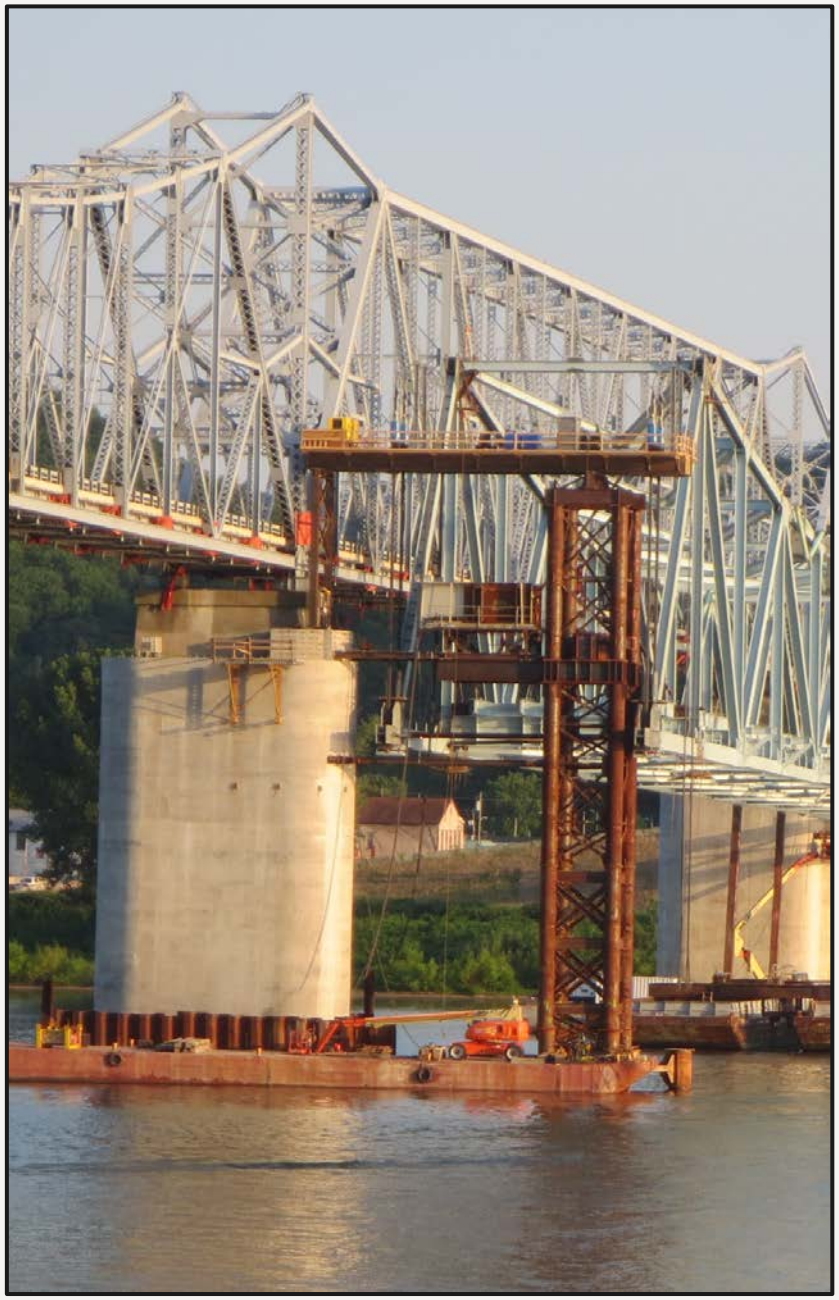
Milton Madison Bridge Replacement

Tom Bolte, Burgess & Niple

Murray Johnson, Buckland & Taylor



Project Location:

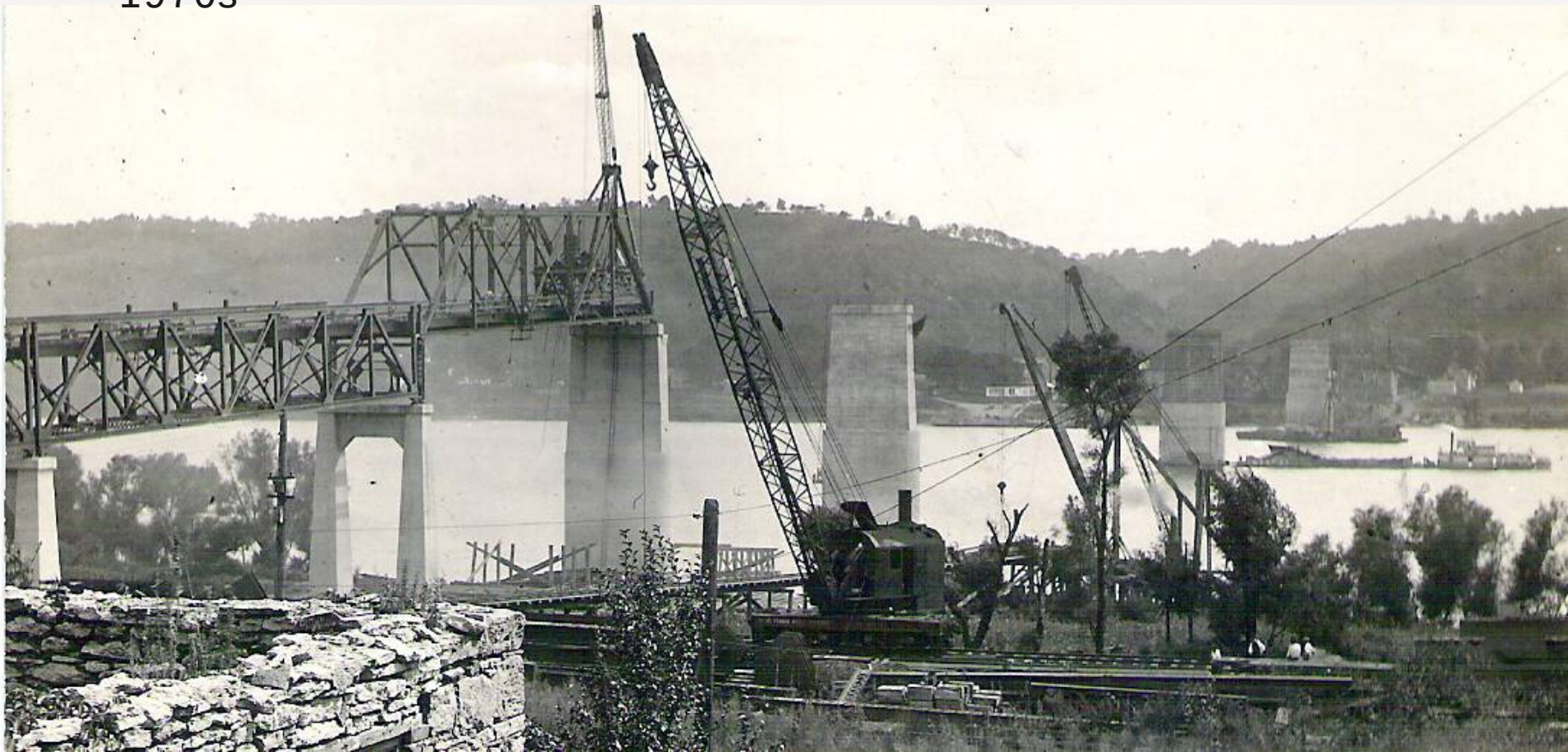
One of two Ohio River bridges between Cincinnati and Louisville

I-65 Bridge - 46 miles
Markland Dam - 26 miles
I-275 Bridge – 65 miles

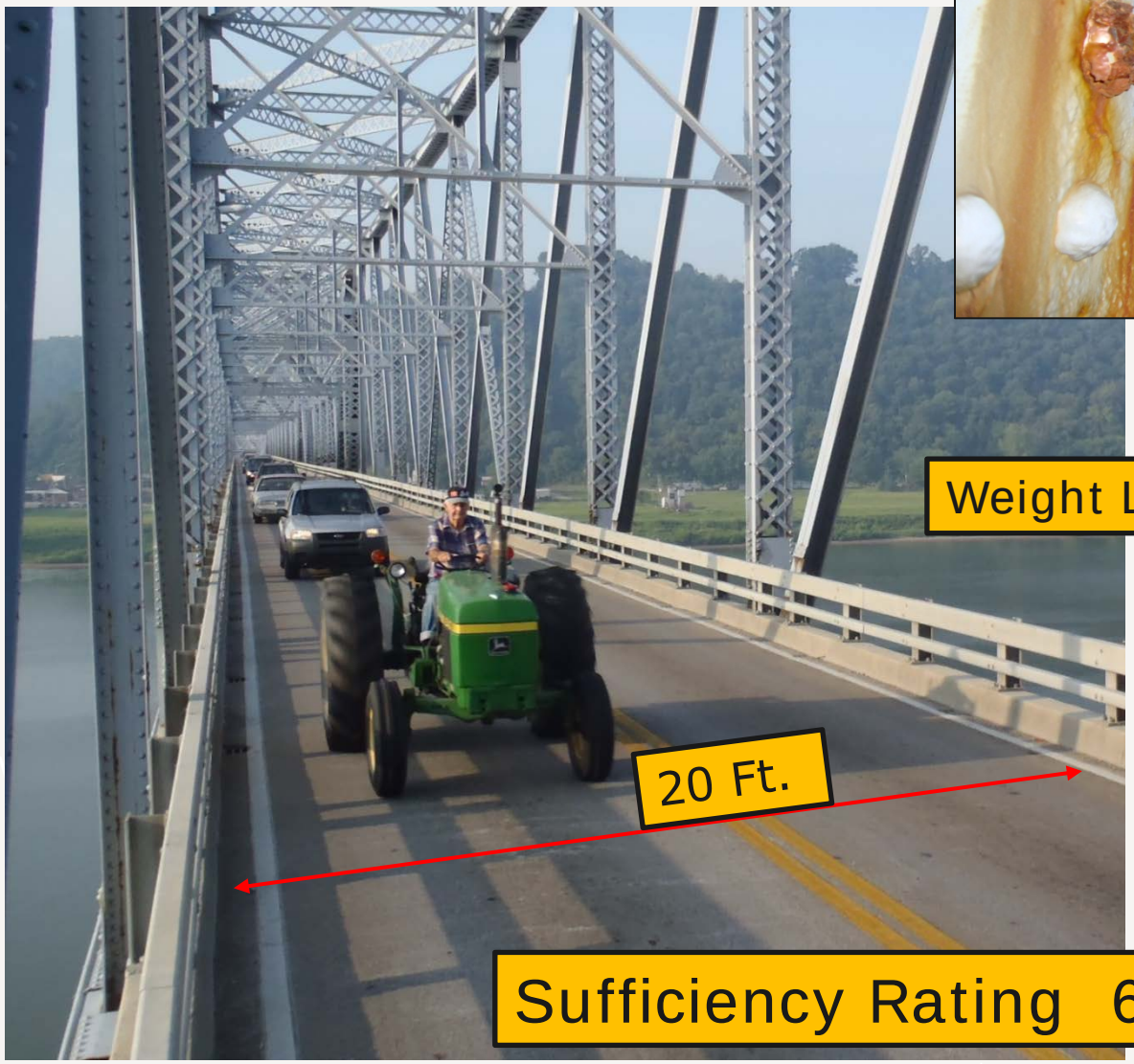
Bridge History

- Built in 1929 by J. G. White, National Toll Bridge Company
  - $1 Million
  - Tolled until 1949: 5¢ for pedestrians, 45¢ for vehicles

