



September 11th, 2013

Milton Madison Bridge: Construction of a Vital River Crossing in Kentucky

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Michael Baker Jr., Inc.





Connecting Two Historic Towns

MADISON, INDIANA

- Largest National Historic Landmark District with 1,800+ buildings
- Clifty Falls State Park & other tourist attractions, including Madison Regatta
 - Population 12,600

MILTON, KENTUCKY

- Historic river town susceptible to flooding
- Rural community divided by 400 ft tall bluff
 - Population 600



■ Existing Bridge

- 80+ year old bridge
- Sufficiency Rating of 6.5
- Remaining life <10 years
- 2009 Posted 15 Tons
- *2011 Posted 3 Tons*

Functionally Obsolete

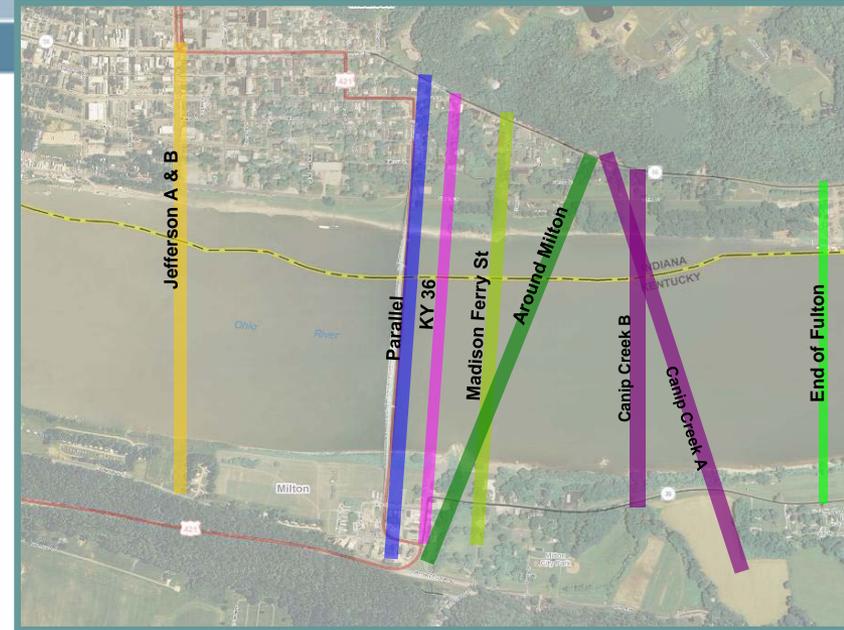


Structurally Deficient





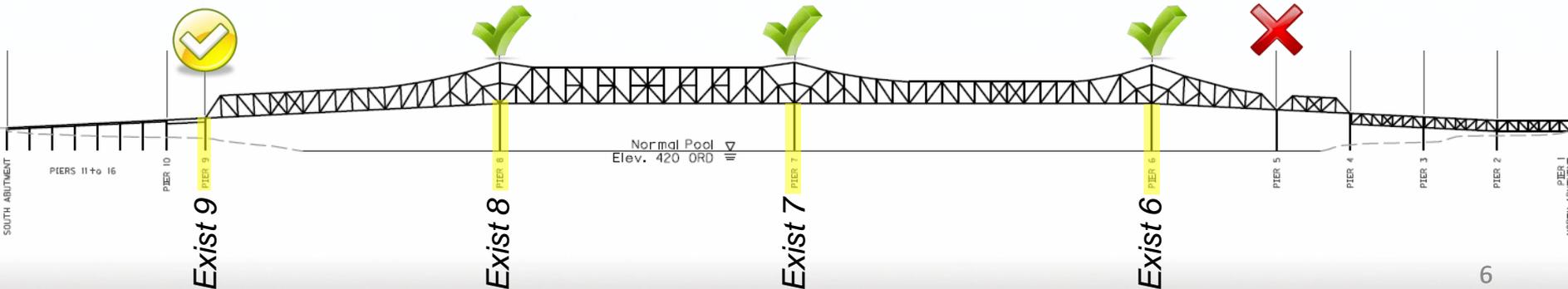
- Do Nothing
- Rehabilitation
- Bridge Replacement
- **Superstructure Replacement**
 - Potential game changer
 - Lower costs
 - Less impacts to the historic district
 - But is it Feasible?



