

Fiscal Year 2012 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		12 Gauge	
		Plain	Aluminum	Plain	Aluminum	Plain	Aluminum
		Galvanized	Steel	Galvanized	Steel	Galvanized	Steel
12	\$35	\$37					
15	\$42	\$45					
18	\$45	\$48					
21	\$52	\$55					
24	\$59	\$62					
30			\$74	\$78			
36			\$89	\$94			
42			\$111	\$118			
48					\$127	\$134	
54					\$143	\$151	

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		12 Gauge	
		Plain	Aluminum	Plain	Aluminum	Plain	Aluminum
		Galvanized	Steel	Galvanized	Steel	Galvanized	Steel
8	\$222						
10	\$264						
12	\$314	\$332					
15	\$379	\$400					
18	\$443	\$468					
21	\$514	\$543					
24	\$579	\$611					
30			\$757	\$800			
36			\$921	\$973			
42			\$1,043	\$1,101			
48					\$1,350	\$1,426	

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, or vertical pipe under floor of fish pond outlet structure)	Diameter (inches)	16 Gauge		14 Gauge		12 Gauge	
		Plain	Aluminum	Plain	Aluminum	Plain	Aluminum
		Galvanized	Steel	Galvanized	Steel	Galvanized	Steel
6	\$9	\$10					
8	\$11	\$12					
10	\$14	\$14					
12	\$16	\$17					
15	\$18	\$19					
18	\$21	\$22					
21	\$25	\$26					
24	\$28	\$30					
30			\$35	\$37			
36			\$41	\$43			
42			\$54	\$57			
48					\$62	\$65	

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	Aluminum
		Galvanized	Steel
6	\$90	\$95	
8	\$111	\$117	
10	\$132	\$140	
12	\$157	\$166	
15 ^{1/2}	\$189	\$200	

^{1/2} Slotted flanges not used--add corrugated metal (CM) connecting band

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5. Connecting Bands		16 Gauge		14 Gauge		12 Gauge			
		Diameter (inches)	Plain	Aluminum	Plain	Aluminum	Plain	Aluminum	
			Galvanized	Steel	Galvanized	Steel	Galvanized	Steel	
A. CM connecting bands--soil-tight Dollars per each (Includes connecting band, bolts, and gasket)		6	\$6	\$6					
		8	\$6	\$6					
		10	\$8	\$8					
		12	\$9	\$10					
		15	\$12	\$12					
		18	\$15	\$16					
		21	\$17	\$18					
		24	\$19	\$20					
		30			\$24	\$25			
		36			\$28	\$30			
		42			\$41	\$43			
		48					\$47	\$50	
		B. CM connecting bands--watertight Dollars per each (Includes band, 2 "O" ring gaskets, and connecting bolts) <th colspan="2">16 Gauge</th> <th colspan="2">14 Gauge</th> <th colspan="2">12 Gauge</th>		16 Gauge		14 Gauge		12 Gauge	
Diameter (inches)	Plain			Aluminum	Plain	Aluminum	Plain	Aluminum	
	Galvanized			Steel	Galvanized	Steel	Galvanized	Steel	
		6	\$6	\$6					
		8	\$8	\$9					
		10	\$10	\$11					
		12	\$13	\$14					
		15	\$16	\$17					
		18	\$20	\$21					
		21	\$23	\$24					
		24	\$25	\$27					
		30			\$32	\$34			
		36			\$39	\$41			
		42			\$56	\$59			
		48					\$64	\$68	
		6. Metal Anti-Seep Collars Dollars per each (Includes materials and fabrication)		Diameter (inches)	Size (inches)	Two-Piece			
16 Gauge						14 Gauge		12 Gauge	
Plain	Aluminum					Plain	Aluminum	Plain	Aluminum
		12	60	\$222	\$234				
		15	63	\$273	\$288				
		18	66	\$330	\$348				
		21	69	\$381	\$402				
		24	72			\$435	\$459		
		30	78			\$537	\$567		
		36	84					\$648	\$684
		42	90					\$750	\$792
		48	96					\$860	\$909

