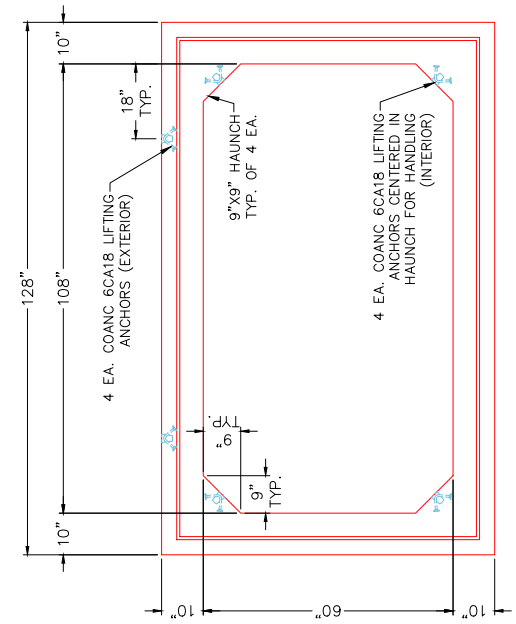
Job Name: 26-1508BC - Ferdinand State Park Culverts Replacement Job Location: Ferdinand, IN Contractor: WB Koester Construction, LLC	Plant: 100 9/15/2026 1:35:32 PM	Tech: Jared - F PC: E. Bradley	

Structure ID: CV-3 Box Culvert

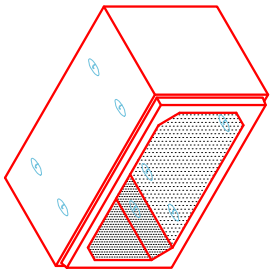
P4 BC060108-10W10T10F-09H BOX CULVERT (10W/10F/10T) T/G T/G

NOTES:

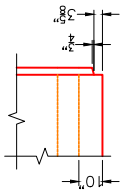
1. BOX CULVERT IS DESIGNED PER INDOT STANDARD SPECIFICATION IN ACCORDANCE W/ AASHTO LFRD 9TH EDITION
2. LOAD REQUIREMENTS = HL93.
3. COVER DEPTH = 1' TO 4'.
4. CONCRETE: 5,000 PSI AT 28 DAYS.
5. TYPE 2 WATERPROOFING MEMBRANE TO BE PROVIDED & INSTALLED BY OTHERS.
6. REINFORCING: PER ATTACHED CALCULATIONS.
7. BOX CULVERT TO BE SEALED WITH CS-102 ROLL & 12" WIDE CS212 W/CS-75 PRIMER (SUPPLIED BY ICAST)
8. REFER TO THE FOLLOWING DRAWINGS AND CALCULATIONS FOR ALL DETAILS AND SIZING OF THE PROPOSED END WALL SYSTEM
9. WEIGHT = 22,708 LBS