Pier Testing and Inspection



- **Vertical Coring (Jan-Feb 09)**
- **Physical Inspection Feb-Mar09**
 - NDT, Lab Testing of Samples
 - Condition/ Service life
- **Results, Generally good**
 - Some durability concerns





MILTON-MADISON
BRIDGE PROJECT

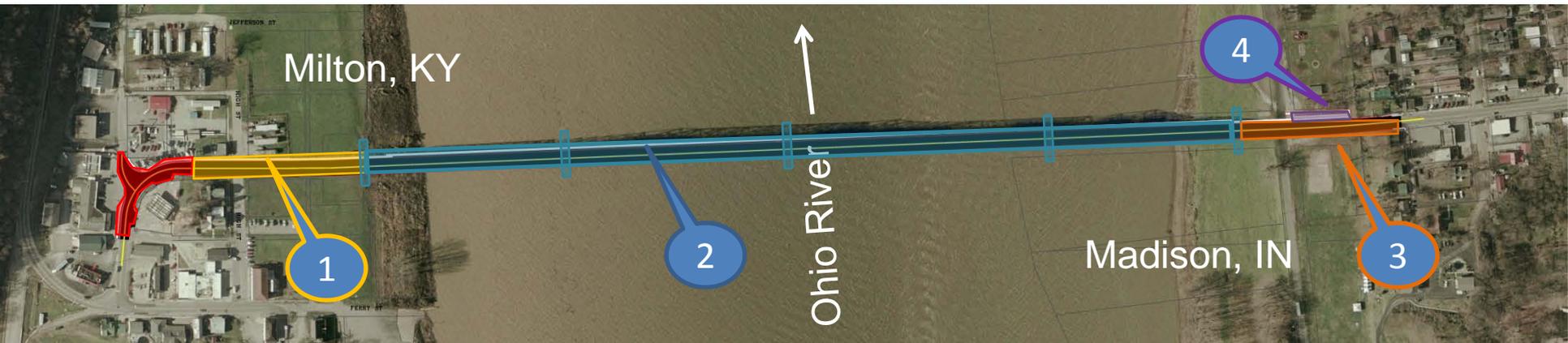
Keys to Success

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- **Superstructure Replacement**
 - Saved cost and time
 - No R.O.W. Required
- **Innovative Procurement**
 - Minimized Closure
- **Unique Construction methods**
 - Reduced costs and schedule

Superstructure Replacement with Minimal Approaches



- **Milton Approach Re-construction**
- **STR 1 Replace KY Approaches**
- **STR 2 Truss Replacement**
 - Pier Strengthening And Scour Mitigation
 - Superstructure Replacement
- **STR 3 – Replace IN Approaches**
- **STR 4 – Pedestrian Access To Park**

