



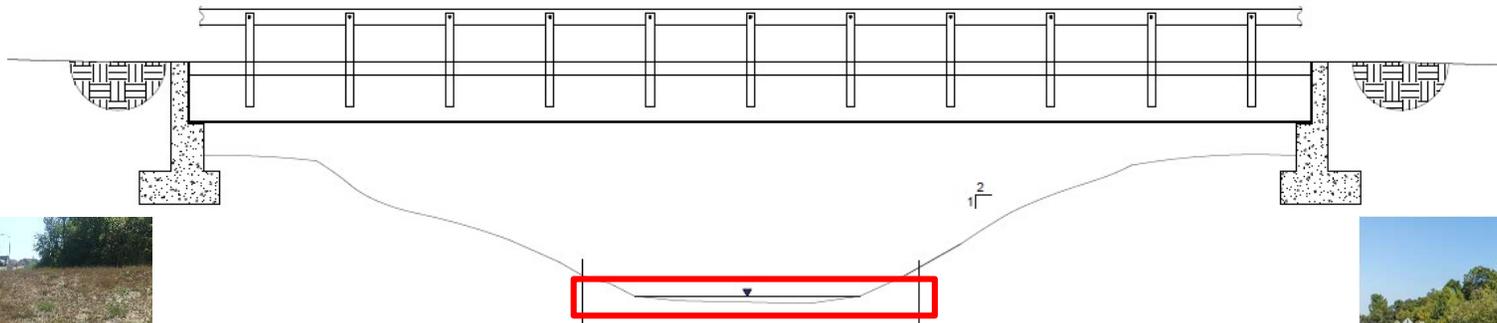
Buried Bridges and Bridges at Grade

Tim Miller, Area Manager Structures
Brad Eberspecher, Bridge Consultant (MT/WY/ND)

- **Contech Introduction**
- **Structure Products**
 - **Bridge Plank**
 - **Buried Bridges**
 - **Bridges at Grade**
- **Design Center Tool**



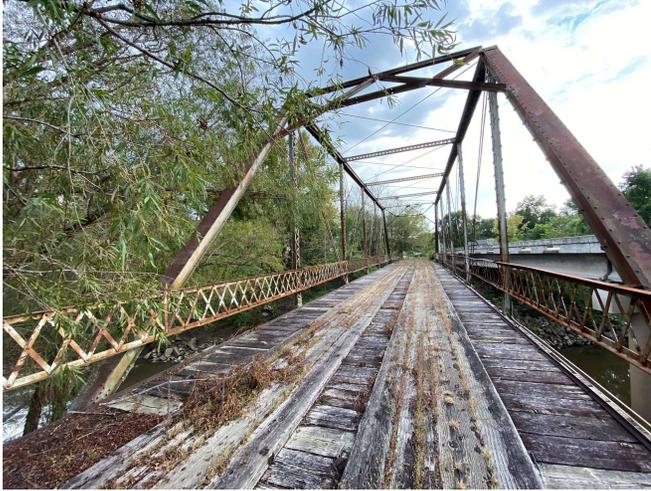
Plate. Precast. Truss. Girder.



Multi Cell Culvert – Burke Cnty SD (120”)

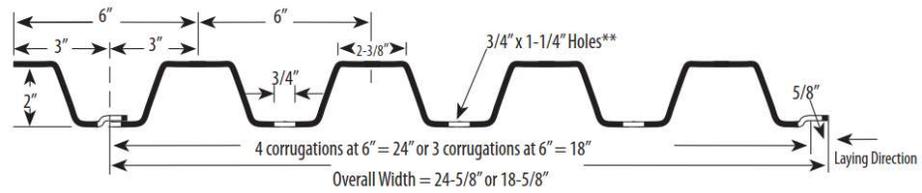


Structural Deck – Bridge Plank

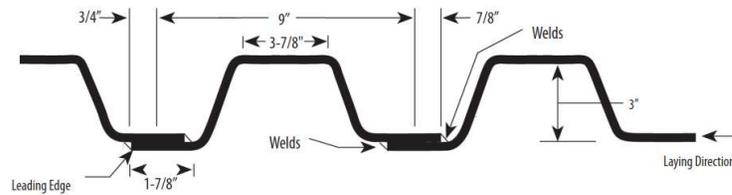


STANDARD SIZES

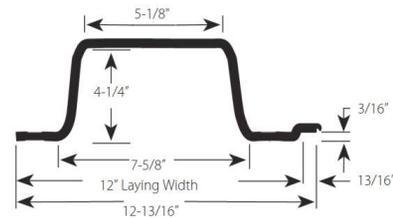
6" x 2" engineering details and design data



