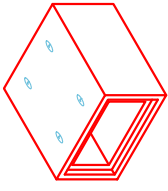




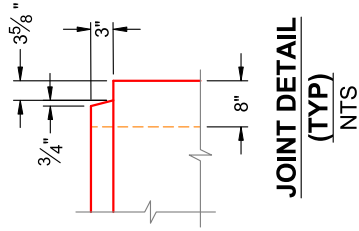
**Structure ID: BC 4 x 2 (PC 9)**

**P1 BC048024-08WLF**

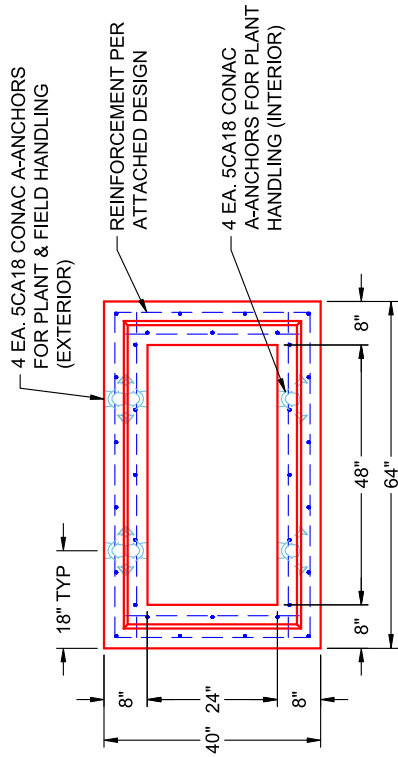
**BOX CULVERT (08W/08F/08T) No Haunch G/T**



