ABC in Nevada
PBES/ABC Practices in Nevada – Past, Present and Future

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Presentation Overview

• Executive Overview
  – Department, Structures Capital Programs, Division Org & Inventory
  – ABC in Nevada
    • Barriers to Implementation
    • Planning and Decision Making
  – ABC Project Specifics
    • Project Details
    • Lessons Learned
  – ABC Activities
    • Education and Research
    • Summary, Future Efforts
Annual Program

- Department Annual Capital Outlay (approx)
  - $1 Billion.
    - $380 Million – Fed Gas Tax
    - $420 Million – State Gas Tax
    - $200 Million – State other (Bonds, etc.)
- HBP Capital Outlay Funds (approx $10.5 million, 1% of total budget)
  - Bridge replacement
  - Seismic retrofit
  - Scour Countermeasures
Organization & Inventory

- Centralized Design & Inspection
  (20 Design, 9 Inventory/Inspection, 3 NDT)
- Designs are typically governed by Seismic Design
- 2014 Data: Approximately 1,900 bridges; 1100 State Owned.
  (150 Steel, 600 Concrete, 300 RCB’s)
- 34 state & local bridges considered structurally deficient
- Aging Inventory. Approximately 33% of state inventory was constructed
  in the 1960’s as part of Interstate System
ECONOMIC/POLITICAL ISSUES

- Highest unemployment rate in the country (12.0%) in 2012
- Employment of local contractors, labor force a sensitive political issue (Only bridge slide performed by out-of-state contractor)

PBES
- Currently, no PCI certified precasting facilities in state or AISC certified bridge fabricators
- Historically, precast girders have not been cost competitive due to shipping costs

ABC
- Limited local experience
PBES/ABC Implementation Barriers:

- **DEPARTMENT PERSONNEL**
  - Design Staff, Construction Inspection and Contractors
  - Unfamiliar with ABC techniques. May require additional education and training.
  - New Information required: Plan Details, Materials,

- **CONSTRUCTION, LONG TERM PERFORMANCE**
  - Hydraulic/Scour Issues may impact GRS-IBS projects
  - Industry must improve QA/QC processes
  - Concern over long term performance/durability. Seismic and service loads. Long term performance of new details is
PBES/ABC Implementation Barriers: ABC Planning and Decision Making

• Currently, no established Departmental policy to support implementation of PBES/ABC projects – evaluated on case by case basis

• FHWA report – "ABC Decision Making and Economic Modeling Tool" - Developed at Oregon State University for the Oregon DOT and FHWA - NDOT is evaluating for use by the Department

• Public/stakeholders can be misinformed regarding project costs/benefits
PBES/ABC Projects

Safety Crossings
- Performance Specs
- Temporary Road Closures

10 Mile Summit

HD Summit
ABC Projects

• Recent Contracts (# of Structures) – Bridge Costs; ABC Elements
  • Contract #3407  Awarded March 2010. HD Summit Animal Crossing
    • 1 Precast Arch w/Full Ht MSE Wall Panels. DBB w/Perf Spec, Structure cost $1.5 million
  • Contract #3388  Awarded July 2009. 10 Mile Summit Crossing
    • 1 Precast Arch w/Full Ht MSE Wall Panels. DBB w/Perf Spec, Structure cost $1.3 million

• Challenges
  • Design: Developing details and performance spec info
  • Discussion with PBES fabricators during plan development of safety crossings
  • Construction: PBES tolerances, MSE Wall fit-up during backfilling, technical oversight, coordinating field revisions
PBES/ABC Projects

B-1942 Tuscarora

Bridge Replacements
• Performance Specs
• Prefabricated Bridge Rail/Headwalls/Wingwalls
• Structure Placed in 1 Day
Recent Contracts (# of Structures) – Bridge Costs; ABC Elements

- 1 Precast Arch, Headwall/Barrier Rail. DBB w/Perf Spec - $220 k
- Challenges:
  - Design of TL-3 barrier rail connection required coordination with manufacturer
  - Hydraulics concern regarding scour required additional concrete floor slab & rip rap
PBES/ABC Projects

Safety Crossings
- Performance Specs
- Crossovers

I-80 Silverzone
ABC Projects

Recent Contracts (# of Structures) – Bridge Costs; ABC Elements

- Contract #3313DB Awarded in June 2006. $242 Million Project Cost
- I-15 North D/B included 6 structures with Precast AASHTO I Girders
- Estimated value/cost of structures: $15.3 Million
- Challenges: End diaphragm & pier diaphragm details, girder curing specifications
I-15 DB North End Diaphragm

I-15 North Design-Build
• Precast Girders

November 18, 2011
PBES/ABC Projects

Mesquite Design-Build
- Precast Girders
- Partial Depth Precast Deck Panels

I-15 South Design-Build
- SPMT bridge move
ABC Projects

• **Recent Contracts (# of Structures) – Bridge Costs; ABC Elements**
  • Contract # 3447DB Awarded March 2011. Mesquite Bridge Replacement. 2 Lateral Bridge Slides & use of partial depth deck panels. Estimated structure value $1.1 million
  • Challenges:
    • Proposal Evaluation, Award
    • Construction:
      • Slide damaged permanent bearings, requiring replacement of 3 bearings
      • Significant coordination/interaction with Design staff required
      • Abutment joints, precast deck panel connections
      • Seismic restraint.
      • Experienced reflective cracking in CIP deck
Mesquite Deck Details
Additional PBES/ABC Activities
Education and Research

- Participation in numerous ABC showcase events in Utah (3+) and Arizona by Management and Design Staff.
- NHI Webinars
- NCHRP Scan 11-02 ABC Seismic Connections - 2012
- GRS-IBS Workshop – FHWA/NDOT - Carson City, 2013
- Current research with UNR on precast deck panels, precast
Additional PBES/ABC Activities
Summary, Future Efforts

• NDOT experience includes: PBES, Bridge slide, and SPMT (completed May/June 2012 on I-15 D/B South (new end span)).
• Continuing work on GRS-IBS projects. Potential for additional bridge slides.
• Potential for ABC opportunities on major Design – Build projects.
• Evaluation of the “ABC Decision Making and Economic Modeling Tool”
• Research underway for precast deck panels, columns.
• Open to opportunities: Urban areas – MOT, Remote locations, GRS-IBS
  – ABC, PBES consideration must be based on project issues/benefits
  – Avoid misinformation regarding project costs/benefits
  – “It’s got to be the right application and fit for the project”

Questions?