**No Right-of-Way
required**



Selected Alternative

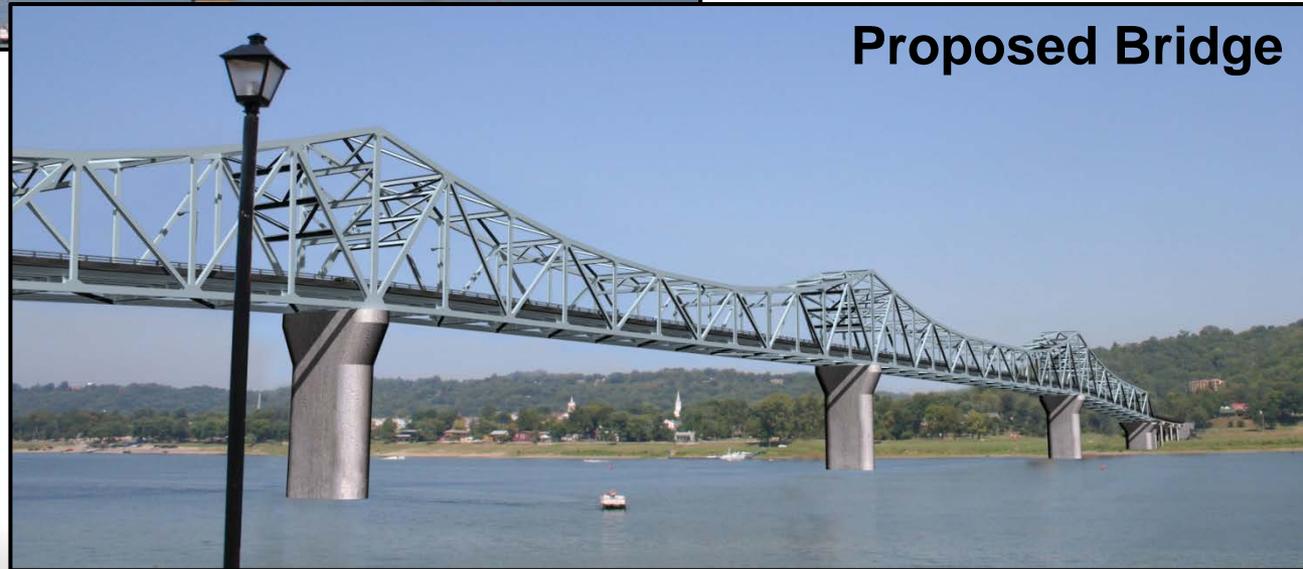
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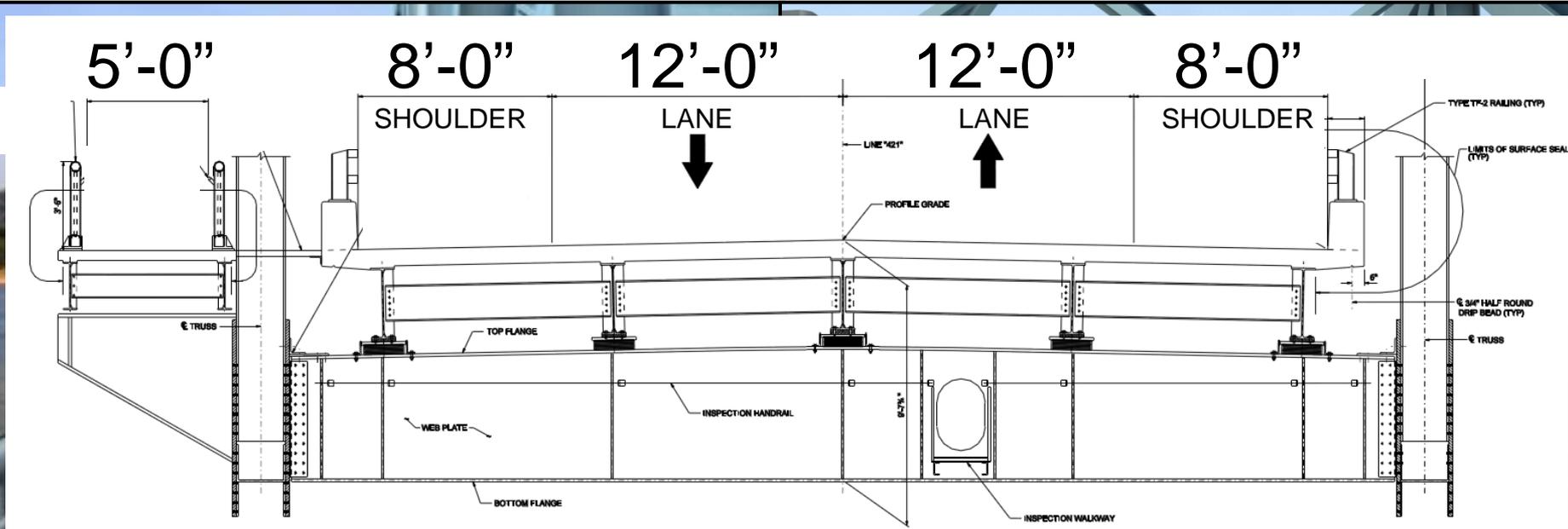
Existing Bridge



