

Job Name: 25-2073 - Alcoa Outfall  
Job Location: Newburgh, IN  
Contractor: Bowen Engineering Corporation

Plant: 100  
7/11/2026 9:06:20 AM

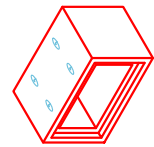
Tech: J. Horsley  
PC: A. Chambers



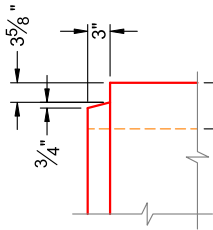
Structure ID: BC 4 x 2 (PC 1)

P1BC0480024-08WLF

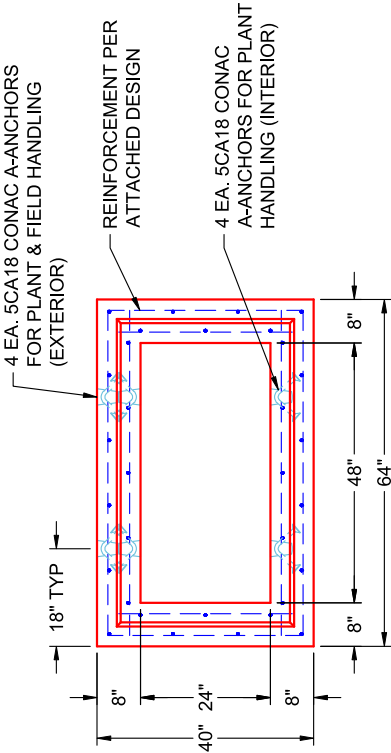
BOX CULVERT (08W/08F/08T) No Haunch & Tongue



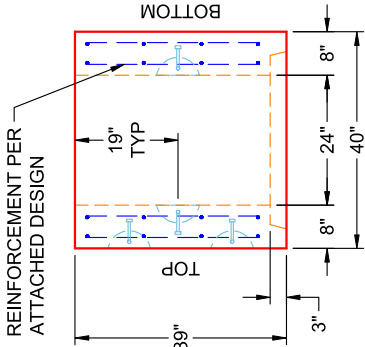
COMPONENT  
ISOMETRIC VIEW



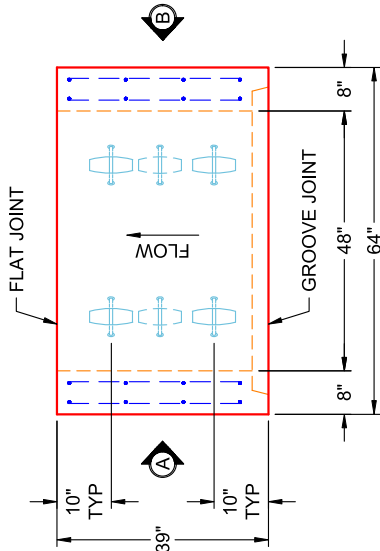
JOINT DETAIL  
(TYP)  
NTS



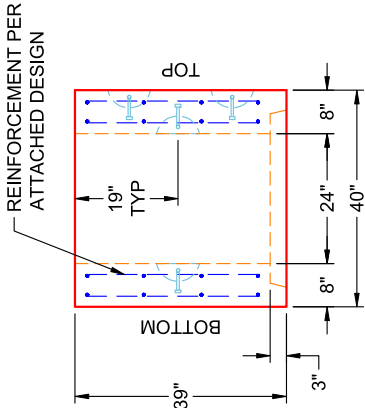
END VIEW  
TYPICAL



VIEW B  
PC 1  
(UPRIGHT IN MOLD)



PLAN VIEW  
PC 1  
(UPRIGHT IN MOLD)



VIEW A  
PC 1  
(UPRIGHT IN MOLD)

- GENERAL NOTES:**
- MANUFACTURED TO ASTM C-1577 & SECTION 714 OF INDOT STANDARD SPECIFICATIONS FOR REINFORCED CONCRETE BOX STRUCTURES
  - LOAD REQUIREMENTS: HL93
  - REINFORCEMENT PER ATTACHED DESIGN
  - COVER DEPTH: 4'-8"
  - CONCRETE: 5,000 PSI AT 28 DAYS
  - JOINT SEALANT: 1" BUTYL MASTIC (CS-102) EXTERIOR JOINT WRAP: 12" WIDE (CS-212)
  - WEIGHT: 4' X 2' (48" X 24") RCBC = 1,418 LBS / LF (39" LONG SECTION = 4,609 LBS)

# INFRASTRUCTURE PRECAST (ICAST)

Project : Alcoa Outfall

Task :

