

## BridgeCor® Overview



# BridgeCor® Structural Plate

## Redefining Standard Bridge Design

The 15" x 5.5" advanced profile allows designers to convert traditional bridges into more economical buried bridges by clear spanning up to 65'. This corrugation is already widely accepted by AASHTO and the international engineering community.

For the past 80 years, Contech MULTI-PLATE® has been the buried bridge standard. BridgeCor enhances the established performance of 6"x2" MULTI-PLATE by offering **9 times the stiffness and 3 times the strength**. Structural plate has proven its bolted, segmental construction to be economical and easily assembled by local forces. Contech BridgeCor is manufactured with the industry's best equipment allowing for the longest laying length sheets in the industry.

### Features & Benefits:

- Spans up to 80'
- Heavy loading conditions
- Reduced maintenance costs
- Buried bridge structure
- Durable and corrosion resistant
- Reduced installation time
- Onsite assembly
- Fewer fasteners required

### Applications:

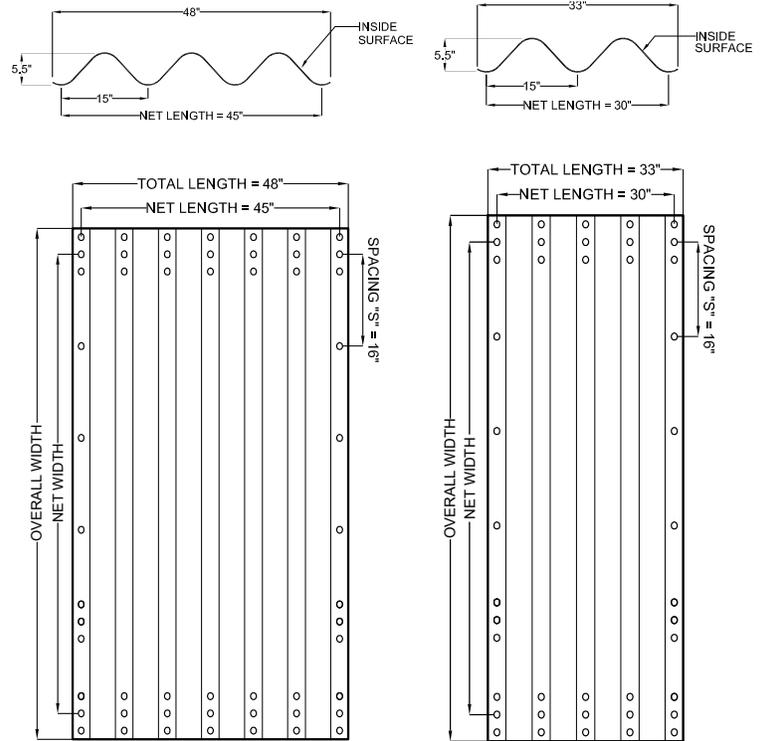
- Airports
- Grade separations
- Mining tunnels
- Railroad tunnels
- Rehabilitation
- Wetland crossings
- Stream crossings
- Environmentally sensitive areas

### Specifications:

- AASHTO LRFD 12.8.9  
Design of long span, deep-corrugated structures
- AASHTO LRFD 12.9  
Design of corrugated box culverts
- AASHTO M-167/ASTM A-761  
Corrugated steel structural plate



(2) 50' Round BridgeCor structures provides a variety of sizes for buried inverts necessary in grade separations needed for mine access roads and tunnel entrances.



### Standard 15" x 5.5" Corrugation

Notes: 8 Ga. (0.170) thru 1 Ga. (0.280) plates shall be three corrugations.

### Standard 15" x 5.5" Corrugation

Notes: 5/16 (.318) and 3/8 (.380) plate shall be two corrugations.

