# PROCESS – DESIGN SUPPORT. PREFABRICATION. INSTALL.

<table>
<thead>
<tr>
<th>PLATE</th>
<th>PRECAST</th>
<th>TRUSS</th>
</tr>
</thead>
</table>
| FABRICATION | FOUNDATIONS |  • Strip footings  
|                |                |  • Pedestal walls  
|                |                |  • Deep foundations  
|                |                |  • Base slab |
| TRANSPORTATION | ELEMENTS |  • CON/SPAN® Anchorwall  
|                | Scour Protection |  • Aluminum Headwall  
|                |                  |  • Welded Wire Wall  
| ASSEMBLY | END TREATMENTS |  |
| BACKFILLING | Decking |  |
| COMPLETION |  |  |
STRENGTH. VERSATILITY. ECONOMY. PLATE.

MULTI-PLATE®, SUPER-SPAN™ & BRIDGECOR®

ALUMINUM STRUCTURAL PLATE & BOX CULVERT
## STRENGTH

### STEEL

<table>
<thead>
<tr>
<th>Gage</th>
<th>12</th>
<th>10</th>
<th>8</th>
<th>7</th>
<th>5</th>
<th>3</th>
<th>1/16</th>
<th>3/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>.111</td>
<td>.140</td>
<td>.170</td>
<td>.188</td>
<td>.218</td>
<td>.249</td>
<td>.280</td>
<td>.318</td>
</tr>
</tbody>
</table>

### ALUMINUM

| Thickness | .125 | .150 | .175 | .200 | .225 | .250 |

## FREIGHT ECONOMY

ONE BRIDGE = ONE TRUCK

## LIGHTWEIGHT. BOLTED PLATE CONSTRUCTION PROCESS.

- **PLATE ASSEMBLY**
- **REINFORCING RIBS**
- **LIFTING ASSEMBLED BOX**
- **COMPLETE SYSTEM**
FOUNDATIONS

FOUNDATION OPTIONS

<table>
<thead>
<tr>
<th></th>
<th>Full Invert</th>
<th>Buried Invert</th>
<th>Strip Footing with Channel</th>
<th>EXPRESS® Foundations</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
<td><img src="image3.png" alt="Diagram" /></td>
<td><img src="image4.png" alt="Diagram" /></td>
<td><img src="image5.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

END TREATMENTS

- **KEYSTONE®**
- **CONCRETE HEADWALL**
- **ALUMINUM HEADWALL**
- **BEVELED END**
- **STEP-BEVELED END**
- **STEP-BEVEL W/ CONCRETE**
## SHAPE VERSATILITY

<table>
<thead>
<tr>
<th>SHAPES</th>
<th>STRUCTURE SIZE RANGES - INSIDE SPAN X RISE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MULTI-PLATE® 6&quot; x 2&quot; Steel</td>
</tr>
<tr>
<td>Round</td>
<td>min. 5'-0&quot;</td>
</tr>
<tr>
<td></td>
<td>max. 26'-0&quot;</td>
</tr>
<tr>
<td>Vertical Ellipse</td>
<td>min. 4'-8&quot; x 5'-2&quot;</td>
</tr>
<tr>
<td></td>
<td>max. 25'-0&quot; x 27'-8&quot;</td>
</tr>
<tr>
<td>Underpass</td>
<td>min. 12'-2&quot; x 11'-0&quot;</td>
</tr>
<tr>
<td></td>
<td>max. 20'-4&quot; x 17'-9&quot;</td>
</tr>
<tr>
<td>Single Radius Arch</td>
<td>min. 6'-0&quot; x 1'-10&quot;</td>
</tr>
<tr>
<td></td>
<td>max. 260&quot; x 131&quot;</td>
</tr>
<tr>
<td>Two Radius Arch</td>
<td>min. 18'-5&quot; x 8'-4&quot;</td>
</tr>
<tr>
<td></td>
<td>max. 50'-7&quot; x 19'-11&quot;</td>
</tr>
<tr>
<td>Horizontal Ellipse</td>
<td>min. 7'-4&quot; x 5'-6&quot;</td>
</tr>
<tr>
<td></td>
<td>max. 14'-11&quot; x 11'-2&quot;</td>
</tr>
<tr>
<td>Pipe Arch</td>
<td>min. 6'-1&quot; x 4'-7&quot;</td>
</tr>
<tr>
<td></td>
<td>max. 20'-7&quot; x 13'-2&quot;</td>
</tr>
<tr>
<td>Low-Profile Arch</td>
<td>min. 19'-5&quot; x 6'-9&quot;</td>
</tr>
<tr>
<td>SUPER-SPAN™ / SUPER-PLATE®</td>
<td>max. 45'-0&quot; x 18'-8&quot;</td>
</tr>
<tr>
<td>High Profile Arch</td>
<td>min. 20'-1&quot; x 9'-1&quot;</td>
</tr>
<tr>
<td>SUPER-SPAN™ / SUPER-PLATE®</td>
<td>max. 35'-4&quot; x 20'-0&quot;</td>
</tr>
<tr>
<td>Horizontal Ellipse</td>
<td>min. 19'-4&quot; x 12'-9&quot;</td>
</tr>
<tr>
<td>SUPER-SPAN™ / SUPER-PLATE®</td>
<td>max. 37'-2&quot; x 22'-2&quot;</td>
</tr>
<tr>
<td>Pear-Arch</td>
<td>min. 23'-11&quot; x 23'-4&quot;</td>
</tr>
<tr>
<td>SUPER-SPAN™</td>
<td>max. 304&quot; x 2510&quot;</td>
</tr>
<tr>
<td>Pear</td>
<td>min. 23'-8&quot; x 25'-5&quot;</td>
</tr>
<tr>
<td>SUPER-SPAN™</td>
<td>max. 29'-11&quot; x 31'-3&quot;</td>
</tr>
<tr>
<td>Box Culvert</td>
<td>min. 17'-6&quot; x 6'-10&quot;</td>
</tr>
<tr>
<td></td>
<td>max. 35'-4&quot; x 13'-11&quot;</td>
</tr>
</tbody>
</table>

