

Fiscal Year 2014 Kansas State Cost Estimate  
for Practice Components

1. Corrugated Metal Pipe (CMP) Riser Dollars per linear foot (Does not include riser base, tees for principal spillway barrel or drawdown pipe, trash rack, or backfill)	Diameter (inches)	16 Gauge		14 Gauge	
		Plain Galvanized	Aluminized Steel	Plain Galvanized	Aluminized Steel
		12	\$38	\$41	
15	\$45	\$49			
18	\$48	\$52			
21	\$57	\$62			
24	\$65	\$70			
30	\$79	\$85			
36	\$95	\$102			
42			\$118	\$128	
48			\$135	\$146	
54			\$152	\$164	

  

2. Principal Spillway Tee Dollars per each (Includes 4 feet of pipe and fabrication--add these costs to the CMP riser to determine total riser cost)	Diameter (inches)	16 Gauge		14 Gauge	
		Plain Galvanized	Aluminized Steel	Plain Galvanized	Aluminized Steel
		8	\$243		
10	\$290				
12	\$345	\$373			
15	\$415	\$448			
18	\$487	\$526			
21	\$565	\$610			
24	\$635	\$686			
30	\$832	\$899			
36	\$1,013	\$1,094			
42			\$1,146	\$1,238	
48			\$1,486	\$1,605	

  

3. CMP Principal Spillway Barrel, Drawdown Pipe, or Underground Outlet Dollars per linear foot (Includes pipe and cost of laying--does not include 4 feet of pipe in principal spillway tee, 2 feet of pipe in drawdown pipe tee, hand-compacted backfill, or vertical pipe under floor of fish pond outlet structure)	Diameter (inches)	16 Gauge		14 Gauge	
		Plain Galvanized	Aluminized Steel	Plain Galvanized	Aluminized Steel
		6	\$10	\$11	
8	\$13	\$14			
10	\$15	\$16			
12	\$18	\$19			
15	\$19	\$21			
18	\$22	\$24			
21	\$28	\$30			
24	\$32	\$34			
30	\$36	\$39			
36	\$43	\$47			
42			\$57	\$62	
48			\$65	\$70	

  

4. Drawdown Pipe Tee Dollars per each (Includes 2 feet of pipe, cover plate and flange, one slotted flange attached, and fabrication--add these costs to the CMP riser to determine total riser cost)	Diameter (inches)	16 Gauge	
		Plain Galvanized	Aluminized Steel
		6	\$193
8	\$243	\$262	
10	\$290	\$313	
12	\$345	\$373	
15 <sup>1/</sup>	\$415	\$448	

<sup>1/</sup> Slotted flanges not used--add corrugated metal (CM) connecting band

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5. Connecting Bands	Diameter (inches)	16 Gauge		14 Gauge	
		Plain	Aluminized	Plain	Aluminized
		Galvanized	Steel	Galvanized	Steel
A. CM connecting bands--soil-tight Dollars per each (Includes connecting band, bolts, and gasket)	6	\$6	\$7		
	8	\$7	\$7		
	10	\$8	\$8		
	12	\$9	\$10		
	15	\$11	\$12		
	18	\$14	\$15		
	21	\$17	\$19		
	24	\$19	\$21		
	30	\$22	\$24		
	36	\$27	\$29		
	42			\$39	\$42
	48			\$44	\$48
B. CM connecting bands--watertight Dollars per each (Includes band, 2 "O" ring gaskets, and connecting bolts)	Diameter (inches)	16 Gauge		14 Gauge	
		Plain	Aluminized	Plain	Aluminized
		Galvanized	Steel	Galvanized	Steel
	6	\$7	\$7		
	8	\$9	\$10		
	10	\$9	\$9		
	12	\$14	\$15		
	15	\$18	\$19		
	18	\$22	\$24		
	21	\$25	\$27		
	24	\$30	\$32		
	30	\$35	\$38		
	36	\$43	\$46		
	42			\$62	\$67
	48			\$70	\$76

6. Metal Anti-Seep Collars Dollars per each (Includes materials and fabrication)	Diameter (inches)	Size (inches)	Two-Piece			
			16 Gauge		14 Gauge	
			Plain	Aluminized	Plain	Aluminized
			Galvanized	Steel	Galvanized	Steel
	12	60	\$251	\$271		
	15	63	\$314	\$339		
	18	66	\$373	\$403		
	21	69	\$438	\$474		
	24	72	\$501	\$541		
	30	78	\$618	\$667		
	36	84	\$745	\$805		
	42	90			\$863	\$933
	48	96			\$991	\$1,070