- Purchased by Kentucky in 1939; half interest sold to Indiana in 1970s



Bridge in 2008

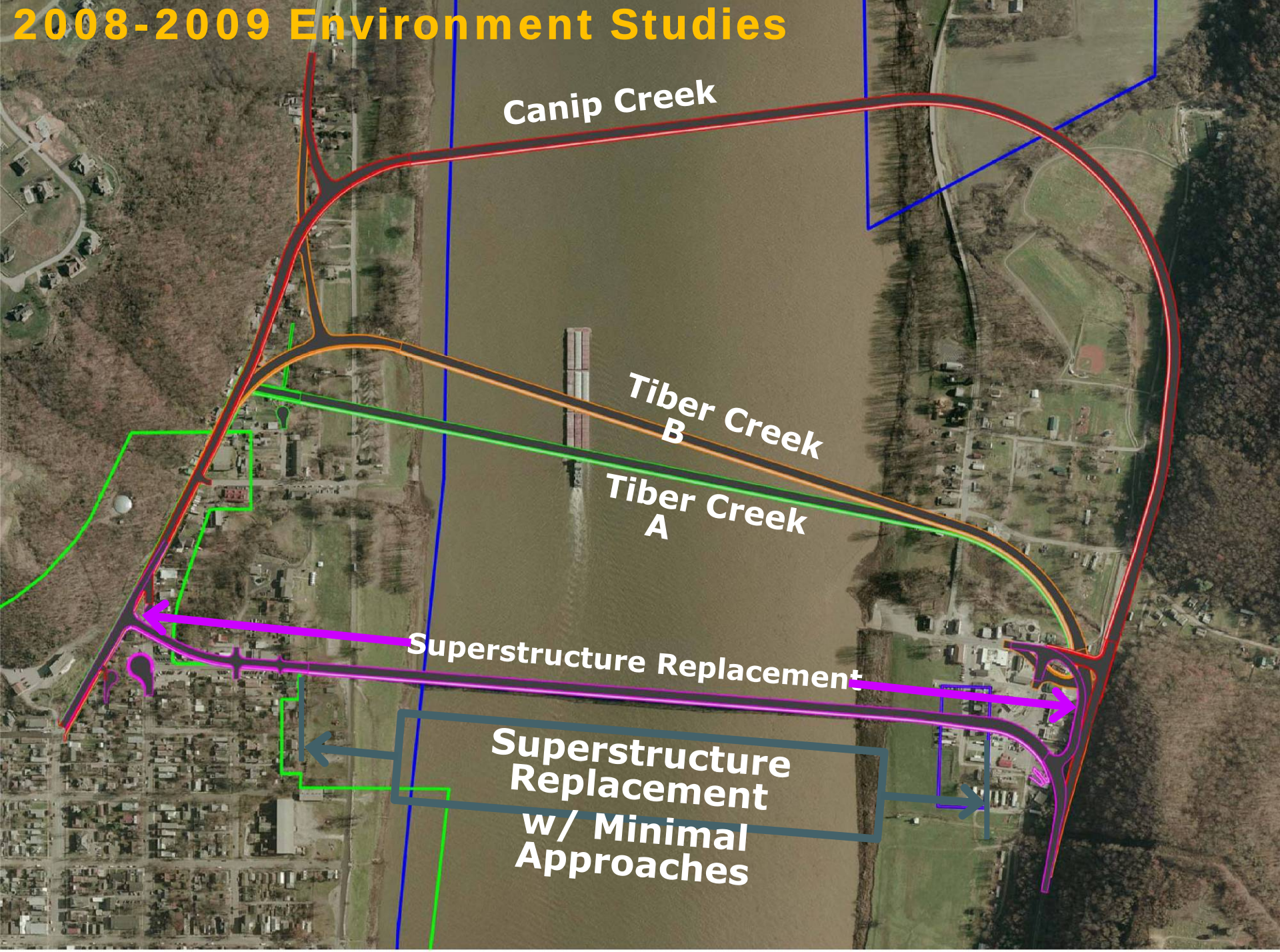


Weight Limit 15 tons

Madison, IN

Sufficiency Rating 6.5 out of 100

2008-2009 Environment Studies



Transportation Investment Generating Economic Recovery

American Recovery and Reinvestment Act of 2009

“Stimulus Act”

$20 Million Awarded to Milton Madison Project

(Estimated Total Project Cost $130 Million)

Tiger Grant Constraints

- Completion in 2012
- No Right-of-Way Acquisition

Late 2009: Decision to Replace Superstructure
Use design-build

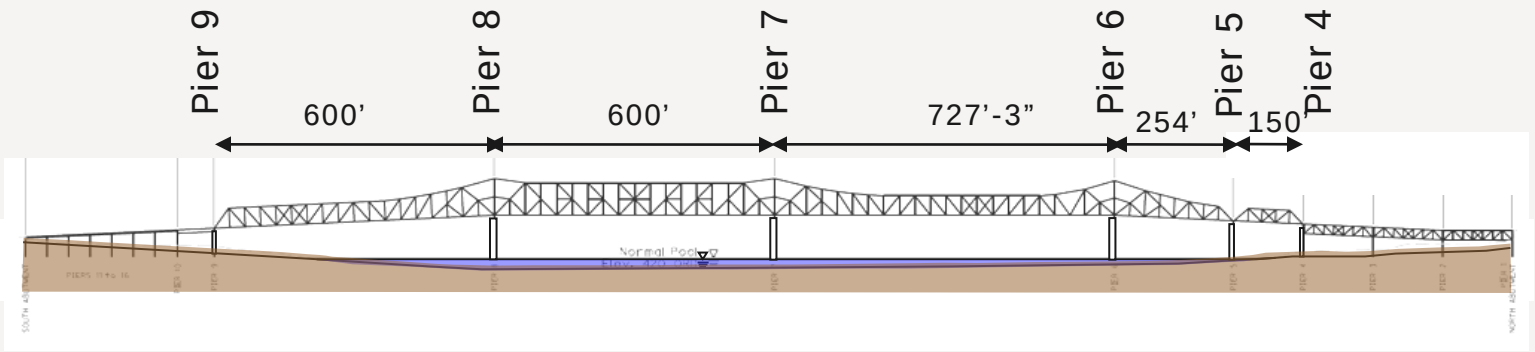
Late 2009 – June 2010: Prepare procurement documents

June 2010 – Advertisement by INDOT

Bid Documents

Bid Documents

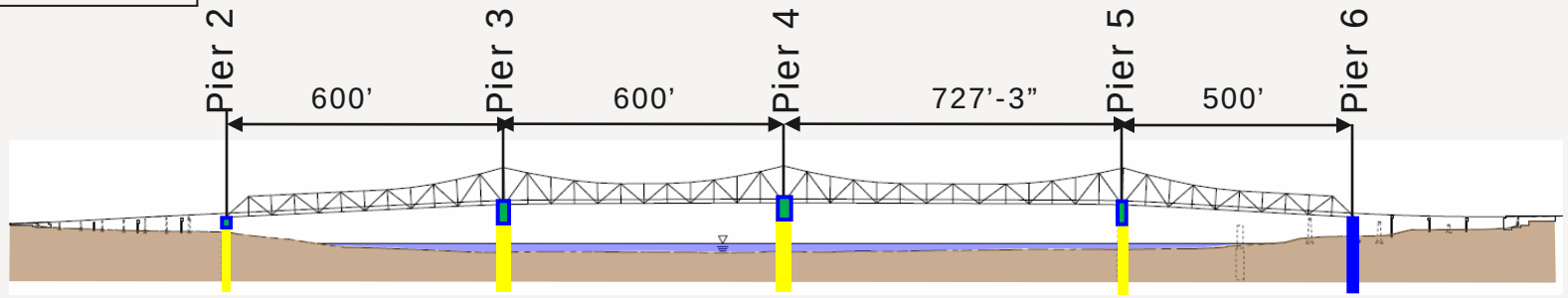
Bid Documents



Existing Bridge

Milton, KY

Madison, IN



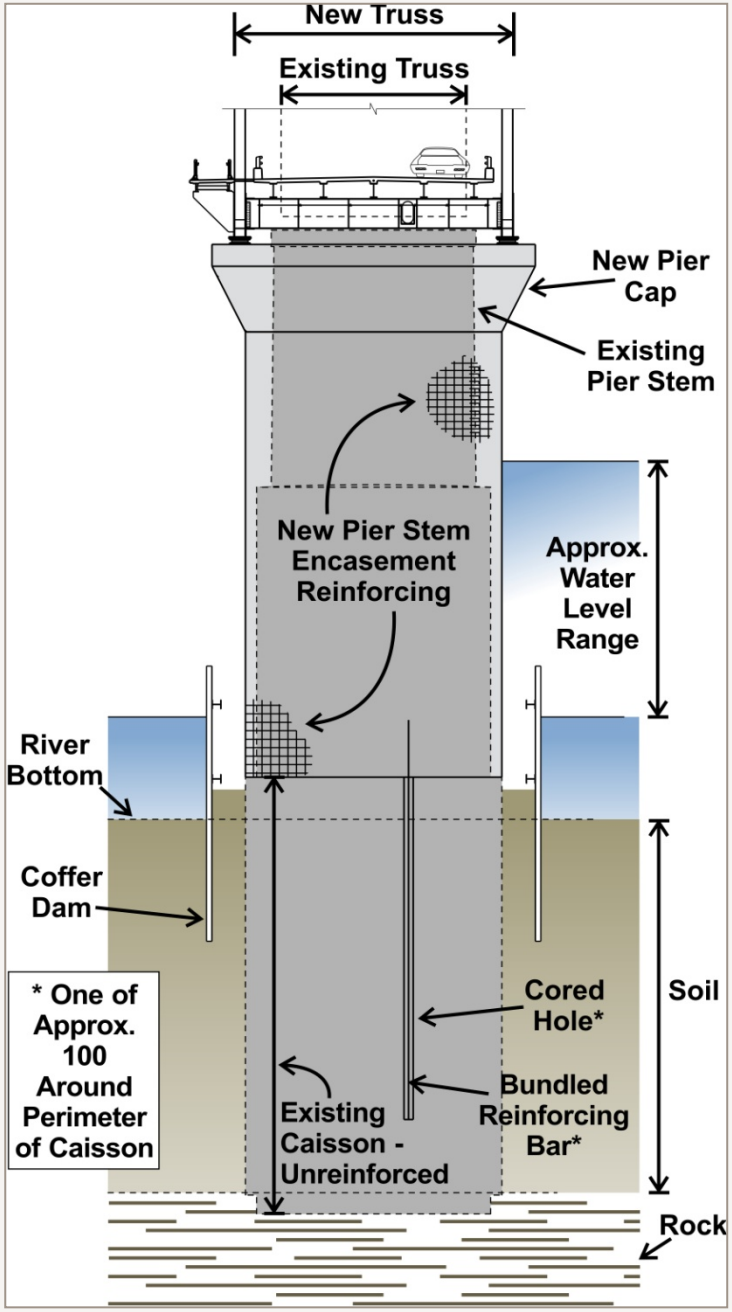
Proposed Bridge

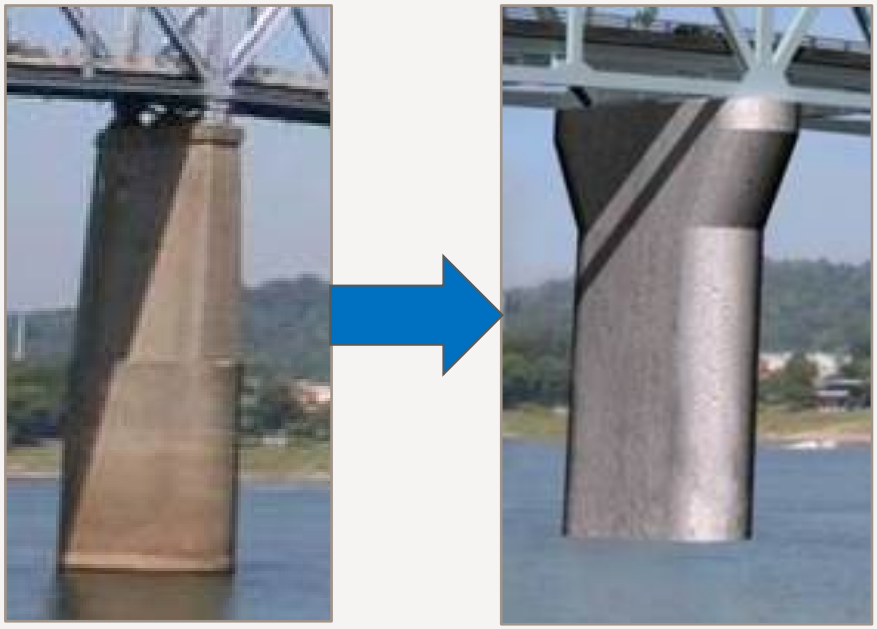
Strengthen Existing Pier

New Pier Cap

New Pier

Bid Documents





Bid Documents

Bidding Formula

[A + B – Adjustment]

