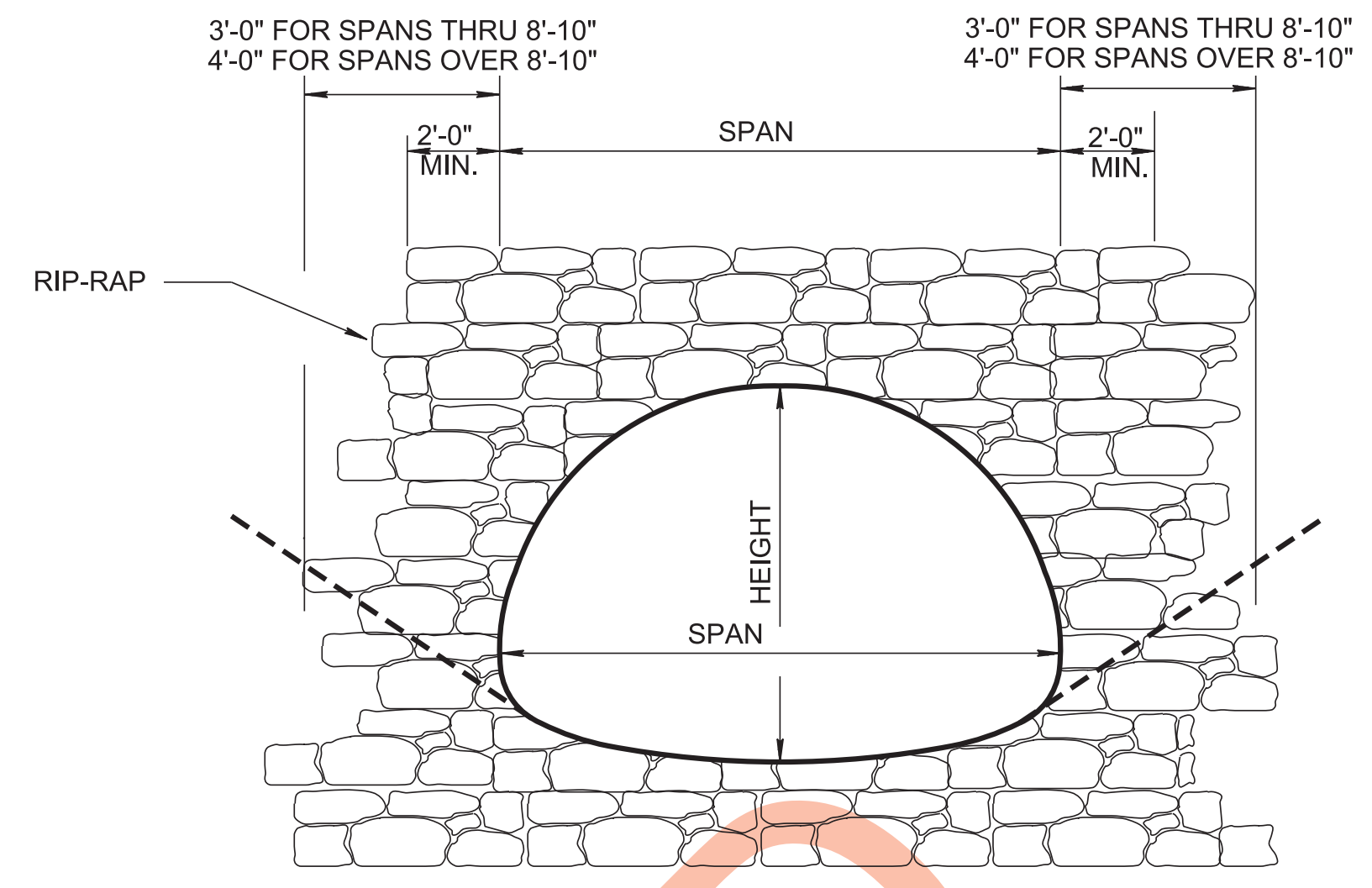
