

HY-8 Culvert Analysis Report

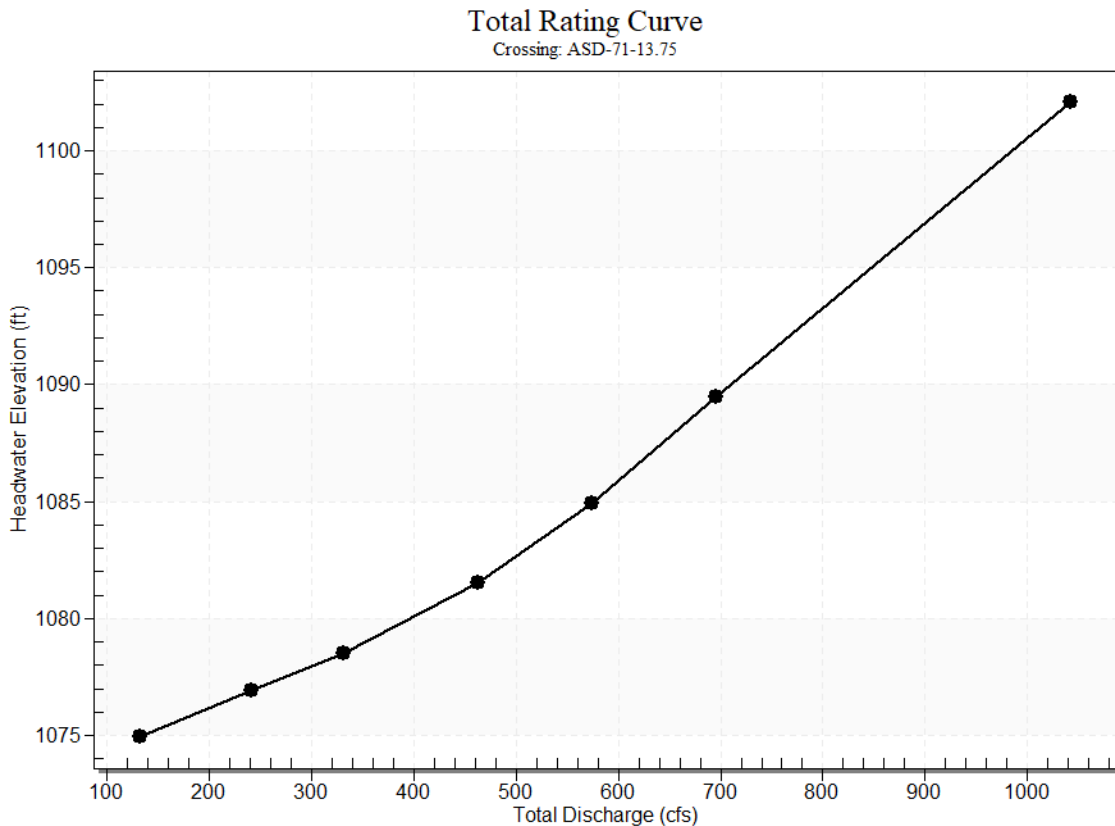
Crossing Discharge Data

Discharge Selection Method: Recurrence

Table 1 - Summary of Culvert Flows at Crossing: ASD-71-13.75

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	EX. 82" CPP Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1074.96	2 year	132.00	132.00	0.00	1
1076.91	5 year	241.00	241.00	0.00	1
1078.51	10 year	331.00	331.00	0.00	1
1081.52	25 year	463.00	463.00	0.00	1
1084.91	50 year	574.00	574.00	0.00	1
1089.49	100 year	695.00	695.00	0.00	1
1101.59	Overtopping	932.83	932.83	0.00	Overtopping

