ABC, FHWA SHRP2 R04:
Project update, lessons learned

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Goals for ABC

- Enhanced Mobility
- Safety
- Reduced Costs***

***Who’s costs?
Innovative Bridge Designs for Rapid Renewal

ABC Toolkit
**Expected Outcome:**  The designer, guided by the standard plans, details and the set of ABC design examples, will be able to easily complete an ABC design for a routine bridge replacement project.
• How can the Toolkit help you implement ABC?
• Eight projects scattered around the county
  – Gila River Indian Reservation (Arizona)
  – California
  – Kentucky
  – Maine
  – Missouri
  – Rhode Island
  – Wisconsin
  – Michigan
Held 3 Showcases
Three Peer to Peer Exchanges

• Many lessons learned from implementation projects, showcases and peer to peer exchange

  – ABC comes in many forms
  – Differing reasons to consider ABC
  – Contracting methods can very depending on need and ABC driver
Lessons Learned So Far

- ABC comes in many forms
  - Multiple pieces assembled on site
  - Slide in Bridge Construction (SIBC)
    - Transverse
    - Longitudinal
  - Self Propelled Modular Transporters (SPMT’s)
Lessons Learned So Far

- Differing reasons to consider ABC
  - Time savings
  - Safety
  - Quality
  - Reduced environmental impacts
  - Materials (Precast, Galvanized, Carbon fiber)
Lessons Learned So Far

• Contracting methods can very depending on needs
  • Design, bid, build (Traditional)
  • Design, build (Less control)
  • Construction Manager/General Contractor (CMGC)
  • A + B, Cost plus time
Lessons Learned So Far

• Identify the main goal of the project
  – Least disruption of traffic?
  – Least cost?
  – Environmental protection?
  – Length of construction season?
  – Length of detour?
Lessons Learned So Far

• Policy Related
  – The SHRP2 Toolkit can help when considering ABC alternatives
    • Precast construction
    • SIBC
Lessons Learned So Far

• Speed of ABC
  – How fast is really needed (Closure time)
  – SPMT’s are very fast, but pricey
  – SIBC is a nice combination of speed and cost
  – If 14 to 21 days will work, assembling pre-built pieces is cost effective
  – There is a cost for speed
    • Choose the time line carefully!
Lessons Learned So Far

• Cost of ABC
  – Generally cost more
  – ABC is showing up on design/build projects
    • What does this mean?
  – Look at big picture
    • Cost of traffic control
    • Cost of construction inspection staff
  – Simple details equal lower costs
  – Align proposed ABC method with local expertise
Lessons Learned So Far

• Technical Issues
  – Foundations selection is a big deal
    • Spread footing are fast
  – Post tensioning works, but takes time
  – Simple detail lead to successful projects
  – UHPC is a good tool, but expensive
  – Watch the weight of precast elements
  – Pay attention during shop reviews
    • Best to have issues on paper
Lessons Learned So Far

• Technical Issues
  – Geosynthetic Reinforced Soil (GRS) abutments are fast and inexpensive
    • Scour needs to be considered in their use
  – ABC can help with some weather issues
  – Grouted bar splice couplers work well for ABC
  – Deck overlays solve deck alignment issues
Lessons Learned So Far

• Owner related
  – “DOT’s need to be innovative to stay relevant”
  – Durable joints are a must to gain acceptance
  – A top down and team approach with real resources committed will be needed
  – Changing the “We have always done it this way” is not easy.
  – DOT’s gain real political capital from ABC
Lessons Learned So Far

• Contractor Related
  – Like to retain as much work as possible
  – Contractors bid labor, material and risk
  – Like CMGC contracts
    • Geared to their means and methods
  – Work with them, they have good suggestions
Lessons Learned So Far

• Contracting with ABC
  – CMGC contracts work well if everyone buys in
    • Owner
    • Designer
    • Contractor
  – Good communications is a must
    • New approach, moving fast
  – Pick your timeline carefully
    • Speed costs money
Lessons Learned So Far

• General ABC observations
  – Need the “A” team
    • Owner
    • Designer
    • Contractor
  – Not every project needs an ABC solution, but some really benefit from it
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!
Access to the toolkit and other resources including implementation assistance can be found here:
- FWHA’s GOSHRP2 web site or specifically: http://www.fhwa.dot.gov/goshrp2/Solutions/Renewal/R04/Innovative_Bridge_Designs_for_Rapid_Renewal
- AASHTO’s SHRP2 web site or specifically: http://shrp2.transportation.org/Pages/Bridge-Designs-for-Rapid-Renewal.aspx
- TRB publications site: http://www.trb.org/Main/Blurbs/168046.aspx