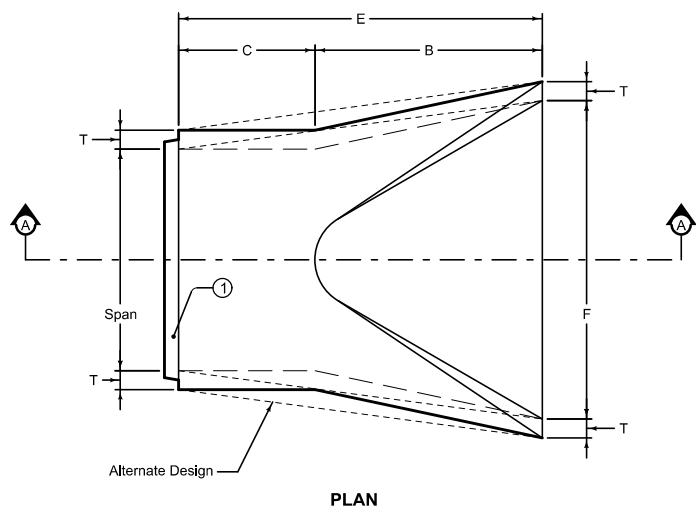


Comply with AASHTO M 206 for Apron Reinforcement.

Dimension "E" shown is minimum and is considered the design length. Appropriately adjust for any difference between the actual length of concrete apron installed and the length indicated hereon for the length of concrete culvert pipe furnished.

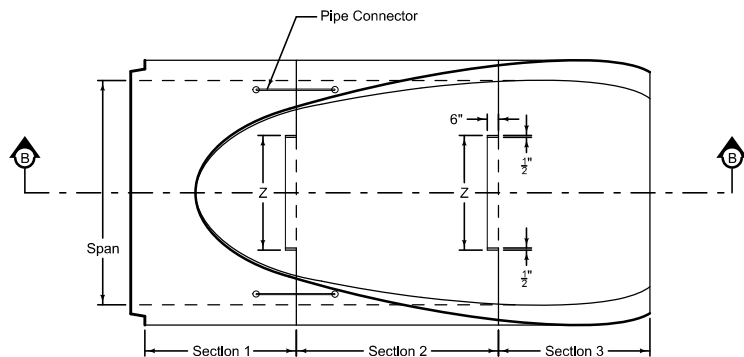
- ① Tongue end on inlet end section, Groove end on outlet end section. (Inlet end section shown.)

NOMINAL DIMENSIONS SPAN X RISE Inches	EQUIVALENT DIAMETER Inches	SPAN Inches	RISE Inches	SLOPE	APPROXIMATE DIMENSIONS Inches					
					(T)	(A)	(B)	(C)	(E)	(F)
22 X 14	18	22	13 $\frac{1}{2}$	3:1	2 $\frac{1}{2}$	7	27	45	72	36
29 X 18	24	28 $\frac{1}{2}$	18	3:1	3	8 $\frac{1}{2}$	39	33	72	48
37 X 23	30	36 $\frac{1}{4}$	22 $\frac{1}{2}$	3:1	3 $\frac{1}{2}$	9 $\frac{1}{2}$	50	46	96	60
44 X 27	36	43 $\frac{5}{8}$	26 $\frac{5}{8}$	3:1	4	11 $\frac{1}{8}$	60	36	96	72
52 X 32	42	51 $\frac{1}{8}$	31 $\frac{5}{16}$	3:1	4 $\frac{1}{2}$	15 $\frac{13}{16}$	60	36	96	78
59 X 36	48	58 $\frac{1}{2}$	36	3:1	5	21	60	36	96	84
65 X 40	54	65	40	3:1	5 $\frac{1}{2}$	25 $\frac{1}{2}$	60	36	96	90
73 X 45	60	73	45	3:1	6	31	60	36	96	96
88 X 54	72	88	54	2:1	7	31	60	39	99	120
102 X 62	84	102	62	2:1	8	21 $\frac{1}{2}$	83	19	102	144