	Unit	Pipe Diameter (inches)																
		4	5	6	8	10	12	14	15	16	18	20	21	24	30	36	42	48
7. Steel Base for CMP Riser	each								\$81	\$107		\$168		\$206	\$240	\$458	\$701	
8. Slotted Flanges for CMP <sup>1/</sup>	pair			\$145	\$145	\$149	\$153											
9. Trash Rack for CMP Riser	each			\$156	\$187	\$230			\$280		\$343		\$383	\$453	\$560	\$682		
10. Trash Rack for Canopy Inlet	each			\$121	\$153	\$184	\$225	\$258	\$275	\$295	\$337	\$364	\$377	\$445				
11. Guard Rail for CMP Riser	each															\$2,051	\$2,051	\$2,485
12. CMP Pipe Support																		
A. 6 feet of length below pipe	each			\$84	\$103	\$119	\$141		\$167		\$208		\$254	\$288				
B. Each additional foot	lin. ft.			\$10	\$13	\$15	\$18		\$19		\$22		\$28	\$32				
13. Timber Pipe Support																		
A. 6 feet of length below pipe	each			\$186	\$186	\$186	\$186		\$231		\$231		\$231	\$273	\$273			
B. Each additional 2 feet	lin. ft.			\$10	\$10	\$10	\$10		\$19		\$19		\$19	\$22	\$22			
14. Fabrication of CMP Elbow																		
A. Plain galvanized	each			\$33	\$44	\$54	\$65		\$81		\$97		\$108	\$121	\$146	\$193		
B. Aluminized steel	each			\$34	\$45	\$55	\$66		\$84		\$99		\$111	\$125	\$150	\$199		
15. Fabrication of Canopy Inlet																		
A. Polyvinyl chloride (PVC) or plain galvanized	each			\$29	\$38	\$46	\$55	\$62	\$65	\$69	\$77	\$86	\$91	\$100	\$118	\$146		
B. Aluminized steel	each			\$31	\$41	\$50	\$60		\$71		\$83		\$98	\$108	\$128	\$158		
16. Manually Tamped Backfill																		
A. Riser for drop inlet spillways	lin. ft.						\$4		\$4		\$4	\$5	\$5	\$6	\$7	\$8	\$10	\$11
B. CMP and plastic pipe barrels	lin. ft.			\$2	\$2	\$3	\$3	\$3	\$3	\$3	\$4	\$4	\$4	\$5	\$6	\$7	\$8	\$9
C. Inlet, outlet, and culvert under embankment	lin. ft.	\$0.80	\$0.80	\$1.10	\$1.30	\$1.40	\$1.60	\$1.80	\$1.90	\$2.00	\$2.20	\$2.40	\$2.50	\$2.90	\$3.70	\$4.60	\$5.60	\$6.70
17. Metal End Section (Flared End)	each			\$110	\$110	\$117	\$117		\$123		\$158		\$192	\$233	\$425	\$685	\$1,042	\$1,206

	Unit	Pipe Diameter (inches)																
		1½	2	4	6	8	10	12	14	15	18	21	24					
18. Butyl Rubber Anti-Seep Collars																		
A. 36" x 36"	each	\$97	\$97	\$97	\$97													
B. 48" x 48"	each	\$121	\$121	\$121	\$121	\$121	\$121											
C. 60" x 60"	each	\$193	\$193	\$193	\$193	\$193	\$193	\$193	\$193	\$193	\$193							
D. 72" x 72"	each	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227
19. Polyethylene (PE) Anti-Seep Collars																		
A. 24" x 24"	each	\$233	\$233															
B. 48" x 48"	each	\$299	\$299	\$280	\$280	\$293	\$302	\$315		\$328	\$340		\$350					
C. 60" x 60"	each	\$447	\$447	\$425	\$425	\$438	\$444	\$463		\$479	\$498		\$520					
D. 72" x 72"	each			\$532	\$532	\$542	\$548	\$570		\$583	\$602		\$624					
20. Rodent Guard for Terrace Outlet	each			\$29	\$31	\$33	\$43	\$57		\$89	\$124							