## Available Shapes

| Invert Structures  |                      |                                     |
|--|----------------------|-------------------------------------|
|   | Round                | 19'-50' Diameter                    |
|   | Ellipse              | Custom Sizes                        |
| Arch Structures  |                      |                                     |
|  | Single Radius Arch   | 22'-54' Spans                       |
|   | Multiple Radius Arch | 22'-50' Spans<br>(Up to 65' custom) |
|  | External Rib Arch    | 35'-80' Spans                       |
| Box Culverts   |                      |                                     |
|   | Box Culvert          | 18'-35' Spans<br>(Up to 45' custom) |

## Design Challenge »

- **Structure** – 2-radius arch
- **Stream width** – 40' clear span required
- **Application** – wildlife crossing
- **Length** – 260'

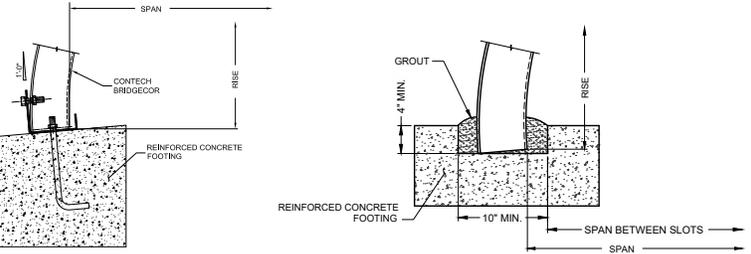
|                  | SUPER-SPAN  | BridgeCor   |
|------------------|-------------|-------------|
| Corrugation      | 6" x 2"     | 15" x 5.5"  |
| Structure        | 138A39      | 28A8        |
| Span             | 42'-3"      | 42'-7"      |
| Rise             | 15'-5"      | 15'-6"      |
| End Area         | 510 sf      | 525 sf      |
| Min. Cover       | 48"         | 30"         |
| Gage             | 1           | 7           |
| Weight/Foot      | 940         | 680         |
| Total Weight     | 244,400 lbs | 176,800 lbs |
| Number of Trucks | 6           | 4           |

**A MINIMUM 35% COST SAVINGS**

NOTE: A minimum of 35% cost savings for an erected structure. Total structure weight is less. Less trucks to the jobsite. In a low cover application, the SUPER-SPAN® will not meet specification design requirements.



40' x 28'-10" BridgeCor Railway Overpass – Morenci, Arizona



UNBALANCED CHANNEL DETAIL

GROUTED SLOTTED FOOTING DETAIL



21'-2" x 10'-8" BridgeCor Arch with Keystone® Retaining Wall Systems - Shelton, Connecticut



35'-8" x 17'-10" BridgeCor Backfill with Welded Wirewall – Gainesville, Georgia

## DESIGN AND INSTALLATION SUPPORT

### Complete Design Analysis

BridgeCor is designed through the use of the finite element analysis program, CANDE (Culvert Analysis and Design). This rigorous evaluation practice ensures the structure will meet the most stringent of designs. As with all buried structures, the soil envelope is critical; and proper soil data is necessary to accurately analyze these designs.

### On-Site Monitoring Assistance

As part of the AASHTO LRFD Bridge Construction Specification Section 26, appropriate field monitoring of the backfill is required. These are large bridge structures, and proper backfill and placement is key to project success.

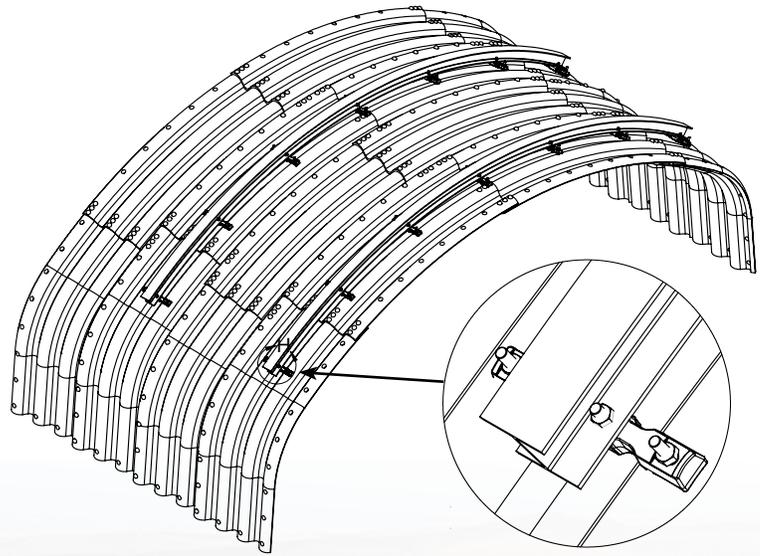
# BridgeCor<sup>®</sup> External Rib System

