

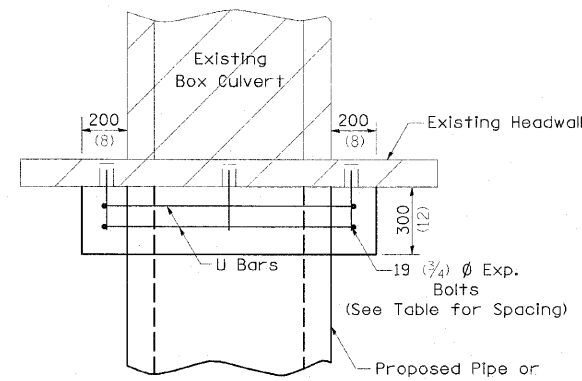
CONCRETE COLLARS FOR PIPE OR BOX CULVERT EXTENSIONS

Bill of Materials

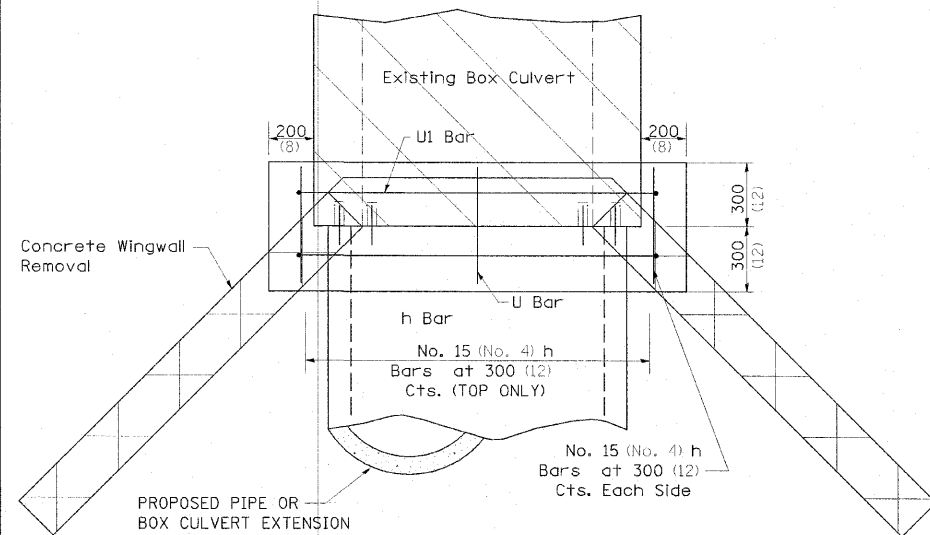
STATION	DIMENSIONS		h Bar	U Bar		EXPANSION BOLTS	CONCRETE COLLAR	REINF. BARS
	X	Y	No.	No.	Length	No.	Cu. Yd	LBS
48+98 RT	3'-6"	2'-5"	0	4	8'-4"	8	0.5	30
All h Bars 450 (18) Long			Totals			8	0.5	30

General Notes

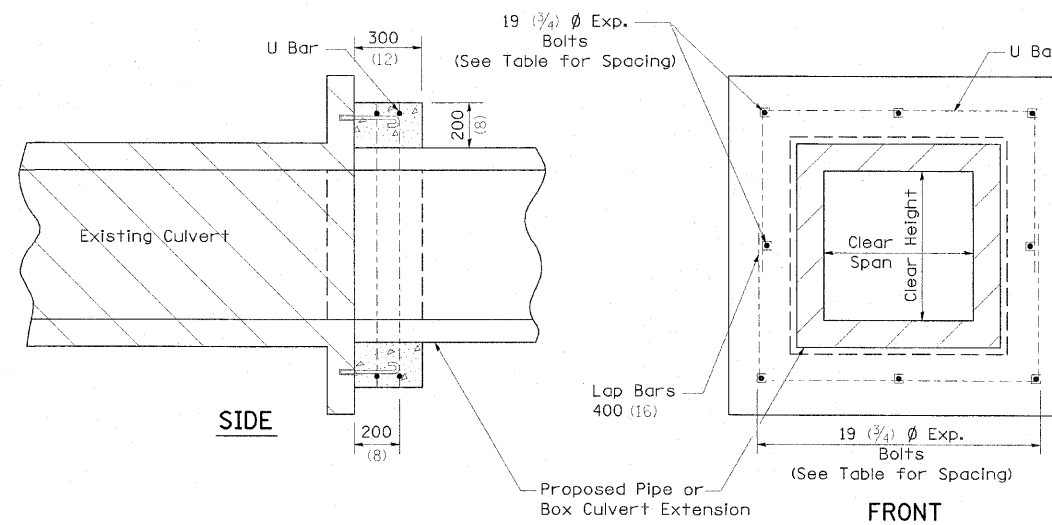
Concrete Collars shall be constructed of Class SI Concrete in accordance with Section 503 of the Standard Specifications. Reinforcement bars shall conform to Section 508 of the Standard Specifications. The concrete will be paid for at the contract unit price per cubic meter (cubic yard) for CONCRETE 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. Concrete headwall or wingwall removal will not be paid for separately but shall be included in the cost of CONCRETE COLLAR.