Proposed Bridge



- Existing Bridge is 20 ft curb to curb
- 5 ft pedestrian walkway

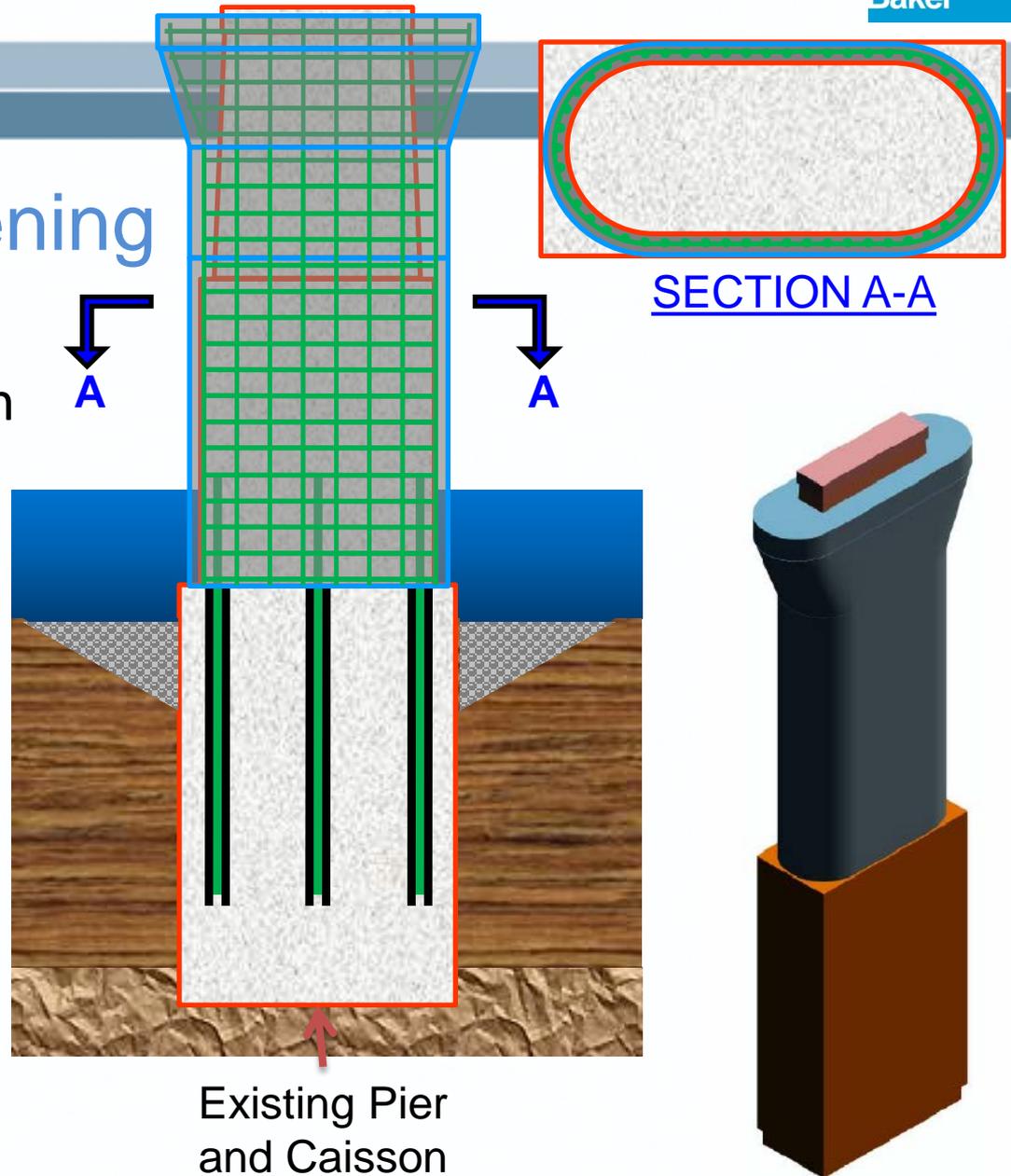




- **Strengthen existing piers**
- **Build a new truss on downstream piers while the existing bridge remains open to traffic**
- **Build temp. ramps to existing bridge allowing construction of perm. approaches**
- **Switch traffic onto new structure in temp. location**
- **Remove old truss and slide the new truss onto the strengthened existing piers**