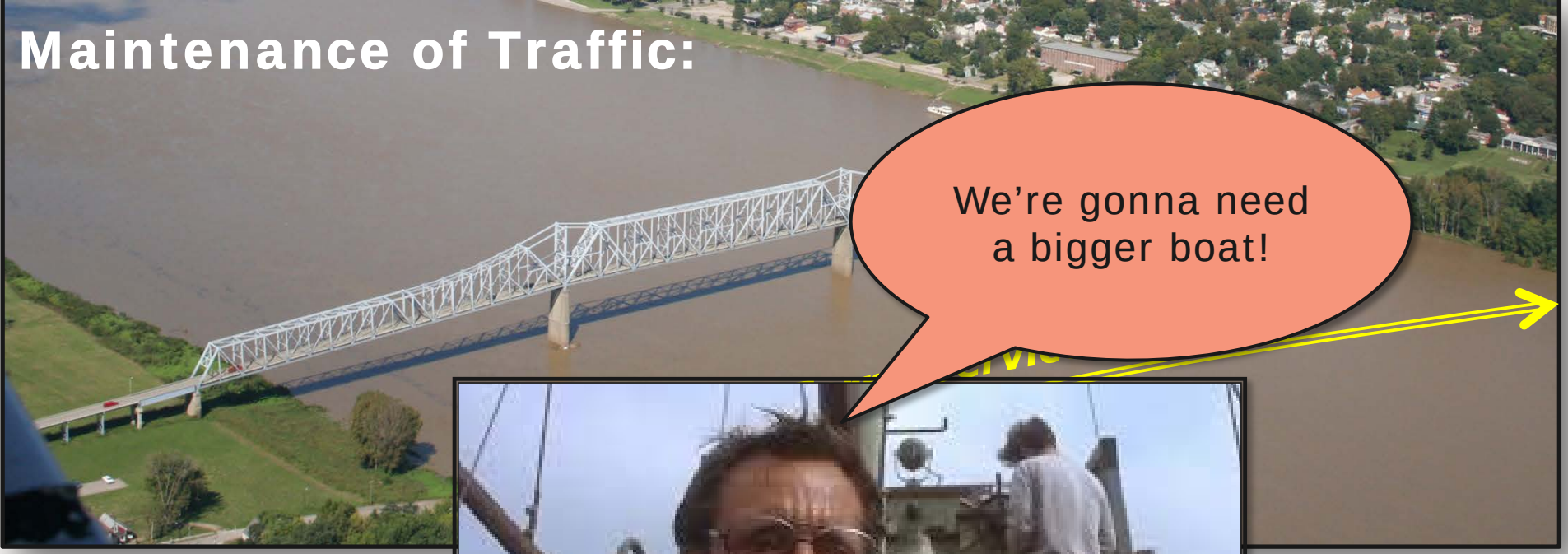
A = construction cost (including ferry)
B = closure days x $25,000/day.
Adjustment = $3.75 million for early opening

$25,000 x 365 = $ 9.1 Million

Design Alternate Meetings

- Two during bidding period
- Confidential

Maintenance of Traffic:



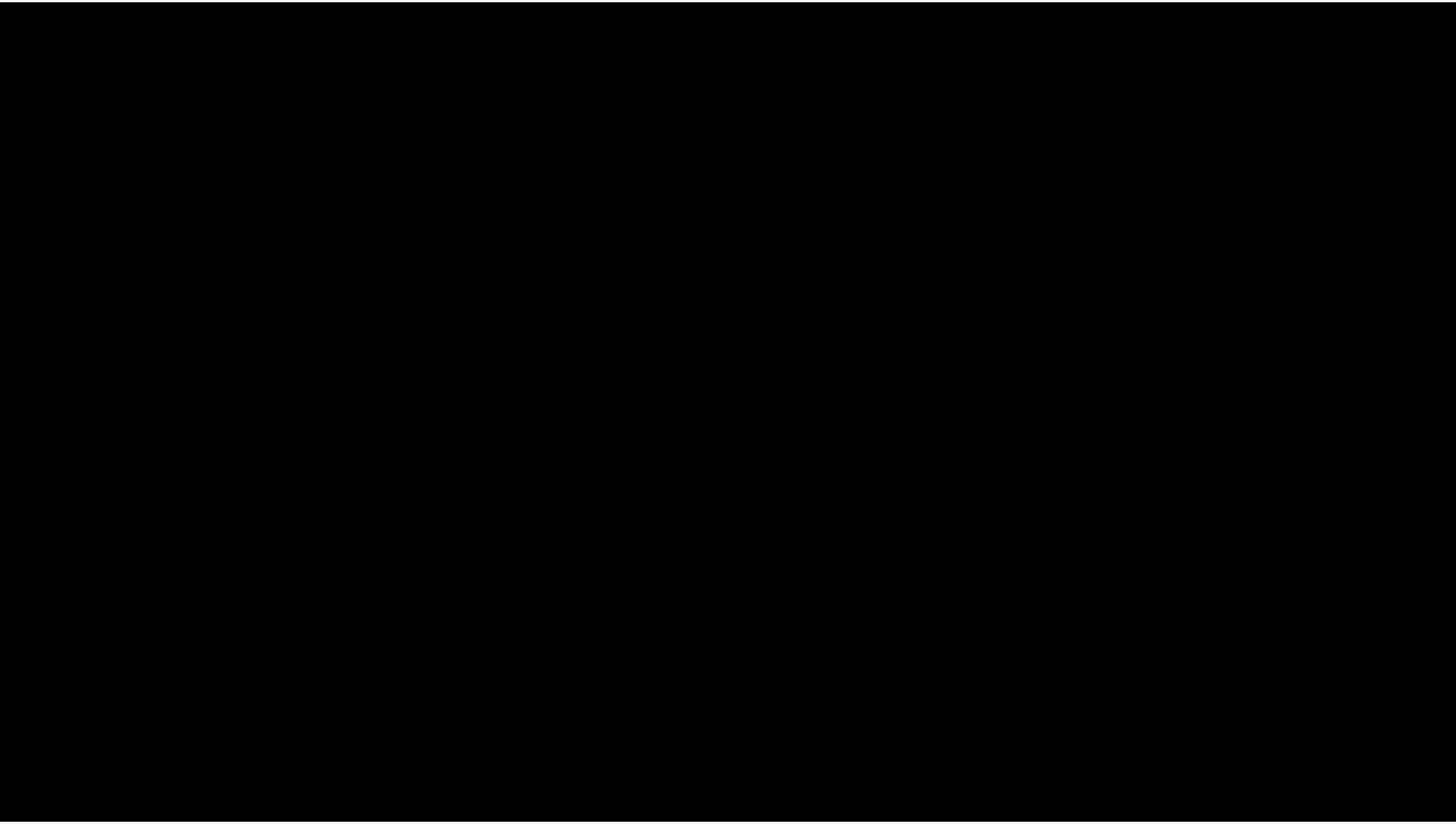
We’re gonna need a bigger boat!

Bid Opening – September 22, 2010

- Five Contractors submitted bids
- Awarded to Walsh Construction:
  - Cost to construct project $103 Million
  - Length of bridge closure 10 days

Design Concept:

Design Concept



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BURGESS & NIPLE

WALSH

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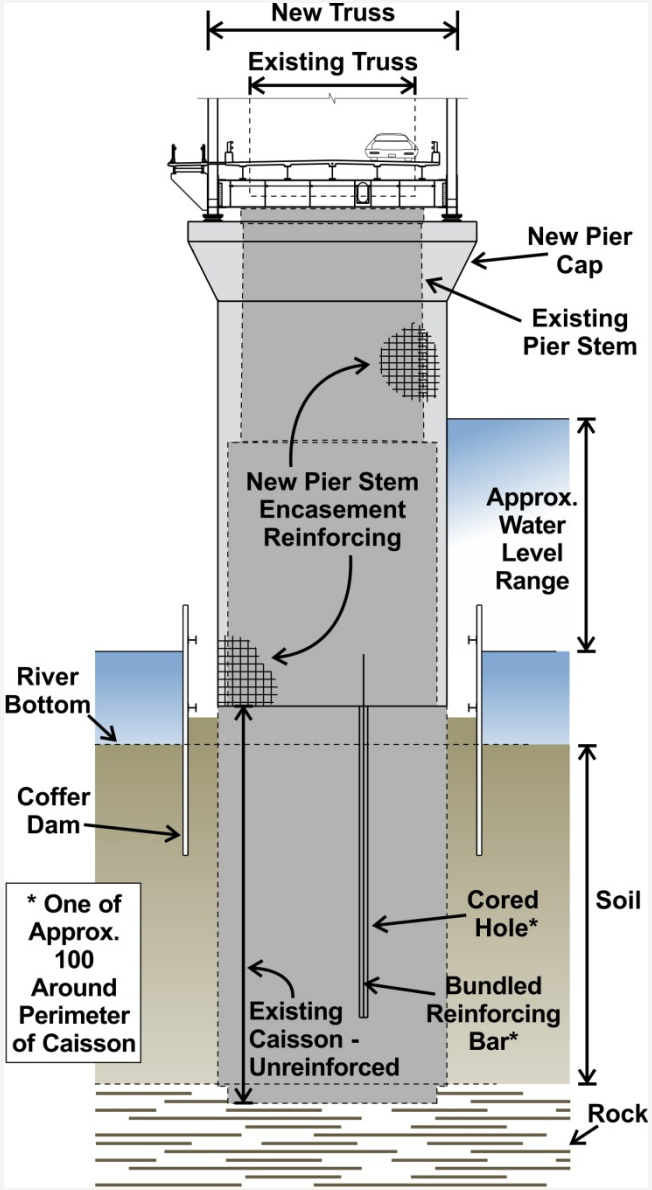
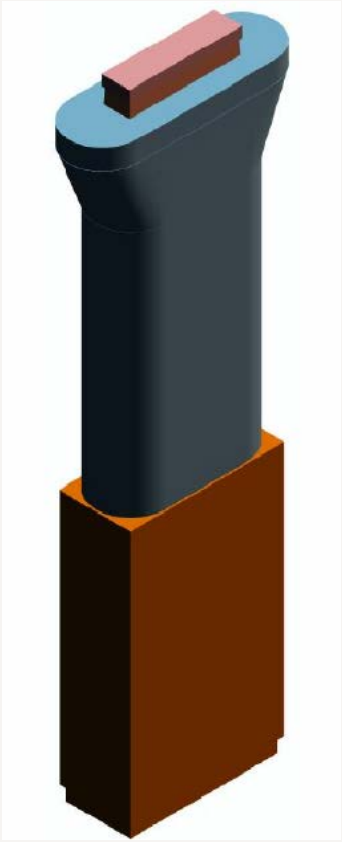
Pier Strengthening

1. Drill holes into existing unreinforced caisson
2. Grout rebar into caisson
3. Add stem reinforcement
4. 2’ thick encapsulation
5. Pier cap reinforcement
6. Form and cast new pier cap





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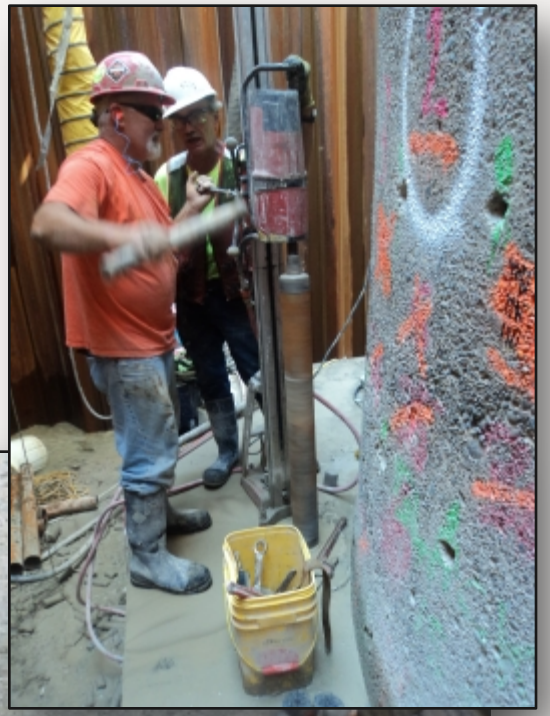
Pier Strengthening



