

# CONCRETE COLLARS FOR PIPE OR BOX CULVERT EXTENSIONS

## Bill of Materials

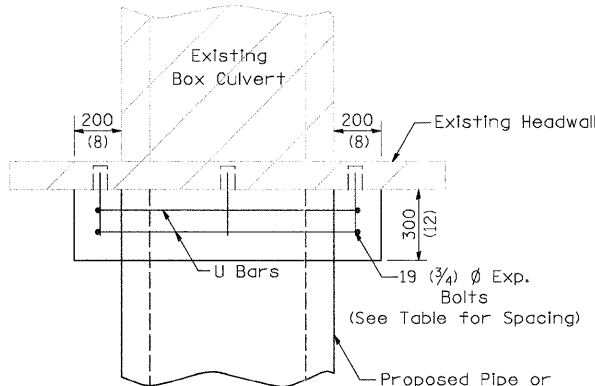
STATION	DIMENSIONS		u Bar	h Bar	EXPANSION BOLTS	CONCRETE COLLAR	REINF. BARS
	X	Y	No.	No.			
-	10'-4"	5'-0"	8	84	1'-6"	28	4
All h Bars 450 (18) Long					Total		

## General Notes

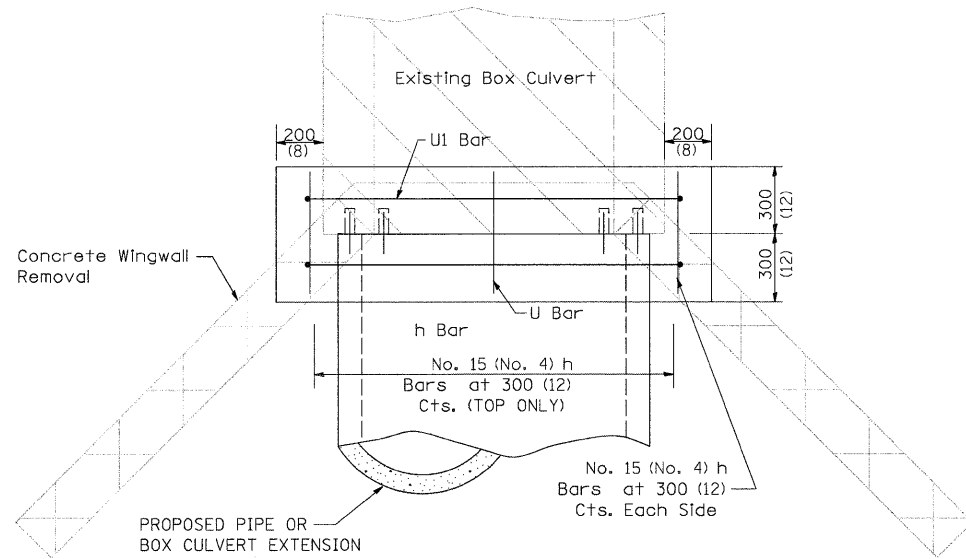
Concrete Collars shall be constructed of Class SI Concrete in accordance with Section 503 of the Standard Specifications

Reinforcement bars shall conform to Section 508 of the Standard Specifications.