## Expanded Design for Increased Strength at Greater Spans

Contech innovations continue to take structural plate buried bridge systems to the next level with the new **BridgeCor External Rib System**. The BridgeCor External Rib System optimizes structure designs, reduces the amount of material required, increases spans up to 80', and maximizes the overall structure stability.

### Features & Benefits:

- Spans between 40' - 80'
- Complete bridge system – Rapid installation
- Material optimization for steel and backfill savings
- Cost-savings vs. conventional bridge structures
- Suitable for new construction, retrofit, deep cover and rehabilitation applications
- Ideal for DOTs, Counties/Municipalities, Residential, Railroad and Mining market projects
- AASHTO Section 12 includes external ribs as part of the overall design specification
- Patent Pending Design



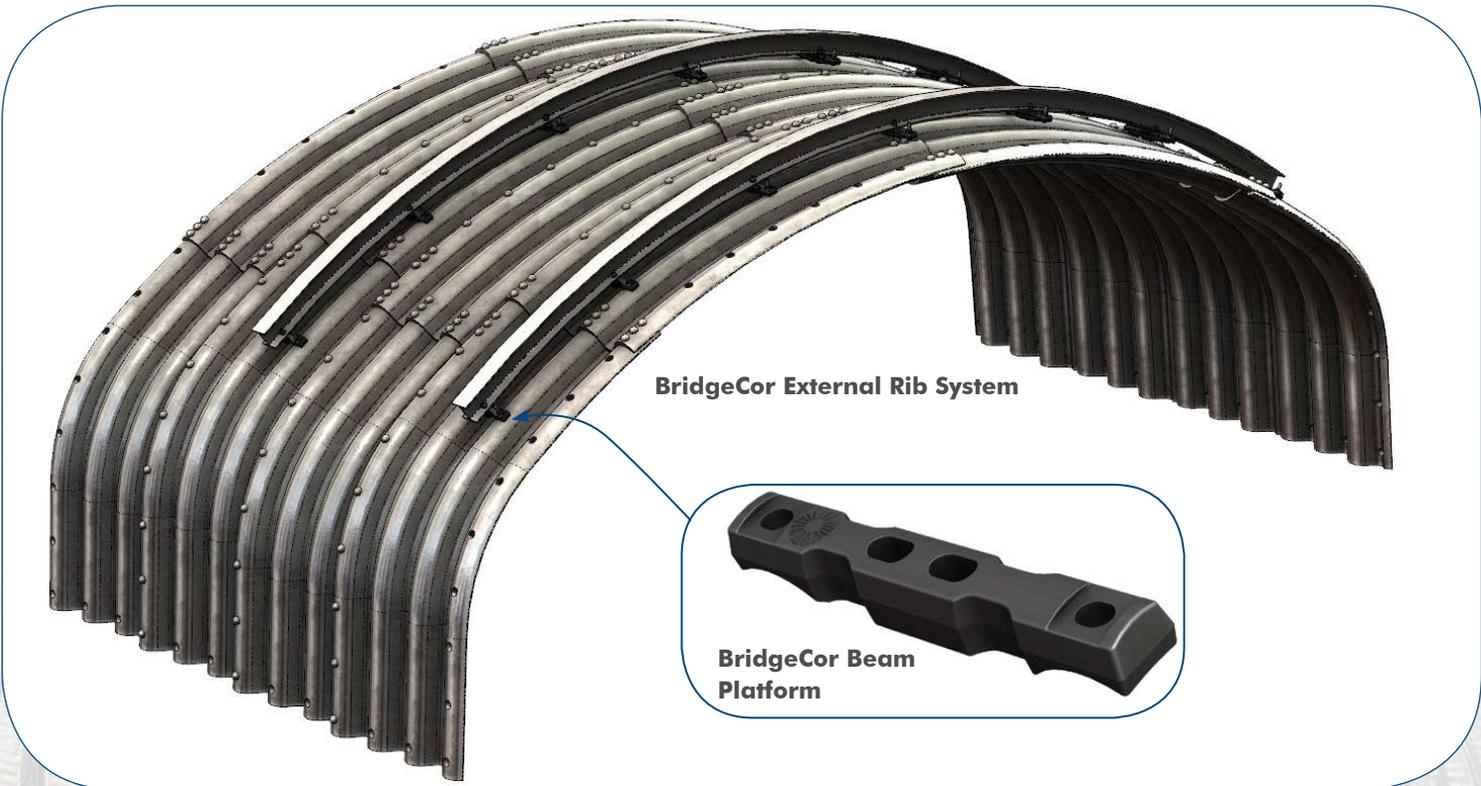


BridgeCor External Rib System ( 64'-2" x 19'-7" ) during construction



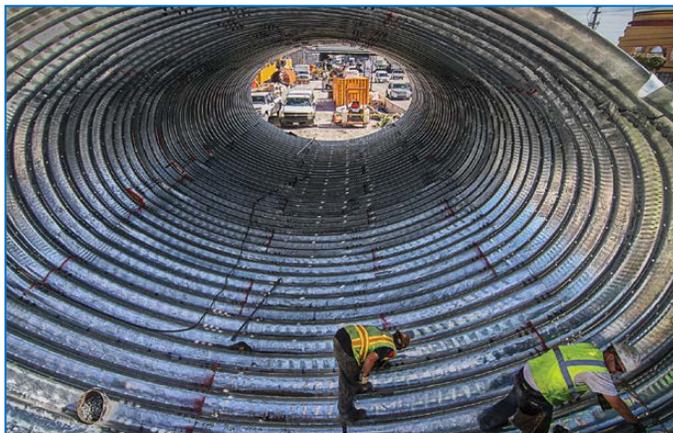
BridgeCor External Rib System after construction

Pawnee, Oklahoma



**BridgeCor External Rib System**

**BridgeCor Beam Platform**



## **NW 25th St. - Canal Enclosure Miami, Florida**

In order to widen NW 25th Street in Miami-Dade County, Florida, the contractor, Astaldi Construction Corp., decided that the best solution to present to the Florida Department of Transportation (FDOT) as a Value Engineering proposal was Contech Engineered Solutions' BridgeCor structural steel plate. The solution was to encase the existing canal and extend the