



# Successfully Implementing Innovative Bridge Projects

MassDOT – Highway Division

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AMERICAN ASSOCIATION  
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TRANSPORTATION OFFICIALS

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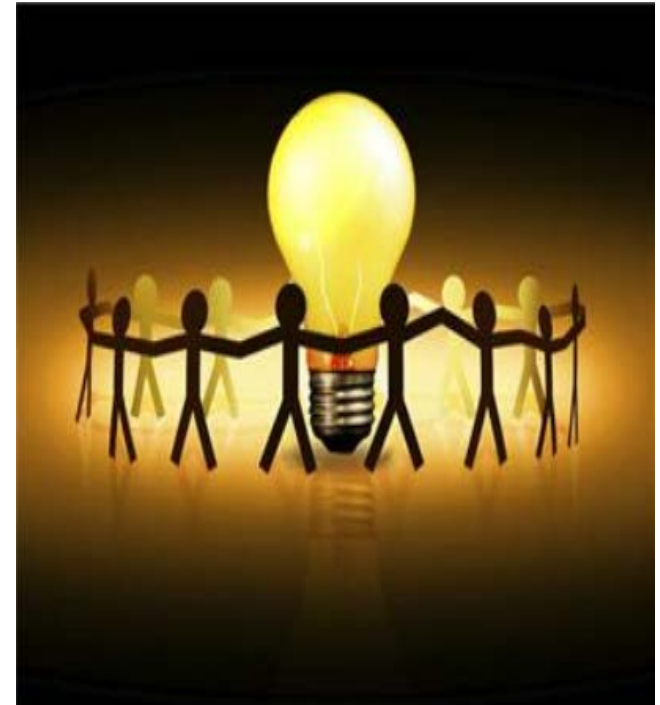
# Accelerated Bridge Program

- 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

# Medford - I-93 Fast 14 Project



- 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





# Dry Runs & After Action Reviews



# 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





Monday Morning - 5:00 AM – Open to Traffic



*“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



# Placement of Precast Deck Beams



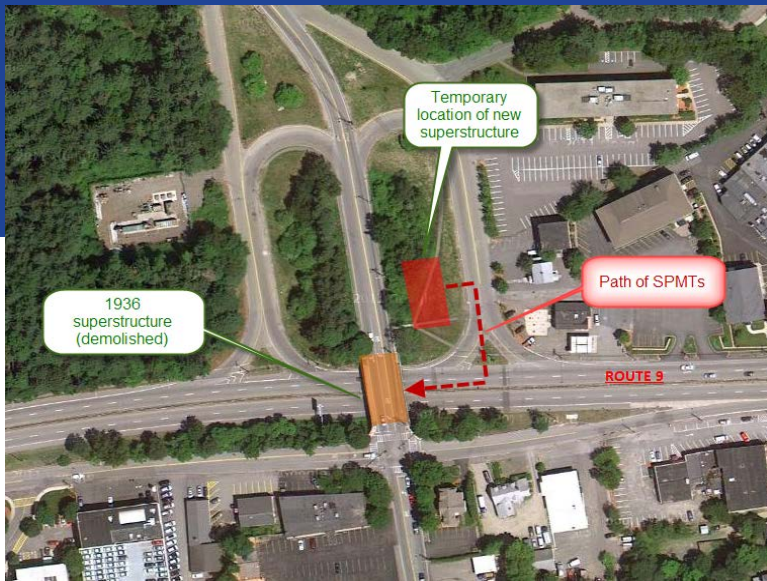
# Completed Bridge - 60 days later



# Wellesley – Heavy Lift



- 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 9, 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



# Lessons Learned

## MassDOT's

ACCELERATED  
**BRIDGE**  
PROGRAM



- 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