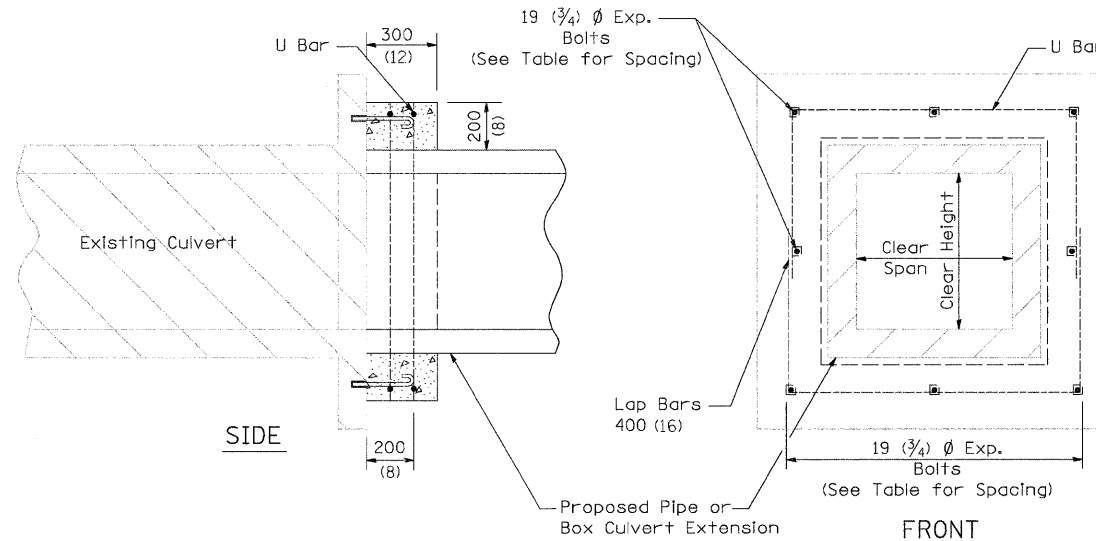
The concrete will be paid for at the contract unit price per cubic meter (cubic yard) for CONCRETE COLLAR. Reinforcement will be paid for at the contract unit price per kilogram (pound) for REINFORCEMENT BARS. Expansion Bolts, when required, will be paid for at the contract unit price each for EXPANSION BOLTS of the size indicated, which price shall include furnishing, drilling holes, and installing the expansion bolts complete in place. These bolts shall extend at least 200 (8) inches into the new concrete.