Pier Strengthening

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Pier Strengthening

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Pier Strengthening

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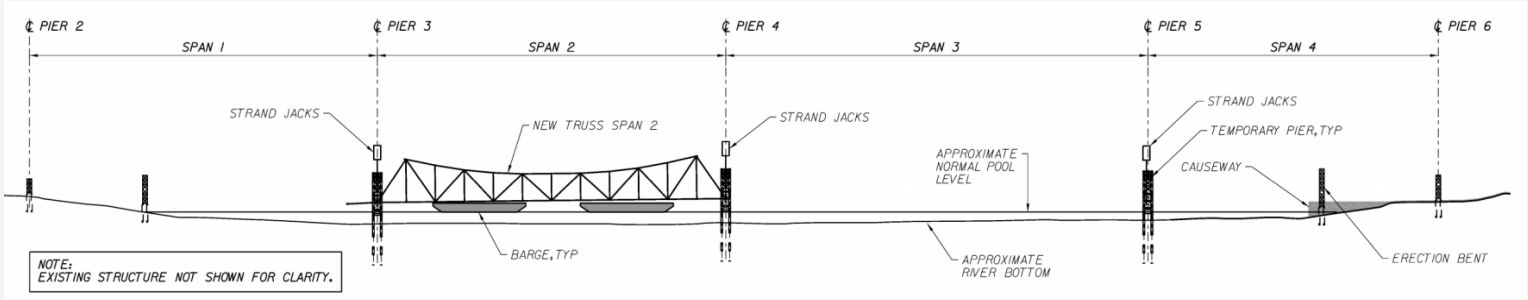
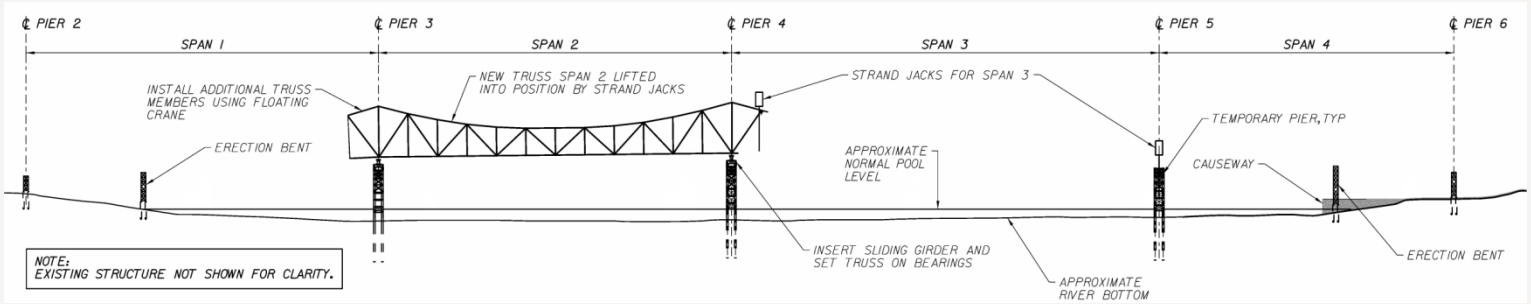
Main Spans: Construction Sequence

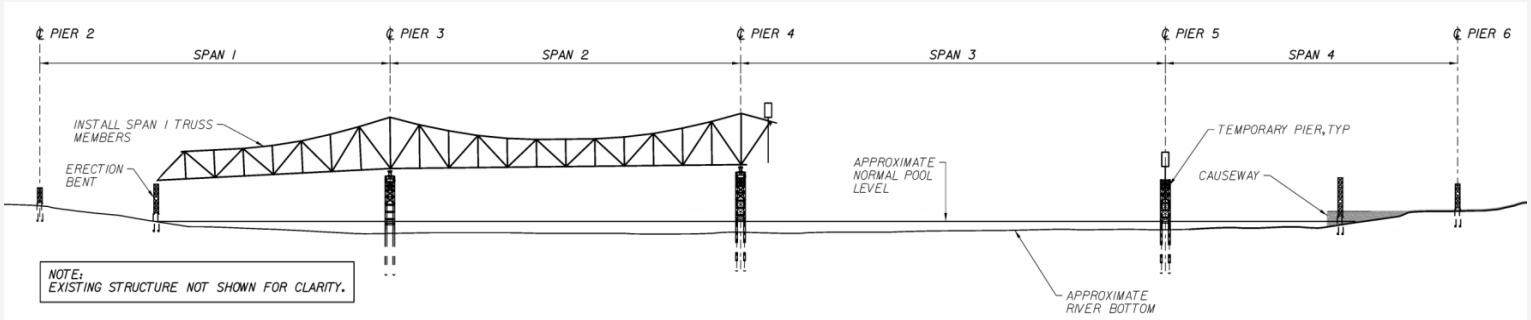
Float in Span 2



Lift Span 2



Cantilever Span 1



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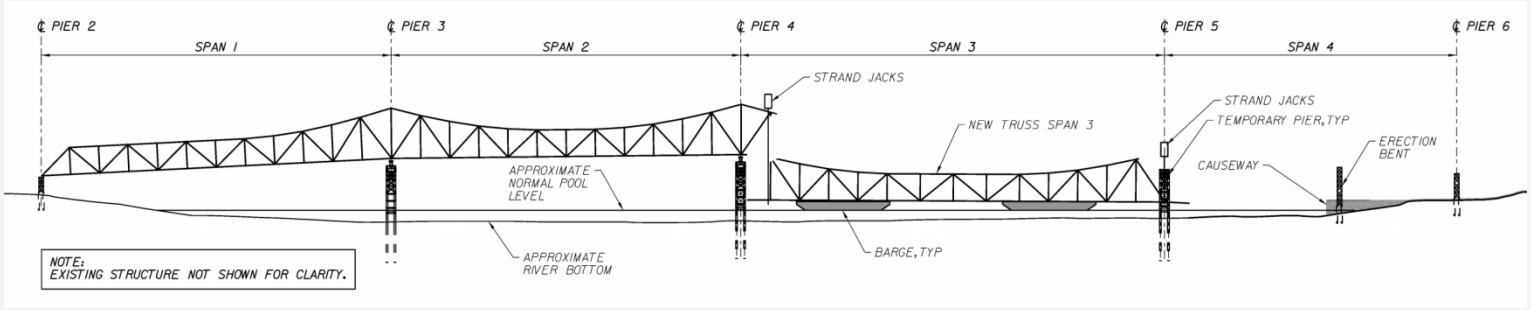
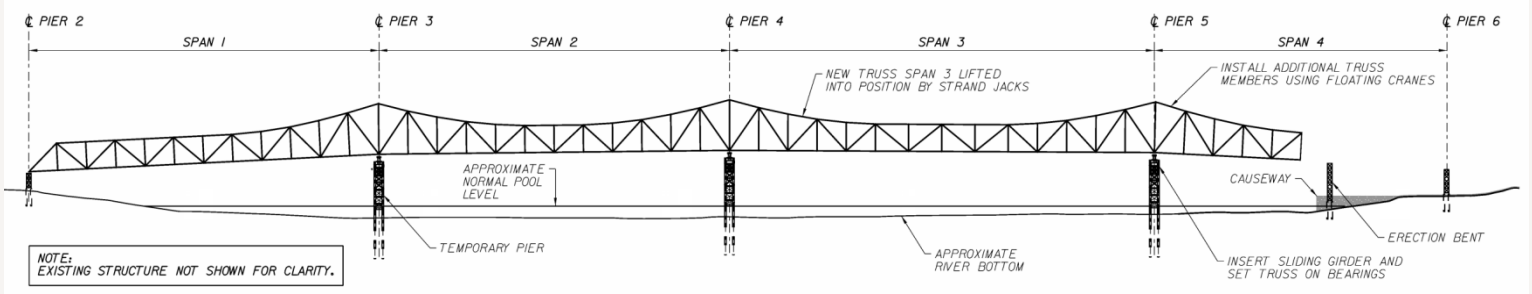
Main Spans: Construction Sequence

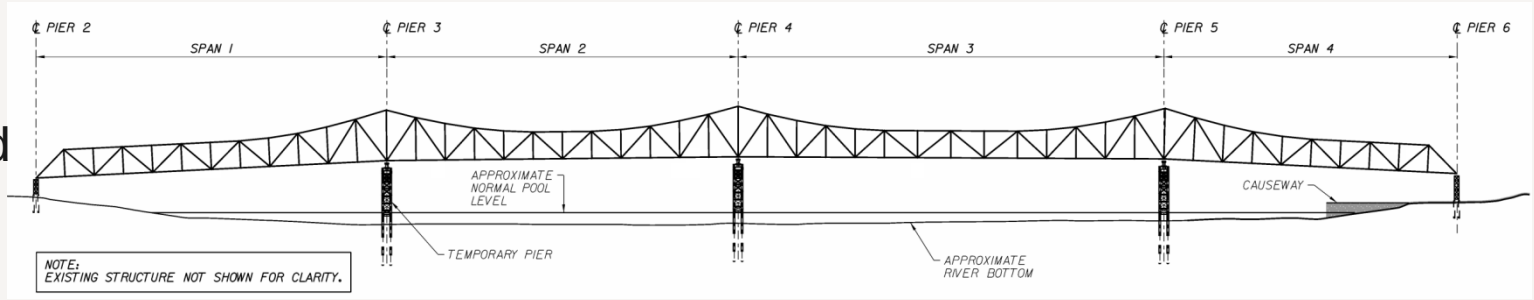
Float in & Lift Span 3



Cantilever Span 4



Slide Completed Bridge Laterally



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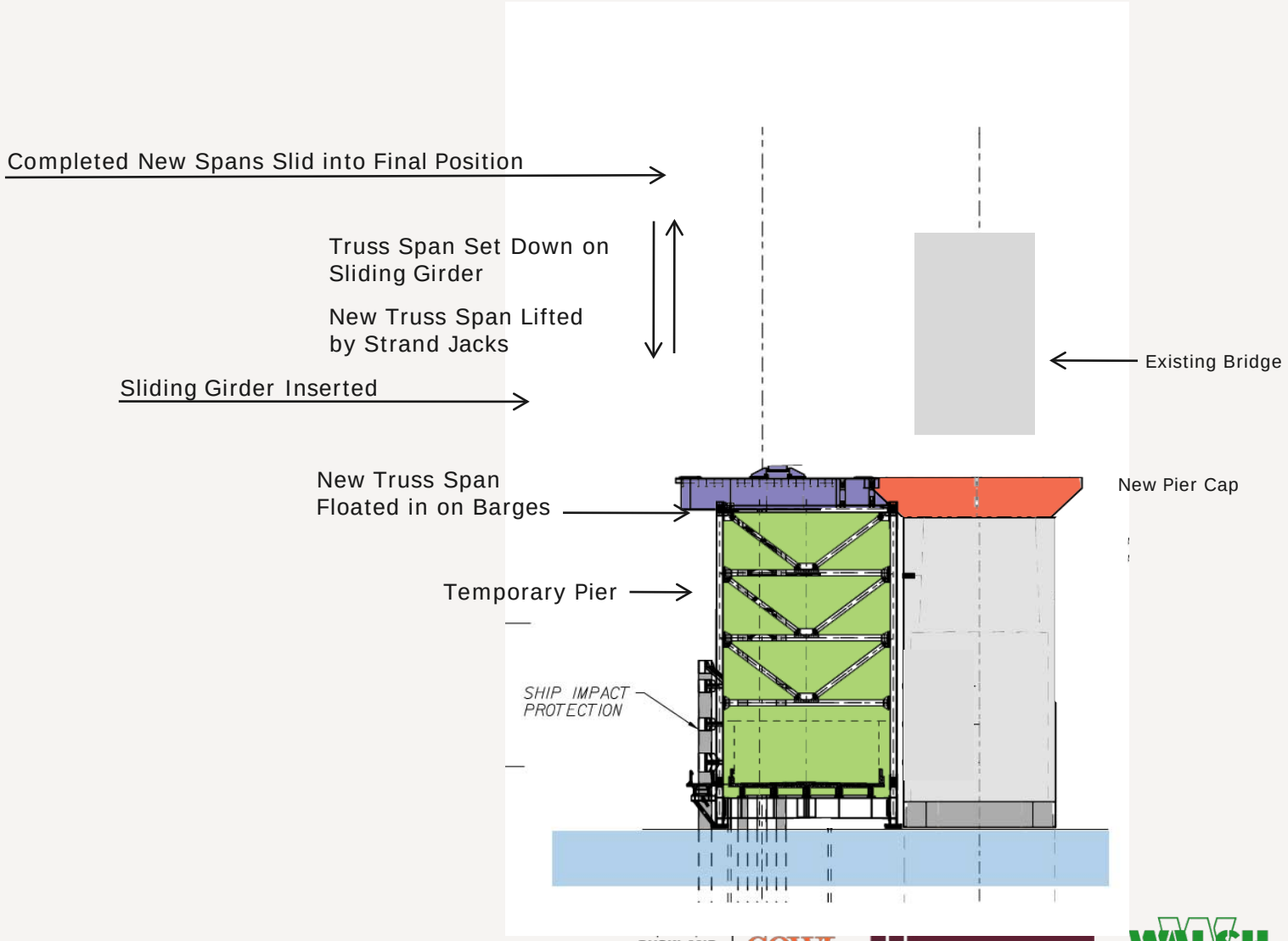
Main Spans: Construction Sequence



