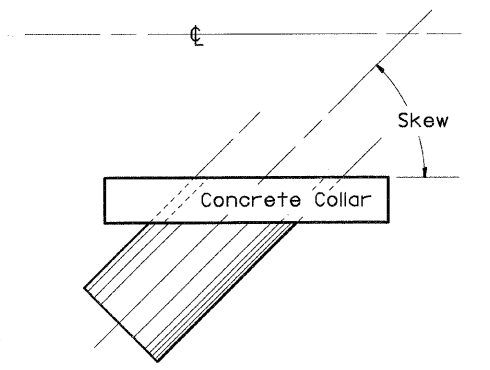
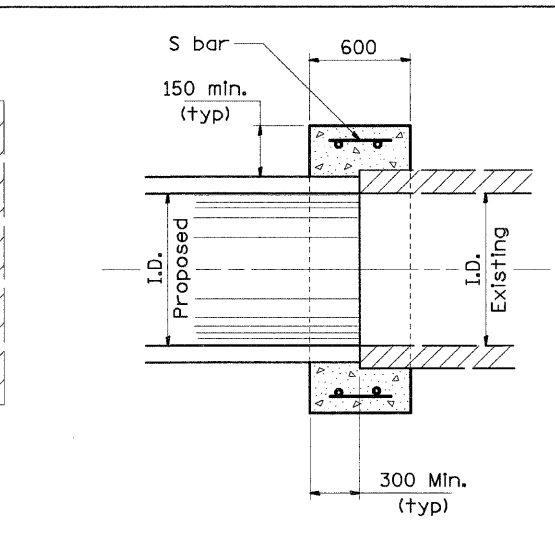
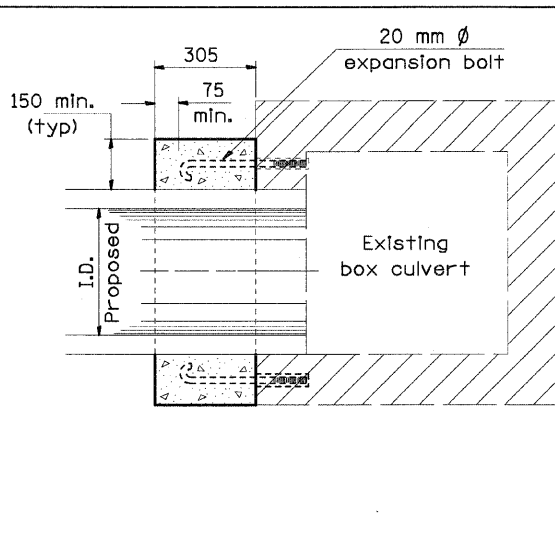
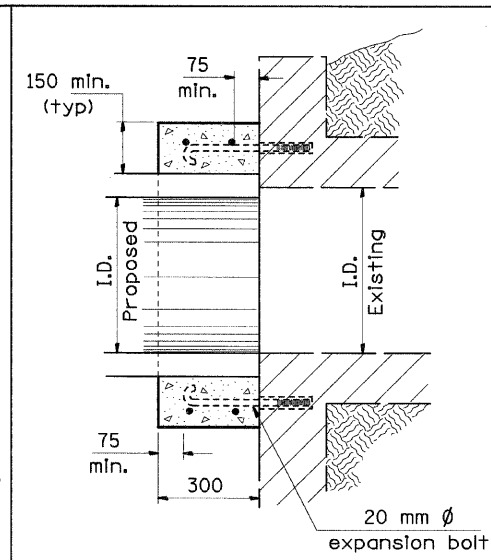
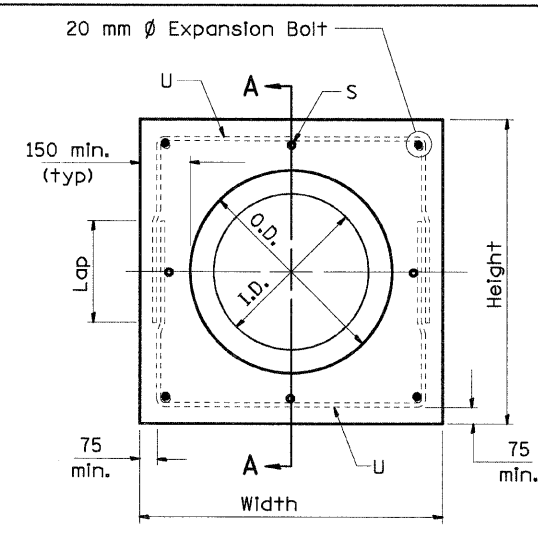


