Successfully Implementing Innovative Bridge Projects

MassDOT – Highway Division

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Accelerated Bridge Program

- Implemented August, 2008
- $3.1 Billion in Funding
- Complete 200 Bridge projects
- Primary Goal: Improve bridge condition/reduce number of SD Bridges to 450 by 2016

*This required MassDOT to be efficient & innovative!!*
Cultural Shift

- Establish a new team of project managers
- Empower staff to be creative
- Obtain Feedback from construction industry
- Consult with other States on successful ABC Projects
- Consult with FHWA on Procurement Methods
Innovations Implemented by ABP

- PBES using steel, precast concrete, aluminum, and FRP
- SPMT bridge moves
- Rapid-set concrete
- Incentive/Disincentive Clauses
- Design Build Procurement Methods
Innovative Bridge Examples

1. Medford – I93 FAST 14

2. Worthington – 100% Precast Concrete Bridge

3. Wellesley – Route 9 – Heavy Lift Bridge
• 14 structures carrying I-93 over various roads and the Mystic River
• ADT: 200,000 in each direction
• Urgent need for emergency repairs and superstructure replacements
• Substructure repairs performed in spring
• All 14 superstructures replaced in a series of ten consecutive 55-hour work weekends in a single summer.
• No impact to weekday rush hour traffic
Isolated Deck Failure
Precast Lifting Exercise
Two Moveable Barrier Machines
Friday night, 10:00 PM – Demolition Starts
Saturday Morning, 7:00 AM – Demolition Complete
Saturday – Erection of PBU’s
Saturday Afternoon - Forming of Closure Pours
Saturday Afternoon – Placement of Rebar
Sunday Morning – Placement of High Early Concrete
“95% of people surveyed prefer ABC over Conventional Construction because it is faster and creates fewer delays”
Worthington - 100% Precast Bridge

- Route 112 over Kearney Brook
- ADT: 300
- Replaced during a 60-day closure period
- New bridge made of 8 PC footings, 6 PB abutments walls, 4 PC wing walls, 4 PC guardrail transitions, 8 PC approach slabs, and 3 PC 32F NEXT Beams
- First curved flange NEXT Beam bridge
- Completed in 60 days
Placement of Precast Substructure
Completed Bridge - 60 days later
Cedar Street over Route 9
ADT: 16,700
Short detour used existing (modified) ramps
Closed for 72 hours during Independence Day weekend
Bridge and roads reopened in just 61 hours (11 hours ahead of schedule)
Award-winning public information campaign
Heavy Lift Equipment

Moving the Cedar Street Bridge

Route I, Wellesley, Mass.

July 3, 2011
Sequence of Construction

**July 1, 10:30 PM**
Demolition of old bridge superstructure is underway

**July 2, 10:30 AM**
Demolition of old bridge superstructure completed

**July 2, 10:30 PM**
Erecting pier and abutment caps

**July 3, 10:30 AM**
The new bridge is in place
Completed Bridge - 11 hrs. Ahead of Schedule
MassDOT’s Lessons Learned

- Involve the Public and Stakeholders early to define project expectations.

- Explore ABC opportunities on every project early in the design to minimum disruption to the stakeholders.

- Explore different contracting methods and the use of Incentives/Disincentives when appropriate.

- Lose the mindset “We’ve Always Done it This Way”!
Feedback & Questions