Job No. : 25-2073

Client: Bowen Engineering Co

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

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

By: J. Horsley

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

5/11/2026 4:10:17 PM

Page 1 of 3

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'c: 5.000 ksi  
Density: 0.150 kcf  
Elasticity, Ec: 3834 ksi  
Type: Normal wt  
Steel  
Yield, fy: 60 ksi  
Allow Stress: 36 ksi  
Elasticity, Es: 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

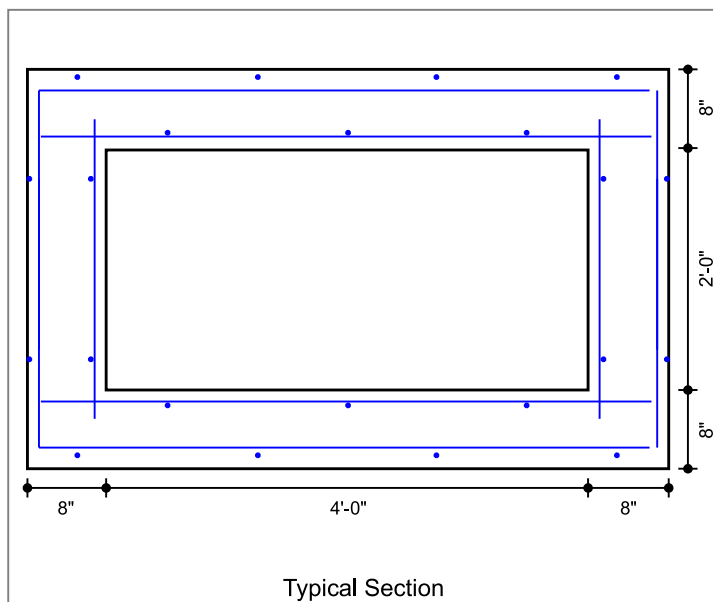
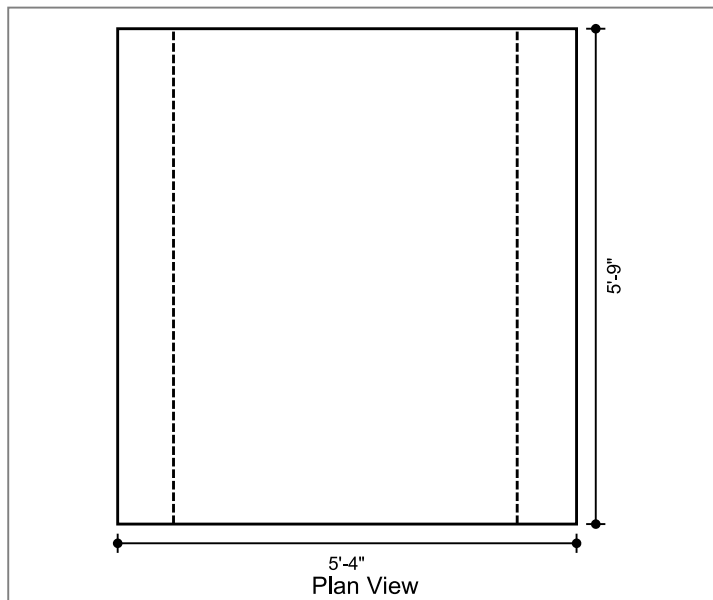
## Loads

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)

Project : Alcoa Outfall

Task :