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Temporary Pier

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Temporary Pier Connection to Pier

Barge Impact

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Barge Impact Protection Frames

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Barge Impact Protection Frames

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Stability Frames

Sliding Girders

Sliding Girders

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Sliding Girders

Sliding Girders

Span Lifting

Span Lifting

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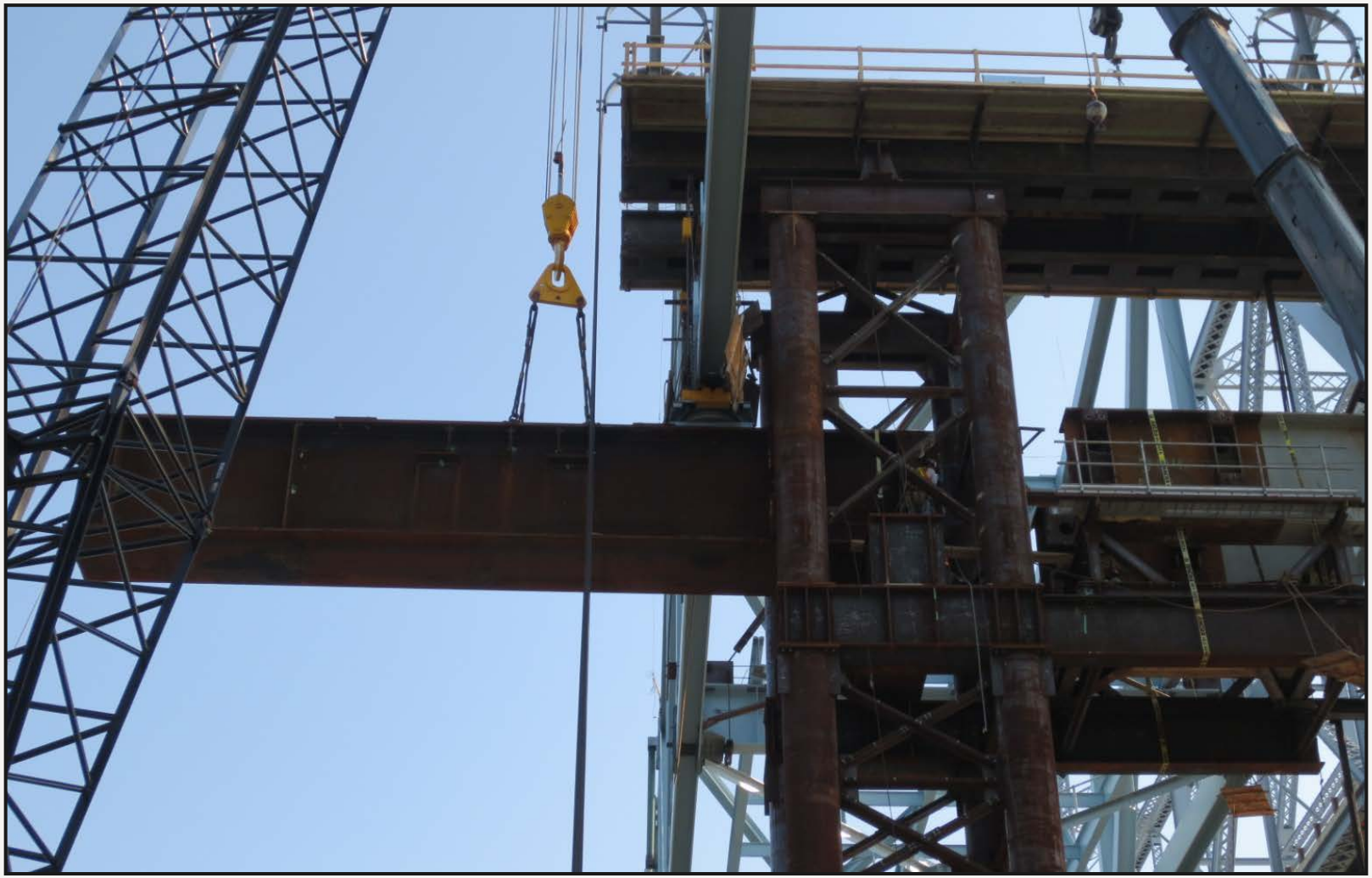
Span Lifting

Sliding Girder Installation

Sliding Girder Installation

Sliding Girder Installation



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Sliding Girder Installation

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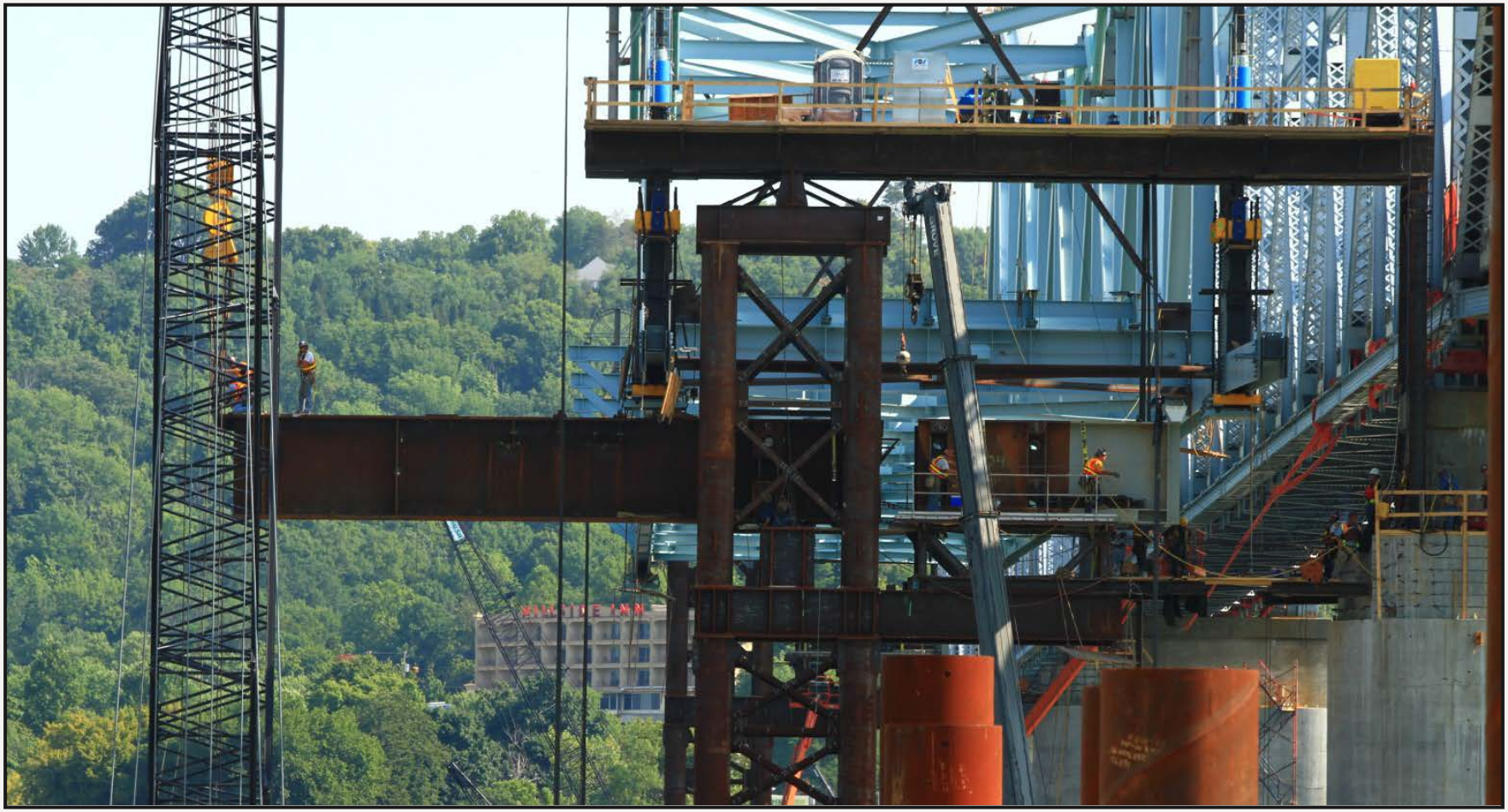
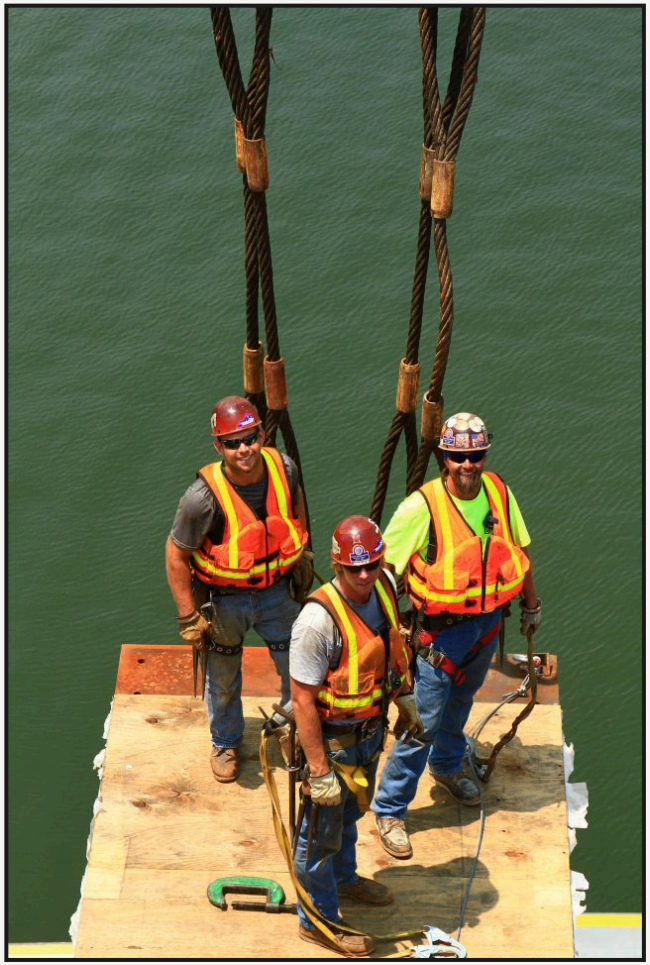
Sliding Girder Installation

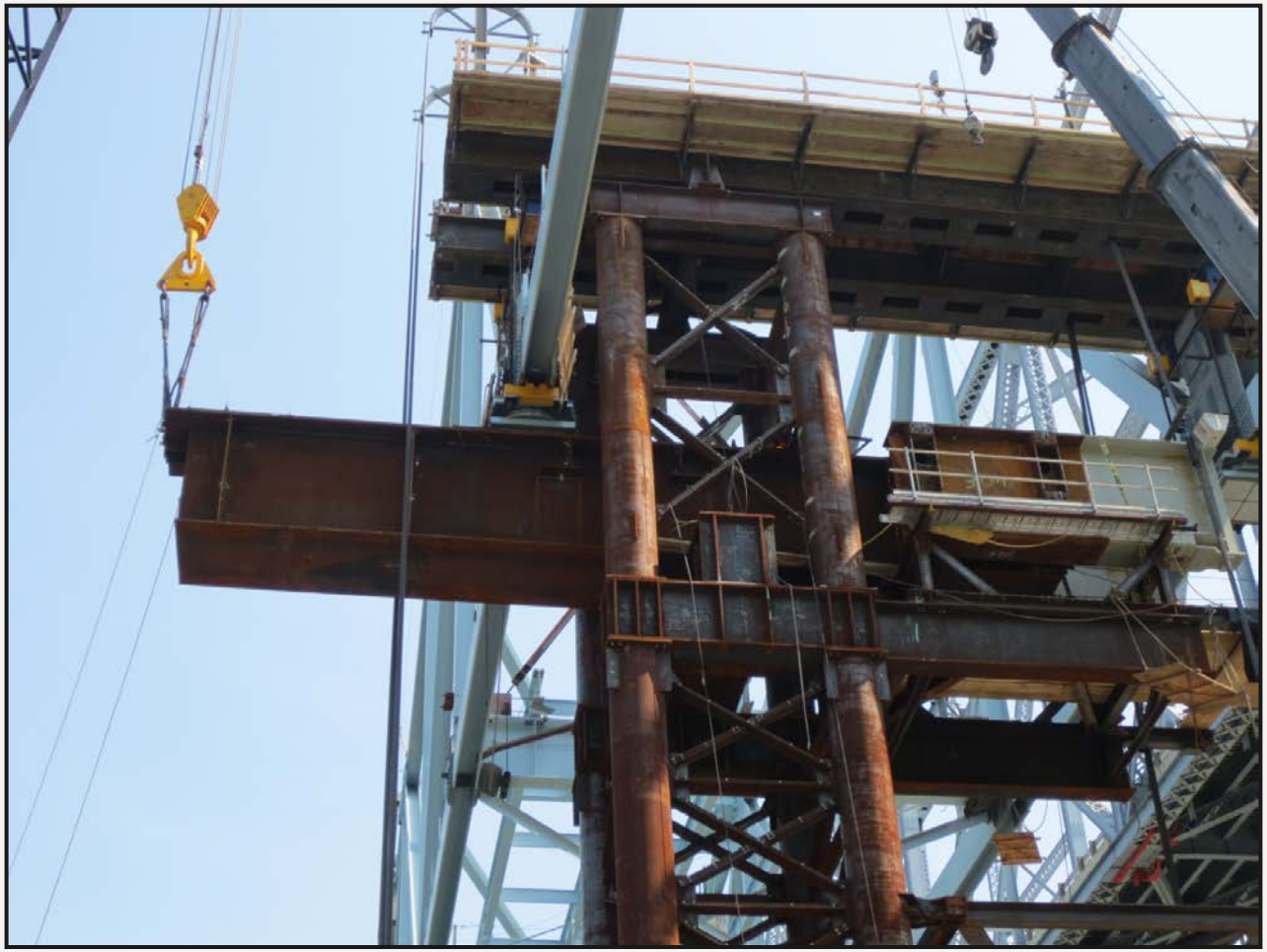


BUCKLAND & TAYLOR | COWI | BURGESS & NIPLE | WALSH

Sliding Girder Installation



Sliding Girder Installation



Sliding Girder Installation

Temporary Restraints

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Temporary Pier Complete

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Side Span Cantilever Construction

