

RUN LENGTHS UP TO 50 FEET

PREDICTABLE SERVICE LIFE OF 100+ YEARS

DIAMETERS 12"-120"

METAL CULVERT

"LIGHTWEIGHT PIPE WITH HEAVYWEIGHT PROTECTION"

**METAL
CULVERTS
INC.**

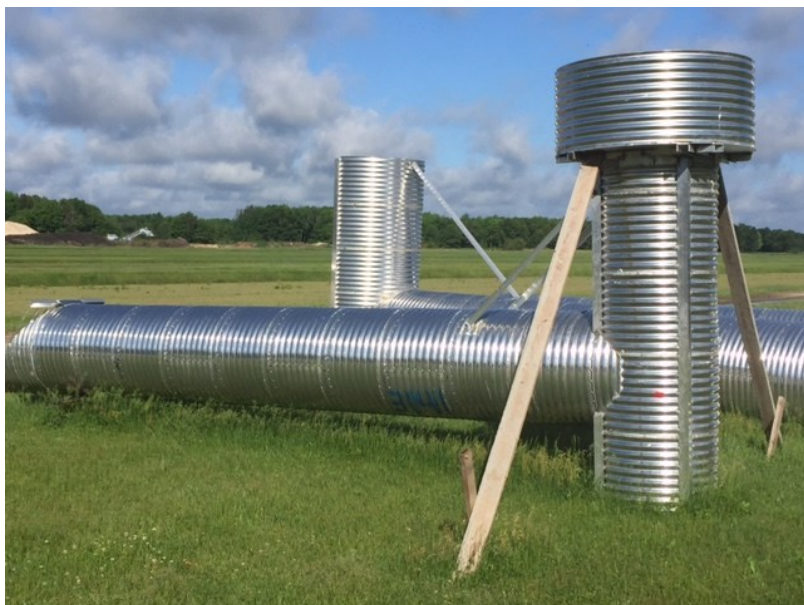
In today's construction environment contractors, municipalities, and design engineers have numerous choices when it comes to selecting pipe and culvert materials for their drainage projects. Metal Culverts, Inc. is proud to offer our customers with another quality alternative -corrugated aluminum pipe (CAP). Whether for storm sewers, culverts, or underground retention/detention systems, CAP offers an option that is made to last. Different from Aluminized Type 2 coating, CAP provides the corrosion resistance and durability of aluminum throughout the entire pipe wall thickness. Corrugated Aluminum Pipe is a product that is lightweight, long lasting, easily fabricated, and completely customizable to your next project. **Metal Culverts, Inc. is able to offer CAP in:**

- **Both Riveted and Helical (Spiral) Construction**
- **Diameters 12" -120"**
- **Round and Arch Profiles**
- **Standard (2-2/3" x 1/2") & 3"x 1" Corrugations**
- **Spiral Rib Profile (Mannings "n" value of .012)**
- **Fabricated Water Control Structures**
- **16 through 8 Gauge material thickness**



"In nearly all situations under our rock roads, Fayette County is using Aluminum CMP for 24" and above. You cannot beat the value proposition when price and the expected service life are factored in."

Joel D. Fantz, P.E.
Fayette County Iowa Engineer



Strength & Durability

Corrugated Aluminum Pipe (CAP) gains much of its durability and corrosion resistance from the aluminum alloys it is manufactured from. CAP is constructed from two metalurgically bonded aluminum alloys. The core material for CAP is alloy 3004 that is clad on both sides with alloy 7072. Combined, these alloys create a material that provides superior strength and corrosion resistance. As an additional barrier against corrosion and abrasion, CAP forms a tough oxide film on its surface when exposed to air that builds over time and is very difficult to remove. If damaged, the film is "self healing" and will rapidly redevelop. These layers of protection create an extremely durable product that gives CAP a service life expectancy of **100+ years** in select soil/water environments with pH values ranging from 4-9 and resistivity readings 500 ohm's and greater. Studies documenting the durability and life expectancy of CAP have been completed by numerous state and federal agencies.

Economical

When comparing Corrugated Aluminum Pipe (CAP) to HDPE pipe and reinforced concrete pipe (RCP) in storm sewer, culvert, and retention/detention applications, CAP offers numerous economic advantages:

- CAP weighs approximately 1/35 the weight of RCP and 1/3 the weight of steel culverts providing significant advantages in ease of installation and lower freight costs. With its lighter weight, CAP does not require special or heavy equipment at your jobsite for loading/unloading product and pipe installation.
- Longer run lengths save installation time, require fewer joints, reduce material waste with the ability to order CAP in exact run lengths, and increase accuracy in pipeline alignment.
- Lower excavation costs (reduced trench widths and depths) due to smaller outside diameter dimensions of CAP.
- Easy field and shop fabrication that requires no specialized tools or protective treatment when completed.
- Several connecting options available that provide positive joint connections. Where soil and water tight joints are required, gasket material is available.

