



ABC, FHWA SHRP2 R04: Project update, lessons learned

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February 24, 2015



U.S. Department of Transportation
Federal Highway Administration



Innovative Bridge Designs for Rapid Renewal ABC Toolkit

S2-R04-RR-2



Transition R04 to DOT's



- Show the success of past projects
 - Showcases (Today!)
 - Peer to Peer exchanges
 - 4 planned for 2015
 - Sacramento, May 19th-20th
 - Hartford, July
 - Minneapolis, September
 - Atlanta, November

Next Generation *Innovative Bridge* *Design Projects*



- Eight projects scattered around the county
 - Gila River Indian Reservation (Arizona)
 - California
 - Kentucky
 - Maine
 - Missouri
 - Rhode Island
 - Wisconsin
 - Michigan

Gila River - Arizona

- Project Delivery – CMGC
- Construction Manager/General Contractor
 - Team the GRIC DOT with the designer and contractor
 - Allows maximum use of contractors means and methods
 - Owner intimately involved in process
 - Side slide project (SIBC)

Gila River - Arizona



California



- Built in a remote location in Northern California
 - 90 minutes to nearest ready mix plant
 - Precast answers this quality issue well
- Lessons Learned
 - Allow time for all needed pre-approvals
 - Entire team must be on board with ABC approach and available
- Constructed Completed, fall of 2014

Goff Creek, California



2014/11/19

Kentucky

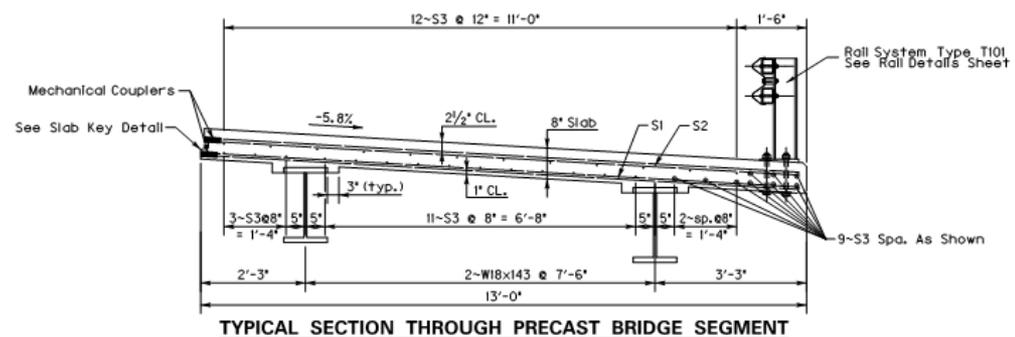
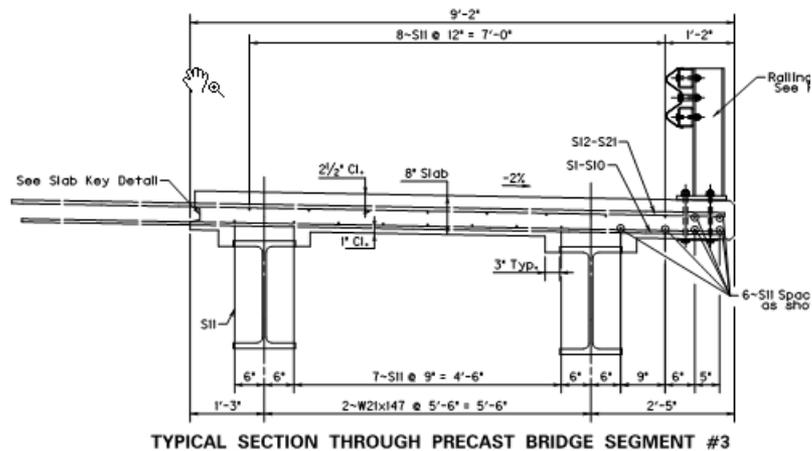
- A + B bidding, (Cost plus time)
 - Shorten closure time (3 weeks max)
 - Total project is only 38 days
- Did two bridges with innovative methods
- Galvanized and painted steel superstructure
- Galvanized deck rebar
- Super in 2 longitudinal pieces
- Completed Fall 2014