New & Old Bridges

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Demolition

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New Pier Caps

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New Pier Caps

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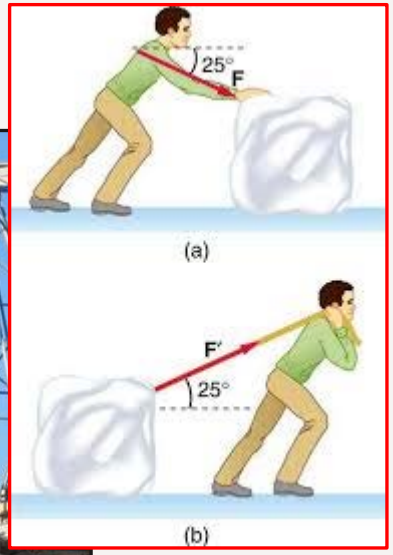
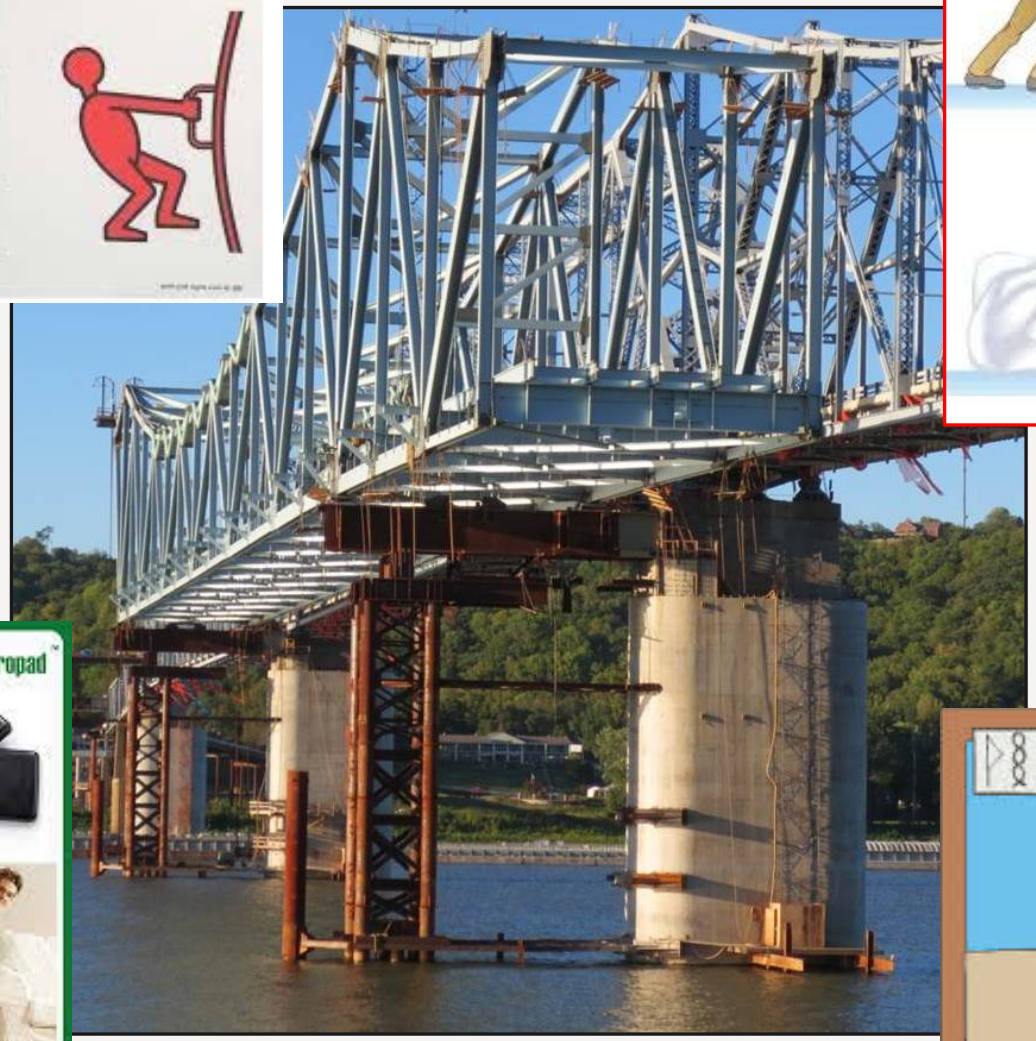
Sliding


PUSH
PULL


25°
F
(a)
F'
25°
(b)

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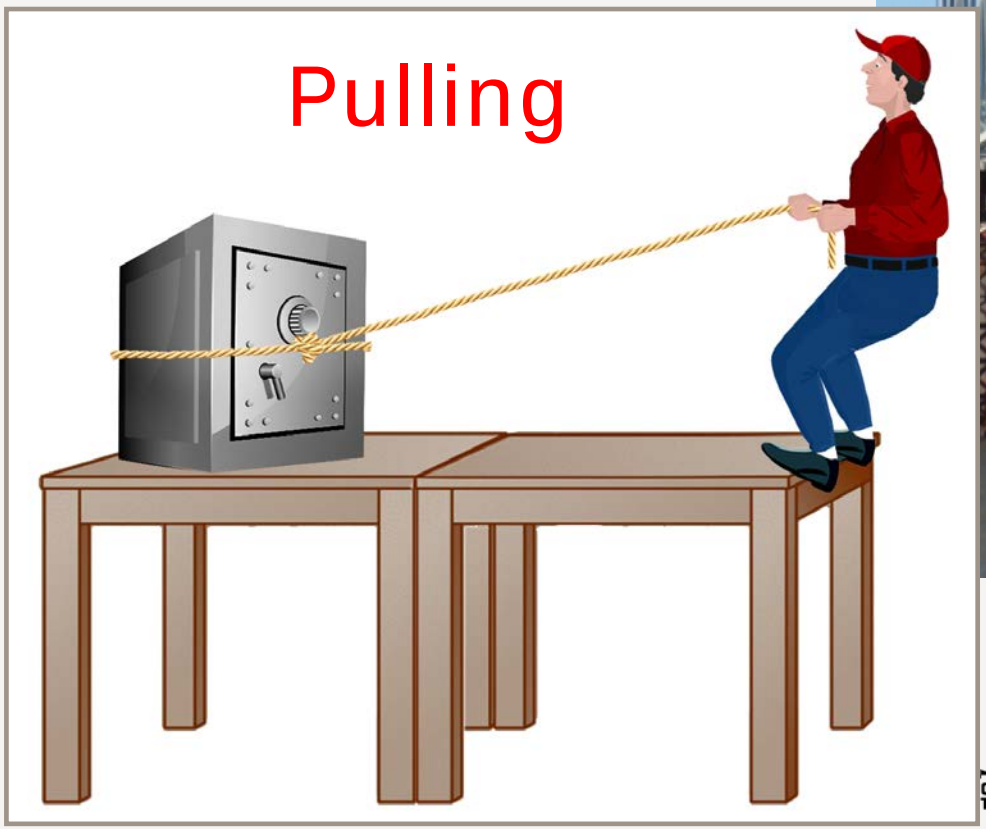
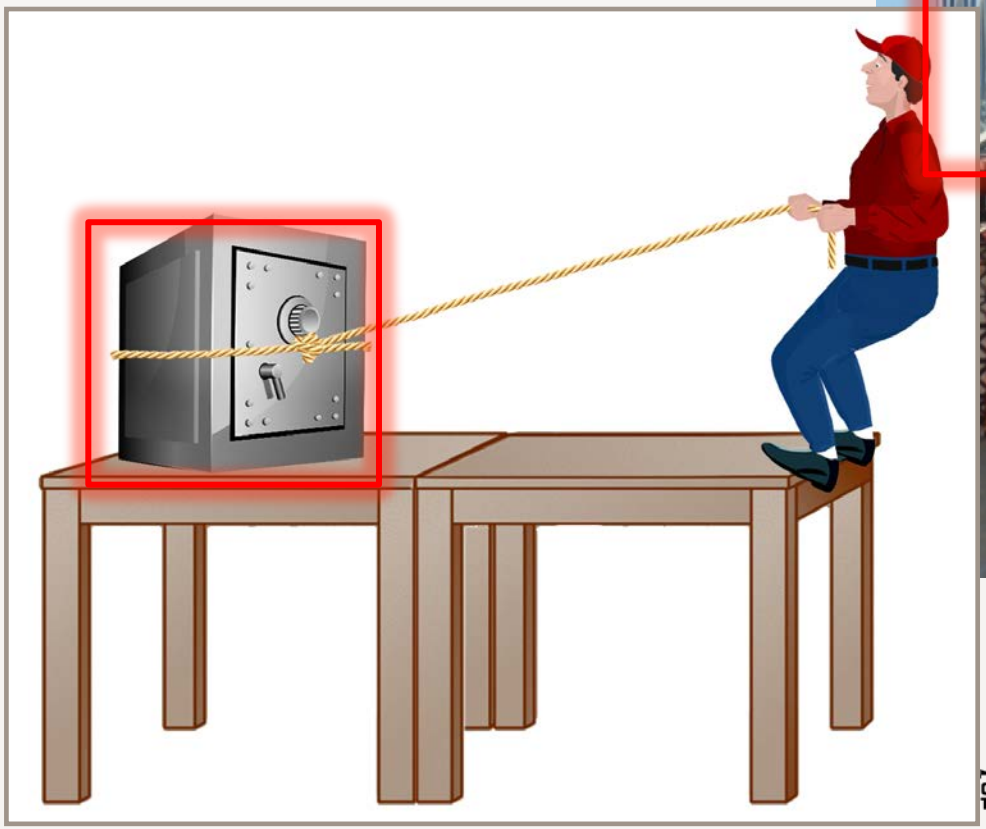
Truss Sliding