9" x 3" engineering details and design data



12" x 4-1/4" engineering details and design data

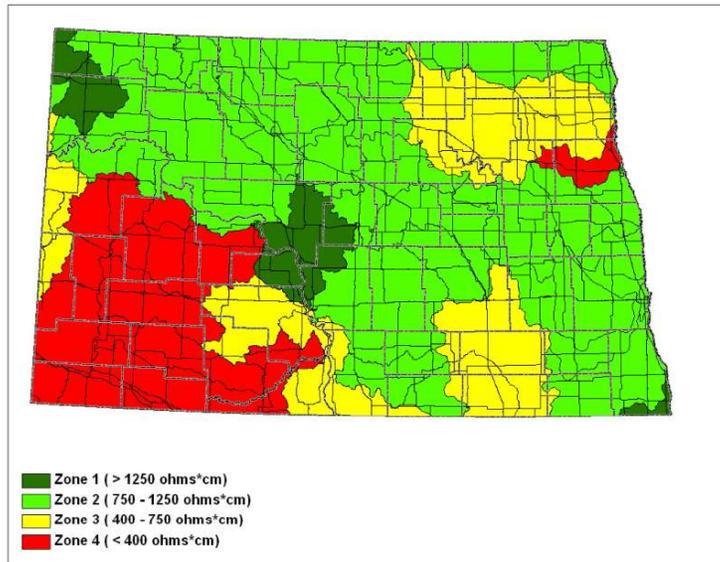


Contech Structural Plate – Steel or Aluminum



Corrosion Zone Map & Tables

North Dakota Corrosion Zones (Map 1)
(Based on Soil Resistivity)



Data Source: United States Environmental Protection Agency's (EPA) Environmental Monitoring Assessment Program.

BACKFILL WITH SELECT Class 5

RECOMMENDED ENVIRONMENTAL RANGES

ALUMINUM

$$4.0 \leq \text{pH} \leq 9.0$$

RESISTIVITY > 500 OHM-CM

STEEL

$$6.0 \leq \text{pH} \leq 10.0$$

RESISTIVITY > 2,500 OHM-CM

Aluminum Service Life Calculation

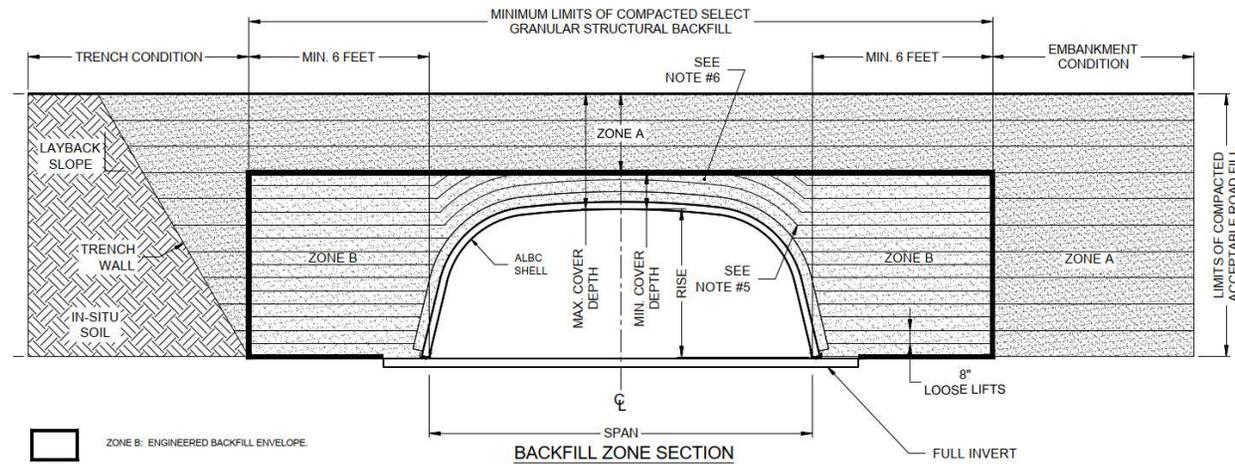
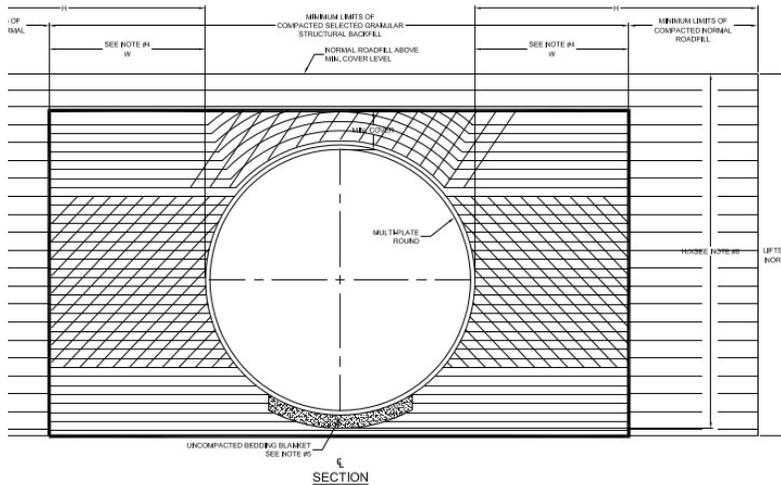
FHWA / TXDOT / NYDOT