*Custom sizes and shapes are available.*

*Not available.*

*For more details on Contech’s complete structural plate offering, please consult the current edition of the Structural Plate Design Guide.*
MODULAR. EFFICIENT. COMPLETE. PRECAST ARCH.

CON/SPAN® O-SERIES®

BEBO® ARCH SYSTEMS
MODULAR COMPONENTS

- O-Series® precast bridge unit
- Precast wall counterfort
- Wingwall connection plate
- Precast wall anchor

EXPRESSION® Foundations

- BEBO® unit
- Precast wall anchor
- Precast headwall

CURVED ALIGNMENT

- PRECAST FOUNDATIONS
- PRECAST ARCH UNITS
- PRECAST HEADWALLS
- PRECAST WINGWALLS

TWIN LEAF CONSTRUCTION

- Precast wingwall
- Precast headwall
- Precast wall anchor

FOOTING
MODULAR. EFFICIENT. COMPLETE. PRECAST ARCH.

FOUNDATIONS

MULTIPLE CELL CONFIGURATIONS
SHAPE VERSATILITY

<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>APPLICATIONS</th>
<th>SPAN RANGE (FT)</th>
<th>RISE RANGE (FT)</th>
<th>WATERWAY RANGE (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON/SPAN®</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-Series®</td>
<td>Hydraulics, clear spans, grade separations</td>
<td>13 - 65</td>
<td>3.23 - 13.77</td>
<td>33 - 685</td>
</tr>
<tr>
<td>Twin Leaf</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-Series® Twin Leaf</td>
<td>Longer span hydraulics, clear spans, grade separations</td>
<td>66 - 87</td>
<td>10.50 - 20.95</td>
<td>550 - 1442</td>
</tr>
<tr>
<td>C-Series</td>
<td>Grade separation, high rise, high covers</td>
<td>29.33 - 54</td>
<td>11.33 - 26.33</td>
<td>260 - 1140</td>
</tr>
<tr>
<td>Twin Leaf</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Series</td>
<td>Arch shape, clearance box, aesthetics</td>
<td>11.17 - 47.75</td>
<td>3.5 - 13.5</td>
<td>28 - 479</td>
</tr>
<tr>
<td>E-Series Twin Leaf</td>
<td>High rise, large span, grade separation</td>
<td>53.58 - 84</td>
<td>14 - 29.83</td>
<td>588 - 2076</td>
</tr>
<tr>
<td>T-Series</td>
<td>Low clearance crossings</td>
<td>22 - 62</td>
<td>2.60 - 9</td>
<td>39 - 377</td>
</tr>
<tr>
<td>T-Series Twin Leaf</td>
<td>Large spans with good soil conditions</td>
<td>64 - 102</td>
<td>7.42 - 13.67</td>
<td>340 - 982</td>
</tr>
</tbody>
</table>

* For additional shape information, please consult the Precast Waterway Charts Overview.

Available for limited applications.
PEDESTRIAN. VEHICULAR. CUSTOM. EXPEDITED.

CUSTOM. AESTHETIC. PEDESTRIAN.

EXPEDITED. STANDARD. PEDESTRIAN.

TIMELESS DESIGN. DEPENDABLE. VEHICULAR.