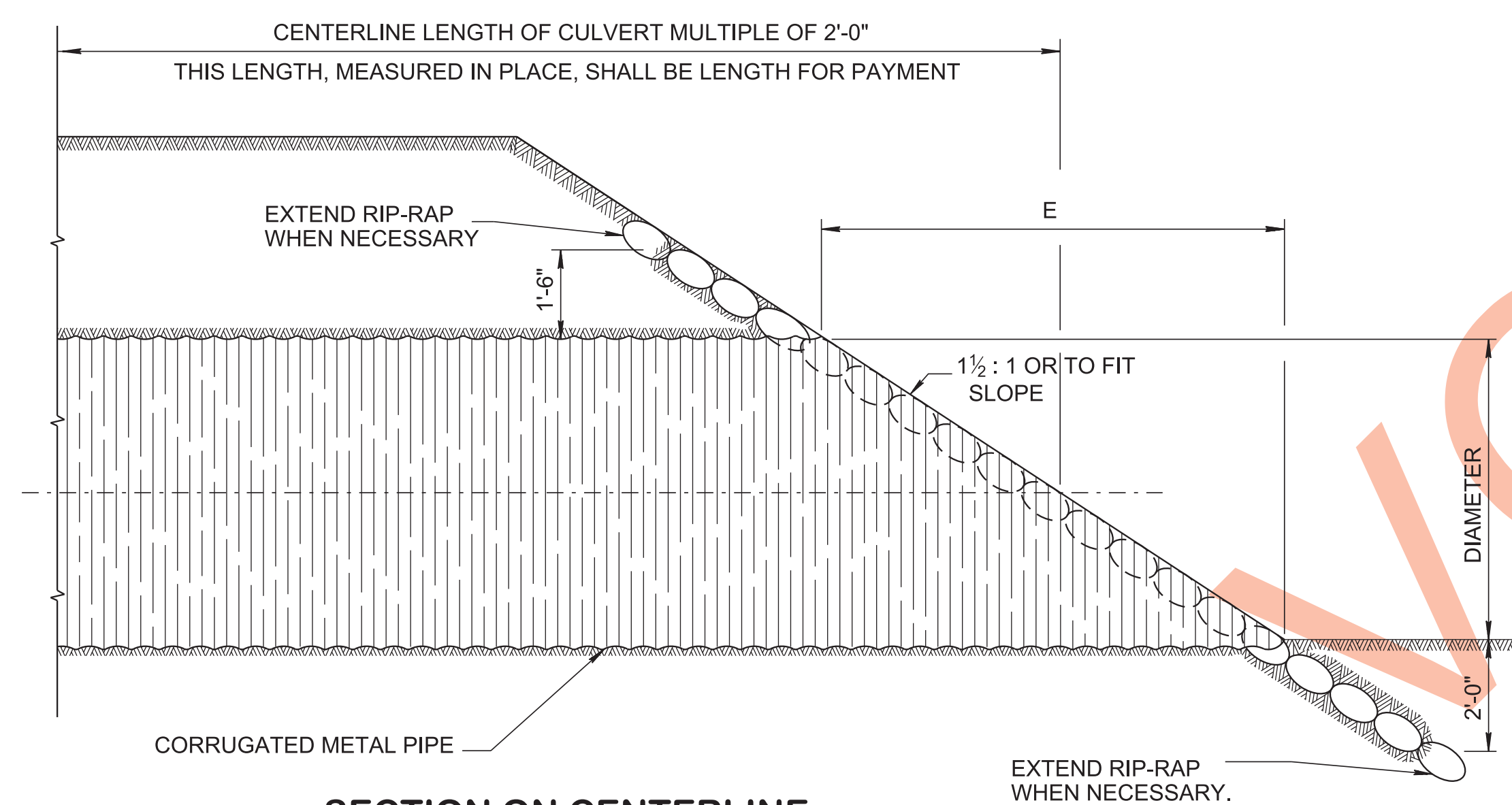


