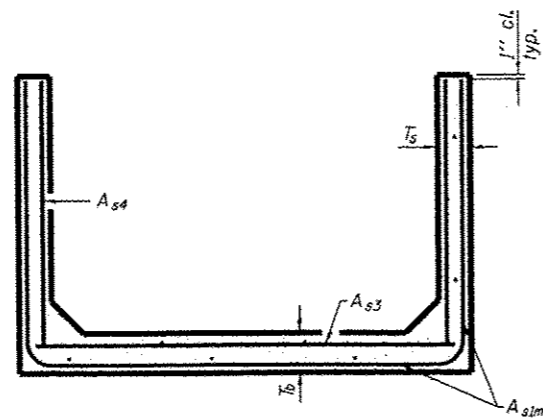
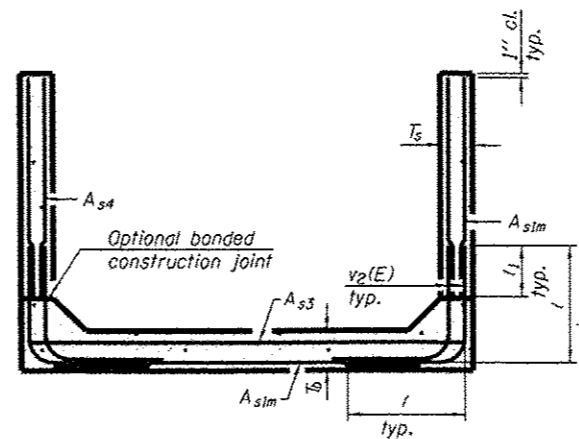


(Design Earth Cover < 2 ft.) (Design Earth Cover ≥ 2 ft.)

SECTION C-C



SECTION D-D



ALTERNATE SECTION D-D

T(in.), T _s (in.)	Reinforcing Steel A _{s1m} (in. ² /ft.)											
	2	3	4	5	6	7	8	9	10	11	12	
4	0.19	0.17										
5	0.26	0.21	0.18									
6		0.26	0.23	0.22								
7		0.33	0.59	0.27	0.28							
8			0.43	0.39	0.36	0.34	0.40					
9				0.43	0.40	0.37	0.36	0.48				
10				0.47	0.44	0.41	0.38	0.42	0.56			
11				0.54		0.46	0.41	0.41	0.50	0.65		
12				0.58		0.50		0.45	0.46		0.75	

(A_{s1m} reinforcement based upon welded wire fabric conforming to AASHTO M 55 or M 221).

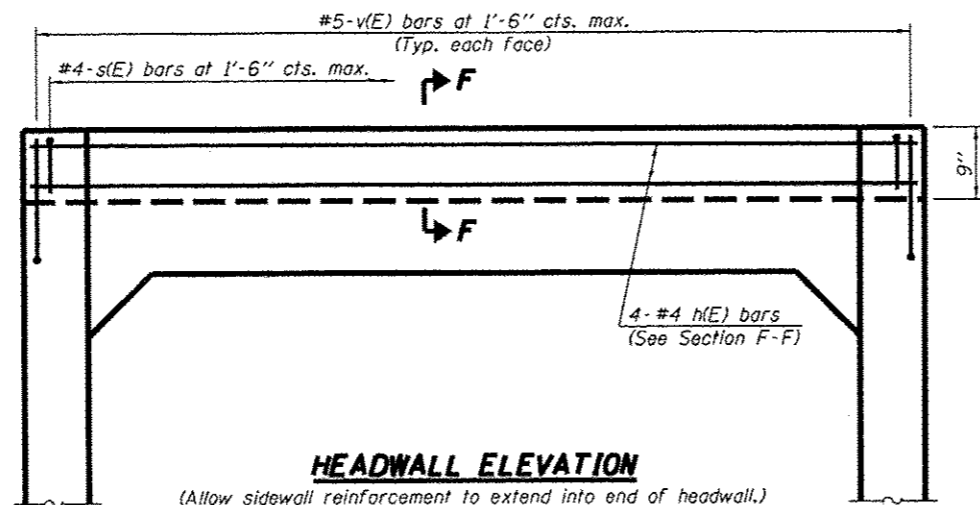
l₁ DIMENSION

- #3 bar = 2'-0"
- #4 bar = 2'-8"
- #5 bar = 3'-4"
- #6 bar = 3'-11"

Notes:
 Alternate Section D-D is provided to allow the Contractor the option of casting the bottom slab of the end section first followed by construction of the sidewalls using conventional forming methods. Shop drawings that detail slab thickness and reinforcement layout shall be submitted to the Engineer for review and approval when using Alternate Section D-D.