KYTC's SHRP2 Bridges - Design

– Design Decisions

- Class M High Early Strength Concrete
- Conventional Lap Splices at Lynn Camp Creek with Galv. Rebar
- Mechanical Couplers at Stewarts Creek with Epoxy Rebar
- Skewed Transverse Rebar at Stewarts Creek Bridge



KYTC's SHRP2 Bridges - Construction

Lynn Camp Creek Bridge



KYTC's SHRP2 Bridges - Construction



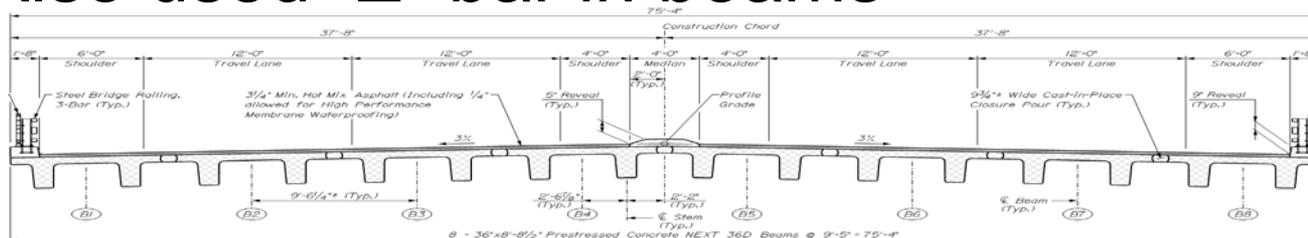
KY-6, Kentucky



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Maine

- Maximum closure time was 35 days, [used 29](#)
- Heavy tourist area, local traffic assistance
- Contractor redesigned precast abutment wall to footing connection, accepted by Maine DOT
- Northeast Extreme Tee Deck Beams (NEXT)
- Carbon fiber prestressing strands to be used
 - No corrosion issues with stand
 - Also used “Z” bar in beams



Kittery, Maine



- ABC and Geosynthetic Reinforced Soil Abutments (GRS)
- Lessons Learned:
 - Make sure modular block are available that meet the spec.
 - Anyone can build a GRS Abutment
 - Present new technology early to contractors
 - Scour concerns would need to be addressed at water crossings

Route B Bridge, Missouri



Rhode Island

- Current bridge in need of replacement
- Lessons learned:
 - ABC works
 - Semi twin bridge took over 400 days to build
 - New bridge closed road to traffic for 21 days



Warren Ave. Rhode Island



Warren Ave. Rhode Island



Warren Ave. Rhode Island



Warren Ave. Rhode Island



- ABC being applied to pier construction
 - Precast columns and caps on cast-in-place footings
- Five median piers between I-39 lanes planned
- Should save 3 weeks time per bridge
- Main ABC driver is safety
 - Less exposure of traffic to contractor
 - Less exposure of contractor to traffic

I-39/90, Wisconsin





Michigan



- Single lane, three-span continuous concrete box beam bridge
- Piers/abutments built with precast pile caps
- Will place a concrete overlay on top of boxes
- Concrete rails cast on to boxes before beam erection
- Prefabrication will limit impacts in an environmentally sensitive area

Michigan



Lessons Learned So Far

- ABC comes in many forms
 - Time savings
 - Safety
 - Quality
 - Reduced environmental impacts
 - Materials (Precast, Galvanized, Carbon fiber)
 - Contracting methods (DBB, DB, A + B, CMGC)

Conclusions

- Be open minded
- Do not be afraid to experiment with the method and materials
- Seek designer and contractor input before AND after every job for improvements
- DOTs get great publicity from ABC projects
 - Let the public know what your doing and why it is special!

Questions?