SECTION ON CENTERLINE

BEVELED END PIPE-ARCH

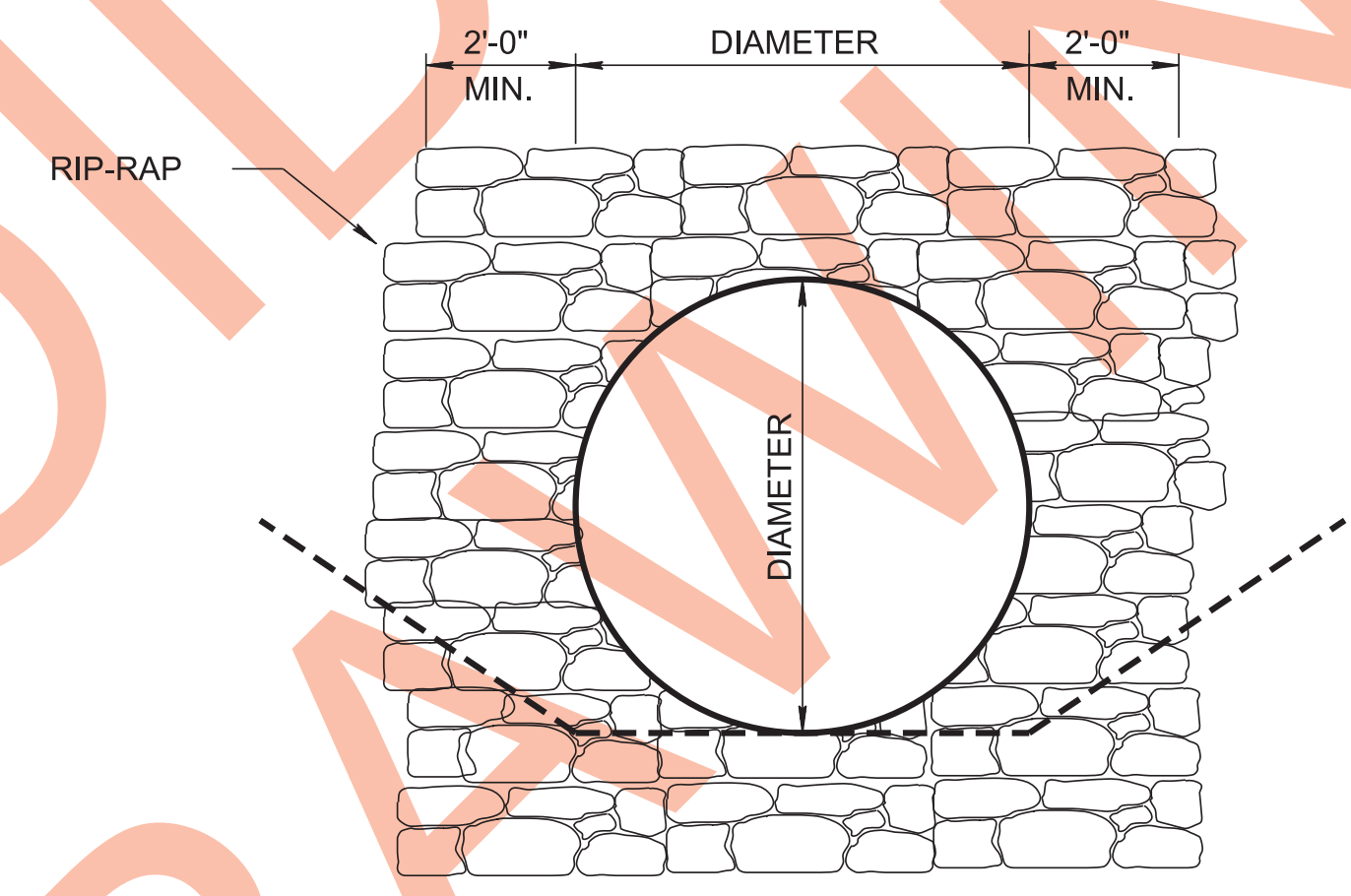


ELEVATION

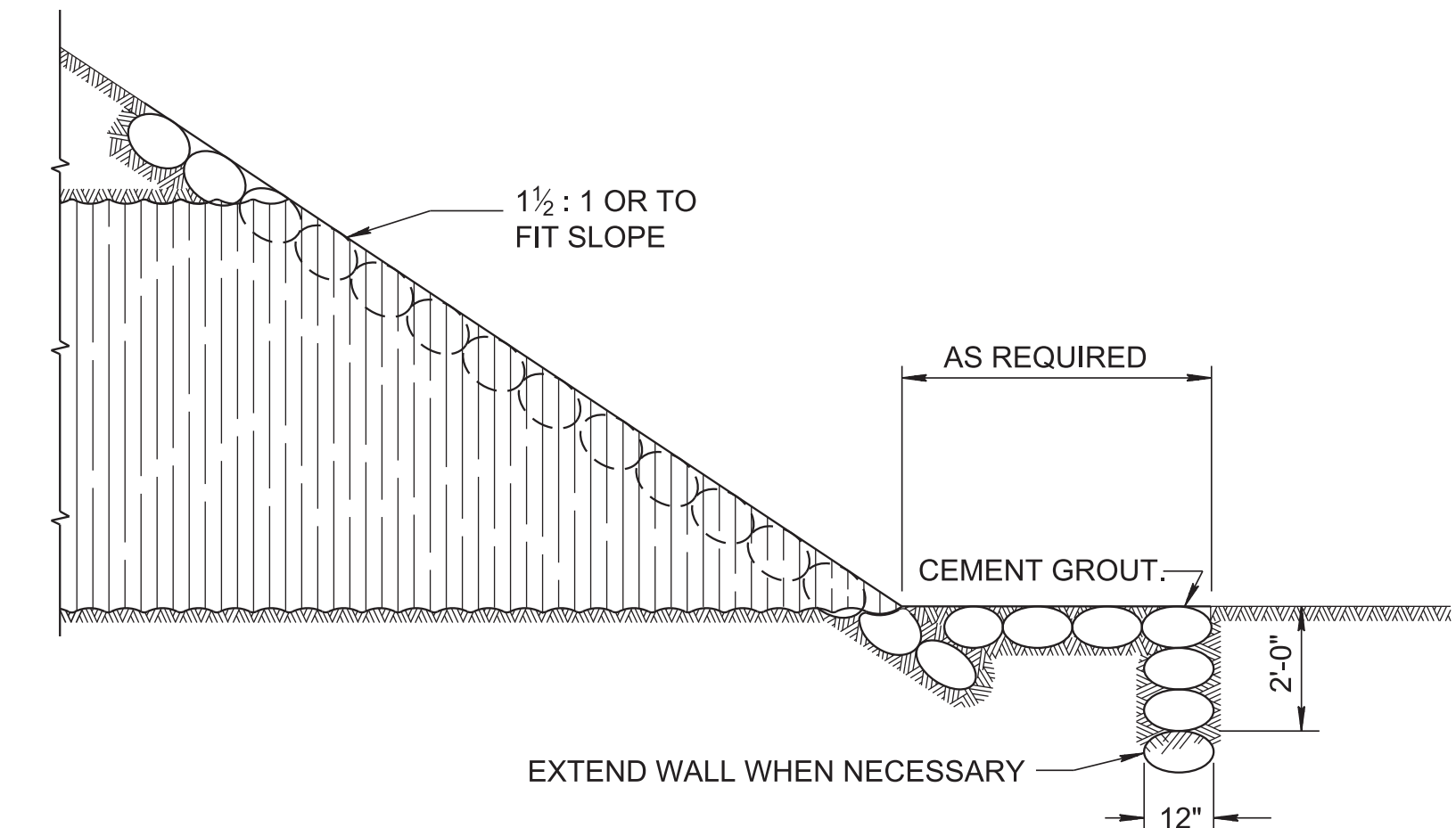


SECTION ON CENTERLINE

BEVELED END PIPE

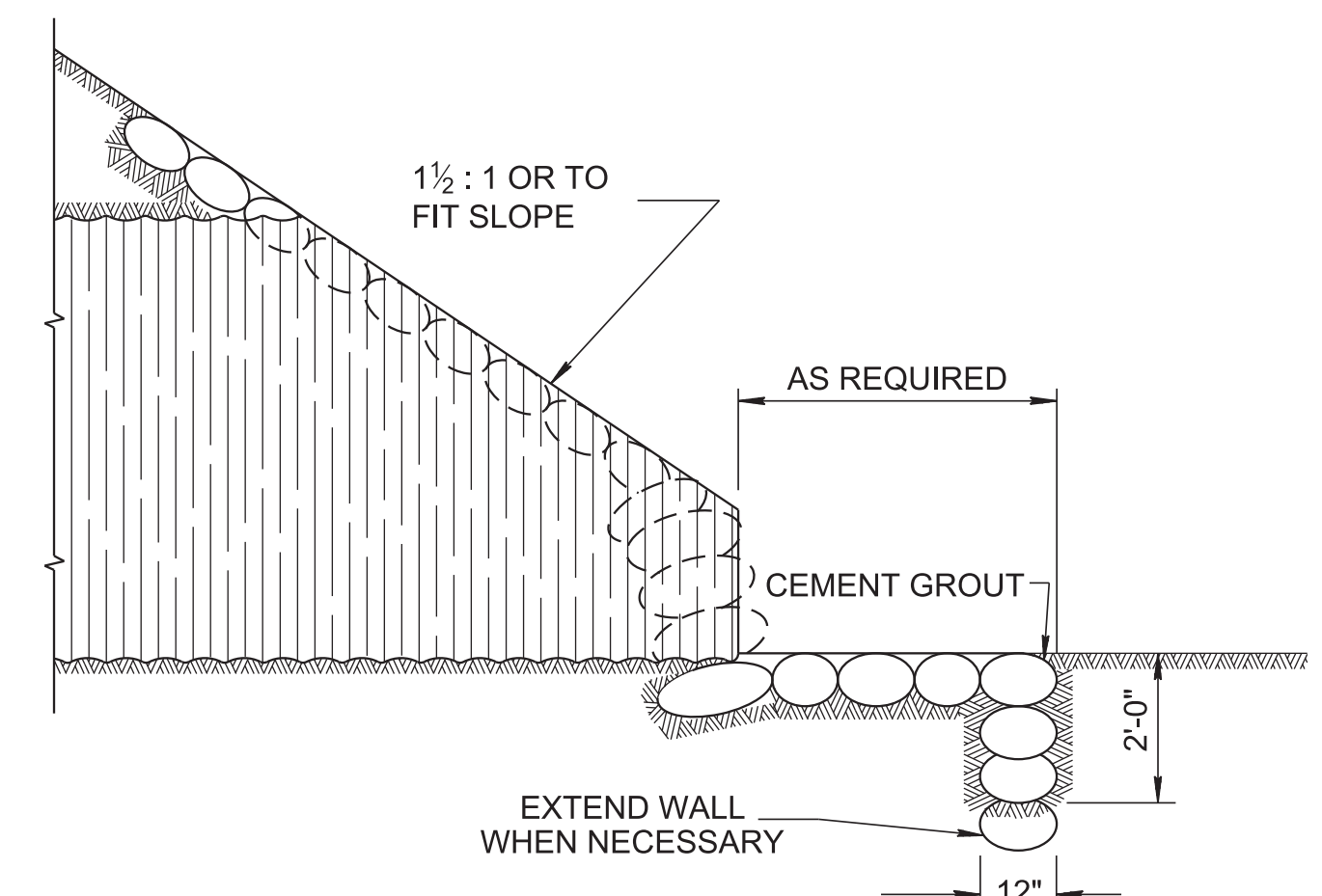


ELEVATION



DETAIL OF APRON FOR OUTLET END OF PIPE

USE ONLY WHEN NECESSARY



DETAIL OF APRON FOR OUTLET END OF PIPE-ARCH

USE ONLY WHEN NECESSARY

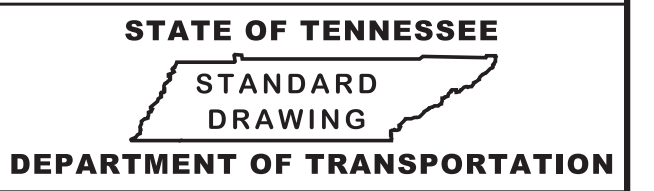
PIPE - ARCH CULVERTS						
SPAN	HEIGHT	RIP-RAP C.Y. (ONE END)		A	B	C
		ONE LINE	TWO LINES			
58"	36"	2.7	4.2	1'-0"	2'-0"	3'-0"
65"	40"	2.9	4.4	1'-0"	2'-4"	3'-6"
72"	44"	3.1	5.0	1'-0"	2'-8"	4'-0"
6'-1"	4'-7"	3.1	5.0	2'-3"	2'-4"	3'-6"
6'-4"	4'-9"	3.3	5.4	2'-1"	2'-8"	4'-0"
6'-9"	4'-11"	3.4	5.6	2'-5"	2'-6"	3'-9"
7'-0"	5'-1"	3.5	5.8	2'-3"	2'-10"	4'-3"