0.0005" Pit Loss per Year (localized)

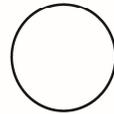
Service Life Years = Thickness/0.0005"

0.100" / 0.0005" = 200 year life

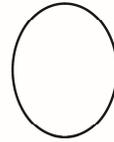
BACKFILL WITH SELECT Class 5



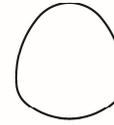
Structural Plate Shapes



Round



Vertical Ellipse



Underpass



Pipe-Arch

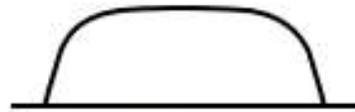


Horizontal Ellipse



Single Radius Arch

Standard Shapes



Full Invert
(see page 72)



PRECAST or Steel Express Foundations





Aluminum Box Structures – Bridge Removal

15'9" span x 8' rise

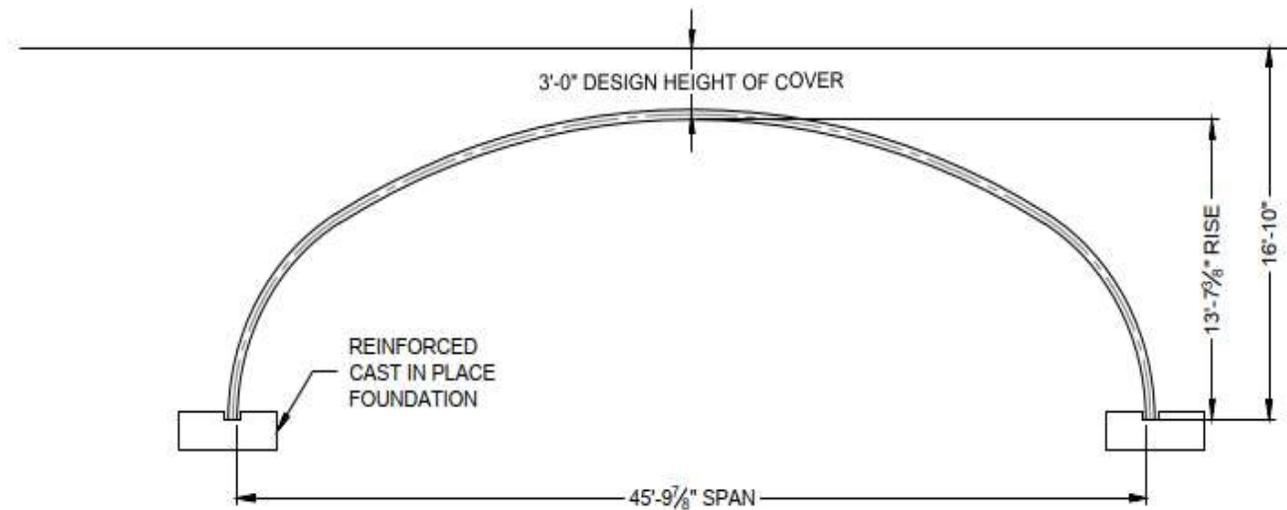


Original Design:

- 3 sided flat top box 36' span
 - Long Leadtime
 - Natural Bottom Requirement

Contech Alternate Design:

- BridgeCor 45'9" span x 13'7" rise
- Vista Wall Steel Grid with Wire Façade
- Foundation, structure, MSE wall Design and load ratings by Contech