PLAN OF CULVERT WITH STRAIGHT HEADWALL

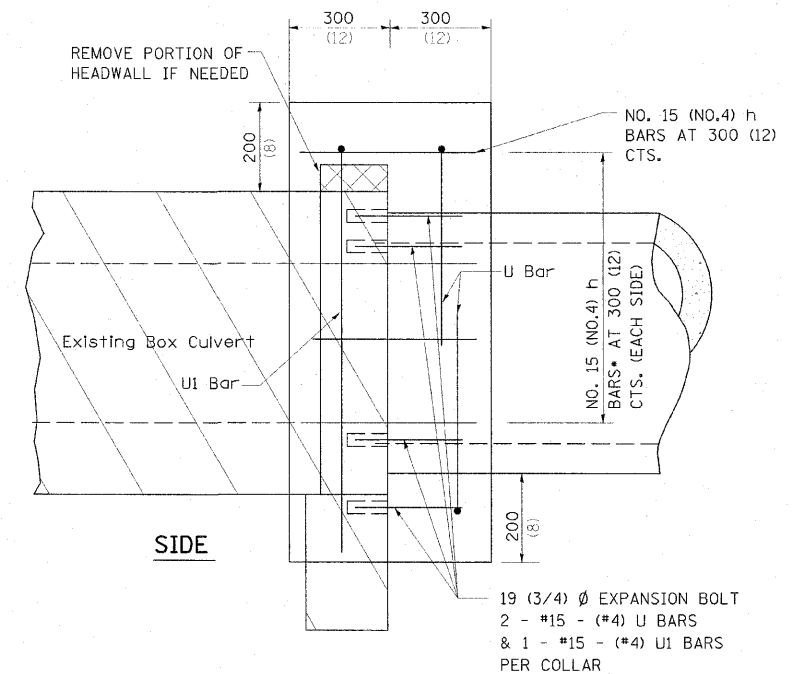


PLAN OF CULVERT WITH ANGLED WING WALLS

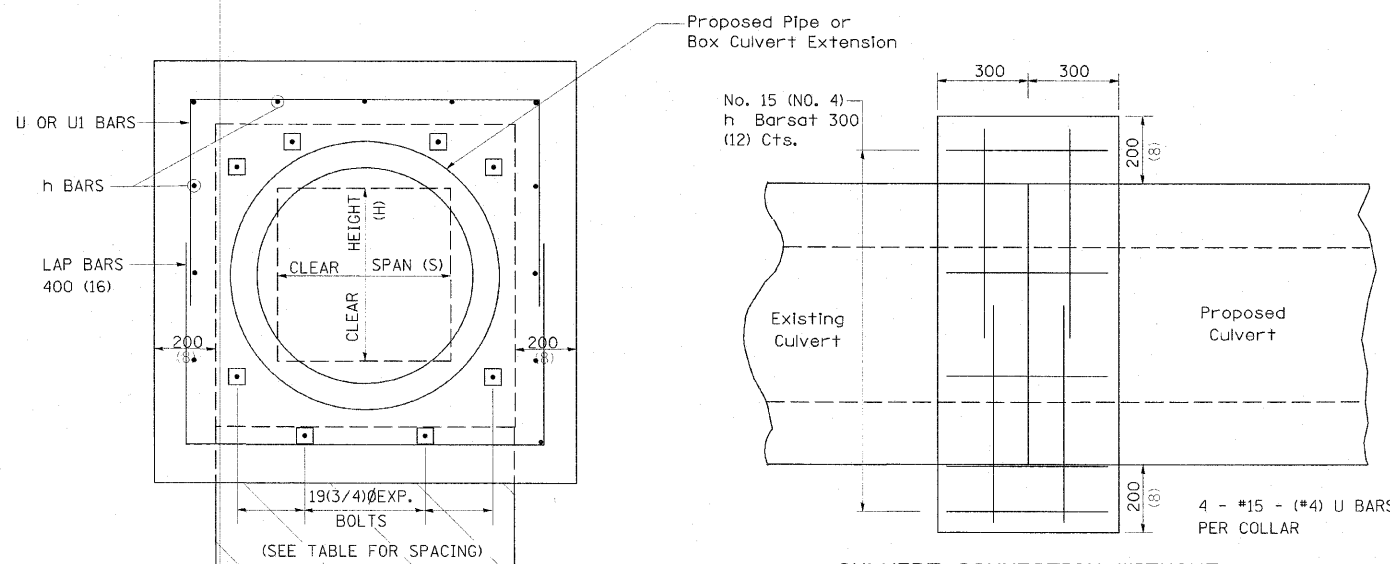


SIDE

FRONT



SIDE



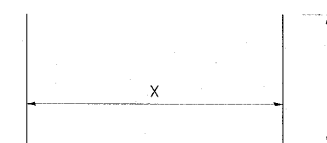
FRONT

CULVERT CONNECTION WITHOUT EXISTING HEADWALL

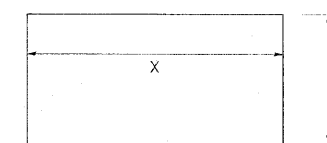
PLACEMENT DETAILS FOR EXPANSION BOLTS

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



(#4) U BAR



(#4) U1 BAR