	Pipe Diameter (inches)	Height (feet)								Add for Back Flap
		2	3	4	5	6	8	10	12	
		4	\$570	\$635	\$700	\$764	\$830	\$998	\$1,134	
6	\$587	\$656	\$654	\$793	\$861	\$1,038	\$1,265	\$1,301	\$50	
8	\$623	\$715	\$731	\$934	\$991	\$1,222	\$1,543	\$1,576	\$50	
10	\$680	\$796	\$835	\$1,069	\$1,144	\$1,432	\$1,674	\$1,878	\$60	
12	\$796	\$932	\$994	\$1,252	\$1,393	\$1,835	\$2,062	\$2,386	\$65	
15	\$989	\$1,103	\$1,226	\$1,483	\$1,673	\$2,052	\$2,431	\$2,753	\$75	
18	\$1,191	\$1,422	\$1,610	\$1,945	\$2,113	\$2,574	\$3,034	\$3,427	\$110	
24		\$1,890	\$2,063	\$2,405	\$2,714	\$3,333	\$3,952		\$200	

  

	Pipe Diameter (inches)						
	3	4	6	8	10	12	15
B. Check valve	\$63	\$69	\$129	\$180	\$250	\$319	\$557
C. Bar guard or heavy duty bar guard	\$45	\$52	\$60	\$75	\$88	\$113	\$133
						\$202	\$272

	Unit	Pipe Diameter (inches)					
		6	8	10	12	15	
22. Irrigation Pipe							
Buried Pipe for Irrigation or Waste Transfer							
A. 50 pounds per square inch (psi) (Standard Dimension Ratio [SDR] 81)	lin. ft.	\$2.95	\$4.02	\$5.47	\$7.22	\$10.67	
B. 80 psi (SDR 51)	lin. ft.	\$3.46	\$4.92	\$6.81	\$9.16	\$13.84	
C. 100 psi (SDR 41)	lin. ft.	\$4.13	\$5.93	\$8.42	\$11.30	\$16.16	
Gated Pipe for Surface Irrigation and Wastewater Treatment Strip							
A. PVC <sup>2/</sup>	lin. ft.	\$2.30	\$3.40	\$4.90	\$6.60		
B. Aluminum <sup>2/</sup>	lin. ft.	\$4.60	\$6.80	\$9.70	\$13.20		

<sup>1/</sup> Includes a pair of flanges welded to the pipe, gasket, or mastic and cost of bolting together

<sup>2/</sup> 30-foot lengths, 30-inch gate spacing (includes tee and end plugs)