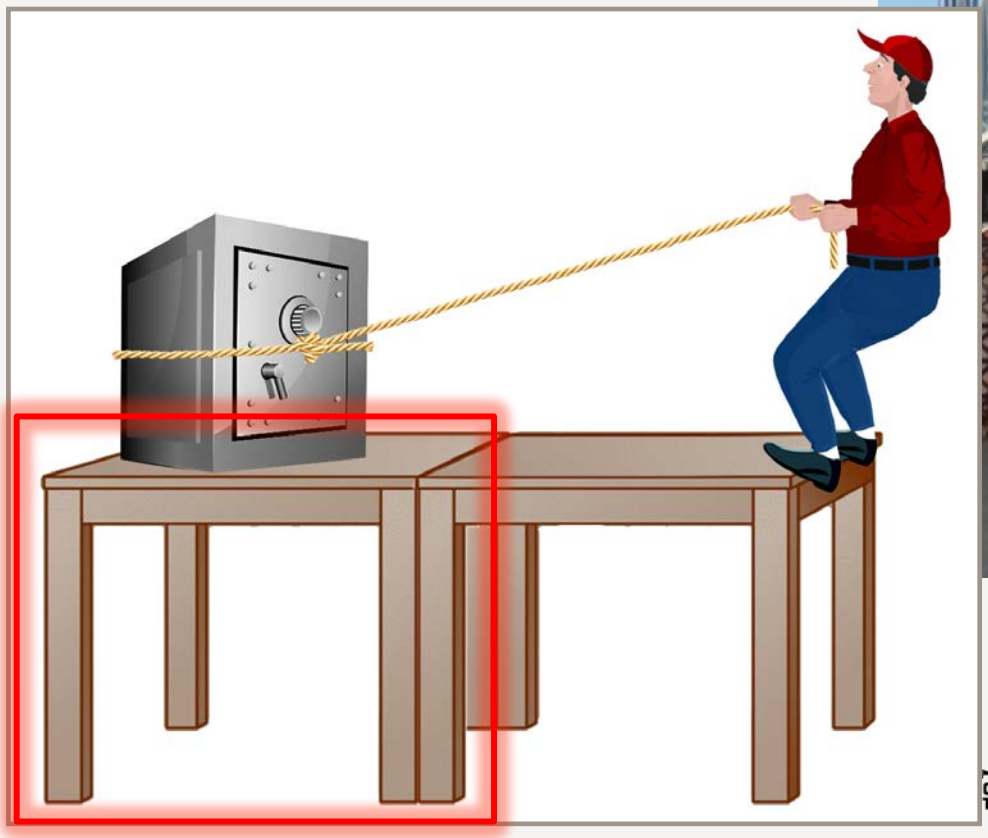
CKLAND TAYLOR | COWI | BURGESS & NIPLE | WALSH

Truss Sliding



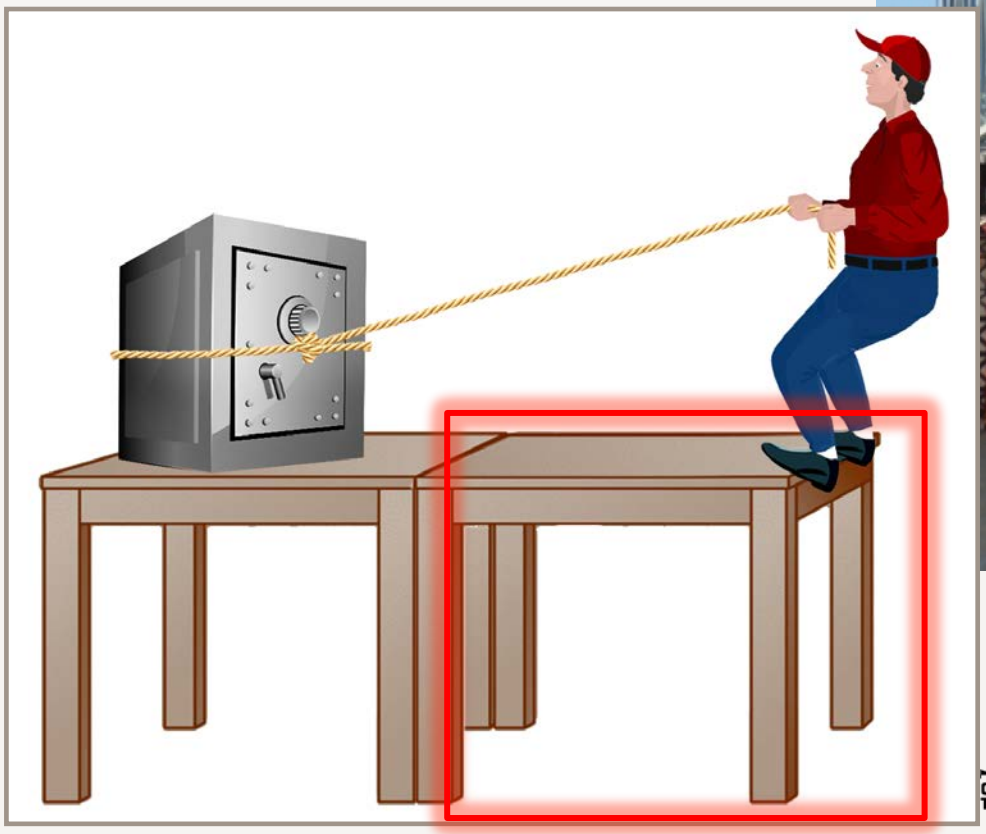
CKLAND TAYLOR | COWI | BURGESS & NIPLE | WALSH

Truss Sliding



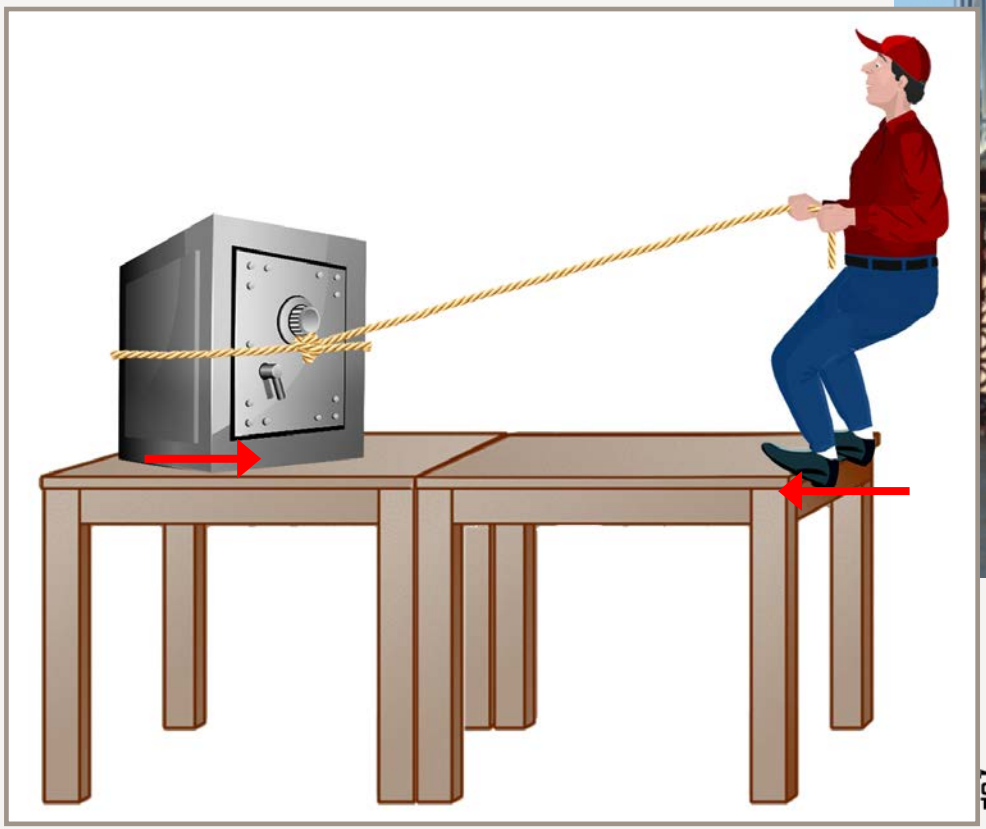
CKLAND TAYLOR | COWI | BURGESS & NIPLE | WALSH

Truss Sliding



CKLAND TAYLOR | COWI | BURGESS & NIPLE | WALSH

Truss Sliding



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“Span D” KY Sliding Span

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Span D”
Kentucky Sliding Span