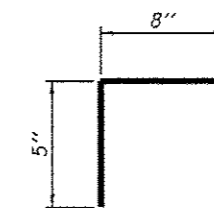
The size and spacing of the v₂(E) bars shall provide a minimum reinforcement area along each face of the walls (in.²/ft.) equal to 1.10*(A_{s1m}). v₂(E) bars may consist of #3 thru #6 size reinforcement bars and the longitudinal spacing shall not exceed the lesser of the wall thickness or 8 inches.

Bonded construction joints shall be prepared according to Article 503.09 of the Standard Specifications.

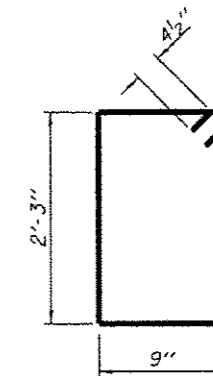


HEADWALL ELEVATION

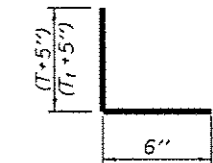
(Allow sidewall reinforcement to extend into end of headwall.)



BAR s(E)



BAR s₁



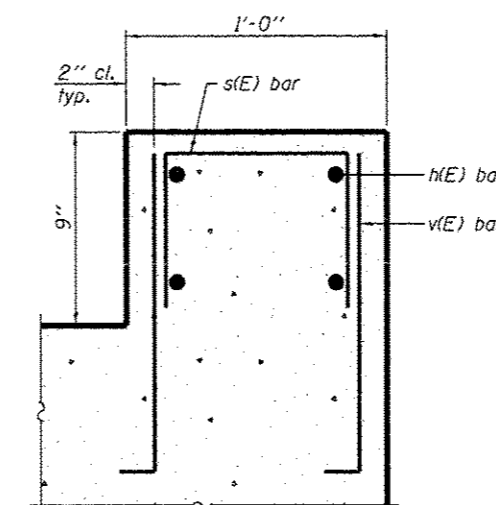
BAR v(E)

TOEWALL CONSTRUCTION SEQUENCE

1. Perform excavation and construct toewall.
2. Backfill according to the applicable paragraphs of Article 502.10 of the Standard Specifications and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and grout reinforcement in toewall using approved chemical adhesive in accordance with Section 1027 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.

* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling method.

** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.



SECTION F-F

DETAILS
(Sheet 2 of 2)

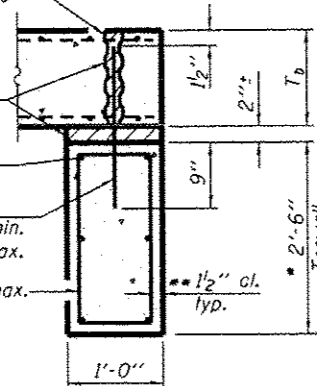
3" φ corrugated PE pipe per Article 1040.04 of the Standard Specifications.

Fill with non-shrink grout

6-#5 h₁ bars placed as shown

#4 v₁(E) bars drilled and grouted into toewall in 9" min. deep holes at 1'-6" cts., max.

#4 s₁ bars at 1'-0" cts., max.



SECTION E-E

10-16-12

FILE NAME #FILES*	USER NAME *	DESIGNED -	REVISOR -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SINGLE CELL PRECAST BOX CULVERT END SECTIONS	F.A. RTE. #ASB 2738	SECTION 03-00053-01-WR	COUNTY MADISON	TOTAL SHEETS	SHEET NO.	CONTRACT NO. 97509
PLOT DATE #DATES*	PLOT SCALE *	CHECKED -	REVISOR -						145	54	
		DRAWN -	REVISOR -								
		CHECKED -	REVISOR -								

SHEET NO. 6 OF 7 SHEETS

ILLINOIS FED. AID PROJECT