CROSS SECTION A-A

Bridgecor

Export/Submit

Select the output you would like to receive below

- PDF/DWG
- 3D Model
- Image

Toolbox

Parameters	Inlet	Outlet
Foundation	Clearance	Site Plan
Documents		

Update Structure

Structure Info

Bridge Type: BRIDGECOR

Shape: Two Radiu... ▾

Span & Rise: 44'-1" x 14'... ▾



- Save
- Default
- Report

Design Center Structure Overlay of Site – Wetland Clearance



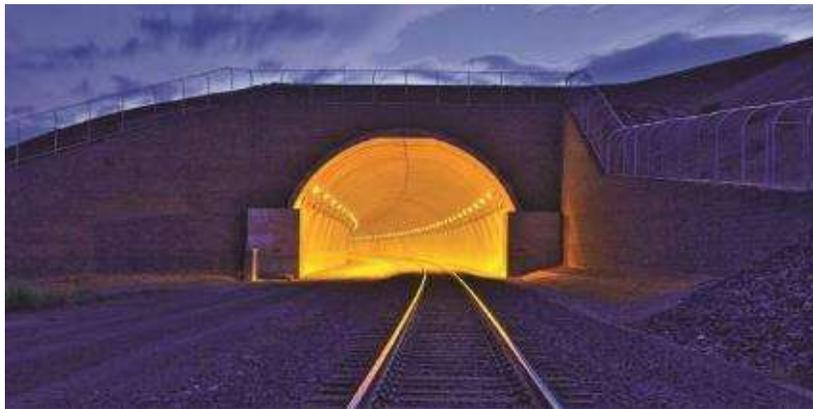
From Approved Drawings:

- Multi Plate (Galvanized Steel) 4-6 weeks
- Aluminum Structure Plate 5-7 weeks
- BridgeCor (Deep Corrugated) 10-12 weeks (Gage Dependent)



Conspan and BEBO Arch Systems

Conspan 12'-87' span and Bebo 12'-102' span







NDDOT Long X Bridge Project



Long X Bridge
Replacement

Wildlife Underpass

NDDOT Long X Bridge Wildlife Underpass



NDDOT Long X Bridge Wildlife Underpass



Contech Precast Lead times

From Approved Shops:

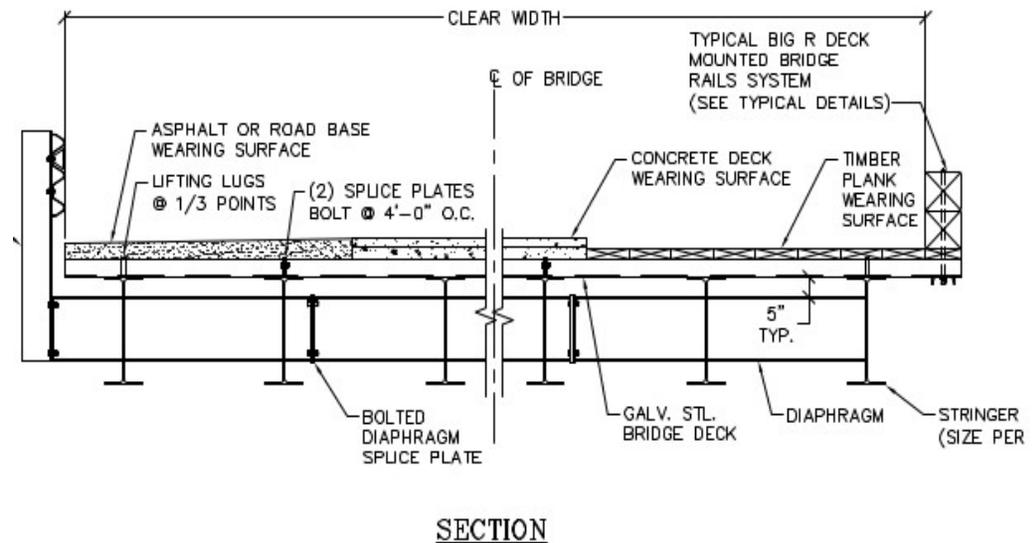
- **Conspan and Bebo Smaller (Less than 10 pieces) 5-6 months**
- **Larger Structures (More than 10 pieces) 6-9 months**