Job No. : 25-2073

Client: Bowen Engineering Co

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

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

By: J. Horsley

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

5/11/2026 4:10:17 PM

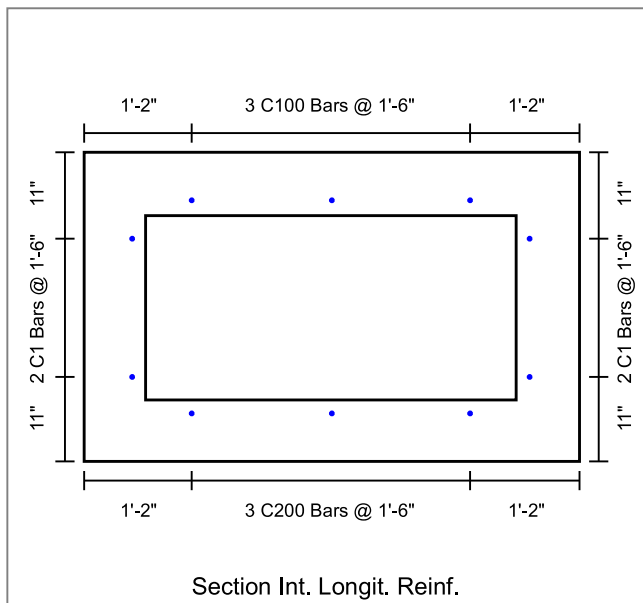
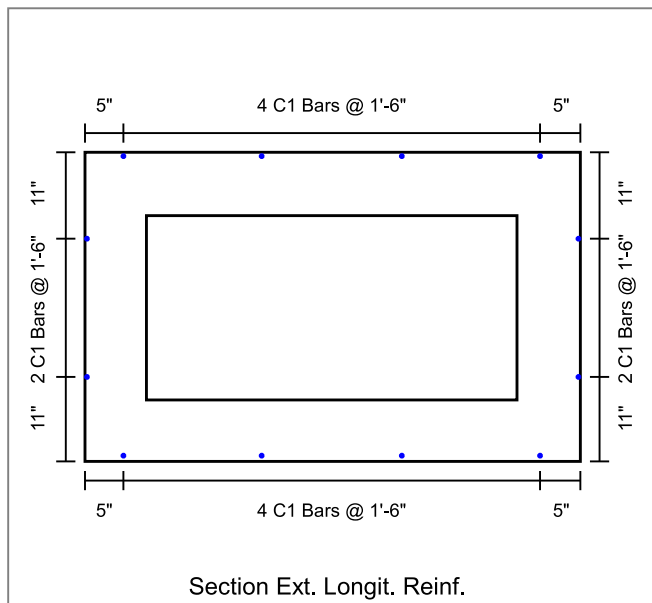
etc of 3

## 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         |

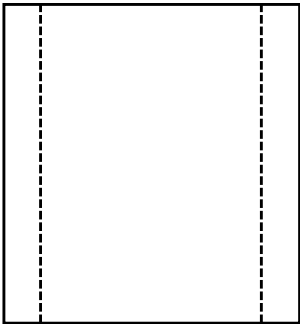


INFRASTRUCTURE PRECAST (ICAST)

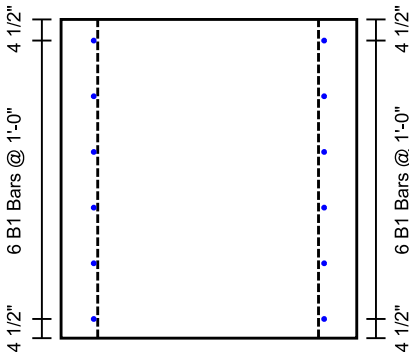
Project : Alcoa Outfall  
Task :  
Job No. : 25-2073

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

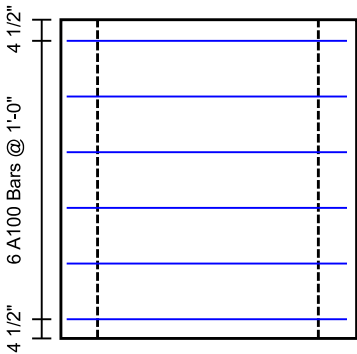
Sht \_\_\_\_\_ of \_\_\_\_\_  
By: J. Horsley  
Ck: \_\_\_\_\_  
5/11/2026 4:10:17 PM  
Page 3 of 3



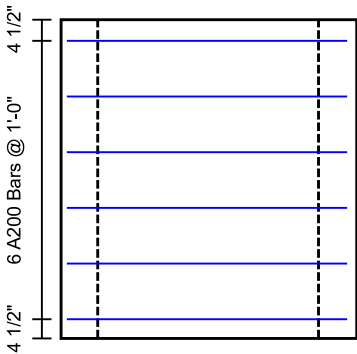
Ext. Wall Reinf.



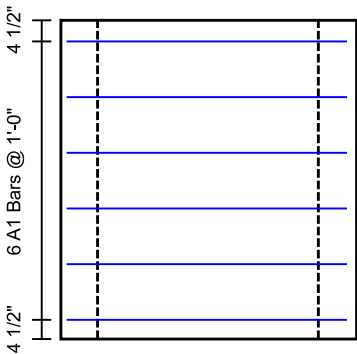
Int. Wall Reinf.



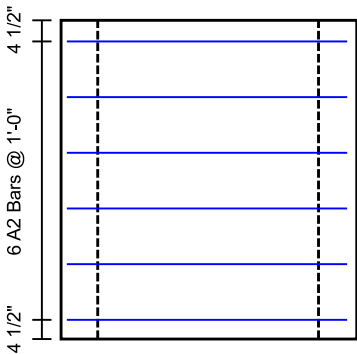
Top Slab Int. Reinf.



Bottom Slab Int. Reinf.



Top Slab Corner Reinf.



Bottom Slab Corner Reinf.