	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								\$79	\$105	\$165		\$202	\$236	\$443	\$687		
8. Slotted Flanges for CMP ^{1/}	pair			\$110	\$115	\$125	\$135											
9. Trash Rack for CMP Riser	each			\$134	\$162	\$201			\$243	\$297		\$339	\$392	\$487	\$593			
10. Trash Rack for Canopy Inlet	each			\$104	\$132	\$160	\$197	\$221	\$239	\$260	\$291	\$315	\$333	\$385				
11. Guard Rail for CMP Riser	each															\$2,010	\$2,010	\$2,436
12. CMP Pipe Support																		
A. 6 feet of length below pipe	each			\$212	\$248	\$284	\$314		\$384	\$454		\$524	\$597					
B. Each additional foot	lin. ft.			\$9	\$11	\$14	\$16		\$16	\$21		\$25	\$28					
13. Timber Pipe Support																		
A. 6 feet of length below pipe	each			\$179	\$179	\$179	\$179		\$226	\$226		\$226	\$264					
B. Each additional 2 feet	lin. ft.			\$6	\$6	\$6	\$6		\$17	\$17		\$17	\$20	\$20				
14. Fabrication of CMP Elbow																		
A. Plain galvanized	each			\$63	\$79	\$95	\$112		\$136	\$160		\$184	\$208	\$271	\$323	\$375	\$485	
B. Aluminized steel	each			\$71	\$89	\$107	\$126		\$154	\$181		\$208	\$235	\$306	\$365	\$423	\$548	
15. Fabrication of Canopy Inlet																		
A. Polyvinyl Chloride (PVC) or plain galvanized	each			\$42	\$63	\$69	\$82	\$88	\$91	\$94	\$101	\$106	\$109	\$131	\$168	\$200		
B. Aluminized steel	each			\$50	\$76	\$83	\$99		\$109	\$121		\$131	\$157	\$201	\$240			
16. Manually Tamped Backfill																		
A. Riser for drop inlet spillways	lin. ft.						\$3		\$4	\$4		\$5	\$6	\$7	\$9	\$11	\$13	
B. CMP and plastic pipe barrels	lin. ft.			\$1	\$2	\$2	\$3	\$3	\$3	\$3	\$4	\$4	\$5	\$6	\$8	\$9	\$11	
C. Inlet, outlet, and culvert under embankment	lin. ft.	\$0.40	\$0.50	\$0.50	\$0.60	\$0.70	\$0.90	\$1.00	\$1.10	\$1.10	\$1.20	\$1.30	\$1.40	\$1.60	\$2.10	\$2.60	\$3.20	\$3.80
17. Metal End Section (Flared End)	each			\$105	\$105	\$112	\$112		\$116	\$152		\$184	\$224	\$408	\$659	\$1,001	\$1,159	

	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		\$93	\$93	\$93	\$93												
B. 48" x 48"	each		\$104	\$104	\$104	\$104	\$104	\$104										
C. 60" x 60"	each		\$172	\$172	\$172	\$172	\$172	\$172	\$172	\$172	\$172							
D. 72" x 72"	each		\$198	\$198	\$198	\$198	\$198	\$198	\$198	\$198	\$198	\$198	\$198	\$198	\$198			
19. Polyethylene (PE) Anti-Seep Collars																		
A. 30" x 30"	each		\$98	\$98														
B. 48" x 48"	each			\$131	\$131	\$140	\$143	\$147		\$155	\$162					\$165		
C. 60" x 60"	each			\$201	\$201	\$207	\$213	\$221		\$233	\$243					\$248		
D. 72" x 72"	each			\$240	\$240	\$245	\$251	\$258		\$267	\$278					\$282		
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									
21. Inline Water Level Control Structure Components																		
A. Inline water level control structure (To be placed in the embankment)	4	\$541	\$603	\$666	\$728	\$792	\$954	\$1,085	\$1,201	\$50								
	6	\$557	\$624	\$615	\$757	\$823	\$994	\$1,133	\$1,247	\$50								
	8	\$592	\$682	\$689	\$893	\$948	\$1,172	\$1,357	\$1,513	\$50								
	10	\$629	\$737	\$760	\$993	\$1,064	\$1,333	\$1,571	\$1,750	\$50								
	12	\$737	\$865	\$907	\$1,165	\$1,296	\$1,561	\$1,826	\$2,044	\$65								
	15	\$846	\$1,023	\$1,122	\$1,380	\$1,558	\$1,913	\$2,269	\$2,566	\$65								
	18	\$1,104	\$1,321	\$1,477	\$1,683	\$1,968	\$2,400	\$2,831	\$3,194	\$65								
	24		\$1,659	\$1,896	\$2,240	\$2,530	\$3,110	\$3,689	\$100									
B. Check valve																		
C. Bar guard or heavy duty bar guard																		
	3	\$55	\$61	\$128	\$179	\$237	\$309	\$557	\$644									
	4	\$44	\$51	\$60	\$71	\$92	\$111	\$130	\$187	\$249								

	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.	\$2.75	\$3.66	\$5.37	\$7.39	\$10.79				
B. 80 psi (SDR 51)	lin. ft.	\$3.33	\$4.68	\$6.90	\$9.63	\$14.39				
C. 100 psi (SDR 41)	lin. ft.	\$4.09	\$5.83	\$8.74	\$12.05	\$14.99				
Gated Pipe for Surface Irrigation and Wastewater Treatment Strip										
A. PVC ^{2/}	lin. ft.	\$2.60	\$3.90	\$5.60	\$7.70					
B. Aluminum ^{2/}	lin. ft.	\$3.90	\$5.80	\$8.40	\$11.50					