- Big R Rolled Girders

- 20-120'+ span
- Single lane or multi lane widths (12', 14', 16', 18' and 24' widths)
- 12x4.25 Decking with wearing surface (gravel, asphalt, concrete, timber) and Guardrail TL-1, TL-2 and TL-3 (*Designed)
- **(STOCK 40',50',60' SPAN X 16' WIDE)**



Modular Rolled Girder - Delivery / Installation

- Modular components for quick installation
- Standard 8' wide modules (>70' span beam splice typically required)



Rolled Girder Steel Express Pile Cap – Cooke City MT

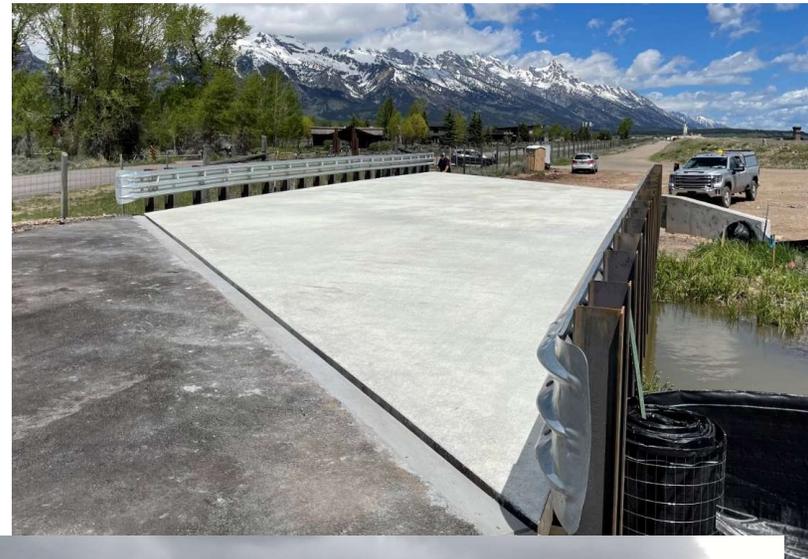


Rolled Girder Steel Express Pile Cap – Cooke City MT



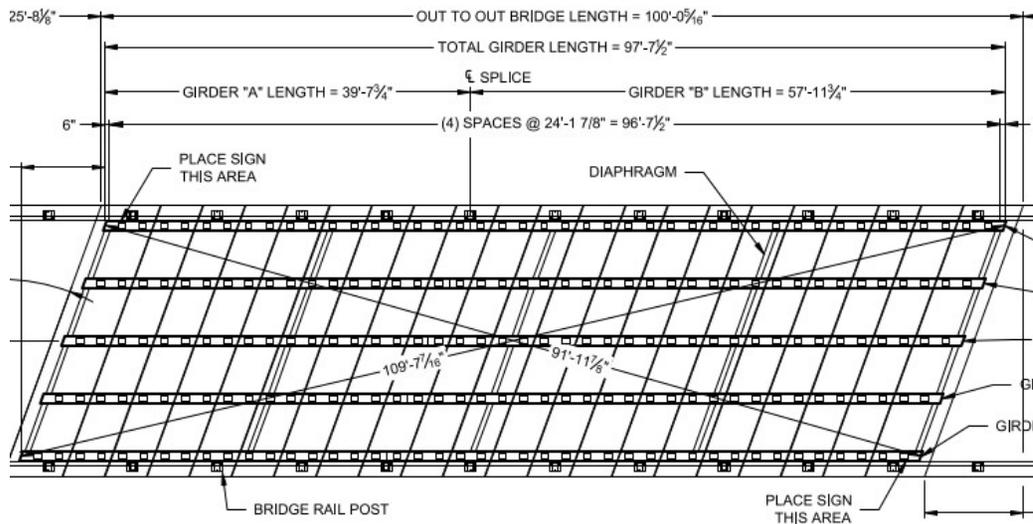
Site Specific - Big R Modular Rolled Girder

- 20-120'+ span
- Single lane or multi lane widths (12'-any width)
- Skews
- Custom or Crash Tested Rail with CIP Deck and Curb
- Wearing surface - CIP Concrete, asphalt, gravel, precast deck, timber, bar grate decking



Site Specific Modular – Wiggins Creek WY

- FHWA/HDR Design
- 100' span x 24' wide Rolled Girder skewed with precast deck and Crash Tested Rail
- Winter Install before Spring Runoff



Vehicular Truss – Carbella Bridge MT (Park Cnty)

- Park County / Stahly
- 210' span x 24' wide Vehicular Truss
- Yellowstone Flood 2022 – Bridge reopen Fall 2024
- No PIER in RIVER or TEMP Bridge



Contech Truss and Rolled Girder Lead times

From Approved Shops:

- Big R Rolled Girder Express 5-6 months
- Custom Rolled Girders 6-9 months
- Pedestrian and Vehicular Truss 10-12 months



Solution Development

Design Support

Installation

CONTECH DESIGNCENTER

Which bridge type is the best fit for your application?