Rating Curve Plot for Crossing: ASD-71-13.75



Culvert Data: EX. 82" CPP

Table 1 - Culvert Summary Table: EX. 82" CPP

Disc harg e Nam es	Total Disc harg e (cfs)	Culv ert Disc harg e (cfs)	Head water Eleva tion (ft)	Inle t Con trol Dep th (ft)	Out let Con trol Dep th (ft)	Fl o w Ty pe	Nor mal Dep th (ft)	Crit ical De pth (ft)	Ou tle t De pth (ft)	Tail water r Dept h (ft)	Outl et Vel ocit y (ft/ s)	Tail water r Velo city (ft/s)
2 year	132.0 0 cfs	132.0 0 cfs	1074. 96	4.23	0.0*	1- S2 n	1.68	2.9 9	1.7 3	0.69	18.0 2	7.50
5 year	241.0 0 cfs	241.0 0 cfs	1076. 91	6.18	0.0*	1- S2 n	2.29	4.1 0	2.4 3	0.99	20.6 7	9.36
10 year	331.0 0 cfs	331.0 0 cfs	1078. 51	7.78	0.0*	5- S2 n	2.72	4.8 2	2.9 2	1.20	22.1 1	10.50
25 year	463.0 0 cfs	463.0 0 cfs	1081. 52	10.7 9	3.90 8	5- S2 n	3.28	5.6 6	3.5 9	1.46	23.7 1	11.82
50 year	574.0 0 cfs	574.0 0 cfs	1084. 91	14.1 8	7.05 2	5- S2 n	3.73	6.1 5	4.1 1	1.65	24.8 8	12.73
100 year	695.0 0 cfs	695.0 0 cfs	1089. 49	18.7 6	11.0 79	5- S2 n	4.22	6.4 6	4.6 6	1.85	26.1 1	13.60

