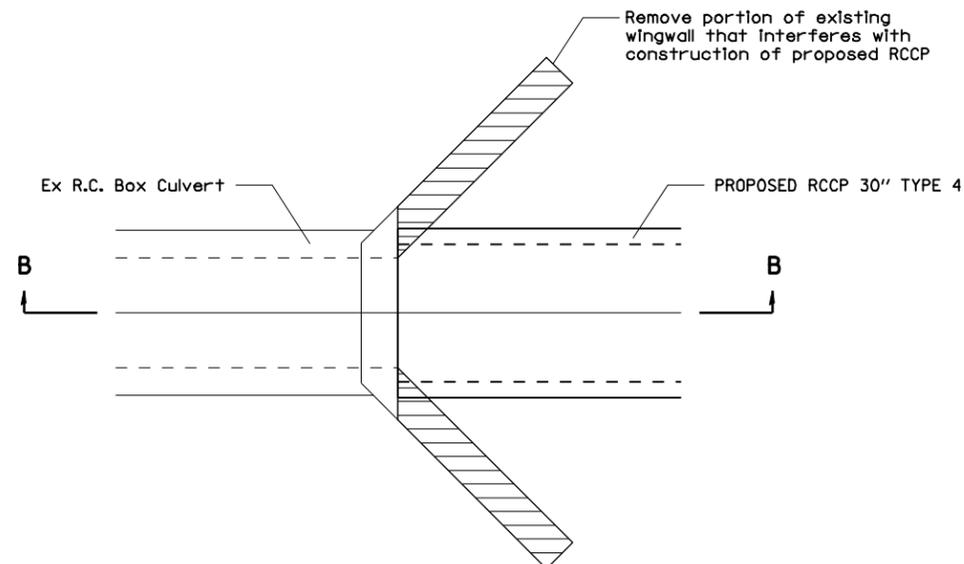
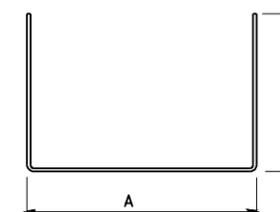


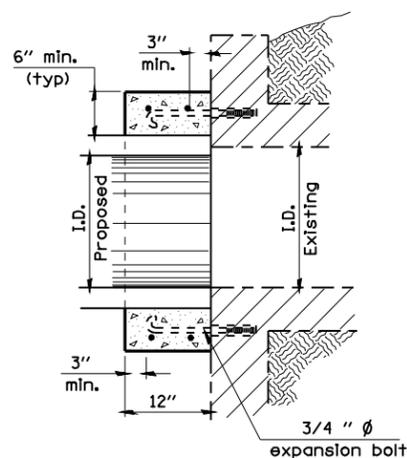
PIPE CULVERT EXTENSION COLLAR



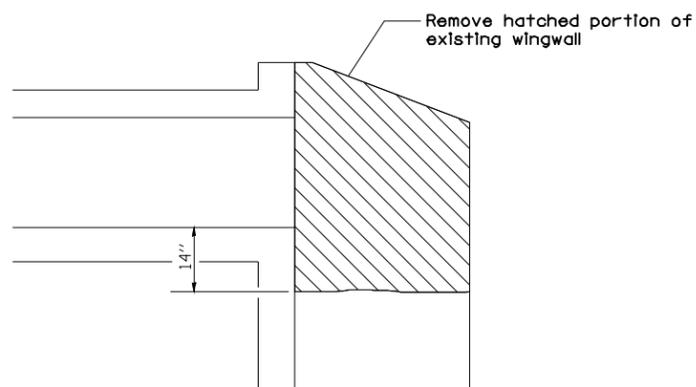
CONCRETE REMOVAL PLAN



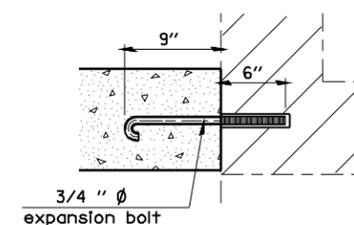
#4 U - bar



Section A - A



SECTION B-B



Expansion Bolt Detail

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.

Notes:

- Expansion bolts shall consist of self drilling expansion shields and 3/4 inch diameter hooked bolts. Hooked bolts shall extend a minimum of 9 inches into new concrete. Minimum Certified Proof Load - 4,080 lbs.
- Use minimum of 1 (one) expansion bolt at each corner.
- The "CONCRETE COLLAR" is paid for as an each item.
- All "Reinforcement Bars" and "Concrete Removal" is included in the "CONCRETE COLLAR" pay item.

Station	Skew	Existing Culvert		Proposed Culvert		Collar		Reinforcement Bars					Expansion Bolts 3/4"	Class SI Concrete Collar cu yd	
		Size	I.D.	O.D.	Height	Width	No.	Size	A	B	Lap	Length			lb
662+00 (EB-72)	NONE	2' x 2'	30"	37"	4'-1"	4'-1"	4	#4	3'-10"	2'-9"	1'-8"	9'-4"	30	8	0.34