7'-3"	5'-3"	3.6	6.0	2'-1"	3'-2"	4'-9"
7'-8"	5'-5"	3.7	6.3	2'-4"	3'-1"	4'-7 1/2"
7'-11"	5'-7"	3.9	6.7	2'-2"	3'-5"	5'-1 1/2"
8'-2"	5'-9"	4.0	6.9	2'-0"	3'-9"	5'-7 1/2"
8'-7"	5'-11"	4.1	7.1	2'-4"	3'-7"	5'-4 1/2"
8'-10"	6'-1"	4.3	7.5	2'-2"	3'-11"	5'-10 1/2"
9'-4"	6'-3"	4.9	8.3	2'-5"	3'-10"	5'-9"
9'-6"	6'-5"	5.0	8.5	2'-4"	4'-1"	6'-1 1/2"
9'-9"	6'-7"	5.2	8.9	2'-2"	4'-5"	6'-7 1/2"
10'-3"	6'-9"	5.3	9.2	2'-5"	4'-4"	6'-6"
10'-8"	6'-11"	5.4	9.4	2'-9"	4'-2"	6'-3"
10'-11"	7'-1"	5.6	9.9	2'-7"	4'-6"	6'-9"
11'-5"	7'-3"	5.7	10.1	2'-10"	4'-5"	6'-7 1/2"
11'-7"	7'-5"	5.9	10.5	2'-8"	4'-9"	7'-1 1/2"
11'-10"	7'-7"	6.1	11.0	2'-6"	5'-1"	7'-7 1/2"
12'-4"	7'-9"	6.2	11.2	2'-10"	4'-11"	7'-4 1/2"
12'-6"	7'-11"	6.3	11.4	2'-8"	5'-3"	7'-10 1/2"
12'-8"	8'-1"	6.5	11.7	2'-6"	5'-7"	8'-4 1/2"