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

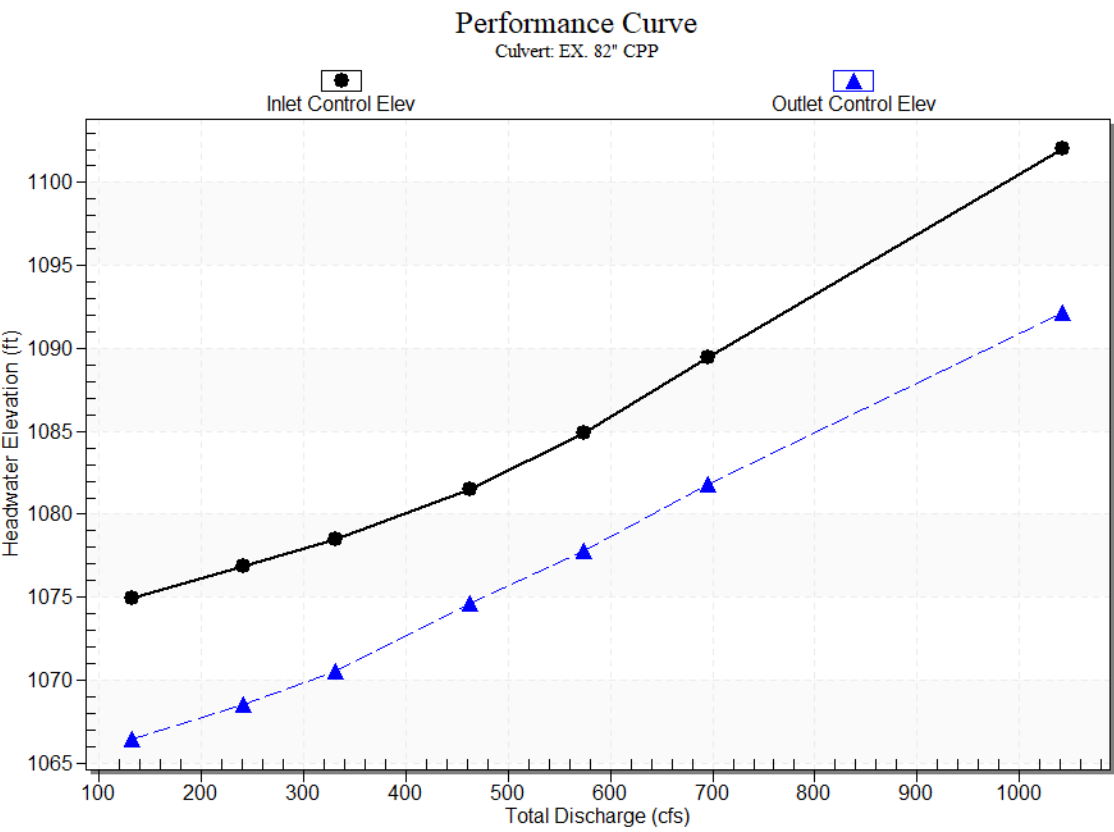
Inlet Elevation (invert): 1070.73 ft,

Outlet Elevation (invert): 1062.99 ft

Culvert Length: 333.42 ft,

Culvert Slope: 0.0232

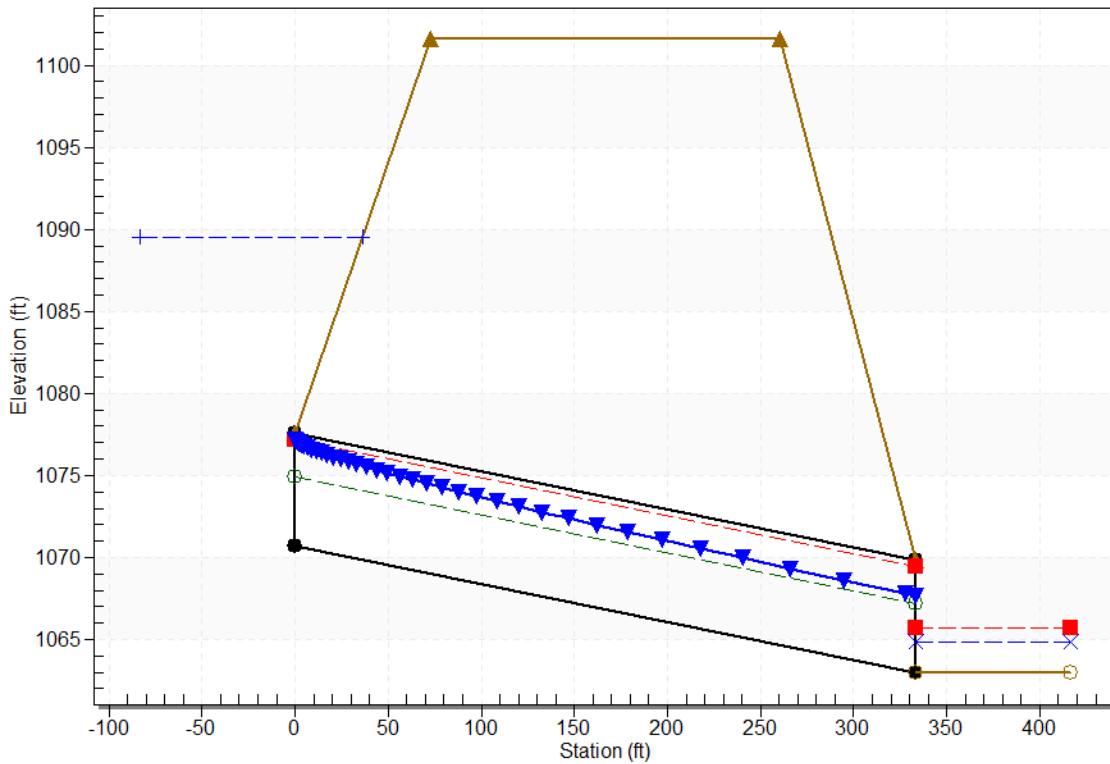
Culvert Performance Curve Plot: EX. 82" CPP



Water Surface Profile Plot for Culvert: EX. 82" CPP

Crossing - ASD-71-13.75, Design Discharge - 695.0 cfs

Culvert - EX. 82" CPP, Culvert Discharge - 695.0 cfs



Site Data - EX. 82" CPP

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1070.73 ft

Outlet Station: 333.33 ft

Outlet Elevation: 1062.99 ft

Number of Barrels: 1

Culvert Data Summary - EX. 82" CPP

Barrel Shape: Circular

Barrel Diameter: 6.83 ft

Barrel Material: Smooth HDPE

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall ($K_e=0.5$)

Inlet Depression: None

Tailwater Data for Crossing: ASD-71-13.75

Table 2 - Downstream Channel Rating Curve (Crossing: ASD-71-13.75)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
132.00	1063.68	0.69	7.50	3.14	1.63
241.00	1063.98	0.99	9.36	4.48	1.72
331.00	1064.19	1.20	10.50	5.41	1.77
463.00	1064.45	1.46	11.82	6.59	1.82
574.00	1064.64	1.65	12.73	7.47	1.85
695.00	1064.84	1.85	13.60	8.35	1.88

Tailwater Channel Data - ASD-71-13.75

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 24.00 ft

Side Slope (H:V): 2.00 (┐:1)

Channel Slope: 0.0725

Channel Manning's n: 0.0400

Channel Invert Elevation: 1062.99 ft

Roadway Data for Crossing: ASD-71-13.75

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 1101.59 ft

Roadway Surface: Paved

Roadway Top Width: 187.00 ft