Valmont Bridge Systems

Complete Bridge Solutions
At Valmont, we improve life by creating vital infrastructure and advancing agricultural productivity with a commitment to conserving resources.
History of Valmont Bridge Systems

- First county installation in 2004
- Inspected every 2 years
- No signs of deterioration of concrete driving surface or corrosion in steel girders
- Bridge funding by FHWA, DOT’s A.I.D. Grant, EDC-3

Current Condition (2019)
Why do we need a “New” solution?

THE PROBLEM WITH THE CURRENT SOLUTION

• Prestressed concrete box beams have been the standard solution since the 1970’s for off-system, local agency, non-interstate bridges.

• MDOT study of current inventory shows pre-stressed concrete box beam service life < 50 years

1970 + 50 years = NOW!

4 - POOR CONDITION - structural capacity of element is affected or jeopardized by advanced deterioration, section loss, spalling, cracking, or other deficiency

3 - SERIOUS CONDITION - loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible.
Concrete Box Beam

DEFICIENCIES

The side-by-side box-beam bridge was the bridge of choice for short to medium span bridges due to ease of construction, favorable span-to-depth ratios, aesthetic appeal, and high torsional stiffness.

The bridge can be constructed in an accelerated fashion and classified among the systems that qualify for accelerated bridge construction (ABC).

This bridge is losing favor primarily because of persisting performance issues.

A section of concrete fell from a bridge in Chattanooga, Tennessee, shutting down two interstate ramps.

I-70 Overpass collapsed in Western Pennsylvania.
Concrete Box Beam

DEFICIENCIES

Major deficiencies of the concrete box beam include:

- Reflective Deck Cracking (cracking between the beams that reflects to the deck surface)
- Only 35 Year Service Life in Extreme Conditions
- Early Deterioration of Joints
- Limited Corrosion Protection

Performance problems persist despite design changes over the last 70 years. Specifically, the longitudinal deck cracking reflecting from the shear keys continue.

Reflective deck cracking is identified as the leading cause for triggering other distresses that create safety concerns.

FERRYSBURG, Mich. — A historic bridge in Ferrysburg is closing and causing concerns for residents who say emergency response vehicles use it regularly.

But after years of upgrades and no money to pay for them, the city says closing the bridge is a matter of safety.

Ferrysburg’s busy Smith bridge closing due to safety concern: “Concrete box beams are deteriorating, so if something goes heavy over a box beam, there’s a chance it could sink,” says Craig Bessinger, Ferrysburg city manager.
Valmont Bridge Systems

PRESS-BRAKE-FORMED TUB GIRDERS, AN AASHTO 2020 FOCUS TECHNOLOGY

Major benefits include:

- Can be installed in a single day
- Competitive installation pricing
- **100 year service life** = 60 year maintenance free protective galvanized coating + 40 year service life beam underneath
- AASHTO LRFD Design
- Valmont bridge design support
- Flexible options:
  - Valmont U-BEAM™ only
  - Complete Bridge Solution – Field Assembly  
    *U-BEAM™ with precast deck panels*
  - Complete Bridge Solution – Accelerated Construction Assembly (ABC)  
    *U-BEAM™ integral with concrete deck*
WHAT MAKES A COMPLETE SUPERSTRUCTURE?
What is a Steel Press-Brake-Formed Tub Girder?

PRESS-BRAKE-FORMED TUB GIRDERS, AN AASHTO 2020 FOCUS TECHNOLOGY

FABRICATION COMPONENTS

PROCEDURES FOLLOW AASHTO DESIGN & CONSTRUCTION SPECIFICATIONS:

1. Design
2. Material
3. Shop Drawings
4. Press-Brake Forming
5. Stud Welding
6. Galvanizing
Valmont U-BEAM™
CAST-IN-PLACE DECK

Order just our Valmont U-BEAMs and utilize local contractors to cast the deck in place.
Valmont Complete Bridge Solutions

PRECAST DECK OPTIONS

Accelerated Construction Assembly
Order Valmont U-BEAMs and Valmont Precast Deck Panels to streamline purchasing and installation.

Field Assembly
Order Valmont U-BEAMs and Valmont Precast Deck Panels or locally sourced precast deck panels and assemble in the field.

Items can be bundled, stored and installed on your timeline.
Valmont Bridge Solutions

VERSATILE BRIDGES FOR RURAL ROADWAYS

Valmont Bridges can:

• Be used for any county or secondary road with a span length of 25 to 100ft

• Match or improve the existing depth of a structure

• Accommodate roadway constraints like horizontal curves, vertical curves, skew, camber, etc.