"In Atchison county we were experiencing earlier than anticipated replacements of our galvanized corrugated metal pipes due to the highly corrosive nature of our soils. As a county, we decided to install corrugated aluminum pipe for all culvert applications up to 24" diameter. When we compared an aluminized coating to the 100% aluminum alloy construction of CAP, we felt the aluminum pipe provided better value and were pleased with the performance in the installations we had completed"

*Matt Dorssom
Former Road & Bridge Supervisor
Atchison County Kansas*



Table 1: AASHTO and ASTM Specification Reference

Specification	AASHTO	ASTM
Material	M197	B744
Pipe	M196	B745
Design	Section 12	B790
Installation	Section 26	B788

TABLE 2: HANDLING WEIGHTS AND COVER LIMITS FOR ROUND CORRUGATED ALUMINUM PIPE*

Corrugation		Weight (Lbs/Lineal Ft.)				Minimum Cover (Ft)		Maximum Cover (Ft.)			
2-2/3 x 1/2	3x1	Gage				HS-20	Construction Vehicle	Gage			
		16	14	12	10			16	14	12	10
12		3.2	4.0	5.5		1.0	2.0	113	142	200	
15		3.9	4.9	6.8		1.0	2.0	94	118	166	
18		4.7	5.9	8.1		1.0	2.0	75	94	133	
21		5.4	6.8	9.4		1.0	2.0	65	82	116	
24		6.2	7.8	10.7	13.8	1.0	2.0	56	71	99	128
30	30	7.8 8.9	9.6 11.2	13.4 15.5	17.1 19.9	1.0 1.0	2.0 2.0	45 52	56 65	79 91	102 118
36	36	10.7	11.5 13.4	16.0 18.5	20.5 23.7	1.0 1.0	2.0 2.0	43	47 54	66 76	85 98
42	42	12.4	15.5	18.6 21.5	23.8 27.5	1.0 1.0	2.0 2.5	36	46	56 65	73 84
48	48	14.1	17.7	21.2 24.5	27.2 31.4	1.0 1.0	2.0 2.5	32	40	49 57	63 73
54	54	15.8	19.9	23.8 27.5	30.5 35.2	1.0 1.0	2.0 3.0	28	35	43 50	56 65
60	60	17.6	22.0	30.5	33.9 39.0	1.0 1.0	2.0 3.0	25	32	45	50 58
66	66	19.3	24.2	33.5	37.2 42.9	1.0 1.0	2.0 4.0	19	24	35	46 46
	72		26.3	36.5	46.7	1.5	3.0		26	37	48
	78		28.5	39.5	50.5	1.5	3.0		24	34	44
	84		30.7	42.5	54.3	1.5	3.5		22	31	41
	90			45.4	58.2	1.5	3.5			29	38
	96			48.4	62.0	1.5	3.0			27	36
	102			51.4	65.8	2.0	3.5			25	33
	108			54.4	69.7	2.0	3.5			24	31
	114			57.4	73.5	2.0	4.0			22	29
	120			60.4	77.3	2.0	4.0			21	28

Table 3: Cover Limits for Arched Corrugated Aluminum Pipe***Aluminum Arch Profile Standard Corrugation**

Round Equilant	Span x Rise (inches)	Minimum Cover (Ft)		Minimum Material Gauge	Maximum Cover (Ft)
		HS 20	Const. Vehicle		
15	17 x 13	1	2	16	15
18	21 x 15	1	2	16	15
21	24 x 18	1	2	16	14
24	28 x 20	1	2	14	14
30	35 x 24	1	2	14	13
36	42 x 29	1	2	12	13
42	49 x 33	1	2.5	12	12
48	57 x 38	1	3	10	12
54	64 x 43	1	3	10	11

Aluminum Arch Profile 3x1 Corrugation

Round Equilant	Span x Rise (Inches)	Minimum Cover (Ft)		Minimum Material Gauge	Maximum Cover (Ft)
		HS 20	Const. Vehicle		
54	60 x 46	1.00	2.50	14	29
60	66 x 51	1.00	2.50	14	25
66	73 x 55	1.25	3.00	14	22
72	81 x 59	1.50	3.00	12	29
78	87 x 63	1.50	3.00	12	26
84	95 x 67	1.50	3.50	12	24
90	103 x 71	1.75	3.50	10	34
96	112 x 75	2.00	3.50	10	31

***NOTES:**

- Depths and weights subject to inquiry
- Weights and cover limits listed are for helical pipe—riveted pipe values may vary slightly
- Cover limits are based on proper installation and backfill. For proper installation and backfill guidelines consult a Metal Culverts, Inc. representative
- State DOT Regulations may differ in minimum/maximum cover and gauge requirements
- Standard Corrugation refers to 2 2/3"x1/2" corrugations

"Adams County installed 2 multi-plate aluminum alloy culverts in the late 1980's, and a few round culverts in the mid 1990's. After inspecting those pipes in 2011, a decision was made then and there to use aluminum culverts under all our highways. Now we are not looking back, we are looking forward."

*Jim Frankenhoff
Adams County Illinois Engineer*