



SHRP2 SOLUTIONS
STRATEGIC HIGHWAY RESEARCH PROGRAM

ABC, FHWA SHRP2 R04: Project update, lessons learned

Finn Hubbard, Fish & Associates Inc.
SHRP2 ABC/PBES Implementation Technical Lead

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U.S. Department of Transportation
Federal Highway Administration

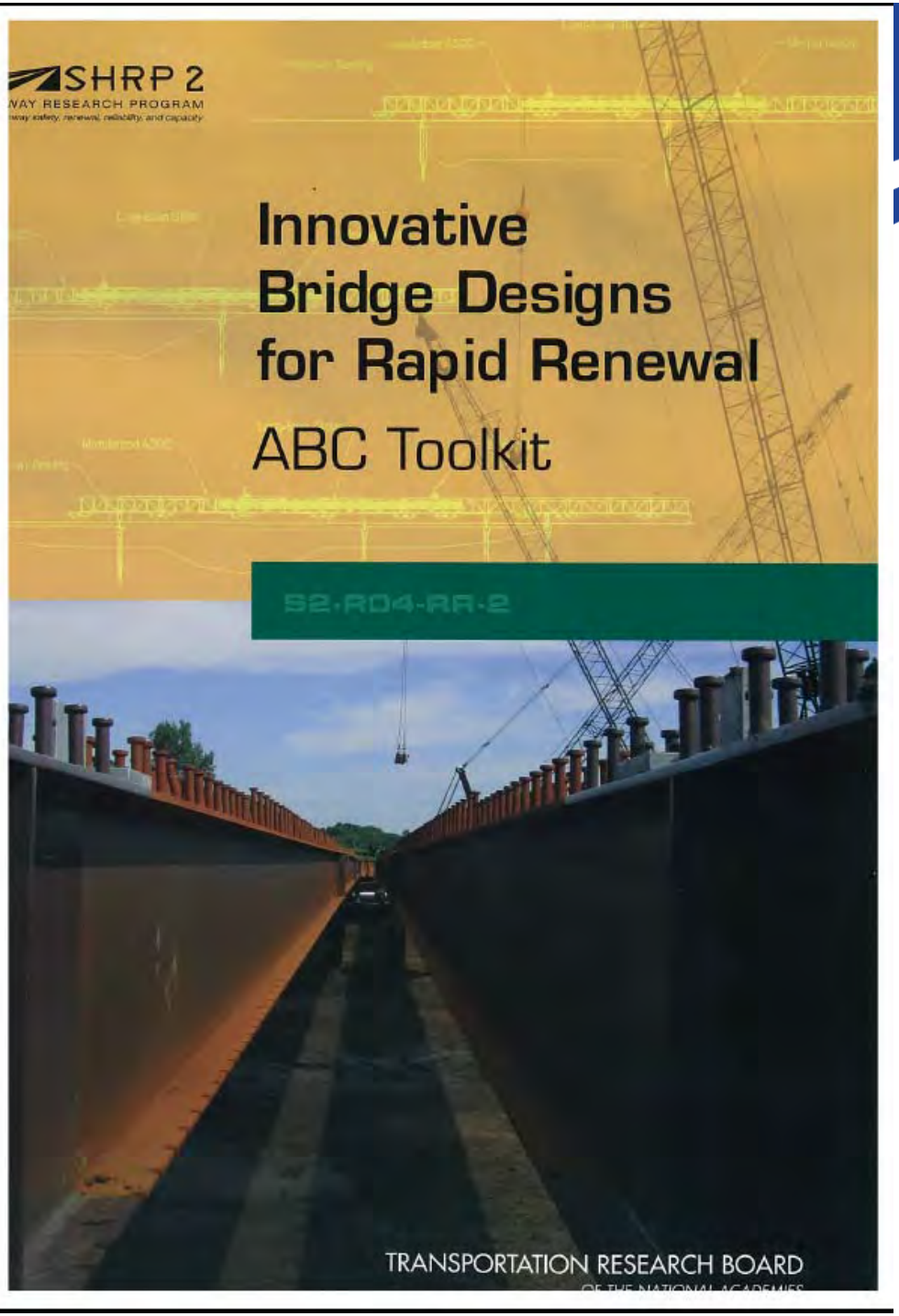
American Association of State Highway and Transportation Officials
AASHTO
The Voice of Transportation

TRB

Goals for ABC

- Enhanced Mobility
- Safety
- Reduced Costs***

***Who’s costs?


SHRP 2
WAY RESEARCH PROGRAM
Innovative
Bridge Designs
for Rapid Renewal
ABC Toolkit
S2-R04-RR-2
TRANSPORTATION RESEARCH BOARD

SHRP 2 R04 ABC Toolkit

1. ABC STANDARD DESIGN CONCEPTS
2. ABC ERECTION CONCEPTS
3. ABC DESIGN EXAMPLES
4. ABC DESIGN SPECIFICATIONS (LRFD)
5. ABC CONSTRUCTION SPECIFICATIONS

Expected Outcome: The designer, guided by the sample drawings, details and the set of ABC design examples, will be able to easily complete an ABC design for a routine bridge replacement project.

Transition R04 to DOT's

- Show the success of past projects
  - Showcases (Arizona Feb. 24, 2015)
  - 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
  - Will be a side slide project (SIBC)
  - Showcase February 24, 2015

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

Goff Creek, California

Kentucky

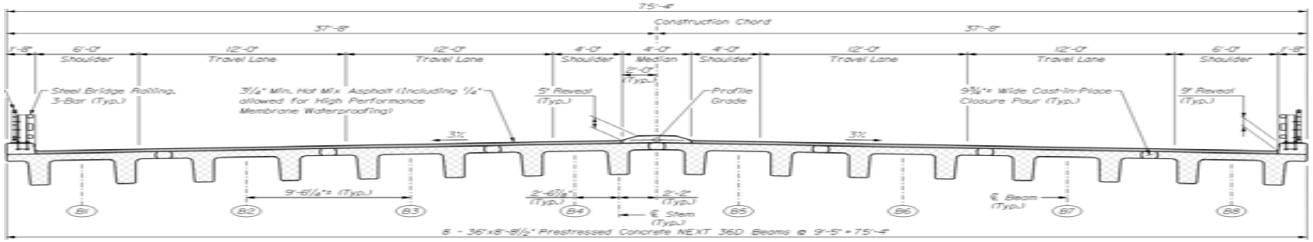
- A + B bidding, (Cost plus time)
  - Shorten closure time (3 weeks max)
  - Total project is only 38 days
- Did two bridges with innovative methods
- Galvanized and painted steel superstructure
- Galvanized deck rebar
- Super in 2 longitudinal pieces
- Completed Fall 2014

KY-6, Kentucky

KY-6, Kentucky

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

Missouri

- 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

Wisconsin

- 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)

Lessons Learned So Far

- Costs
  - Does ABC cost more?
    - Often, but not always
      - New York I-84 at Dingle Ridge Road
      - Vermont's experience
  - What drives ABC costs?
    - Define your project and real goals
    - Do your goals really change the project?
  - DOT budget versus user costs

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?


OCTOBER 7, 2013 ■ A SUPPLEMENT TO ENGINEERING NEWS-RECORD
ENR New York
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