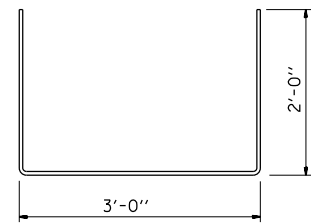
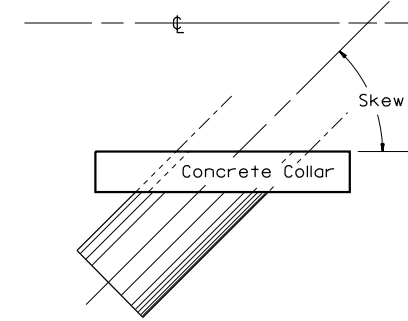
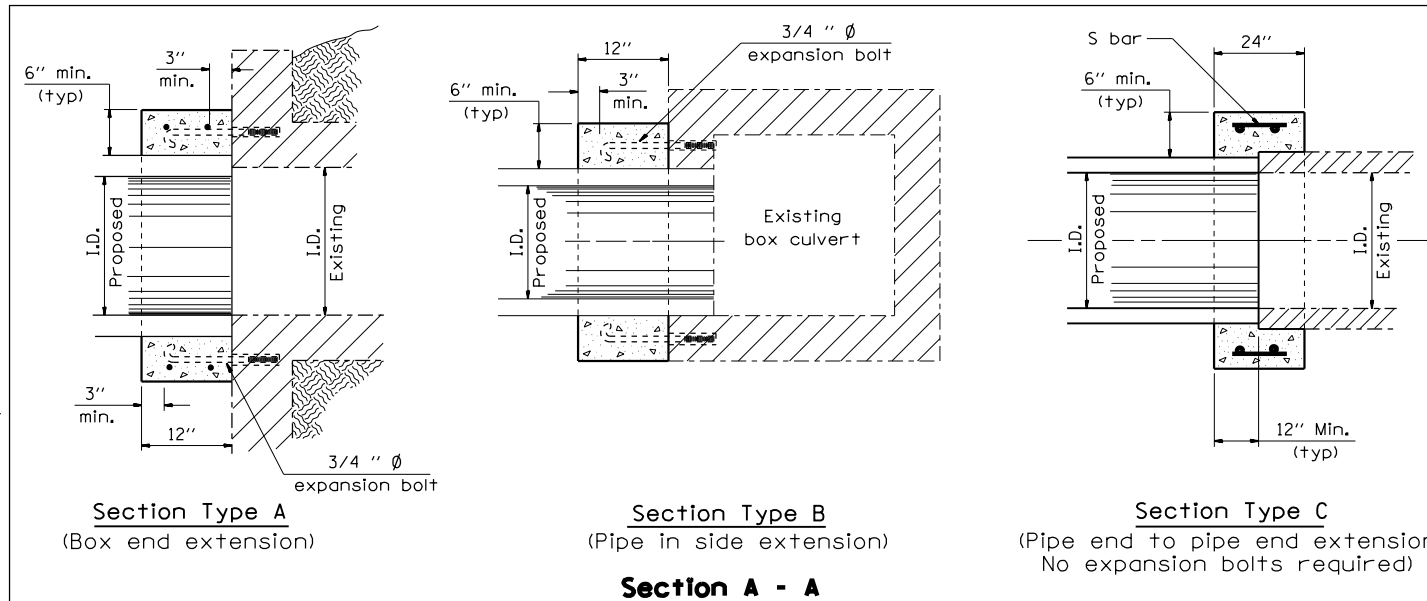
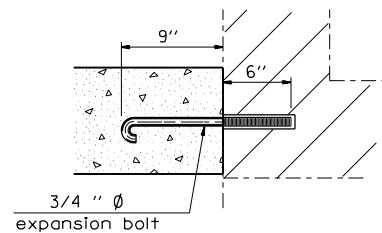


PIPE CULVERT EXTENSION COLLAR



#4 U - bar

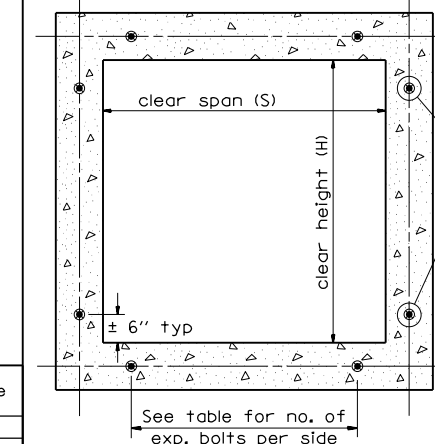


Expansion Bolt Detail

Notes:

- Expansion bolts shall consist of self drilling expansion shields and 3/4" Ø hooked bolts. Hooked bolts shall extend a minimum of 9" into new concrete. Minimum Certified Proof Load - 4,080 lbs.
- Use minimum of 1 (one) expansion bolt at each corner.

BOX CULVERT POURED IN PLACE EXTENSION



Section Thru Barrel

EXPANSION BOLTS REQUIRED FOR CULVERT EXTENSIONS

H or S	No. Expansion Bolts Req'd. Per Side			
	Extension ≤ 15ft		Extension > 15ft	
	No.	Spacing	No.	Spacing
24"	*	*	*	*
30"	2	18"	2	18"
36"	2	24"	2	24"
48"	3	18"	3	18"
60"	4	16"	3	24"
72"	5	15"	4	20"
84"	5	18"	4	24"
96"	6	17"	5	21"
108"	6	19"	5	24"
120"	7	18"	6	21"
132"	8	17"	6	24"
144"	8	19"	7	22"

Note: Number of expansion bolts in table based on non-skewed culverts.

* Use minimum 1 (one) expansion bolt in each corner.

Station	Section Type	Skew	Existing Culvert Size	Proposed Culvert		Collar		Reinforcement Bars							Expansion Bolts 3/4"	Class SI Concrete Collar			
				I.D.	O.D.	Height	Width	S bar		U bar							lb	yd ³	
								No.	Size	Length	No.	Size	A	B	Lap	Length			
LT 918+98	A	0	2.0X1.5	24"	30"	3'-6"	3'-6"	4	#4	3'-0"	2'-0"	1'-0"	7'-0"	19	4	0.3			
RT 918+98	A	0	2.0X1.5	24"	30"	3'-6"	3'-6"	4	#4	3'-0"	2'-0"	1'-0"	7'-0"	19	4	0.3			
Total																	38	8	0.6