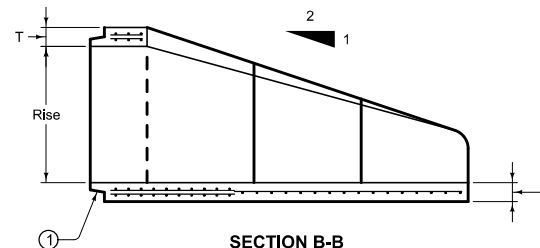
Possible Contract Item:
Low Clearance Concrete Pipe Aprons

Possible Tabulations:
104-3
104-4

 STANDARD ROAD PLAN	REVISION	
	6	04-17-12
	RF-42	
	SHEET 1 of 3	
REVISIONS: Added option for elliptical pipe. Changed title. Changed Possible Contract Item to "Low Clearance Concrete Pipe Aprons"		
 APPROVED BY DESIGN METHODS ENGINEER		
LOW CLEARANCE CONCRETE PIPE APRONS		

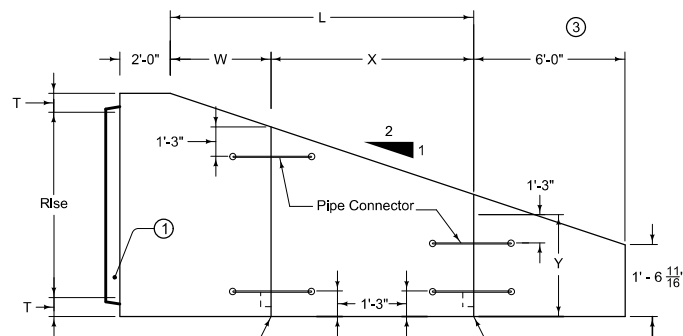


PLAN

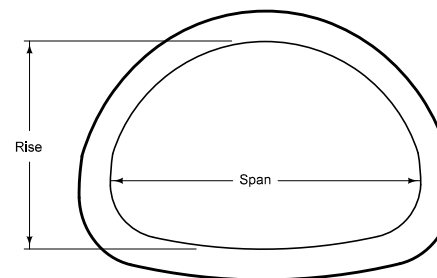


SECTION B-B

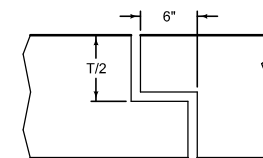
- ① Tongue end on inlet end section. Groove end on outlet end section. (Inlet end section shown.)
- ③ 132" size is a three-piece end section.



ELEVATION



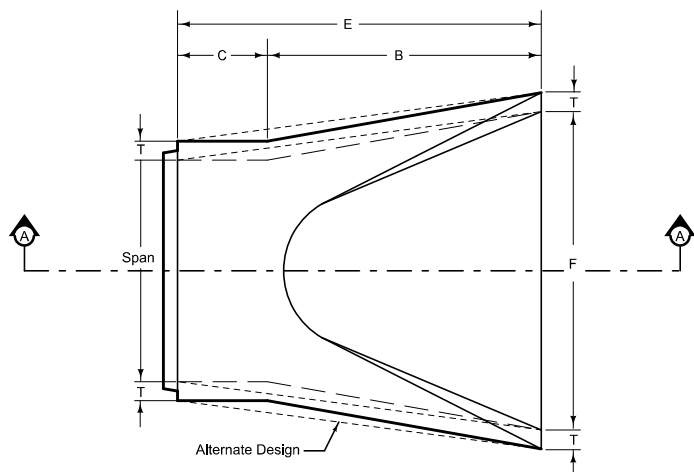
END



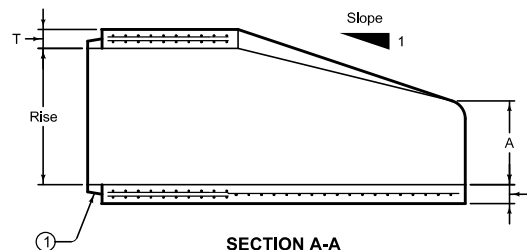
DETAIL 'A'