Pier Strengthening

1. Drill holes into ex. caisson
2. Grout Rebar into Caisson
3. Add Stem Reinforcement
4. 2' thick encapsulation
5. Pier Cap Reinforcement
6. Cast new Pier cap
7. Scour Countermeasure





Pier Strengthening







Pier 6 – New pier in Madison

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Truss Assembly Yard

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Temporary Tower Details

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Span 2 Truss Float Out

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Truss Float

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Span 3 Lift – 9/10/12

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Span Lift – Jacking Platform

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■ Span 3 Lift

- ~727 ft Section
- 1900 Ton lift
- **24 hr River Closure**
- 8 – 360T VSL jacks
- 22" Stroke
- 2.5 Safety Factor



Spans 1 & 4 – Stick Build



Topping Out!



Photo by Charlie Gannon



Milton Temporary Ramp

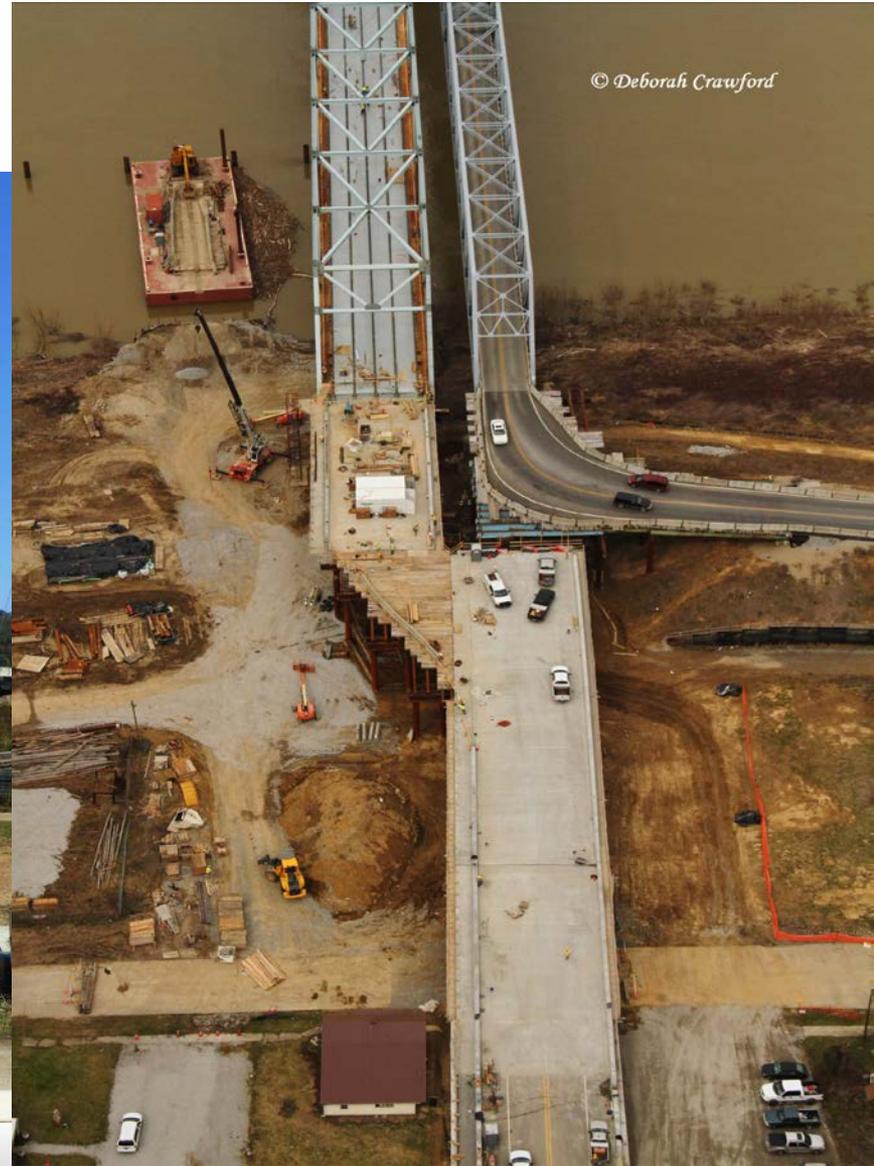
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Milton Approach