F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
310	60-15-1, 60-15HB-1	MADISON	238	172
STA.		TO STA.		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		
CONTRACT NO. 76635				

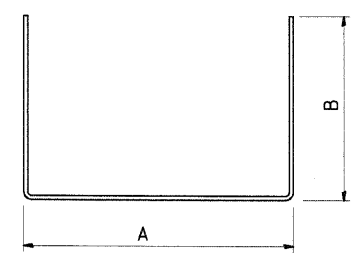


Section Type A
(Box end extension)

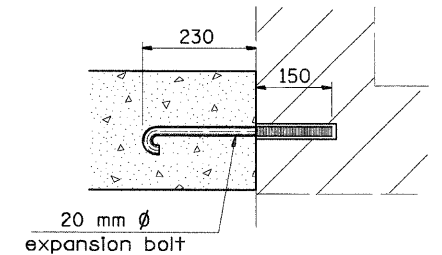
Section Type B
(Pipe in side extension)

Section Type C
(Pipe end to pipe end extension
No expansion bolts required)

Section A - A



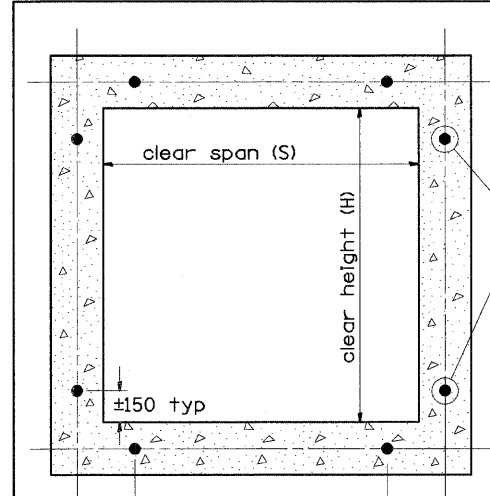
#15 U - bar



Expansion Bolt Detail

Notes:

- Expansion bolts shall consist of self drilling expansion shields and 20 mm ϕ hooked bolts. Hooked bolts shall extend a minimum of 230 mm into new concrete. Minimum Certified Proof Load - 18 kN
- Use minimum of 1 (one) expansion bolt at each corner.



Section Thru Barrel

EXPANSION BOLTS REQUIRED FOR CULVERT EXTENSIONS

H or S	No. Expansion Bolts Req'd. Per Side			
	Extension \leq 5 m		Extension > 5 m	
	No.	Spacing	No.	Spacing
600	*	*	*	*
750	2	460	2	460
900	2	610	2	610
1,200	3	460	3	460
1,500	4	405	3	610
1,800	5	380	4	510
2,100	5	460	4	610
2,400	6	430	5	535
2,700	6	480	5	610
3,000	7	460	6	535
3,300	8	430	6	610
3,600	8	480	7	560

Note:
All Dimensions are in millimeters unless otherwise shown.

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 20 mm Each	Class SI Concrete Collar m ³		
				I.D.	O.D.	Height	Width	S bar				U bar						kg	
								No.	Size	Length	No.	Size	A	B	Lap	Length			
19+629.72	C	0	0.305	0.30	0.42	0.75	0.75	8	15	0.45	4	15	0.60	0.45	0.30	1.50	15.1	0	0.3
19+698.33	C	0	0.305	0.30	0.42	0.75	0.75	8	15	0.45	4	15	0.60	0.45	0.30	1.50	15.1	0	0.3
19+766.78	C	0	0.305	0.30	0.42	0.75	0.75	8	15	0.45	4	15	0.60	0.45	0.30	1.50	15.1	0	0.3
19+834.97	A	0	0.762	0.75	0.93	1.30	1.30				4	15	1.15	0.93	0.70	3.00	18.8	8	0.3
20+322.94	C	0	0.305	0.30	0.42	0.75	0.75	8	15	0.45	4	15	0.60	0.45	0.30	1.50	15.1	0	0.3
20+396.10	C	0	0.305	0.30	0.42	0.75	0.75	8	15	0.45	4	15	0.60	0.45	0.30	1.50	15.1	0	0.3
20+250.70	C	0	0.610	0.60	0.75	1.10	1.10	8	15	0.45	4	15	0.95	0.63	0.30	2.20	19.5	0	0.5
20+250.70	C	0	0.610	0.60	0.75	1.10	1.10	8	15	0.45	4	15	0.95	0.63	0.30	2.20	19.5	0	0.5
Total																	133.3	8	2.8

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION
MISCELLANEOUS DETAILS
FAP 310 (IL 255)
SECTIONS 60-15-1, 60-15HB-1
MADISON COUNTY
DRAWN BY
CHECKED BY
DATE

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