KDOT Local System ABC Experience

Rural ABC Bridges in Kansas

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Local Bridge Improvement

- Funding Hurdles likely the best improvement
  - Low-cost Bridge Options
    - Husker Bridge (Steel)
    - Oden Precast (Conventional Concrete)
  - Bureau of Local Projects Standard Designs
    - Single Span Steel
    - Single Span “Spread Box” (Pre-stress)
Osborne Existing
Riley Existing
Riley Existing
KDOT State System ABC Experience

Proj. 9-58 KA-2101-01 Waterville Bridge: Lessons Learned


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Waterville Bridge: Lessons Learned

• KDOT ABC Timeline
  – Iowa SHRP-2 Demo Project: 2011
  – KDOT chooses Waterville Site: Early 2012
  – Prelim. Design: Summer 2013
  – Final Design Completed: Summer 2014
  – Letting November 2014
Waterville Bridge: Lessons Learned
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• Existing Bridge Site
  – AADT (2035): 1500 vpd; 13% trucks
  – 60-84-60 ft. RDGH-2 w/ 26 ft. roadway
  – State route detour = 31 miles adverse travel
  – Split emergency services between local towns
  – Close route or use Shoofly Detour ($600K)
  – Cannot close route between end of school and beginning of wheat harvest
  – ABC chosen as alternative to Shoofly Detour
Waterville Bridge: Lessons Learned

• Proposed ABC Bridge
  – 71-72-71 ft. WBMC w/ 36 ft. roadway
  – No change in profile grade
  – Abutment piling pre-installed w/ flagged traffic
  – Pier drilled shafts placed under existing bridge using “low overhead” techniques—no straddle bent.
  – Precast abutment beams, pier columns, and pier caps installed using grouted connections
• Proposed ABC Bridge, cont’d
  – Conventional continuous weathering steel rolled beam framing plan
  – Precast concrete full-width, full depth, 10 ft. deck sections “semi-composite” to beams
  – Abutments are backfilled using low strength flowable fill
  – Asphalt wearing surface and no approach slabs
Waterville Bridge: Lessons Learned

• Letting(s)
  – Letting #1: one bidder; Bridge Bid Items = $2,154,810; $272/sq. ft.
  – Letting #2: multiple bidders, about the same cost
  – Cost baseline comparison: conventional bridge ($1,000,000) + shoofly ($600,000)
  – Bids were rejected
• Lessons Learned
  – If you want a demonstration project, it has to have a champion from beginning to end.
  – Reliance on precast members could leave you at the mercy of local precasters’ production schedules.
  – Future ➔ KDOT is looking for a new bridge site to use ABC; probably single span to reduce absolute $$ amount.