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Madison Temporary Ramp

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Madison Approach



Concrete Truss Deck



Charlie Gannon - April 13, 2001.3



Maintenance of Traffic

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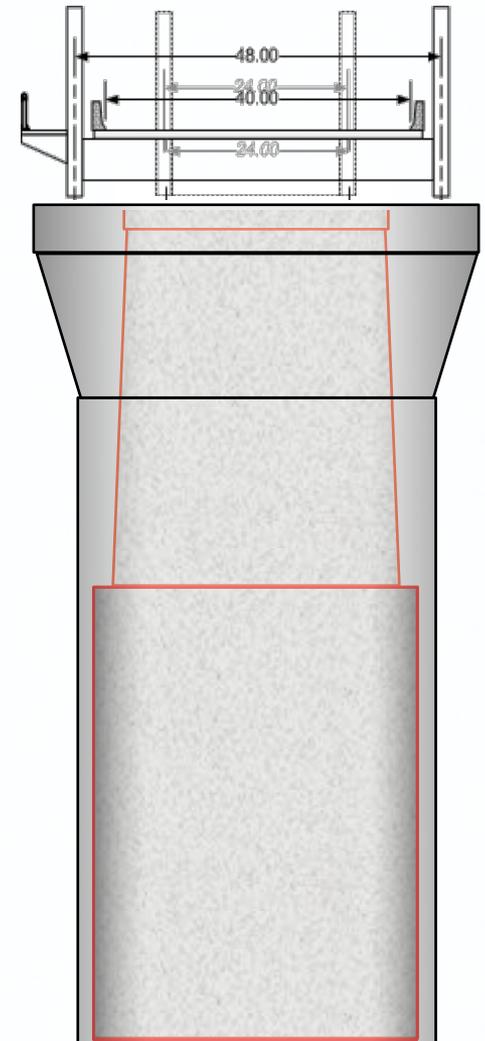
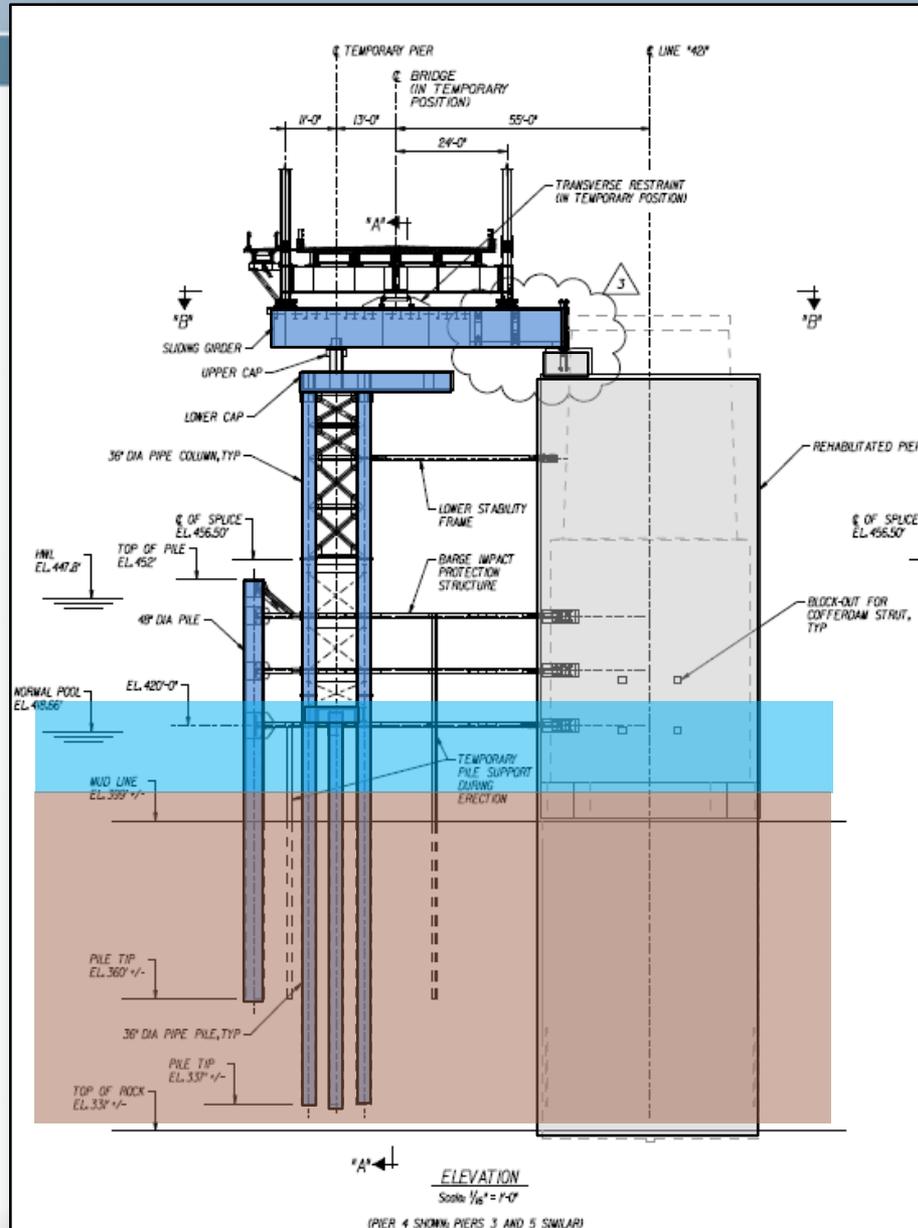
Demolition





