



UNIVERSAL CULVERT DESIGN

PID : 122339 Date : 11/25/2024 Project : ATB/TRU-CULVERTS-FY26 Location : ATB-45-17.196

Description : Proposed Culvert Design

Designer : MEP

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.) : 783.89 Outlet Invert Elevation (ft.) : 780.02 Tailwater Elevation (ft.) : 781.10 Overflow Elevation (ft.) : 791.00
Allowable Headwater Elevation (ft.) : 791.00 or Diameter + 2 ft. (whichever is less)
Pipe Length (ft.) : 152.00 Culvert Slope (ft./ft.) : 0.0255 Design Manning 'n' : 0.0120
Design Discharge (cfs) : 42.00 @ 25 yrs. Flood Discharge (cfs) : 50.00 @ 50 yrs.

	FLOW (cfs.)	PIPE #	CULVERT SIZE	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	OVER FLOW (cfs.)	DESIGN CODE	BURIAL DEPTH (ft.)
CULVERT TYPE : CIRCULAR SMOOTH				Entrance Type : Half Headwall						Entrance Loss (Ke) : 0.20				
Ex. culvert size is sufficient and will be mimicked with the prop. design.	42.00	1	30 in.	787.90	785.07	2 - E	15.05	1.38	2.17	0.0120	INLET	0.00	D	0.00
	42.00	1	27 in.	788.90	786.65	2 - E	14.90	1.50	2.12	0.0120	INLET	0.00	D - 1	0.00
	42.00	1	24 in.	790.73	789.77	2 - E	13.37	2.00	1.96	0.0120	INLET	0.00	D - 2	0.00
	50.00	1	30 in.	788.84	786.27	2 - E	15.66	1.55	2.30	0.0120	INLET	0.00	F	0.00
	50.00	1	27 in.	790.31	788.54	2 - E	15.30	1.72	2.18	0.0120	INLET	0.00	F - 1	0.00
	43.00	1	24 in.	793.02	793.02	2 - E	13.69	2.00	1.96	0.0120	INLET	7.00	F - 2	0.00
CULVERT TYPE : CIRCULAR CORRUGATED				Entrance Type : Half Headwall						Entrance Loss (Ke) : 0.90				
Corrugated Metal Pipe (2 2/3 x 1/2 in. corrugations)														
	42.00	1	36 in.	787.49	785.68	2 - E	8.87	1.91	2.11	0.0241	INLET	0.00	D	0.00
	42.00	1	30 in.	789.13	790.10	2 - F	9.28	2.50	2.17	0.0244	OUTLET**	0.00	D - 2	0.00
	42.00	1	42 in.	786.96	N/A	1 - C	9.04	1.70	2.02	0.0237	INLET	0.00	D + 1	0.00



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FLOW (cfs.)	PIPE #	CULVERT SIZE	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	OVER FLOW (cfs.)	DESIGN CODE	BURIAL DEPTH (ft.)
50.00	1	36 in.	788.24	787.07	2 - E	9.15	2.17	2.30	0.0241	INLET	0.00	F	0.00
44.30	1	30 in.	790.61	793.39	2 - F	9.64	2.50	2.21	0.0244	OUTLET**	5.70	F - 2	0.00
50.00	1	42 in.	787.37	N/A	1 - C	9.44	1.89	2.21	0.0237	INLET	0.00	F + 1	0.00
Corrugated Metal Pipe (3 x 1 in. corrugations)													
42.00	1	36 in.	787.49	787.83	2 - F	7.91	2.13	2.11	0.0281	OUTLET*	0.00	D	0.00
42.00	1	42 in.	786.96	N/A	1 - C	8.02	1.87	2.02	0.0278	INLET	0.00	D + 1	0.00
50.00	1	36 in.	788.24	788.25	2 - F	8.60	2.50	2.30	0.0281	OUTLET*	0.00	F	0.00
50.00	1	42 in.	787.37	N/A	1 - C	8.35	2.09	2.21	0.0278	INLET	0.00	F + 1	0.00
Corrugated Metal Pipe (6 x 2 in. corrugations)													
42.00	1	60 in.	786.49	N/A	1 - C	6.95	1.73	1.81	0.0332	INLET	0.00	D	0.00
42.00	1	66 in.	786.38	N/A	1 - C	6.93	1.66	1.76	0.0330	INLET	0.00	D + 1	0.00
50.00	1	60 in.	786.76	N/A	1 - C	7.29	1.90	1.98	0.0332	INLET	0.00	F	0.00
50.00	1	66 in.	786.65	N/A	1 - C	7.28	1.82	1.92	0.0330	INLET	0.00	F + 1	0.00
Corrugated Metal Pipe (6 x 2 in. corrugations, Field Paved Invert)													
42.00	1	60 in.	786.49	N/A	1 - C	8.28	1.53	1.81	0.0260	INLET	0.00	D	0.00
42.00	1	66 in.	786.38	N/A	1 - C	8.21	1.47	1.76	0.0260	INLET	0.00	D + 1	0.00
50.00	1	60 in.	786.76	N/A	1 - C	8.70	1.67	1.98	0.0260	INLET	0.00	F	0.00
50.00	1	66 in.	786.65	N/A	1 - C	8.64	1.61	1.92	0.0260	INLET	0.00	F + 1	0.00