

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. End sections will be paid for at the contract unit price per each for Box Culvert End Sections. Box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements for ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

Details for Double Cell Box Culvert shown. Details for Triple Cell Box Culvert similar.

The details contained herein are for constructing the end sections using cast-in-place (CIP) construction. The Contractor may propose to furnish the end sections using precast construction methods and the end sections may consist of multiple precast concrete segments. The Contractor shall be responsible for determining all details associated with the precast option including any strengthening or stiffening provisions necessary for handling the precast segments. Conceptual details followed by shop drawings and design calculations sealed by an Illinois Licensed Structural Engineer shall be submitted to the Engineer for review and approval. Elements of the precast option shall at a minimum result in the same wingwall geometry and not have a thickness less than that detailed herein. The option to construct the end sections using precast construction methods shall be at no additional charge.

Shop drawings that detail slab thickness and reinforcement layout for the Box Culvert End Sections shall be provided to the Engineer for review and approval. Reinforcement bars not detailed herein shall be detailed with a clear distance at the end of the reinforcement not less than 1/2" nor more than 2".

The contractor may use reinforcement bars in lieu of welded wire fabric (WWF). Reinforcement bars shall be limited to the sizes of #3 through #5 bars, a maximum spacing of the lesser of 8" or the member thickness, and shall result in an area of reinforcement equal to or greater than that provided by the WWF. Minimum lap lengths detailed herein are applicable to WWF and reinforcement bars.

Reinforcement (circumferential and longitudinal) in the precast concrete box culvert segments immediately adjacent to the box culvert end sections that is being lapped with the end section reinforcement shall not be less than that required by ASTM C 1577 for the design fill height or the reinforcement detailed for the end section, whichever is greater.

Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60.

Reinforcement bars designated (E) shall be epoxy coated.

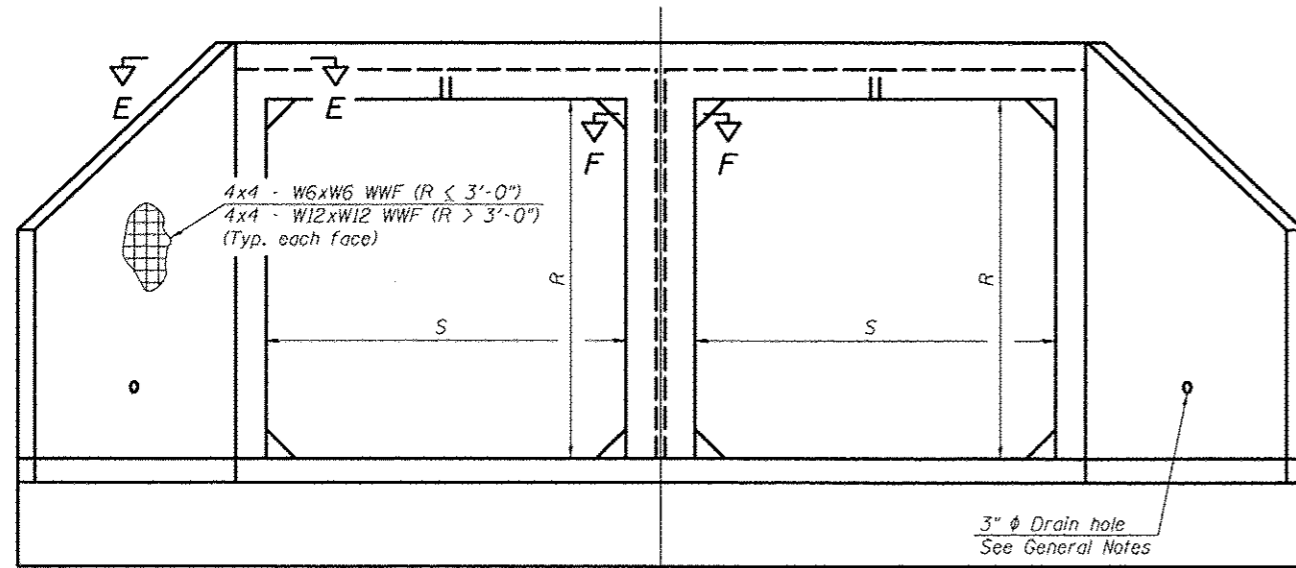
Class SI concrete shall be used for construction of the end section.