SIMPLE SPAN. ROLLED BEAM BRIDGE. VEHICULAR.
### EXPRESS® » EXPEDITED. STANDARDIZED. PRE-ENGINEERED.

**DEIGNED IN ACCORDANCE WITH AASHTO LRFD**

<table>
<thead>
<tr>
<th>Clear Width:</th>
<th>6’</th>
<th>8’</th>
<th>10’</th>
<th>12’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length:</td>
<td>40’</td>
<td>50’</td>
<td>60’</td>
<td>70’</td>
</tr>
<tr>
<td></td>
<td>80’</td>
<td>90’</td>
<td>100’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>110’</td>
<td>120’</td>
<td>130’</td>
<td>140’</td>
</tr>
<tr>
<td></td>
<td>150’</td>
<td>160’</td>
<td>170’</td>
<td></td>
</tr>
<tr>
<td>Deck:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure Treated Wood</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cast-in-Place Concrete (by Others)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. SELECT
- Connector® Style Pedestrian Truss
- Weathering Steel Finish
- Horizontal Safety Rail System

2. SPECIFY
- Bid Drawings
- Specification
- 10-Year Limited Warranty
- Estimate

3. SATISFY
- Stamped Drawings in One Week
- Bridge Delivery in 6-8 Weeks of Approved Drawings
- Bridge Installation Support
- Cost-Effective Solution

*IBC & AISC designed EXPRESS Structures also available in 20’ - 100’ lengths.*
PEDESTRIAN. VEHICULAR. CUSTOM. EXPEDITED.

FREIGHT ECONOMY

SIMPLE INSTALLATION

OPTIONS

DECK

Wood
Steel Grate
Concrete
Asphalt

FINISH

Weathering Steel
Painted Steel
Galvanized Steel*

RAIL

Cable
Mesh Panels
Safety Rail/Wood Rub Rail
Vertical Picket/Pipe Handrail

*Exclusive 35-year galvanized rust free warranty for vehicular truss.
CONTINENTAL® PEDESTRIAN TRUSS STYLES

Connector®

Capstone®

Link®

Keystone®

Gateway®

Tied Arch®

STEADFAST BRIDGES® VEHICULAR TRUSS STYLES

Colonial Flat

Colonial

Capstone®

Keystone®

Horizon

Archway®
EXPRESS® FOUNDATIONS.

SPEED OF PRECAST. ECONOMY OF CAST-IN-PLACE.

EXPRESS Foundations

PLATE

PRECAST

TRUSS

STRIP FOOTING

PEDESTAL WALL

PILE CAP

BASE SLAB
HARD ARMOR. ARMORTEC.

ARMORFLEX®
ARTICULATING CONCRETE BLOCKS

Closed-Cell Block
Open-Cell Block

A-JACKS®
CONCRETE ARMOR UNITS

A-Jacks Unit

REVEGETATION

BEFORE
AFTER

SPEED OF INSTALLATION

SCOUR PROTECTION

OUTLET PROTECTION

CHANNEL LINING

DAM OVERTOPPING
SEGMENTAL WALLS. KEYSSTONE®. WIRE WALLS.

KEYSTEEL®
WITH WELDED WIRE REINFORCEMENT.
INEXTENSIBLE.

KEYSTONE®
WITH GEOGRID REINFORCEMENT.
EXTENSIBLE.

WELDED WIRE WALL
WITH GEOGRID REINFORCEMENT.
EXTENSIBLE.

END TREATMENTS

ABUTMENTS

RETAINING WALLS
CONTECH TUNNEL LINER PLATE

STEEL. ALUMINUM.
STANDARD SHAPES

Arch  Horseshoe  Underpass  Pipe Arch

2-FLANGE PLATES

2-Flange Liner Plate Lap Joint  2-Flange Liner Plate
DESIGN CONSIDERATIONS.

BRIDGE AT-GRADE
- Long clear span required
- No stream impact allowed
- High span to rise ratio required
- Minimal freeboard clearance available
- Desire to reduce permitting requirements

BURIED BRIDGE
- Clear span required
- Minimal or no stream impact allowed
- Desire to reduce permitting requirements
- Life cycle/maintenance costs a primary concern
- Design considerations balanced between stream impact, cost and permitting

CULVERT w/Engineered Natural Invert
- Hydraulics are primary design consideration
- Temporary stream disturbance allowed
- Minimal debris or maintenance concerns
- Stream ecology/fish passage are key design consideration

CULVERT
- Hydraulic design considerations only
- Clear span not required
- Stream disturbance allowed
- Minimal debris or maintenance concerns
- Cost more critical than stream considerations

Traditional culverts are typically designed to pass flood discharge without consideration for stream ecology impacts.
**INVERT. ECOLOGY. BIOLOGY.**

### I-SERIES™
**INVERT TECHNOLOGY**

Integration of i-Series™ invert technology promotes sedimentation of natural streambed material. This creates a natural bottom – open to hyporheic zone below. The engineered bottom enhances the stream biology and ecology as well as provides areas of low velocity to allow for fish passage through the culvert.