BUCKLAND & TAYLOR | COWI

BURGESS & NIPLE

WALSH

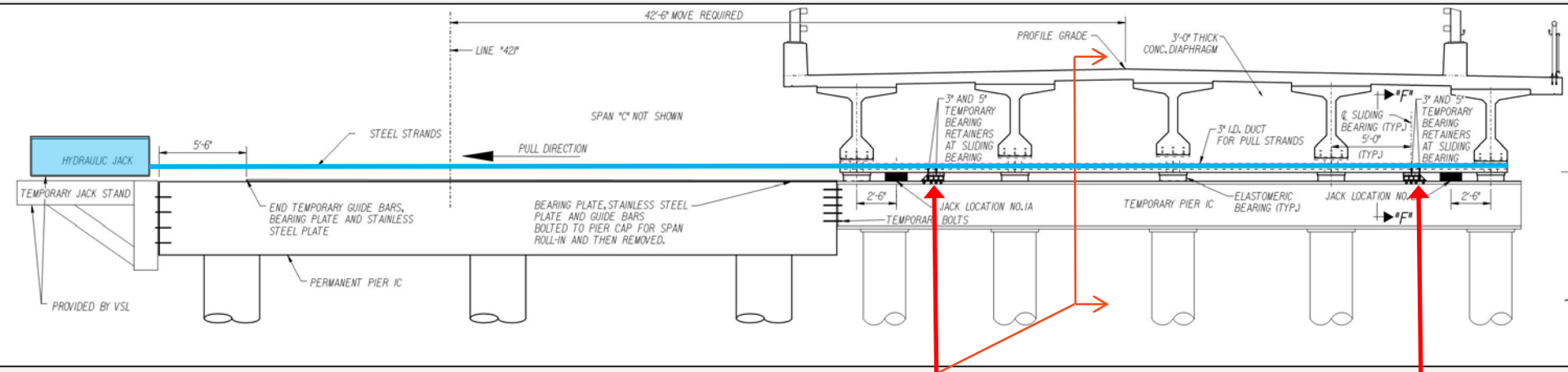
Span D Slide

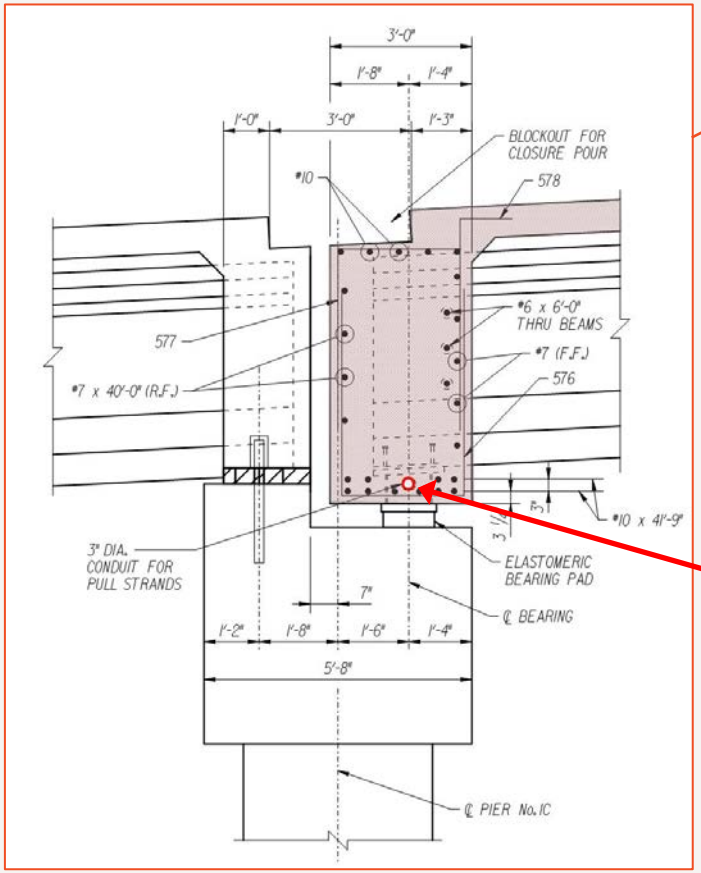
Span D Slide

BUCKLAND & TAYLOR | COWI | BURGESS & NIPLE | WALSH

Span D Slide

BUCKLAND & TAYLOR | COWI | BURGESS & NIPLE | WALSH





Temporary Sliding Bearings

3" Conduit for Pulling Strand

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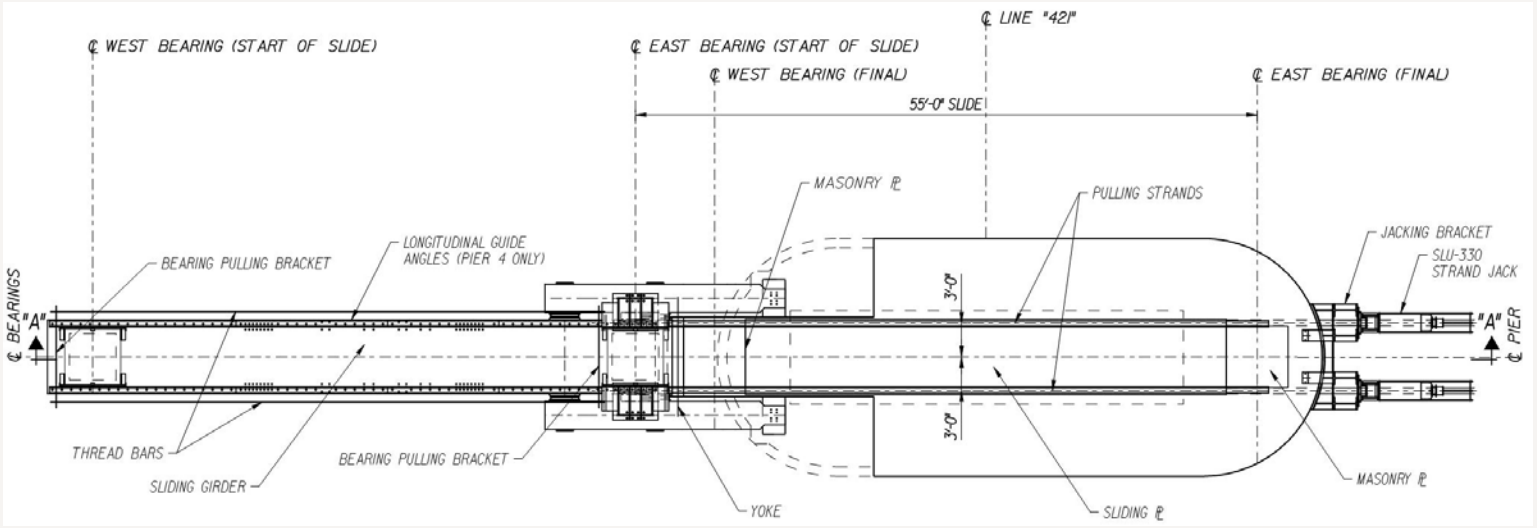
Sliding Main Spans

The Numbers:

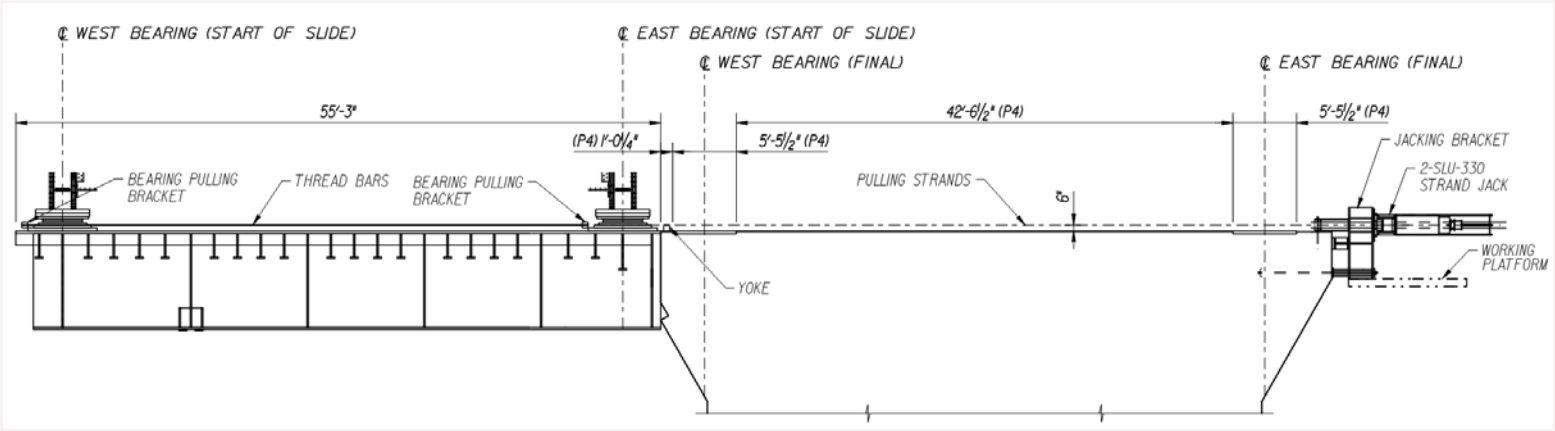
- 2433 Feet Long
- 4 Spans Continuous
- 15,260 Tons
- Lateral Move 55 Feet

Sliding Main Spans

Plan View



Elevation View



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Sliding Surface

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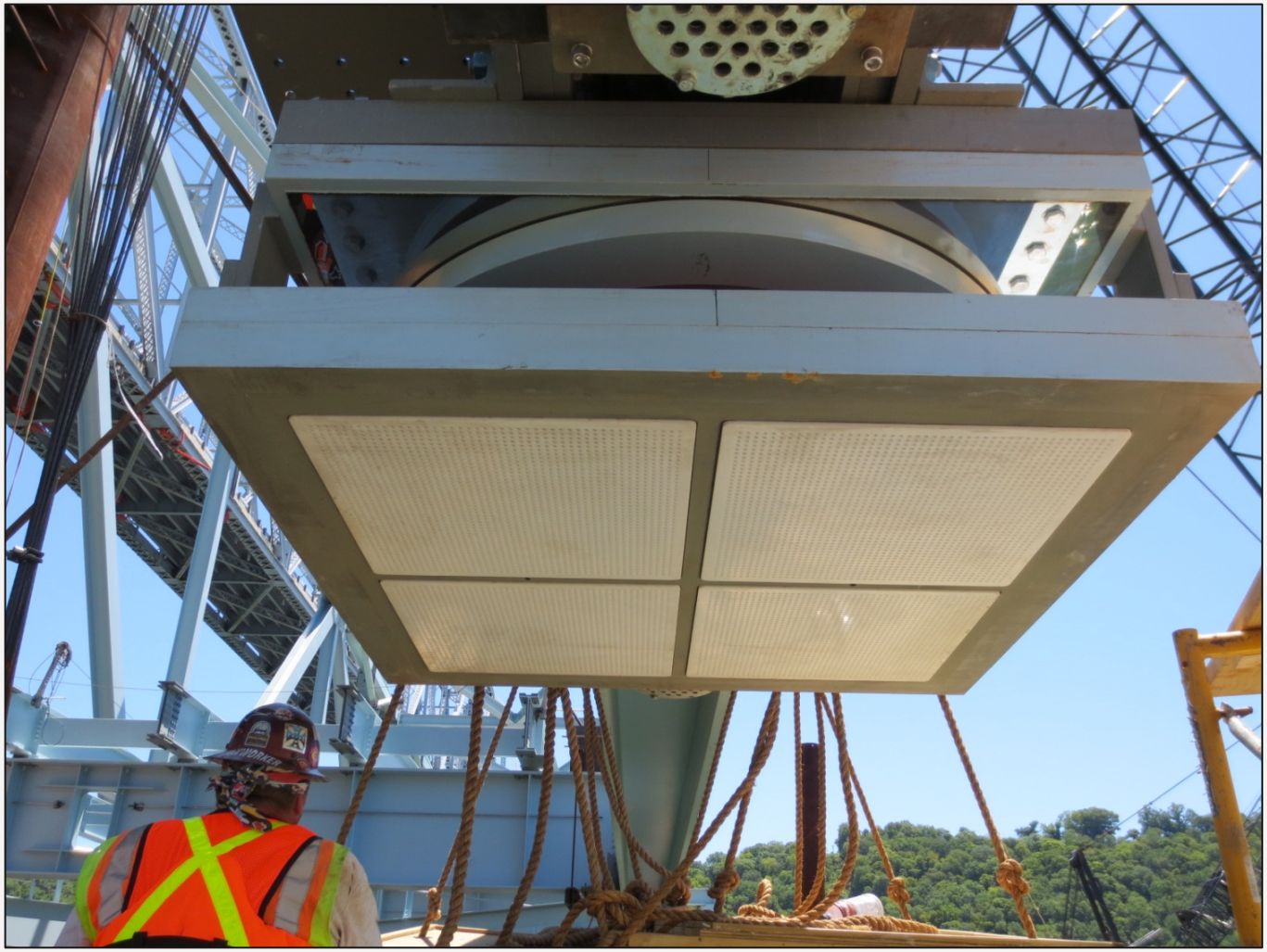
Sliding Bearings



Strand Jacks for Sliding

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Sliding Runways

Pulling Frames

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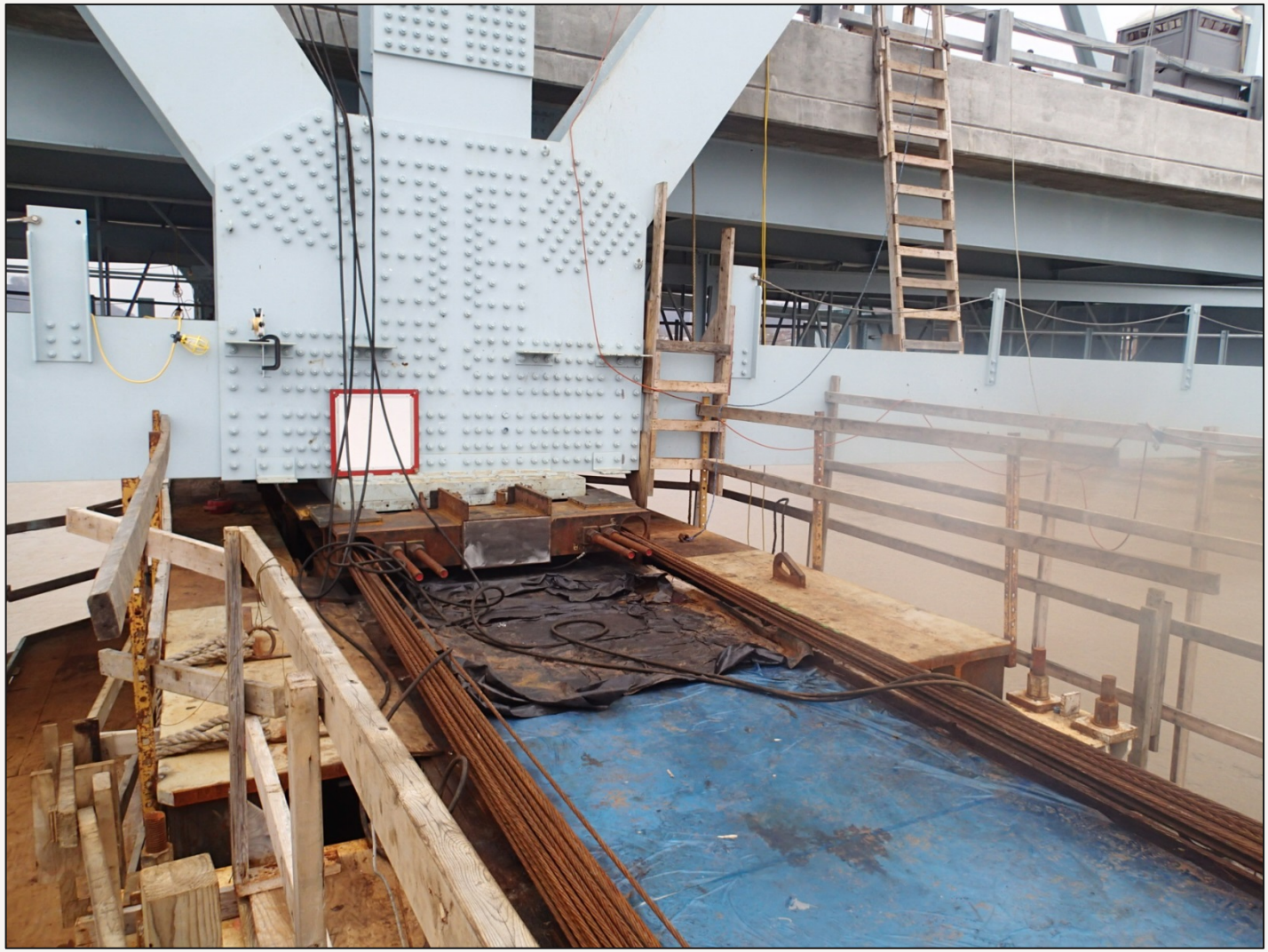
Pulling Frames

Bearing Sliding Harnesses



Bearing Sliding Harnesses

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Bearing Sliding Harnesses

Slide Control

Slide Control

Slide Control

Sliding

Slide Complete

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Slide Complete

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Time-Lapse Video of Main Spans Slide

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Questions?

Thanks to the following for photos and other material included in this presentation :

- Walsh Construction
- INDoT
- KYTC
- Deborah Crawford

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