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

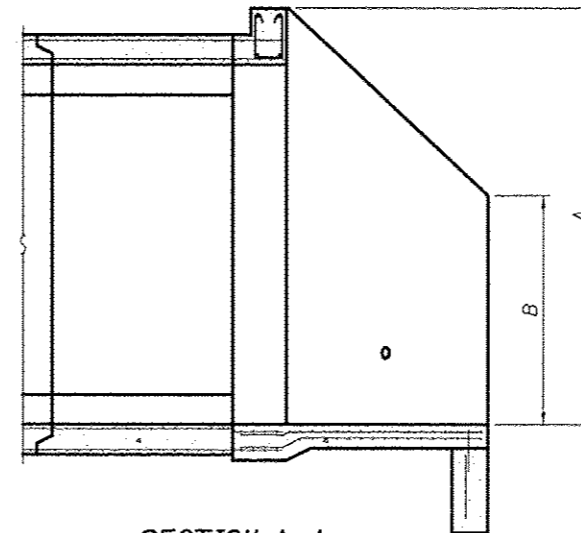
One drain hole shall be provided in each wingwall for end sections of box culverts having an opening with a clear rise greater than 3 ft. The drain hole shall be located within 1/3 of the clear rise of the box culvert and shall conform to the requirements of Article 503.11 of the Standard Specifications.