### Successful Culvert Design Outcomes*

<table>
<thead>
<tr>
<th></th>
<th>FLOOD CONVEYANCE</th>
<th>FISH PASSAGE</th>
<th>PROFILE CONTINUITY</th>
<th>HYDRAULIC DIVERSITY</th>
<th>SEDIMENT TRANSPORT CONTINUITY</th>
<th>LOW FLOW CONTINUITY</th>
<th>A Margin HABITAT</th>
<th>BED GRADATION CONTINUITY</th>
<th>DEBRIS TRANSPORT</th>
<th>CONNECTIVITY TO SUBGRADE (hyporheic zone)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i-Series™ Culvert</td>
<td><img src="image1" alt="i-Series™ Culvert" /></td>
<td><img src="image2" alt="i-Series™ Culvert" /></td>
<td><img src="image3" alt="i-Series™ Culvert" /></td>
<td><img src="image4" alt="i-Series™ Culvert" /></td>
<td><img src="image5" alt="i-Series™ Culvert" /></td>
<td><img src="image6" alt="i-Series™ Culvert" /></td>
<td><img src="image7" alt="i-Series™ Culvert" /></td>
<td><img src="image8" alt="i-Series™ Culvert" /></td>
<td><img src="image9" alt="i-Series™ Culvert" /></td>
<td><img src="image10" alt="i-Series™ Culvert" /></td>
</tr>
<tr>
<td>Traditional Culvert w/ Invert (may include buried invert)</td>
<td><img src="image11" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image12" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image13" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image14" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image15" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image16" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image17" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image18" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image19" alt="Traditional Culvert w/ Invert" /></td>
<td><img src="image20" alt="Traditional Culvert w/ Invert" /></td>
</tr>
</tbody>
</table>

* Per the Washington Department of Fish & Wildlife

- This performance summary is based on extensive testing from Colorado State University.
- Comprehensive testing report available upon request.
- Bed gradation continuity can be achieved by manual filling of the culvert with natural bed sediments during installation.

### I-SERIES™
**CON/SPAN® CULVERT**

![CON/SPAN® CULVERT Diagram](image21)

- Precast rise
- Effective rise
- Span
- Area of low velocity for fish passage
- Naturally deposited material
- Precast foundation/cut-off wall
- Precast wall anchor
- Open to subgrade
- Shiplap joint
- Precast wingwall
- Attached precast headwall
- Precast bridge unit
- B-Series precast headwall
- Precast wall anchor
- Sedimentation member
- Open to subgrade
Contech Engineered Solutions provides a comprehensive array of plate, precast, and truss structures, with the best-known brands available worldwide. Contech bridges - vehicular and pedestrian - fit a wide variety of applications, spanning distances from five to 300 feet and more. These bridge brands include Contech Structural Plate, CON/SPAN®, BEBO®, Continental®, Steadfast® and EXPRESS® Bridges.

Experience, innovative thinking and exceptional service have put more than 80,000 Contech bridge installations on the map worldwide.
CONSIDERATIONS FOR ENGINEER OF RECORD

- Site Design
- Soil Borings
- Soil Bearing Recommendations
- Hydraulic Analysis
- Scour Analysis
- Scour Countermeasures
- Permitting
- Inspections

SOLUTION DEVELOPMENT & DESIGN SUPPORT

- Structure Selection
- Structure Siting and Layout
- Engineer's Estimate
- Photo Simulation
- DYOB Concept
- Proposal Drawings
- Contract Drawings
- Specifications
- Foundation Reactions
- Foundation Design
- Hydraulic Coordinates
- Scour References
- Approval Assistance
- Fabrication Drawings

INSTALLATION SUPPORT

- Preconstruction Meeting
- Logistics Coordination
- Structure Onsite Installation Assistance

PHOTO SIMULATION

BEFORE

AFTER

DYOB® Design Your Own Bridge

To get started, choose a structure type:

- Aluminum Box Culvert
- MULTI-PLATE SUPER-SPAN
- CON/SPAN BEBO
- Steadfast Continental

www.ContechES.com/dyob

DRAWINGS & TECHNICAL SUPPORT
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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Florida (Orlando) 321-348-3520
Maine (Scarborough) 207-885-9830
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800-338-1122

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