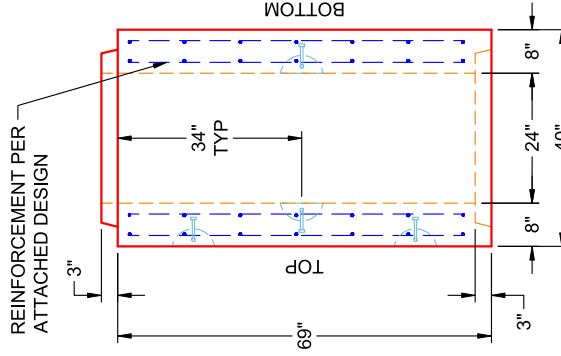
**COMPONENT ISOMETRIC VIEW**



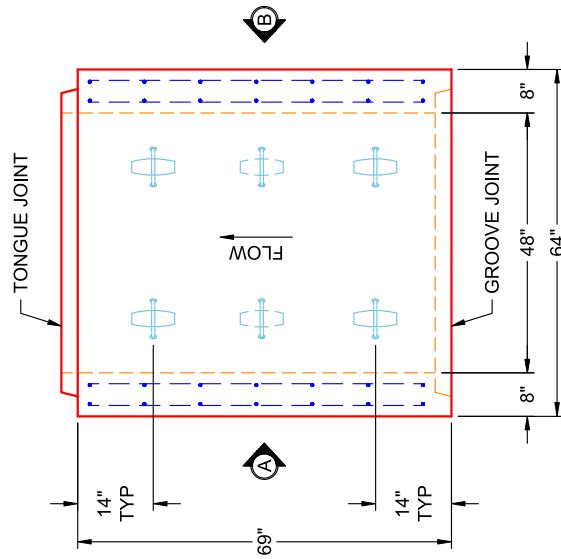
**JOINT DETAIL (TYP) NTS**



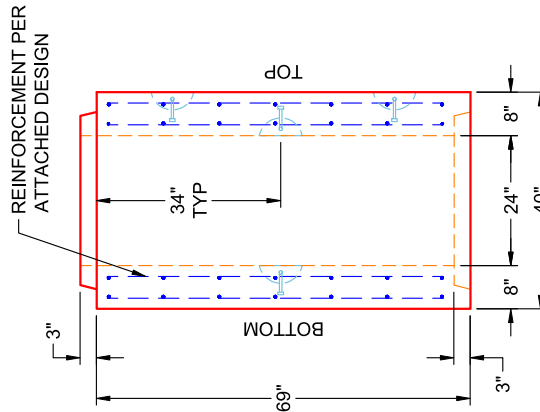
**END VIEW TYPICAL**



**VIEW B PC 9 (UPRIGHT IN MOLD)**



**PLAN VIEW PC 9 (UPRIGHT IN MOLD)**



**VIEW A PC 9 (UPRIGHT IN MOLD)**

**GENERAL NOTES:**

1. MANUFACTURED TO ASTM C-1577 & SECTION 714 OF INDOT STANDARD SPECIFICATIONS FOR REINFORCED CONCRETE BOX STRUCTURES
2. LOAD REQUIREMENTS: HL93
3. REINFORCEMENT PER ATTACHED DESIGN
4. COVER DEPTH: 4'-8"
5. CONCRETE: 5,000 PSI AT 28 DAYS
6. JOINT SEALANT: 1" BUTYL MASTIC (CS-102) EXTERIOR JOINT WRAP: 12" WIDE (CS-212)
7. WEIGHT: 4' X 2' (48" X 24") RCBC = 1,418 LBS / LF (69" LONG SECTION = 8,152 LBS)

# INFRASTRUCTURE PRECAST (ICAST)

Sht \_\_\_\_\_ of \_\_\_\_\_  
 By: J. Horsley  
 Ck: \_\_\_\_\_  
 5/11/2026 4:10:17 PM  
 p. 1 of 3

Project : Alcoa Outfall  
 Task :  
 Job No. : 25-2073

Client: Bowen Engineering Co  
 File: 4x2 BC Four Sided (no haunch) - 25-2073 Alcoa Outfall

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

## Physical Dimensions

Clear Span: 4'-0"  
 Clear Height: 2'-0"  
 Top Slab: 8"  
 Bottom Slab: 8"  
 Ext. Wall: 8"  
 Fill Depth Range  
   Maximum: 7.99 ft  
   Minimum: 4.00 ft  
   Increment: 0.50 ft  
 Length: 5'-9"  
 Skew Angle: 0.00 deg  
 Bottom Slab Support: Full Slab  
 Top Haunch, Width: 0"  
 Top Haunch, Height: 0"  
 Bottom Haunch, Width: 0"  
 Bottom Haunch, Height: 0"

## Material Properties

Concrete  
   Strength, f<sub>c</sub>: 5.000 ksi  
   Density: 0.150 kcf  
   Elasticity, E<sub>c</sub>: 3834 ksi  
   Type: Normal wt  
 Steel  
   Yield, f<sub>y</sub>: 60 ksi  
   Allow Stress: 36 ksi  
   Elasticity, E<sub>s</sub>: 29000 ksi  
 Soil  
   Density: 0.120 kcf  
 Exposure Factor  
   Class 2 Exposure  
 Reinforcement Covers  
   Ext. Cover Top Slab: 2"  
   Ext. Cover Bottom Slab: 1"  
   Ext. Cover Walls: 1"  
   Int. Cover Walls: 1"  
   Int. Cover Top Slab: 1"  
   Int. Cover Bottom Slab: 1"

## Controlling Ratings

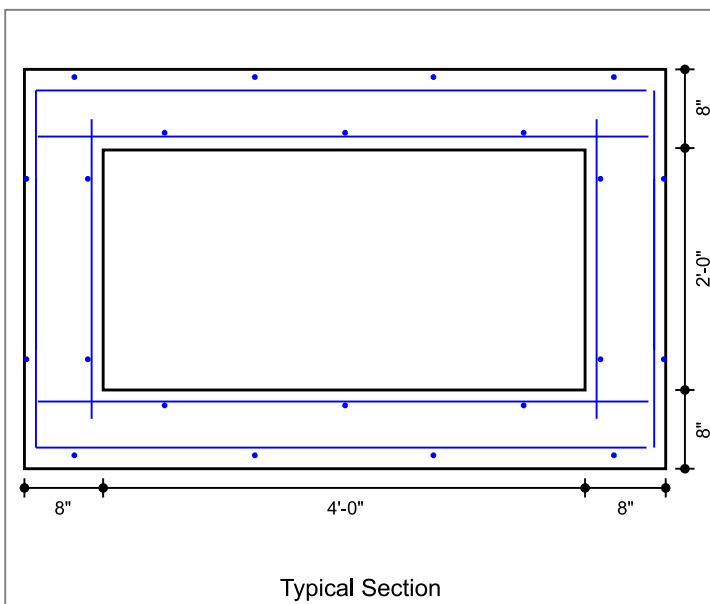
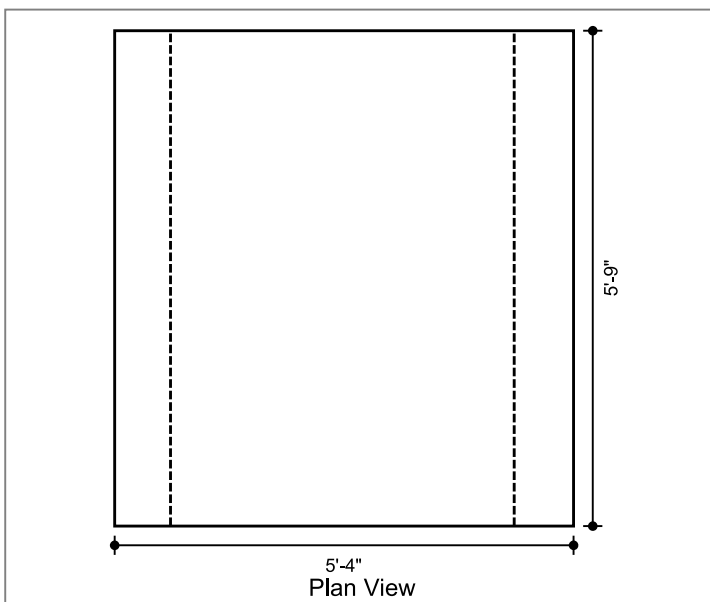
Inventory Rating: NaN  
 Operating Rating: NaN

