

A construction site at sunset. The sky is filled with vibrant, colorful clouds in shades of pink, orange, and purple. In the foreground, there is a concrete wall with rebar protruding. Behind it, various construction materials are covered with white and black tarps. A large crane is visible in the background, silhouetted against the bright sunset. The overall scene is a mix of industrial activity and natural beauty.

# Champaign County Engineer

Jeff Blue, P.E.



# Champaign County Bridge Type Selection

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# PRECAST CONCRETE DECK BEAM

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- Typically used on township roads and some rehabilitation of county roads
- Low Volume of Traffic
- Less likely to be exposed to chlorides
  - Lower Cost
    - \$200/SF Total Cost
    - \$86/SF Beam Costs
  - Quicker Construction



12/03/2014 1

# Steel Beam Concrete Deck

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- Typically used on new county road bridges
- Higher Volume of Traffic
- More likely to be exposed to chlorides
  - Cost a little higher
    - \$300/SF Total Cost
  - Construction is a little more tedious



# Reinforced Concrete Slab

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- Typically used on new county road bridges
- Higher Volume of Traffic
- Reduces “growth” of roadway
- Short Spans
- More likely to be exposed to chlorides
  - Highest Cost
    - \$500/SF
  - Construction is a little more tedious



# Other Options

- Box Culverts
- Metal Arch Culverts

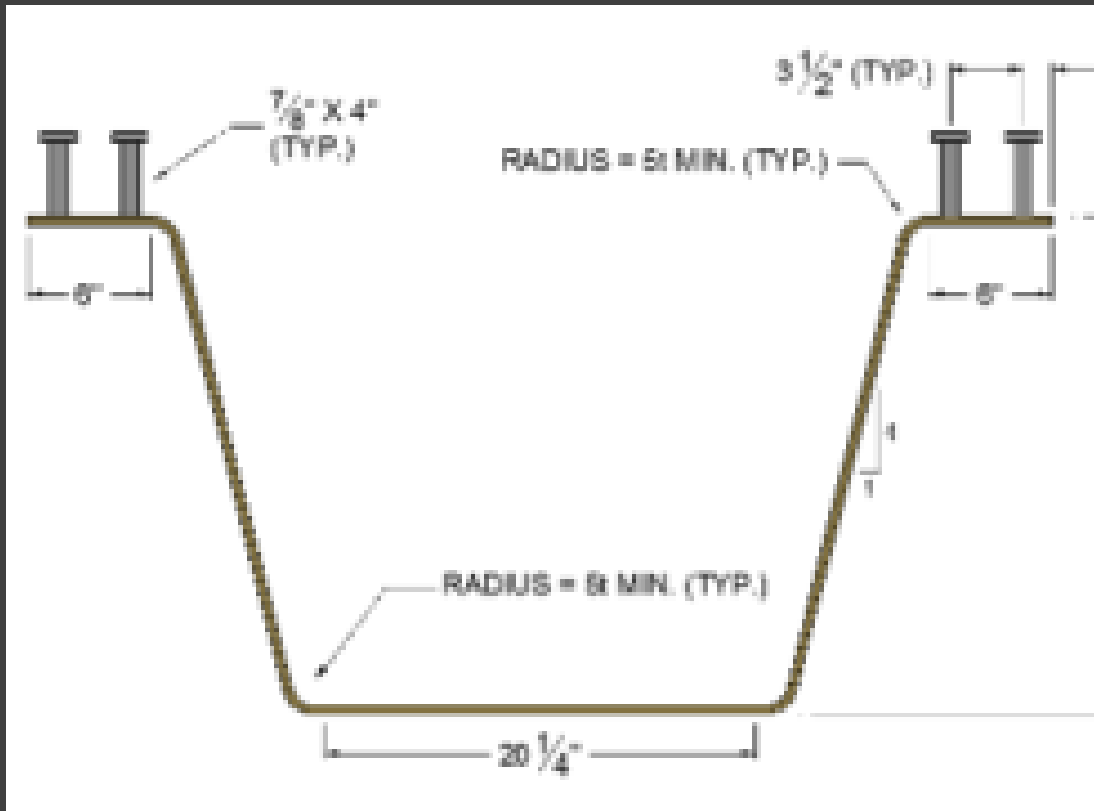


# NACE Annual Conference 2019

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# Press Brake Tub Girders







SHORT SPAN STEEL

 BRIDGE ALLIANCE <sup>TM</sup>

Valmont Industries  
SSAB America  
McCann Concrete

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# Need to Have Competitive Cost vs. Precast

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- Valmont Purchase Order for PBTG “System”
  - Tub Girder
  - Concrete Deck
  - Freight
  - Shop Drawings
  - Load Rating
- **Material Only = \$82/SF**
- **Total Cost = \$263/SF**