viaduct to the west, and FDOT accepted the proposal. With an advanced profile of 15" x 5.5", BridgeCor offers nine times the stiffness and three times the strength of standard plate structures. Using BridgeCor was substantially less expensive than the concrete deck bridge that had originally been considered, and the construction time was also considerably less.

## **State Highway 473 - Wharf Resources Lead, South Dakota**

The Wharf Mine is located four miles west of Lead in the Black Hills, a heavily forested, mountain range in western South Dakota. Since 1983, Wharf Resources Inc. (WRI) has been successfully operating the Wharf open-pit gold mine and heap-leach operation. When WRI wanted access to a site located nearby, a tunnel solution was needed underneath State Highway 473 near Stewart Slope Road. After State Highway 473 was realigned, twin, round 50' x 98.69' BridgeCor Structural Plate structures were installed for their ability to accommodate CAT 777 haul trucks.



## **American River Culvert Replacement Elk City, Idaho**

In Elk City, Idaho – the Nez Perce Tribal Council determined that an undersized fish passage was in need of replacement. The project consisted of removing the existing culvert and replacing it with a new single radius BridgeCor arch - 46'-9" span x 16' rise with precast footings manufactured by Contech Engineered Solution.

The new structure opened up an entire 60,000 acre watershed to fish passage. A standard girder bridge was not economically feasible, and the BridgeCor was able to make the project fit within the available budget.