NOMINAL DIMENSIONS SPAN X RISE Inches	EQUIVALENT DIAMETER Inches	SPAN Inches	RISE Inches	APPROXIMATE DIMENSIONS Inches					
				(T)	(L)	(W)	(X)	(Y)	(Z)
115 X 72	90	115	72	8 1/2	102 1/4	72	30 1/4	37 7/8	48
122 X 78	96	122	77 1/2	9	112 1/2	72	40 1/2	39	54
138 X 88	108	138	87 1/8	10	129 1/2	48	81 1/2	42 5/8	66
154 X 97	120	154	96 7/8	11	144	48	96	46 5/8	78
169 X 107	132 ③	168 3/4	106 1/2	10	144	48	96	54 5/8	90

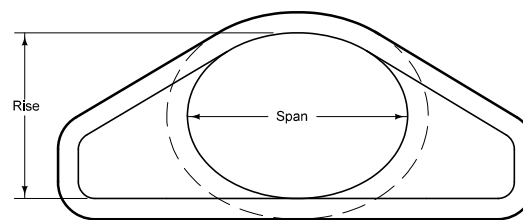
 Iowa Department of Transportation STANDARD ROAD PLAN	REVISION	
	6	04-17-12
	RF-42	
	SHEET 2 of 3	
REVISIONS: Added option for elliptical pipe. Changed title. Changed Possible Contract Item to "Low Clearance Concrete Pipe Aprons"		
<i>Deanna Macfadyen</i> APPROVED BY DESIGN METHODS ENGINEER		
LOW CLEARANCE CONCRETE PIPE APRONS		



PLAN



SECTION A-A



END

Comply with AASHTO M 207 for Apron Reinforcement.

Dimension "E" shown is minimum and is considered the design length. Appropriately adjust for any difference between the actual length of concrete apron installed and the length indicated hereon for the length of concrete culvert pipe furnished.

- ① Tongue end on inlet end section, Groove end on outlet end section. (Inlet end section shown.)

EQUIVALENT DIAMETER Inches	SPAN Inches	RISE Inches	SLOPE	APPROXIMATE DIMENSIONS Inches					
				①	②	③	④	⑤	⑥
18	23	14	3:1	2 ³ / ₄	7 ¹ / ₂	27	45	72	36
24	30	19	3:1	3 ¹ / ₄	8 ¹ / ₂	39	33	72	48
30	38	24	3:1	3 ³ / ₄	9 ¹ / ₂	54	18	72	60
36	45	29	2.5 to 1	4 ¹ / ₂	11 ¹ / ₈	60	24	84	72
42	53	34	2.5 to 1	5	15 ³ / ₄	60	36	96	78
48	60	38	2.5 to 1	5 ¹ / ₂	21	60	36	96	84
54	68	43	2.5 to 1	6	25 ¹ / ₂	60	36	96	90
60	76	48	2.5 to 1	6 ¹ / ₂	30	60	36	96	96
72	91	58	2.5 to 1	7 ¹ / ₂	36	63	33	96	108
90	113	72	1.6 to 1	9	36 ¹ / ₂	58	38	96	113

 Iowa Department of Transportation STANDARD ROAD PLAN	REVISION	
	6	04-17-12
	RF-42	
	SHEET 3 of 3	
REVISIONS: Added option for elliptical pipe. Changed title. Changed Possible Contract Item to "Low Clearance Concrete Pipe Aprons"		
<i>Deanna Mayfield</i> APPROVED BY DESIGN METHODS ENGINEER		
LOW CLEARANCE CONCRETE PIPE APRONS		