^{1/} Includes a pair of flanges welded to the pipe, gasket, or mastic and cost of bolting together

^{2/} 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	
A. Principal spillway barrel ^{1/}																		
(1) SDR 17	lin. ft.			\$8.78	\$13.29	\$19.12	\$27.19											
(2) Schedule 80	lin. ft.			\$13.52	\$17.88	\$25.33	\$35.22											
(3) SDR 21	lin. ft.	\$4.16		\$7.48	\$11.03	\$15.62	\$22.24											
(4) Schedule 40	lin. ft.	\$4.93		\$8.20	\$10.80	\$15.11	\$21.34											
(5) SDR 26	lin. ft.			\$6.67	\$9.71	\$13.57	\$19.33											
(6) Dimension Ratio (DR) 25	lin. ft.			\$7.20	\$10.48	\$14.69	\$20.97	\$28.22		\$35.48	\$43.61	\$53.08		\$74.77	\$111.80	\$157.05		
(7) DR 18	lin. ft.			\$8.73	\$13.35	\$18.72	\$26.64	\$36.16		\$45.81	\$56.58	\$69.26		\$98.04				
(8) Corrugated PVC, smooth interior, Pipe Stiffness (PS) 46	lin. ft.			\$5.19	\$6.94	\$9.39	\$13.86		\$17.95		\$23.12		\$29.75	\$34.19	\$45.98	\$59.04		
(9) Corrugated PVC, smooth interior, PS 115	lin. ft.				\$7.04	\$9.39												
(10) Dual wall corrugated PE, smooth interior, with watertight couplings	lin. ft.		\$4.98	\$6.14	\$8.17	\$11.27		\$14.62		\$18.50				\$27.89	\$40.60	\$48.80	\$63.01	
B. Underground outlet main conduit ^{2/}																		
(1) Smooth PVC																		
(a) SDR 21	lin. ft.	\$3.27		\$5.75	\$8.90	\$13.61	\$19.00											
(b) SDR 26	lin. ft.	\$2.86		\$4.94	\$7.58	\$11.56	\$16.09											
(c) SDR 32.5	lin. ft.	\$2.60		\$4.35	\$6.51	\$9.92	\$13.78	\$16.96		\$39.37		\$55.84	\$83.40	\$118.11	\$157.07	\$203.85		
(d) SDR 35	lin. ft.	\$2.33		\$3.87	\$6.02	\$9.18	\$12.97	\$18.94										
(e) SDR 41	lin. ft.	\$2.32		\$3.74	\$5.48	\$8.31	\$11.54	\$14.38		\$32.40		\$45.84	\$68.37	\$96.17	\$127.65	\$165.47		
(2) Corrugated PVC, smooth interior																		
(a) PS 46	lin. ft.	\$2.78		\$3.46	\$4.81	\$7.38	\$10.62	\$14.59	\$19.56		\$25.54	\$29.44	\$39.83	\$51.40				
(b) PS 115	lin. ft.				\$4.91	\$7.38												
(3) Single wall corrugated PE	lin. ft.	\$1.31	\$1.56	\$1.95	\$2.79	\$4.57	\$5.67	\$9.66	\$14.08			\$21.64						
(4) Dual wall corrugated PE, smooth interior, with soil-tight couplings	lin. ft.	\$2.01		\$3.25	\$4.01	\$6.16	\$8.03	\$10.83	\$14.54			\$22.29	\$33.11	\$39.59	\$51.56	\$57.06		
(5) Dual wall corrugated PE, smooth interior, with watertight couplings	lin. ft.	\$2.01		\$3.25	\$4.01	\$6.16	\$8.23	\$11.93	\$15.00			\$23.79	\$34.64	\$42.78	\$52.51	\$60.09		
C. Underground outlet and connections ^{3/} (Underground outlet riser, tee, and fittings)																		
	Size (inches)	Prefabricated or PVC Riser Diameter (inches)																
		5	6	8	10	12	15											
	4	\$84	\$95	\$131	\$177	\$545	\$599											
	6	\$91	\$95	\$131	\$177	\$545	\$599											
	8	\$105	\$114	\$131	\$177	\$545	\$599											
	10	\$124	\$133	\$156	\$177	\$545	\$599											
	12	\$248	\$257	\$280	\$311	\$545	\$599											
	15	\$271	\$280	\$303	\$334	\$583	\$641											
	18	\$322	\$331	\$354	\$384	\$634	\$697											
	24	\$408	\$417	\$440	\$470	\$720	\$792											
D. Livestock water supply line																		
(1) SDR 21, PVC	lin. ft.		\$1.68	\$1.80	\$1.94	\$2.74	\$3.57											
(2) SDR 26, PVC	lin. ft.		\$1.62	\$1.71	\$1.76	\$2.52	\$3.16											
E. Water supply line under dam																		
(1) 100 feet, Schedule 40, PVC ^{4/}	each			\$296	\$326	\$436	\$577											
(2) Each additional foot of pipe	lin. ft.			\$1.74	\$1.99	\$3.04	\$3.84											
(3) 100 feet, SDR 21, PVC ^{4/}	each			\$268	\$287	\$356	\$499											
(4) Each additional foot of pipe	lin. ft.			\$1.46	\$1.80	\$2.24	\$3.07											
F. Siphon supply line over dam																		
(1) 120 feet, 125 psi, PE pipe ^{5/}	each		\$372	\$420	\$466													
(2) Each additional foot of pipe	lin. ft.		\$1.85	\$2.08	\$2.30													
(3) 120 feet, SDR 26, PVC pipe ^{5/}	each		\$346	\$377	\$403													
(4) Each additional foot of pipe	lin. ft.		\$1.63	\$1.72	\$1.77													
G. Slotted flume																		
(1) Fixed cost for 20 feet of flume	each							\$205	\$280	\$391	\$555							
(2) Additional cost per foot	lin. ft.							\$6.67	\$9.71	\$13.57	\$19.33							