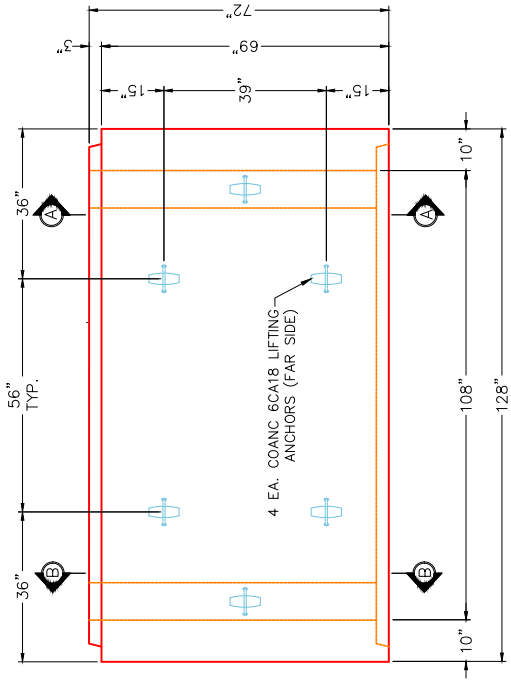
TOP VIEW



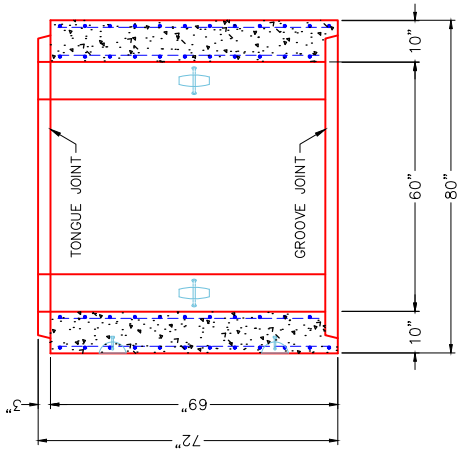
COMPONENT ISOMETRIC VIEW



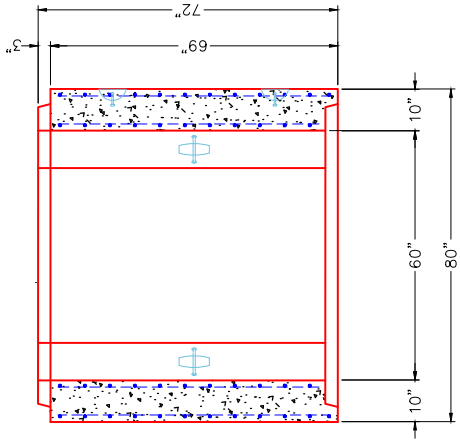
JOINT DETAIL (TYP.)
NTS



FRONT VIEW



SECTION B-B



SECTION A-A

Coating (Int): Coating (Ext):	Seam Up: Tongue Seam Dn: Groove	Wall Thickness: 10" Floor Height: 0"	Height (Int): 69" Height (Ext): 69"	Weight (Net): 22704 lb Volume (Net): 5.8cu.yd

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P4 BC060108-10W10T10F-09H BOX CULVERT (10W/10F/10T) T/G T/G

INFRASTRUCTURE PRECAST (ICAST)

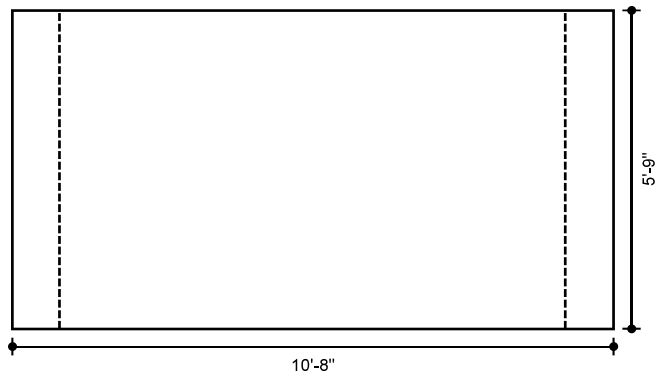
Sht_____of_____
By:J. Horsley
Ck:_____
9/22/2026 10:50:12 AM
p. 1 of 4

Project : Ferdinand State Forest Culvert
Task :
Client: W.B. Koester
Job No. : 26-1508BC
File: 9x5 BC Four Sided - 26-1508BC Ferdinand State Forest.cx

Spec.: LRFD 9th ed.
Type of Culvert: Precast

Physical Dimensions

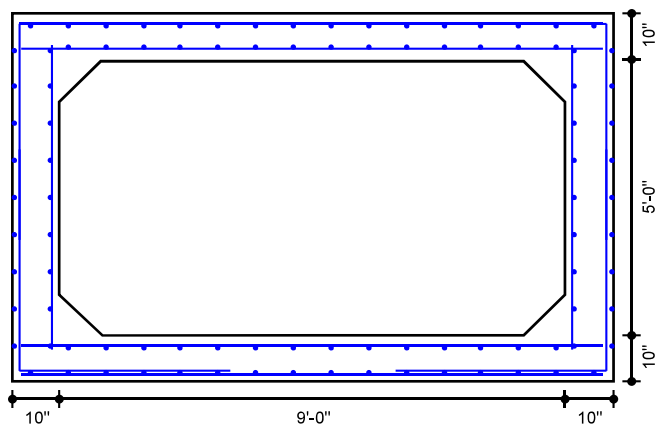
Clear Span:	9'-0"
Clear Height:	5'-0"
Top Slab:	10"
Bottom Slab:	10"
Ext. Wall:	10"
Fill Depth Range	
Maximum:	1.99 ft
Minimum:	0.00 ft
Increment:	0.50 ft
Length:	5'-9"
Skew Angle:	0.00 deg
Bottom Slab Support:	Full Slab
Top Haunch, Width:	9"
Top Haunch, Height:	9"
Bottom Haunch, Width:	9"
Bottom Haunch, Height:	9"