23. Plastic Pipe		Pipe Diameter (inches)															
Unit		4	5	6	8	10	12	14	15	16	18	20	21	24	30	36	42
<b>A. Principal spillway barrel <sup>1/</sup></b>																	
(1) SDR 17	lin. ft.			\$5.67	\$9.80	\$13.59	\$18.86										
(2) Schedule 80	lin. ft.			\$7.39	\$10.88	\$16.36	\$22.27										
(3) SDR 21	lin. ft.	\$2.63		\$4.84	\$7.59	\$11.37	\$15.72										
(4) Schedule 40	lin. ft.	\$2.76		\$4.45	\$6.44	\$8.70	\$11.45										
(5) SDR 26	lin. ft.			\$4.17	\$6.47	\$9.61	\$13.25										
(6) Dimension Ratio (DR) 25	lin. ft.			\$4.60	\$7.20	\$10.57	\$14.65	\$19.62		\$25.05	\$31.32	\$38.70		\$54.97	\$82.73	\$116.81	
(7) DR 18	lin. ft.			\$5.89	\$9.54	\$13.97	\$19.43	\$26.23		\$33.58	\$42.04	\$52.07		\$74.19			
(8) Corrugated PVC, smooth interior																	
(a) Pipe Stiffness (PS) 46	lin. ft.			\$1.70	\$1.97	\$2.36	\$2.82		\$2.52		\$3.20		\$4.08	\$4.58	\$5.21	\$5.86	
(b) PS 115	lin. ft.				\$5.45	\$8.02											
(9) Dual wall corrugated PE, smooth interior, with watertight couplings	lin. ft.			\$5.00	\$5.55	\$6.52	\$8.45		\$12.72		\$15.70			\$25.78	\$36.21	\$46.86	\$62.73
<b>B. Underground outlet main conduit <sup>2/</sup></b>																	
Unit		4	5	6	8	10	12	15	18	20	21	24	30	36	42	48	
(1) Smooth PVC																	
(a) SDR 21	lin. ft.	\$3.17		\$5.44	\$8.31	\$12.21	\$16.69										
(b) SDR 26	lin. ft.	\$2.83		\$4.77	\$7.19	\$10.45	\$14.22										
(c) SDR 32.5	lin. ft.	\$2.62		\$4.28	\$6.29	\$9.09	\$12.29	\$17.07									
(d) SDR 35	lin. ft.	\$2.40		\$3.86	\$5.85	\$8.44	\$11.55	\$16.67	\$23		\$31	\$39	\$64	\$89	\$119	\$153.79	
(e) SDR 41	lin. ft.	\$2.38		\$3.76	\$5.42	\$7.72	\$10.38	\$14.49									
(2) Corrugated PVC, smooth interior																	
(a) PS 46	lin. ft.	\$3.33		\$4.28	\$5.97	\$8.86	\$12.42	\$16.90	\$22.62		\$29.75	\$33.52	\$45.75	\$59.09			
(b) PS 115	lin. ft.				\$6.17	\$8.86											
(3) Single wall corrugated PE	lin. ft.	\$1.82	\$2.34	\$3.02	\$2.47	\$3.89	\$4.27	\$10.34	\$14.64			\$24.33					
(4) Dual wall corrugated PE, smooth interior, with soil-tight couplings	lin. ft.	\$4.61		\$5.65	\$6.32	\$7.31	\$8.80	\$12.65	\$15.62			\$24.92	\$34.75	\$45.09	\$59.72	\$64.84	
(5) Dual wall corrugated PE, smooth interior, with watertight couplings	lin. ft.	\$4.61		\$5.60	\$6.27	\$7.36	\$9.57	\$13.98	\$17.20			\$27.76	\$38.75	\$50.09	\$66.72	\$72.34	
<b>C. Underground outlet and connections <sup>3/</sup></b> (Underground outlet riser, tee, and fittings)																	
Size (inches)		Prefabricated or PVC Riser Diameter (inches)															
		5	6	8	10	12	15										
4		\$87	\$98	\$135	\$183	\$570	\$628										
6		\$94	\$98	\$135	\$183	\$570	\$628										
8		\$108	\$117	\$135	\$183	\$570	\$628										
10		\$128	\$137	\$161	\$183	\$570	\$628										
12		\$258	\$267	\$291	\$323	\$570	\$628										
15		\$282	\$291	\$315	\$347	\$610	\$671										
18		\$334	\$343	\$367	\$399	\$662	\$728										
24		\$423	\$432	\$456	\$488	\$750	\$825										
<b>D. Livestock water supply line</b>																	
Unit		1½	1½	2	3	4	6	8	10	12							
(1) SDR 21, PVC	lin. ft.	\$1.67	\$1.76	\$1.95	\$2.50	\$3.19											
(2) SDR 26, PVC	lin. ft.	\$1.62	\$1.68	\$1.84	\$2.31	\$2.85											
<b>E. Water supply line under dam</b>																	
(1) 100 feet, Schedule 40, PVC <sup>4/</sup>	each		\$304	\$325	\$397	\$511											
(2) Each additional foot of pipe	lin. ft.		\$1.50	\$1.66	\$2.33	\$2.92											
(3) 100 feet, SDR 21, PVC <sup>4/</sup>	each		\$290	\$314	\$374	\$498											
(4) Each additional foot of pipe	lin. ft.		\$1.36	\$1.55	\$2.10	\$2.79											
<b>F. Siphon supply line over dam</b>																	
(1) 120 feet, 125 psi, PE pipe <sup>5/</sup>	each	\$463	\$543	\$666													
(2) Each additional foot of pipe	lin. ft.	\$2.28	\$2.78	\$3.64													
(3) 120 feet, SDR 26, PVC pipe <sup>5/</sup>	each	\$382	\$409	\$447													
(4) Each additional foot of pipe	lin. ft.	\$1.53	\$1.59	\$1.74													
<b>G. Slotted flume</b>																	
(1) Fixed cost for 20 feet of flume	each					\$183	\$254	\$362	\$505								
(2) Additional cost per foot	lin. ft.					\$4.17	\$6.47	\$9.61	\$13.25								

<sup>1/</sup> Does not include manually tamped backfill

<sup>2/</sup> Includes trenching and machine-placed backfill

<sup>3/</sup> When risers are used as "bubble up" structures, add 10 percent if gravel is used as backfill

