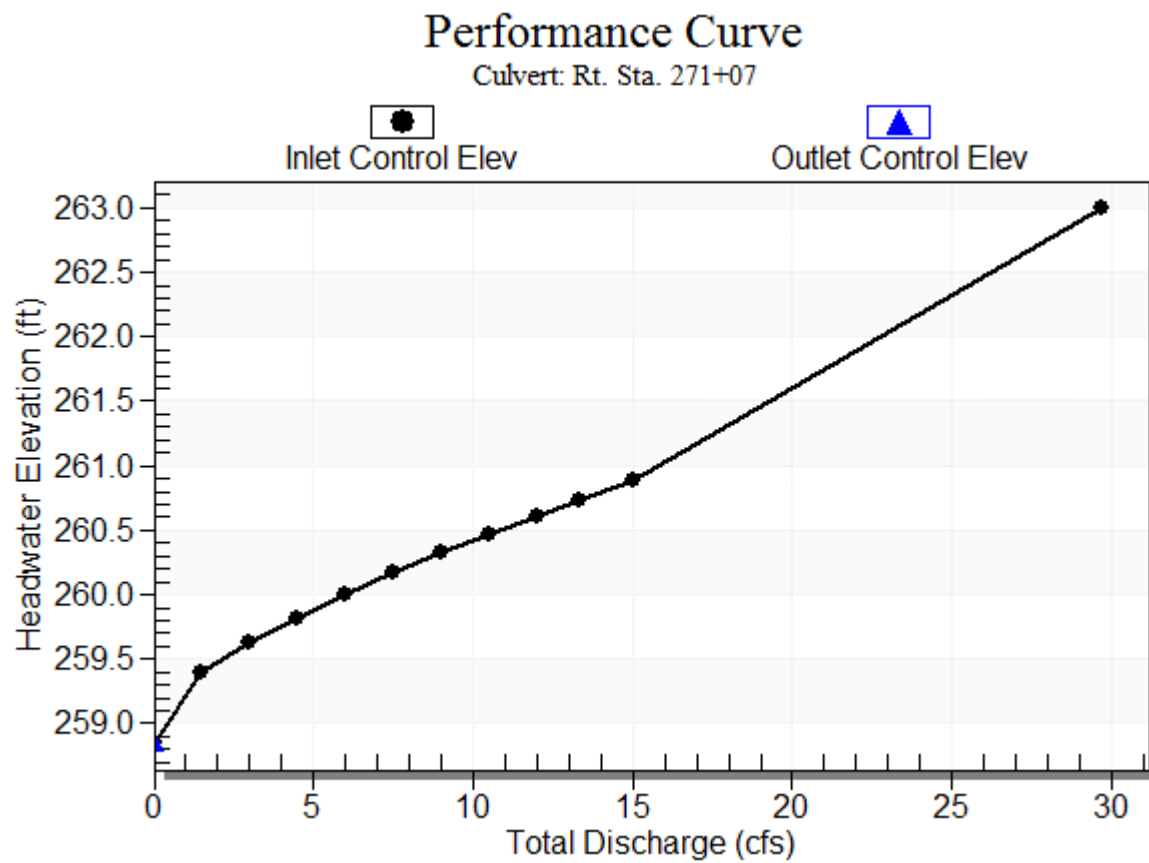
**Table 2 - Culvert Summary Table: Rt. Sta. 271+07**

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	258.85	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
1.50	1.50	259.39	0.542	0.0*	1-S2n	0.206	0.420	0.206	0.267	10.731	2.807
3.00	3.00	259.63	0.781	0.0*	1-S2n	0.286	0.601	0.301	0.424	9.830	3.535
4.50	4.50	259.82	0.971	0.0*	1-S2n	0.365	0.743	0.365	0.561	11.464	4.007
6.00	6.00	260.01	1.158	0.0*	1-S2n	0.414	0.865	0.414	0.688	12.639	4.357
7.50	7.50	260.18	1.326	0.0*	1-S2n	0.463	0.973	0.463	0.809	13.479	4.634
8.99	8.99	260.33	1.478	0.0*	1-S2n	0.512	1.068	0.512	0.925	14.104	4.862
10.49	10.49	260.47	1.620	0.0*	1-S2n	0.557	1.158	0.557	1.038	14.714	5.055
11.99	11.99	260.61	1.758	0.0*	1-S2n	0.594	1.239	0.594	1.149	15.478	5.220
13.30	13.30	260.73	1.879	0.0*	1-S2n	0.626	1.310	0.656	1.244	14.789	5.348
14.99	14.99	260.89	2.042	0.0*	5-S2n	0.667	1.391	0.667	1.364	16.276	5.493

\* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert  
Inlet Elevation (invert): 258.85 ft,    Outlet Elevation (invert): 240.17 ft  
Culvert Length: 296.81 ft,    Culvert Slope: 0.0631  
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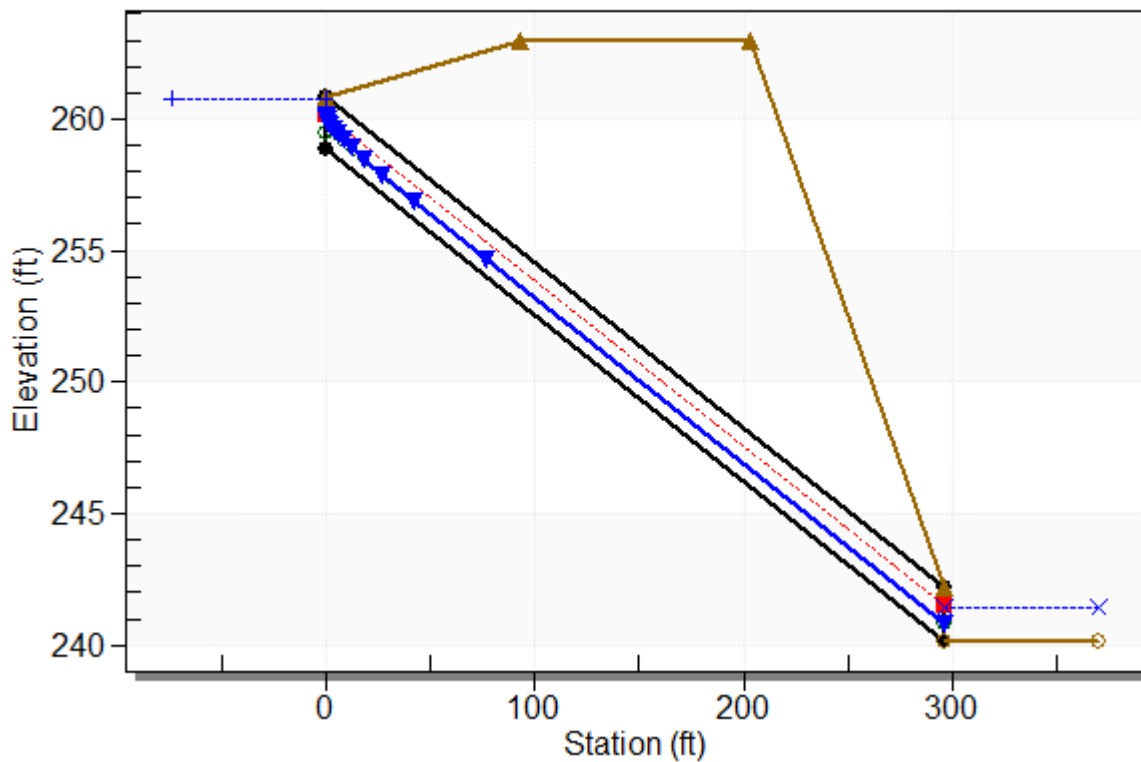
Culvert Performance Curve Plot: Rt. Sta. 271+07



## Water Surface Profile Plot for Culvert: Rt. Sta. 271+07

Crossing - Crossing 14, Design Discharge - 13.3 cfs

Culvert - Rt. Sta. 271+07, Culvert Discharge - 13.3 cfs



### Site Data - Rt. Sta. 271+07

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 258.85 ft

Outlet Station: 296.22 ft

Outlet Elevation: 240.17 ft

Number of Barrels: 1

### Culvert Data Summary - Rt. Sta. 271+07

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Grooved End Projecting

Inlet Depression: NONE



**Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 14)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	240.17	0.00	0.00	0.00	0.00
1.50	240.44	0.27	2.81	0.67	0.96
3.00	240.59	0.42	3.53	1.06	0.96
4.50	240.73	0.56	4.01	1.40	0.94
6.00	240.86	0.69	4.36	1.72	0.93
7.50	240.98	0.81	4.63	2.02	0.91
8.99	241.09	0.92	4.86	2.31	0.89
10.49	241.21	1.04	5.05	2.59	0.87
11.99	241.32	1.15	5.22	2.87	0.86
13.30	241.41	1.24	5.35	3.10	0.85
14.99	241.53	1.36	5.49	3.41	0.83

**Tailwater Channel Data - Crossing 14**

Tailwater Channel Option: Rectangular Channel

Bottom Width: 2.00 ft

Channel Slope: 0.0400

Channel Manning's n: 0.0375

Channel Invert Elevation: 240.17 ft

**Roadway Data for Crossing: Crossing 14**

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 145.00 ft

Crest Elevation: 263.00 ft

Roadway Surface: Paved

Roadway Top Width: 110.00 ft