## Loads

Live Load  
   Vehicle Names: 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

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

Interior Water Pressure: yes, head pressure = 0 ft  
 Exterior Water Pressure: no



# INFRASTRUCTURE PRECAST (ICAST)

Sht \_\_\_\_\_ of \_\_\_\_\_

By: J. Horsley

Ck: \_\_\_\_\_

5/11/2026 4:10:17 PM

etc of 3

Project : Alcoa Outfall

Task :

Client: Bowen Engineering Co

Job No. : 25-2073

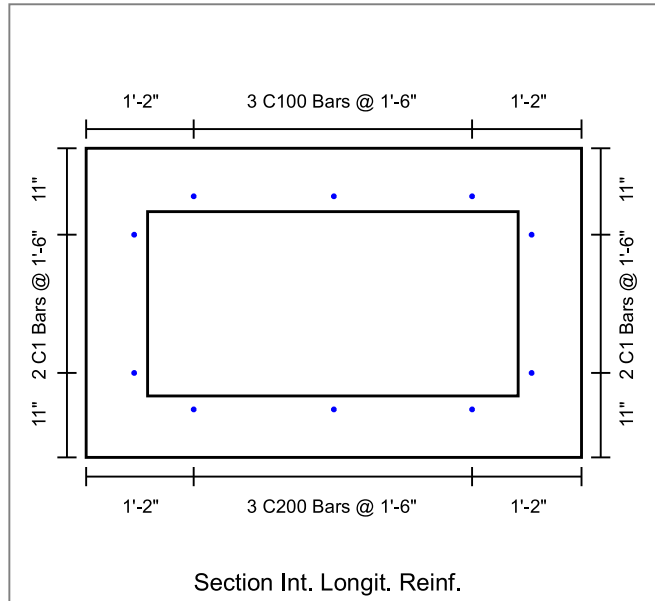
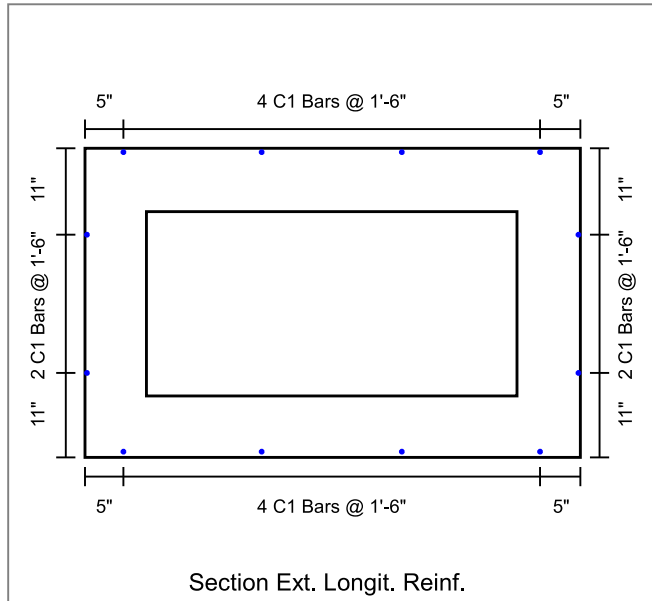
File: 4x2 BC Four Sided (no haunch) - 25-2073 Alcoa Outfall