APRON END SECTION DIMENSIONS

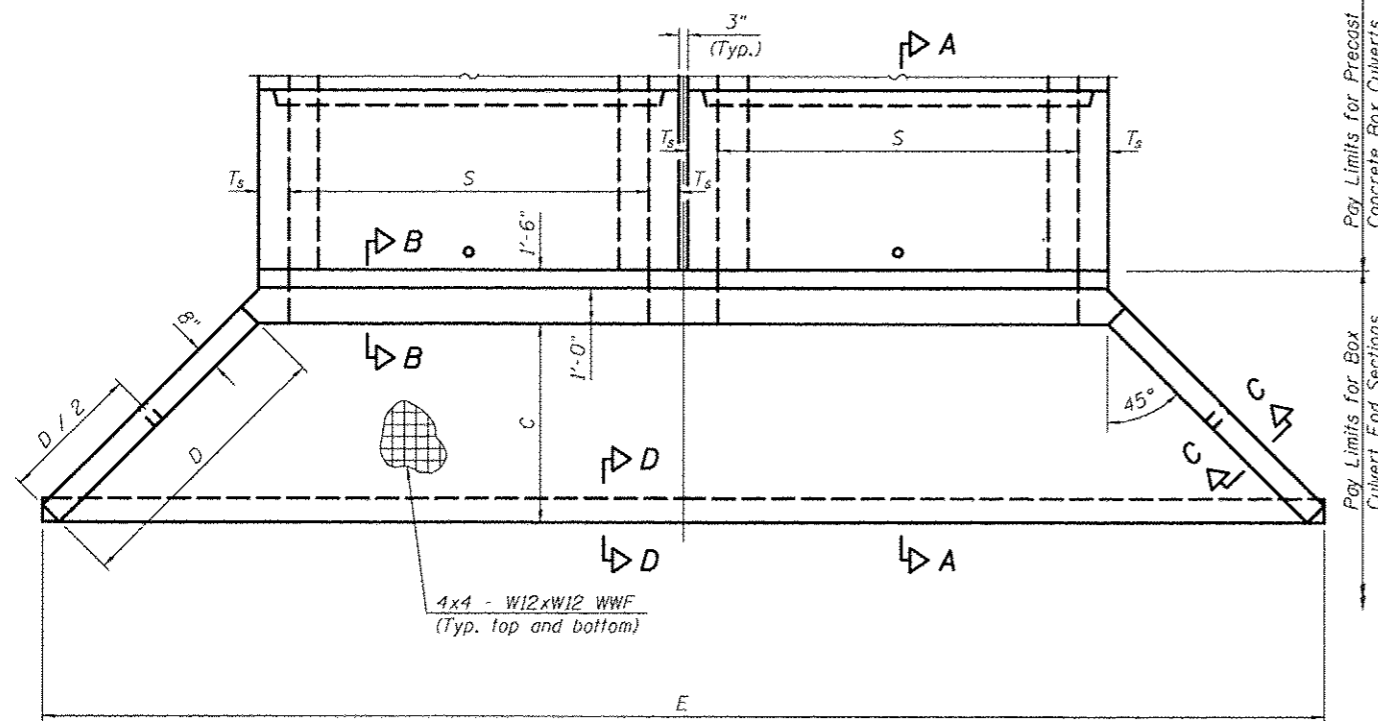
Span (S)	Rise (R)	T ₁ , T _b , & T _s	Double Cell				Triple Cell			
			A	B	C	D	E	Concrete Cu. Yd.	E	Concrete Cu. Yd.
7'-0"	4'-0"	8"	5'-5"	3'-3"	4'-11 ³ / ₈ "	7'-0"	27'-9 ³ / ₈ "	9.5		
7'-0"	5'-0"	8"	6'-5"	3'-9"	5'-11 ³ / ₈ "	8'-5"	29'-9 ³ / ₈ "	11.2		
7'-0"	6'-0"	8"	7'-5"	4'-3"	6'-11 ¹ / ₂ "	9'-10"	31'-9 ¹ / ₄ "	13.1		
8'-0"	2'-0"	8"	3'-5"	2'-3"	2'-11 ³ / ₈ "	4'-2"	25'-9"	7.1		
8'-0"	3'-0"	8"	4'-5"	2'-9"	3'-11 ³ / ₈ "	5'-7"	27'-9 ³ / ₈ "	8.6		
8'-0"	4'-0"	8"	5'-5"	3'-3"	4'-11 ³ / ₈ "	7'-0"	29'-9 ³ / ₈ "	10.2		
8'-0"	5'-0"	8"	6'-5"	3'-9"	5'-11 ³ / ₈ "	8'-5"	31'-9 ³ / ₈ "	11.9		
8'-0"	6'-0"	8"	7'-5"	4'-3"	6'-11 ¹ / ₂ "	9'-10"	33'-9 ¹ / ₄ "	13.8		
9'-0"	5'-0"	9"	6'-6"	3'-9"	6'-0 ⁷ / ₈ "	8'-7"	34'-4"	13.2	45'-1"	17.6
9'-0"	6'-0"	9"	7'-6"	4'-3"	7'-0 ⁷ / ₈ "	9'-11"	36'-2 ⁵ / ₈ "	15.1	46'-11 ⁵ / ₈ "	19.8
10'-0"	2'-0"	10"	3'-7"	2'-4"	3'-1 ¹ / ₂ "	4'-5"	30'-9 ¹ / ₄ "	9.2	42'-8 ¹ / ₄ "	13.0
10'-0"	3'-0"	10"	4'-7"	2'-10"	4'-1 ¹ / ₂ "	5'-10"	32'-9 ¹ / ₄ "	10.8	44'-8 ¹ / ₄ "	15.0
10'-0"	5'-0"	10"	6'-7"	3'-10"	6'-1 ¹ / ₂ "	8'-8"	36'-9 ³ / ₈ "	14.5	48'-8 ³ / ₈ "	19.5
10'-0"	6'-0"	10"	7'-7"	4'-4"	7'-1 ¹ / ₂ "	10'-1"	38'-9 ³ / ₈ "	16.6	50'-8 ³ / ₈ "	22.0
11'-0"	4'-0"	11"	5'-8"	3'-4"	5'-2 ¹ / ₂ "	7'-4"	37'-2 ³ / ₄ "	13.9	50'-3 ³ / ₄ "	19.1
11'-0"	6'-0"	11"	7'-8"	4'-4"	7'-2 ¹ / ₄ "	10'-2"	41'-2 ⁷ / ₈ "	18.1	54'-3 ⁷ / ₈ "	24.2
12'-0"	2'-0"	12"	3'-9"	2'-5"	3'-3 ⁵ / ₈ "	4'-8"	35'-9 ¹ / ₂ "	11.6	50'-0 ¹ / ₂ "	16.5
12'-0"	3'-0"	12"	4'-9"	2'-11"	4'-3 ⁵ / ₈ "	6'-1"	37'-9 ¹ / ₂ "	13.4	52'-0 ¹ / ₂ "	18.8
12'-0"	4'-0"	12"	5'-9"	3'-5"	5'-3 ⁵ / ₈ "	7'-6"	39'-9 ⁵ / ₈ "	15.4	54'-0 ⁵ / ₈ "	21.2
12'-0"	6'-0"	12"	7'-9"	4'-5"	7'-3 ⁵ / ₈ "	10'-4"	43'-9 ⁵ / ₈ "	19.8	58'-0 ⁵ / ₈ "	26.6



END VIEW



SECTION A-A



PLAN

Pay Limits for Precast Concrete Box Culverts

Pay Limits for Box Culvert End Sections

FILE NAME :	USER NAME : ceo-lock_jd	DESIGNED :	REVISED :
02\pwork\pwork\d\ceo-lock_jd\8120316\0378663-sht-structures.dgn		CHECKED :	REVISED :
		DRAWN :	REVISED :
		CHECKED :	REVISED :

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**MULTI-CELL PRECAST CONCRETE BOX CULVERT
APRON END SECTION DETAILS**

SHEET NO. 3 OF 5 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	12X,31RS-3 & 2RS-4	Champaign	551	189
	F.A.U. 7152 & F.A.S. 1512		CONTRACT NO. 70663	
ILLINOIS FED. AID PROJECT				