12'-10"	8'-4"	6.7	12.1	2'-4"	6'-0"	9'-0"
13'-5"	8'-5"	6.9	12.5	2'-7"	5'-10"	8'-9"
13'-11"	8'-7"	7.0	12.7	2'-11"	5'-8"	8'-6"
14'-1"	8'-9"	7.1	12.8	2'-9"	6'-0"	9'-0"
14'-3"	8'-11"	7.3	13.2	2'-7"	6'-4"	9'-6"
14'-10"	9'-1"	7.5	13.6	2'-11"	6'-2"	9'-3"
15'-4"	9'-3"	7.6	13.8	3'-2"	6'-1"	9'-1 1/2"
15'-6"	9'-5"	7.8	14.2	3'-0"	6'-5"	9'-7 1/2"
15'-8"	9'-7"	7.9	14.3	2'-10"	6'-9"	10'-1 1/2"
15'-10"	9'-10"	8.2	14.9	2'-8"	7'-2"	10'-9"
16'-5"	9'-11"	8.3	15.1	3'-0"	6'-11"	10'-4 1/2"
16'-7"	10'-1"	8.5	15.5	2'-10"	7'-3"	10'-10 1/2"

ROUND PIPE CULVERTS			
PIPE SIZE	RIP-RAP (ONE END) C.Y.		E
	ONE LINE	TWO LINES	
42"	2.9	4.7	5'-3"
48"	3.2	5.4	6'-0"
54"	3.5	6.1	6'-9"
60"	3.8	6.7	7'-6"
66"	4.1	7.4	8'-3"
72"	4.5	8.4	9'-0"
78"	4.8	9.1	9'-9"
84"	5.1	9.8	10'-6"
90"	5.2	10.2	11'-3"