<sup>4/</sup> Complete with intake, valve, operating rod, valve box and lid, and manually tamped backfill

<sup>5/</sup> Complete with intake, valves, valve box, filler pipe assembly, testing, excavation, and manually tamped backfill

24. Miscellaneous Structural Items					
	Unit	Materials Cost	Installation Cost	Total Installation Cost	
A. Concrete					
(1) Formed	cu. yd.	\$105	\$205	\$310	
(2) Slab on grade	cu.yd.	\$105	\$110	\$215	
B. Steel reinforcement					
	lbs.	\$0.80	\$1.15	\$1.95	
C. Solar pump installations					
(1) 1/4 horsepower (HP) pumps (185 watts) w/controller	ea.	\$1,100.00	\$300.00	\$1,400.00	
(2) 1/2 HP pumps (370 watts) w/controller	ea.	\$2,200.00	\$400.00	\$2,600.00	
(3) 1 HP pumps w/controller	ea.	\$2,650.00	\$500.00	\$3,150.00	
(4) Solar panels w/mounts < 100 watts	watt	\$6.75	\$7.50	\$14.25	
(5) Solar panels w/mounts 100 - 185 watts	watt	\$6.00	\$2.30	\$8.30	
(6) Solar panels w/mounts > 185 watts	watt	\$3.00	\$1.50	\$4.50	
D. Wood picket fences					
(1) Pipe entrances	sq. ft.	\$5.90	\$11.25	\$17.15	
(2) Concrete chutes/solid stacks	sq. ft.	\$6.95	\$11.25	\$18.20	
E. Geotextiles					
	sq. yds.	\$1.10	\$2.25	\$3.35	
F. Erosion control blankets <sup>1/</sup>					
	sq. yds.	\$1.05	\$1.15	\$2.20	
G. Turf reinforcement mats <sup>1/</sup>					
(1) North American Green C-350	sq. yds.	\$2.70	\$4.00	\$6.70	
(2) Propex Landlok 450	sq. yds.	\$6.00	\$4.00	\$10.00	
(3) Pyramat	sq. yds.	\$14.00	\$4.00	\$18.00	
H. High-density polyethylene (HDPE) flexible membranes					
	sq. ft.	\$0.75	\$0.65	\$1.40	
I. Articulating concrete block materials					
	sq. ft.	\$9.00	\$2.50	\$11.50	
J. Cellular confinement systems (geocell or geoweb)					
	sq. ft.	\$1.20	\$0.55	\$1.75	
K. Sediment control installations					
(1) Silt fence	lin. ft.	\$0.20	\$2.75	\$2.95	
(2) Bale barriers	lin. ft.	\$1.00	\$1.70	\$2.70	
(3) Earthen dikes	lin. ft.	\$0.00	\$1.15	\$1.15	
	Unit	Gabion Cost	Rockfill Materials Cost (delivered)	Installation Cost	Total Installation Cost
L. Gabion baskets	cu. ft.	\$1.80	\$1.58	\$2.07	\$5.45
M. Reno mattresses	cu. ft.	\$2.55	\$1.58	\$2.07	\$6.20
	Unit	Material Cost	Delivery Cost @ \$0.35/ton-mile	Installation Cost	Total Installation Cost
N. Graded rock riprap (50-mile delivery trip)	tons	\$16	\$17.50	\$10	\$43.50
O. Shot rock or concrete rubble (15-mile delivery trip)	tons	\$3.00	\$5.25	\$10	\$18.25
P. Graded crushed rock (50-mile delivery trip)	tons	\$16	\$17.50	\$10	\$43.50
Q. Fill sand (15-mile delivery trip)	cu.yd.	\$3.75	\$3.50	\$3.75	\$11.00
R. Drainfill (20-mile delivery trip)	cu.yd.	\$11	\$10.50	\$3.75	\$25.25
S. Concrete blocks (20-mile delivery trip)					
(1) 30" x 30" x 60"	each	\$90	\$16.40	\$21	\$127.40
(2) 24" x 24" x 48" or smaller	each	\$50	\$8.40	\$18	\$76.40
(3) 8" x 8" x 16" concrete masonry units (CMUs)	each	\$1.35	\$0.05	\$2.50	\$3.90

<sup>1/</sup> Includes pins for staking