Plan View

Material Properties

Concrete	
Strength, f'c:	6.000 ksi
Density:	0.150 kcf
Elasticity, Ec:	4877 ksi
Type:	Normal wt
Steel	
Yield, fy:	60 ksi
Allow Stress:	36 ksi
Elasticity, Es:	29000 ksi
Soil	
Density:	0.120 kcf
Exposure Factor	
User-Defined:	1.00
Reinforcement Covers	
Ext. Cover Top Slab:	2"
Ext. Cover Bottom Slab	1 1/2"
Ext. Cover Walls	1 1/2"
Int. Cover Walls	1 1/2"
Int. Cover Top Slab	2"
Int. Cover Bottom Slab	2"



Typical Section

Controlling Ratings

Inventory Rating: 1.14
Operating Rating: 1.48

Loads

Live Load	
Vehicle Names:	KY HL-93
Traffic Direction:	Parallel
Eq. Height of Soil:	Calculated
Dead Load	
Future Wearing Surface:	0.000 klf
Additional Dead Load:	0.000 klf
Concentrated Loads:	none
Interior Water Pressure:	no
Exterior Water Pressure:	no

Lateral Soil Loads	
Eq. Fluid Press. Max:	60.00 pcf
Eq. Fluid Press. Min:	30.00 pcf

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P4 BC060108-10W10T10F-09H BOX CULVERT (10W/10F/10T) T/G T/G

INFRASTRUCTURE PRECAST (ICAST)

Sht_____of_____
By:J. Horsley
Ck:_____
9/22/2026 10:50:12 AM
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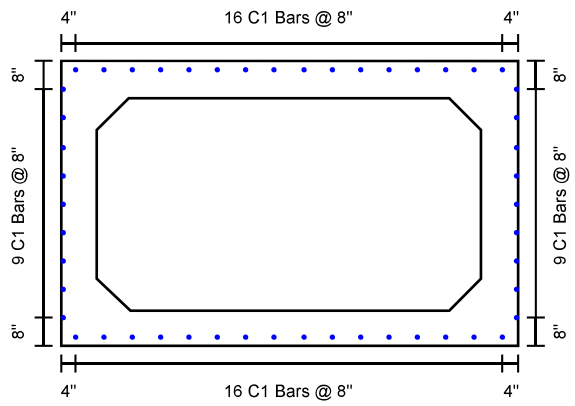
Project : Ferdinand State Forest Culvert
Task :
Client: W.B. Koester
Job No. : 26-1508BC
File: 9x5 BC Four Sided - 26-1508BC Ferdinand State Forest.stp

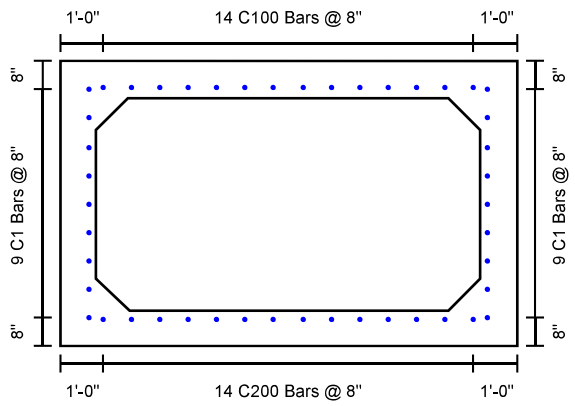
Concrete Summary
Volume of Concrete: 1.009 cy/ft Total Volume of Concrete: 5.800 cy

Reinforcing Steel Bar Schedule (lb)