• Accept any guardrail requirement

• Ship components 9-10 weeks from acceptance of shop drawings
Valmont Structures: Bridge-Dedicated Facility

LEAN & ADVANCED MANUFACTURING APPROACH

STATE OF THE ART PRESS BRAKE FABRICATION FACILITY

• Broke ground in January 2021
• 60’ Press Brake, one of the largest in the world
• Automated stud welding capabilities
• Roll forming camber capabilities
• AISC IBR Certification
• Open to production August, 2021!
Qualifications

VALMONT BRIDGE SYSTEMS

- Follows AASHTO and ASTM Design Codes
- Meets AASHTO LRFD Specifications
- Hold AISC Minor and Intermediate Designation
- AWS Stud Welding
- ASTM Galvanizing

ISO 9001 CERTIFIED
Valmont Bridge Installations
ACROSS NORTH AMERICA

Bridge locations in:
- Alabama
- Illinois
- Indiana
- Iowa
- Louisiana
- Michigan
- Minnesota
- Missouri
- New Mexico
- Oregon
- Pennsylvania
- Texas
- Colfax, SK
NATIONAL RECOGNITION WITH THE AASHTO INNOVATION INITIATIVE AWARD

Many new and emerging technologies, offering improved performance/effectiveness, are continually becoming ready for operational implementation. Some of these technologies have been developed through rigorous research and may have been demonstrated in "real world" applications. In support of that mission, several strategic goals have been identified:

1. Develop mechanisms to solicit ready-to-implement technologies.

2. Identify and mobilize technology champions within the AASHTO member departments who are committed to the deployment of chosen technologies.
A group of bridge and buried soil structure industry leaders who have joined together to provide educational information on the design and construction of short span steel bridges in installations up to 140 feet in length.

**Education**
- Webinars
- Workshops
- Forums
- Conferences

**Technical Resources**
- Standards
- Guidelines
- Best Practices

**Case Studies**
- Economics: Steel is Cost-Effective
- Innovative & ABC Design

**Press Brake Formed Tub Girder (PBFTG) Research Reports**
- Development and Experimental Testing of Press Brake Tub Girders (PBFTG)
- 10 Years, 7 Volume Research Report
- [https://www.shortspansteelbridges.org/testing-of-press-brake-tub-girders/](https://www.shortspansteelbridges.org/testing-of-press-brake-tub-girders/)
MDOT BRIDGE BUNDLING
MDOT Case Study

2021 AWARDED MDOT 19 BRIDGE BUNDLING PROJECT – 200 VALMONT U-BEAMS

PROJECT SPECIFICS

12/13/19  MDOT Pilot Announcement
08/20/20  5 Contractor Teams Shortlisted
11/19/20  MDOT Design-Build Request for Proposal
12/04/20  Valmont Submitted PBTG-Priced Proposal Tub Girder Solutions to All Shortlisted Contractors
02/19/21  CA HULL Named Low Bidder for Project

  • Engineers Estimate $23,785,861
  • Low Bidder $24,262,230
  • 2.0% Over Engineers Estimate

03/12/21  CA HULL Provided Valmont Letter of Intent
07/21/21  Start Fabrication in 2021 (19 Bridges/200 U-BEAMS)
11/18/22  Early Final Completion (2023 Contract Finish / 2022 Actual Finish with Valmont U-BEAM™)

Bridge Bundling Goals and Objectives

1. Achieve goal of Zero Serious and Critical Bridges by 2025 (or earlier)
2. Prioritize Closed/Critical/Serious/Poor bridges
3. Integrate with existing Local Agency Bridge Program to achieve sustained system goals
4. Leverage national, statewide, and local best practices.
5. Use funding sources efficiently
6. Efficiently utilize limited available construction labor and resources
7. Encourage standardization, streamlining and innovation to drive program value
8. Engage local stakeholders and achieve buy-in for a collaborative and coordinated Michigan bridge program
9. Develop maintenance and lifecycle asset management plan to provide the best whole-life value.

POTENTIAL LOCATIONS
Advantages – Installation

SPECIFIC MDOT BRIDGE BUNDLE ADVANTAGES

• Valmont Large Production Capacity
  – Start Girder Fabrication by September 2021
  – Planned 200 Girders Delivered by October 2022
  – Early Final Completion November 2022
• Deliver and install as many as 12 girders the same day…or more!
• Easy to stockpile on jobsite
• Lightweight units, multiple delivered on one standard trailer
• Lightweight units, multiple spans set from one crane location
LOWER COST

- Reduced Installation costs
  - Lighter units require smaller crane
  - Accelerated delivery and light weight allow more girders to be installed in a single day
  - Light weight allows for ease of stockpile on jobsite
- Reduced freight cost, deliver as many as 12 girders the same day (4 per truckload)
- Reduced maintenance cost
  - 60-year galvanized coating service life
  - 40-year steel service life underneath coating
  - Total of 100-year service life!
ABC Advantages – Installation

Accelerated Bridge Construction (ABC)

- Installation the same day received
- Part-width construction options available
- Options available with precast driving surface
  - Full depth precast panels (FA)
  - Integrated composite precast deck (ABC)
- Easy closure pour options
- Accept any DOT approved barrier rail system
Valmont Bridge Design

HOW DO I DESIGN A VALMONT BRIDGE?

Valmont Bridge Systems Brochure
Valmont Bridge Design Guidelines
Valmont Bridge UBEAM™ Specification Guide
Valmont Bridge Case Studies

www.valmontstructures.com/bridges
THANK YOU

valmontbridgesales@valmont.com

valmontstructures.com/bridges