# Construction Process

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- Tub Girders Formed/Galvanized by Valmont
- Shipped to McCann



# Construction Process

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Precast Deck poured by  
McCann



# Construction Process

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- Typical Substructure Construction
  - Drive Piling
  - Pour Abutments
  - Rip Rap on Slopes



# Construction Process

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Crane and Crew for Setting Beams



# Construction Process

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Beams Lifted from Truck



# Construction Process

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Beams Lifted from Truck





# Construction Process

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Beams Set on Abutments



# Construction Process

Beams Set on Abutments



# Construction Process

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Beams Set on Abutments

Beams Set in One Day



# Construction Process

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Beams are Pinned

8" Closure Pour Between Beams



# Construction Process

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8" Closure Pour Between  
Beams

Done in One Day



# Construction Process

Closure Pour Between Beams

9,000 PSI Compressive Strength in 1 Day



# Construction Process

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Under Bridge



# Construction Process

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Midwest Guardrail System





# Construction Process

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Bare Deck

Beams were sealed with  
Pavix at the plant



# Most Long-Term Bang For Your Buck?

## Precast Beams

- \$200/SF
- Expected Life - 50 Years

## Steel Beams With Concrete Deck

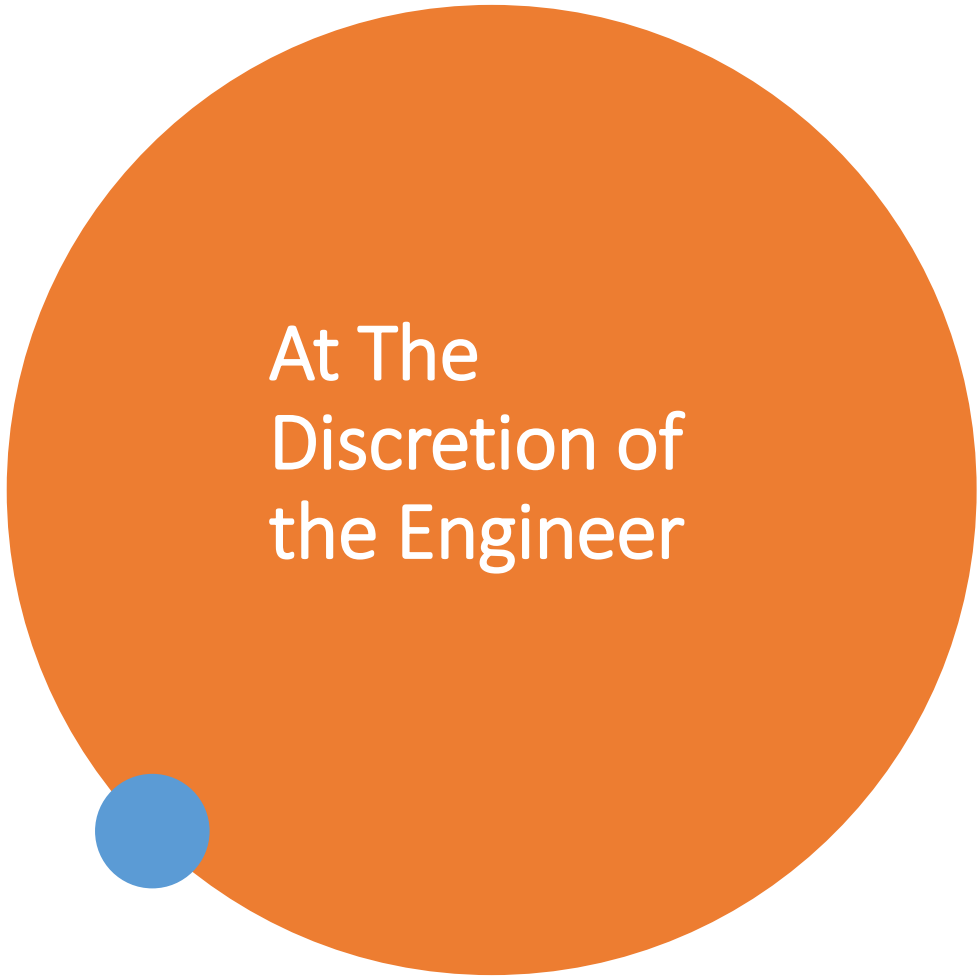
- \$300/SF
- Expected Life - 75 Years

## Concrete Slab Bridge

- \$500/SF
- Expected Life - 75 Years

## Galvanized PBTG With Concrete Deck

- \$263/SF
- Expected Life - 100 Years



At The  
Discretion of  
the Engineer



**TRUST ME**  
— I'M A —  
**BRIDGE  
ENGINEER**

NEVER BUT NEVER QUESTION THE  
**ENGINEER'S**  
JUDGEMENT

**GO ILLINI!**

**THANKS FOR VIEWING!**

**I JOIN THE FIGHT!**