



UNIVERSAL CULVERT DESIGN

PID : _____ **Date :** _____ **Project :** _____ **Location :** _____ **Designer :** _____

Description : _____

HEADWATER CONTROL CODES: INLET - Inlet Control.
 OUTLET - Outlet Control.
 OUTLET* - Outlet Control with backwater curve used to compute headwater. See Figure III - 7E in HDS 5 for type flow.
 OUTLET** - Outlet Control - See Figure III - 7D in HDS 5 for type flow.
 N/A - Flow is supercritical with low headwater and low tailwater. Control Section is at the inlet.

Inlet Invert Elevation (ft.) : 1132.25 **Outlet Invert Elevation (ft.) :** 1132.25 **Tailwater Elevation (ft.) :** 1134.25 **Overflow Elevation (ft.) :** 1137.82

Allowable Headwater Elevation (ft.) : 1136.82 **or Diameter + 2 ft.** *(whichever is less)*

Pipe Length (ft.) : 48.00 **Culvert Slope (ft./ft.) :** 0.0000 **Design Manning 'n' :** 0.0120

Design Discharge (cfs) : 124.00 **@ 25 yrs.** **Flood Discharge (cfs) :** 178.00 **@ 100 yrs.**

FLOW (cfs.)	PIPE #	CULVERT SIZE	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	OVERFLOW (cfs.)	DESIGN CODE	BURIAL DEPTH (ft.)
124.00	1	43 x 68 in.	1136.5	1136.6	2 - F	9.27	3.58	2.74	0.0120	OUTLET*	0.00	D	0.00
124.00	1	38 x 60 in.	1137.3	1137.2	2 - E	9.66	3.17	2.78	0.0120	INLET	0.00	D - 1	0.00
108.60	1	34 x 53 in.	1138.9	1138.3	2 - E	10.71	2.83	2.61	0.0120	INLET	15.40	D - 2	0.00
124.00	1	48 x 76 in.	1136.1	1136.3	1 - A	8.69	3.64	2.64	0.0120	OUTLET*	0.00	D + 1	0.00
164.00	1	43 x 68 in.	1138.3	1138.1	2 - E	9.97	3.58	3.11	0.0120	INLET	14.00	F	0.00
133.30	1	38 x 60 in.	1140.5	1139.5	2 - E	10.39	3.17	2.85	0.0120	INLET	44.70	F - 1	0.00
108.60	1	34 x 53 in.	1144.1	1141.8	2 - E	10.71	2.83	2.61	0.0120	INLET	69.40	F - 2	0.00
178.00	1	48 x 76 in.	1137.3	1137.4	2 - F	10.22	4.00	3.19	0.0120	OUTLET**	0.00	F + 1	0.00

Entrance Type : No Headwall

Entrance Loss (Ke) : 0.20



CULVERT ANALYSIS

PID : _____ **Date :** _____ **Project :** _____ **Location :** _____ **Designer :** _____

Description : _____

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 N/A - Flow is supercritical with low headwater and low tailwater. Control Section is at the inlet.

Pipe Number : 1 **Inlet Invert Elevation (ft.) :** 1132.25 **Outlet Invert Elevation (ft.) :** 1132.25

Pipe Quantity : 1

Culvert Type : Elliptical **Pipe Length (ft.) :** 48.00 **Culvert Slope (ft./ft.) :** 0.0000

Corrugation Type : _____

Pipe Size : 48 x 76 in.

Design Manning 'n' : (default)

Entrance Type : Half Headwall **Loss Coef. Ke :** 0.2000

FLOW (cfs.)	HEAD LOSS (ft.)	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	BURIED DEPTH (ft.)	TAILWATER ELEVATION (ft.)
40.00	0.88	1134.15	1134.56	1 - A	3.90	3.64	1.44	0.0120	OUTLET*	0.00	1134.25
178.00	1.58	1137.37	1137.43	2 - F	10.22	4.00	3.19	0.0120	OUTLET**	0.00	1134.25



CULVERT ANALYSIS

PID :	Date :	Project :	Location :	Designer :
Description :	<p>INLET - Inlet Control. OUTLET - Outlet Control. OUTLET* - Outlet Control with backwater curve used to compute headwater. See Figure III - 7E in HDS 5 for type flow. OUTLET** - Outlet Control - See Figure III - 7D in HDS 5 for type flow. N/A - Flow is supercritical with low headwater and low tailwater. Control Section is at the inlet.</p>			
HEADWATER CONTROL CODES:				
Pipe Number : 1	Use HW : 0	Inlet Invert Elevation (ft.) : 1132.25	Outlet Invert Elevation (ft.) : 1132.25	
Pipe Quantity : 1				
Culvert Type : Box		Pipe Length (ft.) : 48.00		Culvert Slope (ft./ft.) : 0.0000
Corrugation Type :				
Pipe Size : 6.0 x 3.5 ft.				
Design Manning 'n' : (default)				
Entrance Type : 30 - 75 degrees Wingwalls		Loss Coef. Ke : 0.2000		

FLOW (cfs.)	HEAD LOSS (ft.)	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	BURIED DEPTH (ft.)	TAILWATER ELEVATION (ft.)
254e 124.00	1.46	1135.99	1136.07	1 - A	8.73	3.50	2.37	0.0120	OUTLET*	0.00	1134.25
1004e 178.00	2.14	1137.40	1137.08	2 - E	8.48	3.50	3.01	0.0120	INLET	0.00	1134.25