Location	Mark	Qty	Size	Spacing	Type	Length	Hor.Leg	Ver.Leg	Tot.Weight
Top Slab(Int)	A100 (AS2)	9	6	8"	S	10'-4"	--	--	140.0
Bot Slab(Int)	A200 (AS3)	9	6	8"	S	10'-4"	--	--	140.0
Top Slab(Ext)	A300 (AS7)	9	6	8"	S	10'-4"	--	--	140.0
Bot Slab(Ext)	A400 (AS8)	9	5	8"	S	10'-4"	--	--	97.0
Corner(Top)	A1 (AS1)	18	5	8"	L	8'-7"	4'-8"	3'-11"	161.0
Corner(Bot)	A2 (AS1)	18	5	8"	L	7'-9"	3'-9"	4'-0"	145.0
Wall(Int)	B1 (AS4)	18	5	8"	S	5'-6"	--	--	103.0
Longit. Top (Int)	C100 (AS5)	14	5	8"	S	5'-8"	--	--	83.0
Longit. Bot (Int)	C200	14	5	8"	S	5'-8"	--	--	83.0
Longit. Top (Ext)	C1 (AS6)	16	5	8"	S	5'-8"	--	--	94.5
Longit. Bot (Ext)	C1 (AS6)	16	5	8"	S	5'-8"	--	--	94.5
Longit. Wall (Ext)	C1 (AS6)	18	5	8"	S	5'-8"	--	--	106.4
Longit. Wall (Int)	C1 (AS6)	18	5	8"	S	5'-8"	--	--	106.4
									1494



Section Ext. Longit. Reinf.



Section Int. Longit. Reinf.

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P4 BC060108-10W10T10F-09H BOX CULVERT (10W/10F/10T) T/G T/G

INFRASTRUCTURE PRECAST (ICAST)

Sht_____of_____
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Ck:_____
9/22/2026 10:50:13 AM
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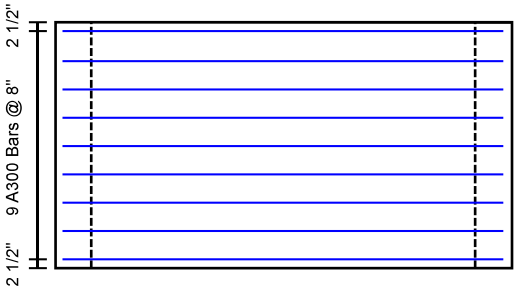
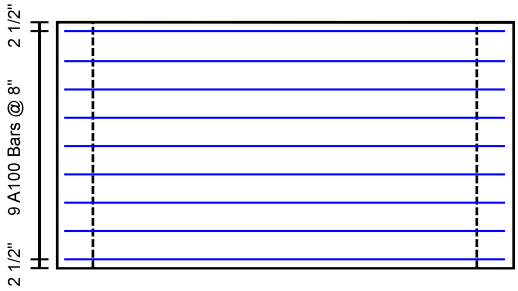
Project : Ferdinand State Forest Culvert
Task :
Client: W.B. Koester
Job No. : 26-1508BC
File: 9x5 BC Four Sided - 26-1508BC Ferdinand State Forest.tcx

Ext. Wall Reinf.

Int. Wall Reinf.



Top Slab Ext. Reinf.



Top Slab Int. Reinf.

Bottom Slab Ext. Reinf.

Bottom Slab Int. Reinf.

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Structure ID: CV-3 Box Culvert

P4 BC060108-10W10T10F-09H BOX CULVERT (10W/10F/10T) T/G T/G

INFRASTRUCTURE PRECAST (ICAST)

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By:J. Horsley
Ck:_____
9/22/2026 10:50:13 AM
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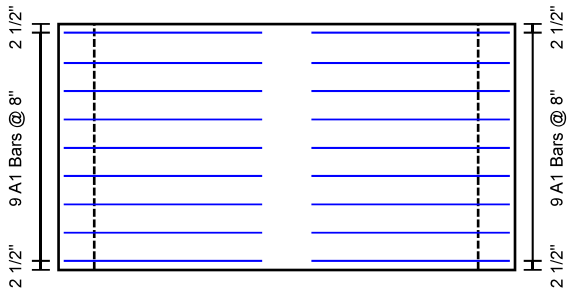
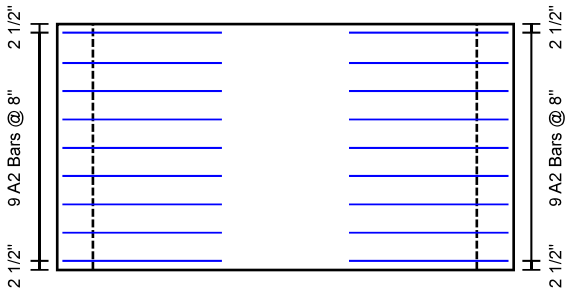
Project : Ferdinand State Forest Culvert
Task :
Client: W.B. Koester
Job No. : 26-1508BC
File: 9x5 BC Four Sided - 26-1508BC Ferdinand State Forest.etx



Top Slab Corner Reinf.



Bottom Slab Corner Reinf.