60.085

^{1/} Does not include manually tamped backfill

^{2/} Includes trenching and machine-placed backfill

^{3/} When risers are used as "bubble up" structures, add 10 percent if gravel is used as backfill

^{4/} Complete with intake, valve, operating rod, valve box and lid, and manually tamped backfill

^{5/} Complete with intake, valves, valve box, filler pipe assembly, testing, excavation, and manually tamped backfill

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24. Miscellaneous Structural Items					
	Unit	Materials Cost	Installation Cost	Total Installation Cost	
A. Concrete					
(1) Formed	cu. yd.	\$90	\$205	\$295	
(2) Slab on grade	cu.yd.	\$90	\$110	\$200	
B. Steel reinforcement	lbs.	\$0.75	\$1.15	\$1.90	
C. Wood picket fences					
(1) Pipe entrances	sq. ft.	\$6.50	\$11.25	\$17.75	
(2) Concrete chutes/solid stacks	sq. ft.	\$8.10	\$11.25	\$19.35	
D. Geotextiles	sq. yds.	\$1.75	\$2.25	\$4.00	
E. Erosion control blankets	sq. yds.	\$1.30	\$1.15	\$2.45	
F. Turf reinforcement mats	sq. yds.	\$5.00	\$4.00	\$9.00	
G. High-density polyethylene (HDPE) flexible membranes	sq. ft.	\$0.75	\$0.65	\$1.40	
H. Articulating concrete block materials	sq. ft.	\$12.50	\$2.50	\$15.00	
I. Cellular confinement systems (geocell or geoweb)	sq. ft.	\$2.10	\$0.55	\$2.65	
J. Sediment control installations					
(1) Silt fence	lin. ft.	\$0.25	\$2.75	\$3.00	
(2) Bale barriers	lin. ft.	\$0.85	\$1.70	\$2.55	
(3) Earthen dikes	lin. ft.	\$0.00	\$1.10	\$1.10	
	Unit	Gabion Cost	Rockfill Materials Cost (delivered)	Installation Cost	Total Installation Cost
K. Gabion baskets	cu. ft.	\$2.52	\$1.53	\$2.07	\$6.12
L. Reno mattresses	cu. ft.	\$3.39	\$1.53	\$2.07	\$6.99
	Unit	Material Cost	Delivery Cost @ \$0.35/ton-mile	Installation Cost	Total Installation Cost
M. Graded rock riprap (50-mile delivery trip)	tons	\$10	\$17.50	\$10	\$37.50
N. Shot rock or concrete rubble (15-mile delivery trip)	tons	\$2.75	\$5.25	\$10	\$18.00
O. Graded crushed rock (50-mile delivery trip)	tons	\$12	\$17.50	\$10	\$39.50
P. Fill sand (15-mile delivery trip)	cu.yd.	\$3	\$3.50	\$3.75	\$10.25
Q. Drainfill (20-mile delivery trip)	cu.yd.	\$8	\$10.50	\$3.75	\$22.25
R. Concrete blocks (30-mile delivery trip)					
(1) 30" x 30" x 60"	each	\$79	\$20.50	\$21	\$120.50
(2) 24" x 24" x 48" or smaller	each	\$45	\$11.10	\$18	\$74.10
(3) 8" x 8" x 16" concrete masonry units (CMUs)	each	\$1.15	\$0.05	\$2.50	\$3.70