## Concrete Summary

Volume of Concrete: 0.362 cy/ft Total Volume of Concrete: 2.082 cy

## Reinforcing Steel Bar Schedule (lb)

Location	Mark	Qty	Size	Spacing	Type	Length	Center	Ver.Leg	Tot.Weight
Top Slab(Int)	A100 (AS2)	6	4	1'-0"	S	5'-1"	--	--	20.0
Bot Slab(Int)	A200 (AS3)	6	4	1'-0"	S	5'-1"	--	--	20.0
Corner(Top)	A1 (AS1)	6	4	1'-0"	U	9'-5"	5'-1"	2'-2"	38.0
Corner(Bot)	A2 (AS1)	6	4	1'-0"	U	9'-7"	5'-1"	2'-3"	38.0
Wall(Int)	B1 (AS4)	12	4	1'-0"	S	2'-6"	--	--	20.0
Longit. Top (Int)	C100 (AS5)	3	3	1'-6"	S	5'-8"	--	--	6.0
Longit. Bot (Int)	C200	3	3	1'-6"	S	5'-8"	--	--	6.0
Longit. Top (Ext)	C1 (AS6)	4	3	1'-6"	S	5'-8"	--	--	8.6
Longit. Bot (Ext)	C1 (AS6)	4	3	1'-6"	S	5'-8"	--	--	8.6
Longit. Wall (Ext)	C1 (AS6)	4	3	1'-6"	S	5'-8"	--	--	8.6
Longit. Wall (Int)	C1 (AS6)	4	3	1'-6"	S	5'-8"	--	--	8.6
									182



# INFRASTRUCTURE PRECAST (ICAST)

Sht \_\_\_\_\_ of \_\_\_\_\_

By: J. Horsley

Ck: \_\_\_\_\_

5/11/2026 4:10:17 PM

Project : Alcoa Outfall

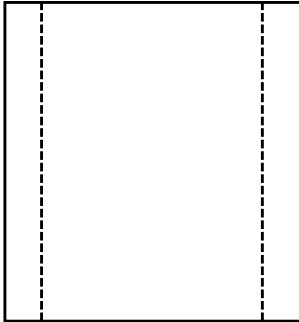
Client: Bowen Engineering Co

Task :

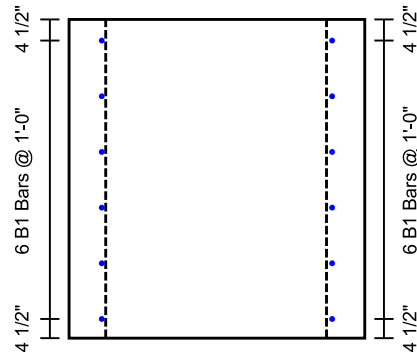
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Job No. : 25-2073

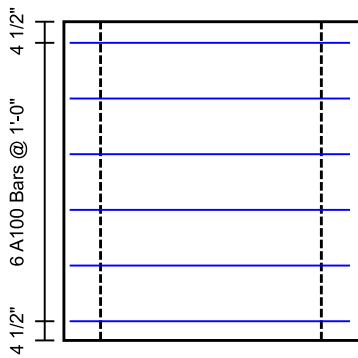
Sheet 3 of 3



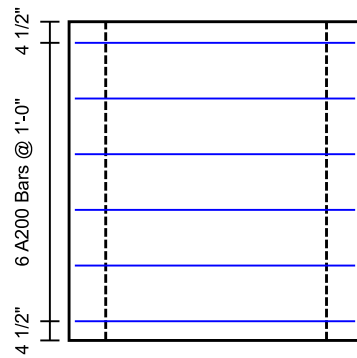
Ext. Wall Reinf.



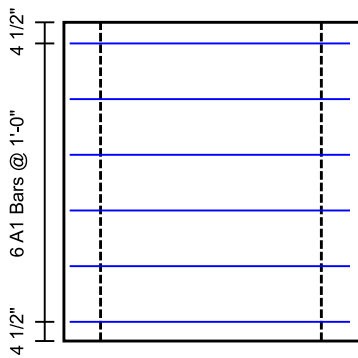
Int. Wall Reinf.



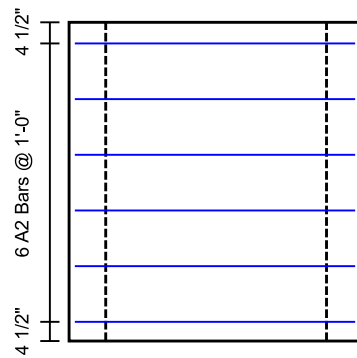
Top Slab Int. Reinf.



Bottom Slab Int. Reinf.



Top Slab Corner Reinf.



Bottom Slab Corner Reinf.