### **HEN-SR24 over Turkeyfoot Creek - Reline Henry County, Ohio**

The Ohio Department of Transportation (ODOT) carefully analyzed the old stone arch bridges along the old State Route 24. Upon inspection of the original bridge over Turkeyfoot Creek, it was determined that the structure was indeed deteriorating and needed to be rehabilitated. Originally constructed in 1845 as part of the Ohio to Erie Canal system, it was imperative that the historical significance of the bridge be preserved. For this reason, it was decided that the best solution was rehabilitation over replacement, and a 32'-8" x 13'-3" BridgeCor Structural Plate, 127'-10.5" in length, was selected and installed.

### **West Dowling Road- Grade Separation Anchorage, Alaska**

In order to reduce east-west traffic congestion on surrounding routes, Phase II of this \$47 million project extended West Dowling Road to Minnesota Drive at the Raspberry Road interchange. As the best solution, a 50'-1" x 27' BridgeCor Structural Plate, 155' in length, was selected and installed. The BridgeCor structure from Contech Engineered Solutions was more cost effective than a traditional girder bridge. Its ease of installation was a plus on the curved, super elevated road over the structure. The designers chose a culvert type bridge over a girder type bridge for economic reasons, due to the limited span required to cross Howard Holtan Court.



### **Blue Heron Cove - Stream Crossing Shelton, Connecticut**

When developers were creating a luxury waterfront community with spectacular views of the Housatonic River, in Shelton, Connecticut, they needed a solution that would provide access to the area and serve as a signature showpiece for Blue Heron Cove.

The 32'-2" span x 10'-8" rise BridgeCor two-radius arch was sized to meet the hydraulic requirements of the stream. Keystone end treatments were chosen to blend in with the architecture of the scenic area. This solution provided \$100,000 in savings over alternative options considered. Not only is BridgeCor economical and easily assembled, its bolted, segmental construction is manufactured with the industry's best equipment, allowing for the longest laying lengths in the industry.

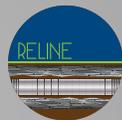
# Contech Design Support

Contech® structural plate bridges are strong and cost-effective solutions. Prefabricated manufacturing means fast installation and substantial cost-savings. Contech plate bridges can be assembled on-site and their lightweight make both transportation and installation much easier. Contech plate bridges feature efficient bridge design and construction that can be customized and manufactured to meet your project specifications.

| SOLUTION DEVELOPMENT  | DESIGN SUPPORT  | INSTALLATION   |
|---|---|--|
| <ul style="list-style-type: none"> <li>• Product Design Worksheet</li> <li>• Structure Selection</li> <li>• Siting &amp; Layout</li> <li>• Design Your Own Bridge (DYOB®)</li> <li>• Engineer Estimates</li> <li>• Site Simulation</li> <li>• Proposal Preparation</li> <li>• Design Build Support</li> </ul> | <ul style="list-style-type: none"> <li>• Specifications</li> <li>• Contract Drawings</li> <li>• Permitting Assistance</li> <li>• Structural/Fabrication Drawings</li> <li>• Approval Assistance</li> <li>• Custom Solutions</li> <li>• Horizontal/Vertical Alignment</li> <li>• Foundation Support</li> </ul> | <ul style="list-style-type: none"> <li>• Preconstruction Meeting</li> <li>• On-Site Installation Assistance</li> <li>• Logistics Coordination</li> </ul> |



## COMPLETE SITE SOLUTIONS



### STORMWATER SOLUTIONS

Helping to satisfy stormwater management requirements on land development projects

- Stormwater Treatment
- Detention/Infiltration
- Rainwater Harvesting
- Biofiltration/Bioretention

### PIPE SOLUTIONS

Meeting project needs for durability, hydraulics, corrosion resistance, and stiffness

- Corrugated Metal Pipe (CMP)
- Steel Reinforced Polyethylene (SRPE)
- High Density Polyethylene (HDPE)
- Polyvinyl Chloride (PVC)

### STRUCTURES SOLUTIONS

Providing innovative options and support for crossings, culverts, and bridges

- Plate, Precast & Truss bridges
- Hard Armor
- Retaining Walls
- Tunnel Liner Plate

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