96"	5.5	11.0	12'-0"
102"	6.2	12.4	12'-8"
108"	6.6	13.2	13'-6"
114"	7.0	14.0	14'-3"
120"	7.4	14.8	15'-0"
126"	7.8	15.6	15'-9"
132"	8.2	16.4	16'-6"
138"	8.6	17.2	17'-3"
144"	9.0	18.0	18'-0"
150"	9.4	18.8	18'-9"
156"	9.9	19.8	19'-6"
162"	10.3	20.6	20'-3"
168"	10.8	21.6	21'-0"
174"	11.2	22.4	21'-9"
180"	11.7	23.4	22'-6"

**RIP-RAP QUANTITIES NOTE**

QUANTITIES SHOWN ARE FOR ONE END AND ARE FOR ESTIMATING PURPOSES ONLY. PAYMENT TO BE MADE FOR QUANTITIES ACTUALLY PLACED AND COMPUTED FOR EACH INSTALLATION.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED



RIP-RAP END TREATMENT FOR CORRUGATED METAL PIPE, OVAL AND PIPE ARCH CULVERTS WITH BEVELED ENDS (PIPE SIZES 42" & LARGER)

9/10/2019 8:07:29 AM C:\Users\jj005471\Desktop\DRAWINGS FOR IB SET DIDPE8-20190628.dgn