PLAN OF CULVERT WITH STRAIGHT HEADWALL

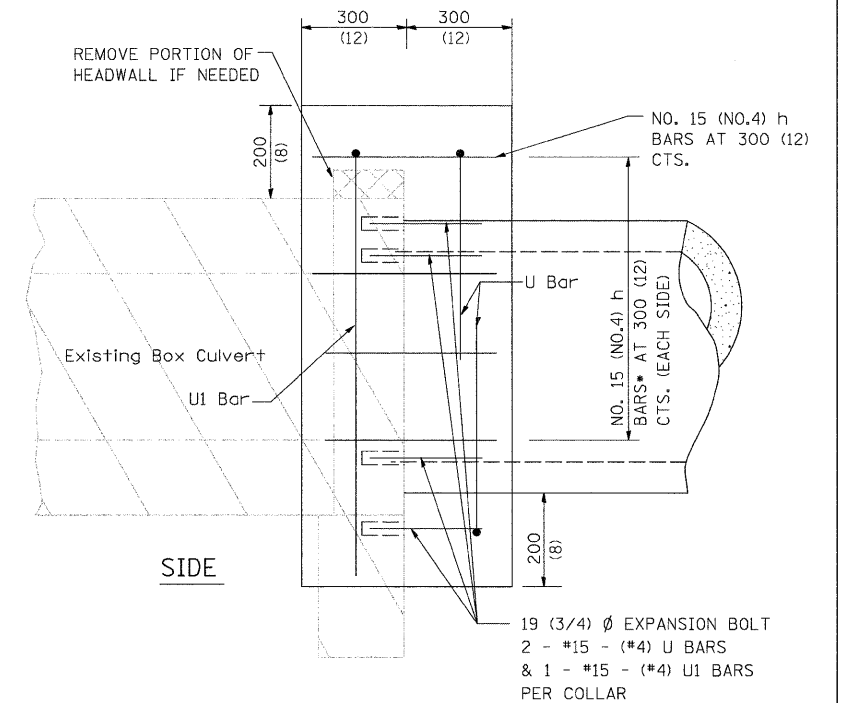


PLAN OF CULVERT WITH ANGLED WING WALLS



SIDE

FRONT

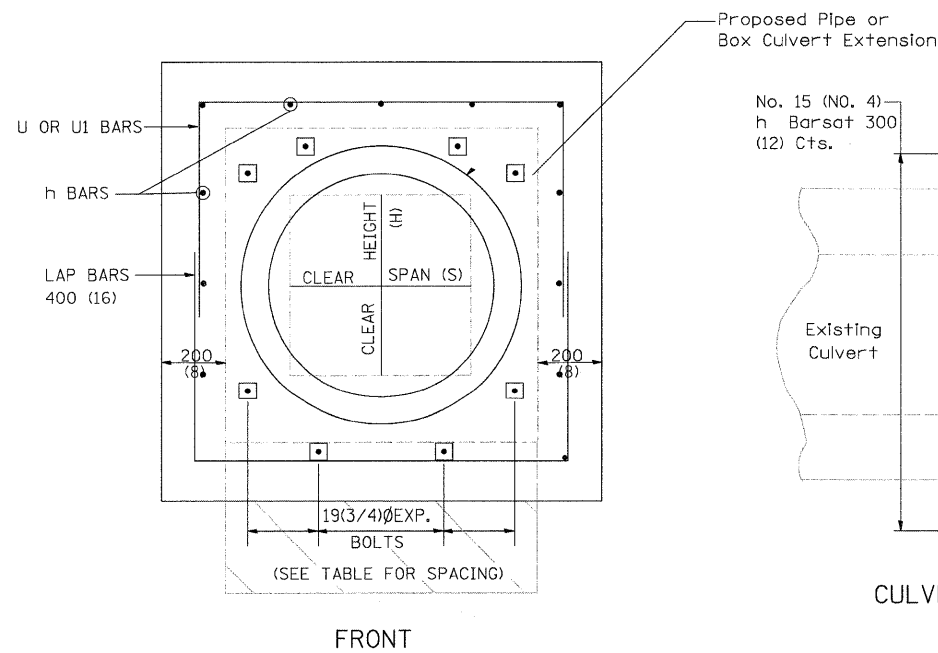


SIDE

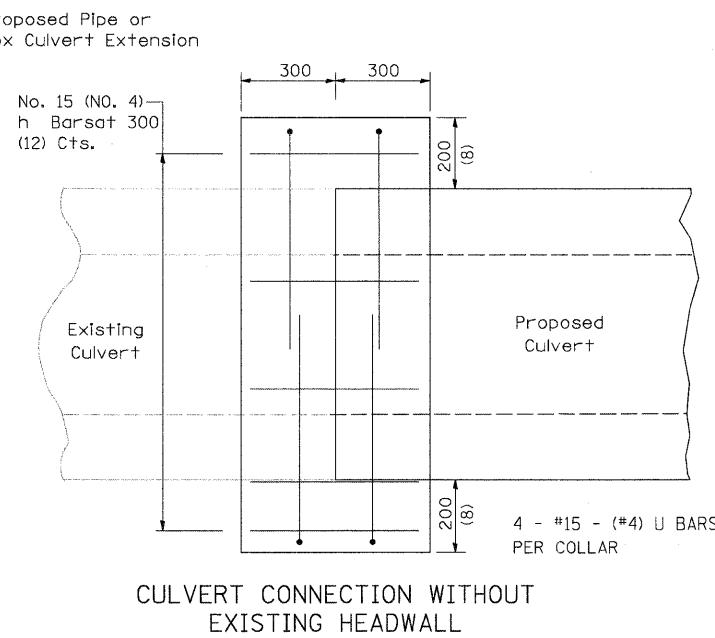
PLACEMENT DETAILS FOR EXPANSION BOLTS

H OR S	NUMBER OF EXPANSION BOLTS REQUIRED PER SIDE			
	EXTENSIONS < 4.57m (15')		EXTENSIONS > 4.57m (15')	
	NUMBER	SPACING	NUMBER	SPACING
600 (24)	*		*	
750 (30)	2	450 (18)	2	450 (18)
900 (36)	2	600 (24)	2	600 (24)
1200 (48)	3	450 (18)	3	450 (18)
1500 (60)	4	400 (16)	3	600 (24)
1800 (72)	5	375 (15)	4	500 (20)
2100 (84)	5	450 (18)	4	600 (24)
2400 (96)	6	375 (15)	5	525 (21)
2700 (108)	6	475 (19)	5	600 (24)
3000 (120)	7	450 (18)	6	525 (21)
3300 (132)	8	425 (17)	6	600 (24)
3600 (144)	8	475 (19)	7	550 (22)

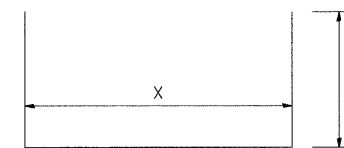
\* MINIMUM ONE PER SIDE



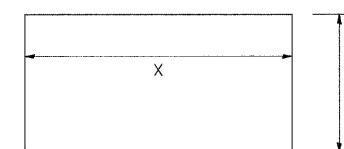
FRONT



CULVERT CONNECTION WITHOUT EXISTING HEADWALL



(#4) U BAR



(#4) U1 BAR