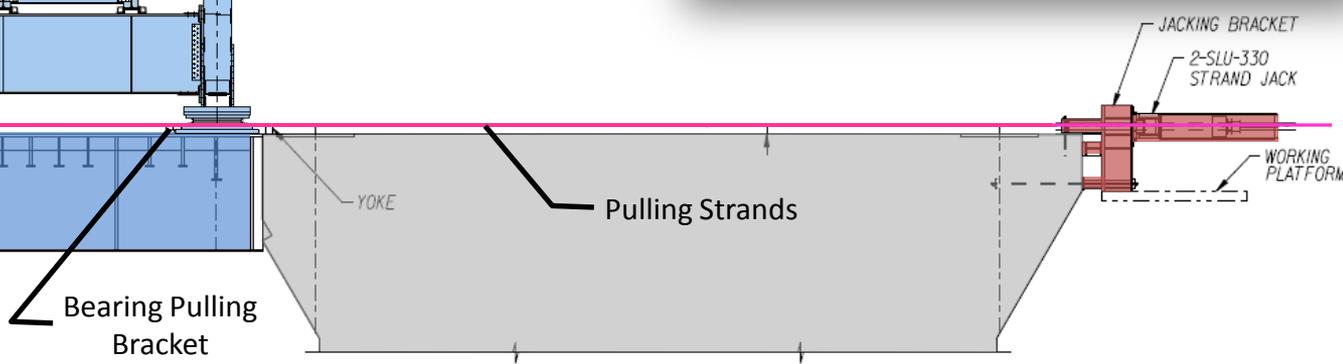
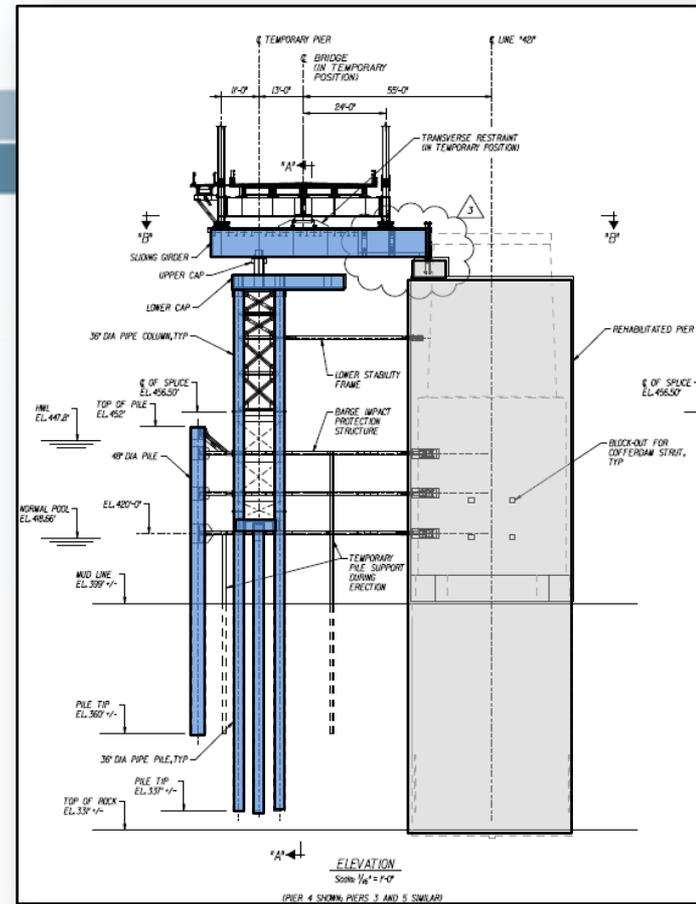
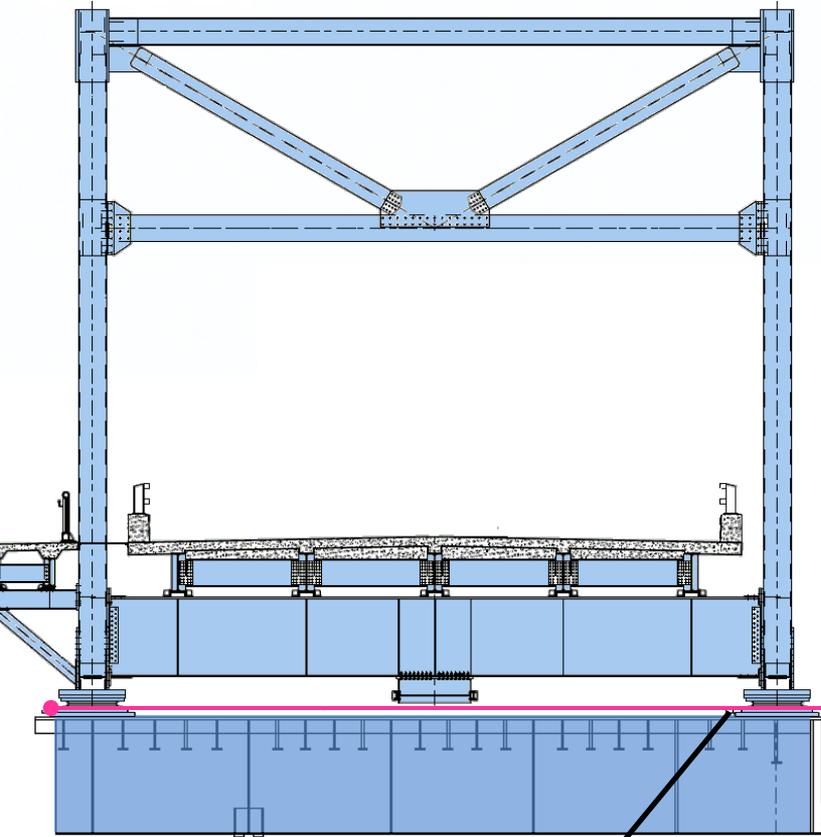
Charlie Gannon ~ August 1, 2013







Sliding – Fall 2013



Sliding Girders



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Sliding Girder Pedestal

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- Nesting pair of Peregrine Falcons
- KDFWR “Cooperator of the Year Award”





River Flooding



152 Total Flood Days

Record
Rainfall



PIRATES! Arrrrrrrgggggg!







Questions?



Walsh Construction



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