DYOB® Structural Plate	DYOB® Precast	DYOB® Modular Rolled Girder	DYOB® Truss
			
Design Your Own Structural Plate solutions. Current product options include: Aluminum Box Culvert, BridgeCor® Coming Soon! MULTI-PLATE & ALSP	Design Your Own Precast solutions. Current product options include: CON/SPAN® & BEBO®	Design Your Own Modular Rolled Girder solutions. Current product options include: Big R EXPRESS Modular Rolled Girder	Design Your Own Truss solutions. Current product options include: Continental Bridge® & Steadfast Bridges®

<https://www.conteches.com/start-a-project/contech-design-center>

The screenshot displays the CONTECH Design Center software interface. The main window shows a 3D model of a bridge structure overlaid on a Google Earth map. The bridge is a multi-span structure with a central arch and side spans. The map shows a road labeled "Hookins Rd" and a body of water.

Left Panel (Parameters):

- Structure Info:**
 - Bridge Type: ALBC
 - Span & Rise: 34'-0" x 1.0'
 - Load: HL-89
 - Shell Type: S1
 - Length (ft), net: 45 (Actual length: 43.25)
 - Show Clear Rise?
- Foundation:**
 - Type: Full Mesa
 - Toe Plate?
- End Treatments:**
 - Calculated
- Calculated:**
 - Box Number: 133
 - Plate Shell Count: 3
 - Span: 34 (ft)
 - Rise: 10.67 (ft)
 - Side Angle: 4.62° (deg)
 - Straight Lag Length: 3.5 (ft)
 - Inside Flow Area: 291.7 (TRF)
 - Haunch Plate: 18 (ft)
 - Haunch Arc Length: 4 (ft)
 - Haunch Gage: 0.175
 - Haunch Rib Spacing: 9
 - Crown Plate: 20 (ft)

Messages:

Wingwall 1 Wale Beams overlap. The low height may need to be adjusted.
 Wingwall 2 Wale Beams overlap. The low height may need to be adjusted.
 Wingwall 3 Wale Beams overlap. The low height may need to be adjusted.
 Wingwall 4 Wale Beams overlap. The low height may need to be adjusted.

Right Panel (Export/Submit):

Export/Submit
 Select the output you would like to receive below

- PDF Draw
- 3D Model
- Image

Bottom Right Panel:

- Save
- Print
- Default
- Reset
- View All
- Search

Stock Modular

Toolbox

Parameters

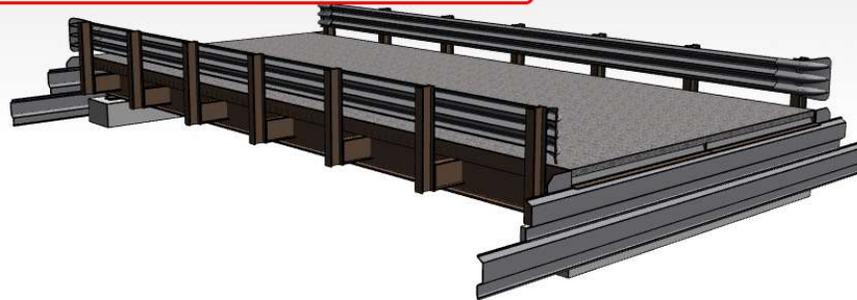
Site Plan

Documents

Structure Info

- Deck Width (ft.) ⓘ 18 ▾
- Structure Length (ft.) ⓘ 40 ▾
- Bridge Plank Gauge ⓘ 9 ▾
- Wearing Surface ⓘ Gravel ▾
- Bridge Rail Type ⓘ TL-1 Crash... ▾
- Abutment ⓘ Sill by Con... ▾
- Backwall ⓘ Sheet Pilin... ▾

Messages:
Design Saved!



Export/Submit

Select the output you would like to receive below



PDF/DWG



3D Model



Image



Save



Default



Measure



Move All



Reset View



Questions?

CROSSINGS. CULVERTS. BRIDGES. CONTECH.