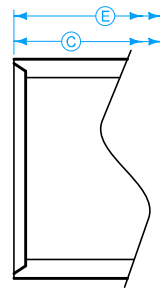
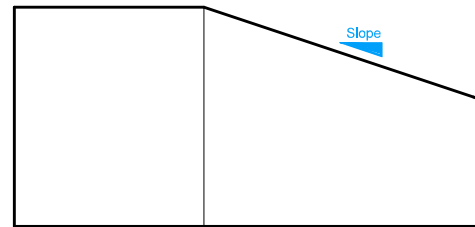


SECTION A-A  
TONGUE END DETAIL ①



SECTION A-A  
GROOVE END DETAIL ①



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

Install connected pipe joints as shown on DR-121.

When specified in the contract documents, install pipe apron guards as shown on DR-213. Pipe apron guards are incidental to "Concrete Aprons".

① Tongue end used on inlet end section. Groove end used on outlet end section.

TYPE 1 APRONS								
DIAM.	SLOPE	A	B	MINIMUM		F	G	T
				C	E			
12"	2.4:1	4"	2'-0"	4'- $\frac{7}{8}$ "	6'- $\frac{7}{8}$ "	2'-0"	2"	2"
15"	2.4:1	6"	2'-3"	3'-10"	6'-1"	2'-6"	2 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "
18"	2.3:1	9"	2'-3"	3'-10"	6'-1"	3'-0"	2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "
21"	2.4:1	9"	3'-0"	3'-1 $\frac{1}{2}$ "	6'-1 $\frac{1}{2}$ "	3'-5"	3"	3"
24"	2.5:1	9 $\frac{1}{2}$ "	3'-7 $\frac{1}{2}$ "	2'-6"	6'-1 $\frac{1}{2}$ "	4'-0"	3"	3"
27"	2.5:1	10 $\frac{1}{2}$ "	4'-1"	2'-0"	6'-1 $\frac{1}{2}$ "	4'-4"	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "
30"	2.5:1	12"	4'-6"	1'-7 $\frac{3}{4}$ "	6'-1 $\frac{3}{4}$ "	5'-0"	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "
36"	2.5:1	15"	5'-3"	2'-9"	8'-0"	6'-0"	4"	4"
42"	2.5:1	21"	5'-3"	2'-9"	8'-0"	6'-6"	4 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "
48"	2.5:1	24"	6'-0"	2'-0"	8'-0"	7'-0"	5"	5"
54"	1.8:1	27"	5'-0"	3'-0"	8'-0"	7'-6"	5 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "
60"	1.6:1	29 $\frac{1}{2}$ "	5'-0"	3'-0"	8'-0"	8'-0"	5 $\frac{1}{2}$ "	6"
66"	1.7:1	30"	6'-0"	2'-3"	8'-3"	8'-0"	5 $\frac{1}{2}$ "	6"
72"	1.6:1	30"	6'-6"	1'-9"	8'-3"	9'-0"	6"	7"
78"	1.8:1	36"	7'-6"	1'-9"	9'-3"	9'-6"	6 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "
84"	1.3:1	29 $\frac{1}{2}$ "	6'-9"	2'-6 $\frac{1}{2}$ "	9'-3 $\frac{1}{2}$ "	10'-0"	6 $\frac{1}{2}$ "	8"

TYPE 2 APRONS								
DIAM.	SLOPE	A	B	MINIMUM		F	G	T
				C	E			
12"	2.4:1	4"	2'-0"	4'- $\frac{7}{8}$ "	6'- $\frac{7}{8}$ "	2'-0"	2"	2"
15"	2.4:1	6"	2'-3"	3'-10"	6'-1"	2'-6"	2 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "
18"	2.3:1	9"	2'-3"	3'-10"	6'-1"	3'-0"	2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "
21"	2.4:1	9"	3'-0"	3'-1 $\frac{1}{2}$ "	6'-1 $\frac{1}{2}$ "	3'-5"	3"	3"
24"	2.5:1	9 $\frac{1}{2}$ "	3'-7 $\frac{1}{2}$ "	2'-6"	6'-1 $\frac{1}{2}$ "	4'-0"	3"	3"
27"	2.5:1	10 $\frac{1}{2}$ "	4'-1"	2'-0"	6'-1 $\frac{1}{2}$ "	4'-4"	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "
30"	2.5:1	12"	4'-6"	1'-7 $\frac{3}{4}$ "	6'-1 $\frac{3}{4}$ "	5'-0"	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "
36"	2.5:1	15"	5'-3"	2'-9"	8'-0"	6'-0"	4"	4"
42"	2.5:1	21"	5'-3"	2'-9"	8'-0"	6'-6"	4 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "
48"	2.5:1	24"	6'-0"	2'-0"	8'-0"	7'-0"	5"	5"
54"	1.9:1	24 $\frac{1}{2}$ "	5'-5"	2'-7"	8'-0"	7'-6"	5 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "
60"	1.4:1	24 $\frac{1}{2}$ "	5'-0"	3'-0"	8'-0"	8'-0"	5 $\frac{1}{2}$ "	6"
66"	1.7:1	30"	6'-0"	2'-3"	8'-3"	8'-0"	5 $\frac{1}{2}$ "	6"
72"	1.4:1	24"	6'-6"	1'-9"	8'-3"	9'-0"	6"	7"
78"	1.8:1	36"	7'-6"	1'-9"	9'-3"	9'-6"	6 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "
84"	1.5:1	23 $\frac{1}{2}$ "	7'-6 $\frac{1}{2}$ "	1'-9"	9'-3 $\frac{1}{2}$ "	10'-0"	6 $\frac{1}{2}$ "	8"

Contract Item:  
Apron, Concrete

Tabulations:  
104-3  
104-5C

 <b>STANDARD ROAD PLAN</b>	REVISION	10-16-18
	1	
	<b>DR-201</b>	
SHEET 1 of 1		
<small>REVISIONS: Modified Circle Note 1 to remove reference to AASHTO M 170 for tongue and groove dimensions.</small>		
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>		
<b>CONCRETE APRONS</b>		