Accelerated Bridge Construction in Connecticut
State Project No. 131-194/195

Rehabilitation of Bridge Nos. 01235 and 01236 I-84 over Marion Ave Southington, Connecticut
Design

Ajit Gokhale, P.E., Close, Jensen & Miller, P.C
Andrew Lessard, P.E., Stantec Consulting Services, Inc.
Louis Bacho, P.E., CTDOT
Mary Baker, P.E., CTDOT

Construction, CTDOT

Mohammed Bishtawi, P.E.
Joe Calafiore
Shawn Mangan
Terri Thompson
Bridge 01235  (EB) East Elevation

Connecticut Department of Transportation
Bridge 01236 (WB) West Elevation
Bridge 01235 cracking

Connecticut Department of Transportation
Bridge 01236 G7 spall beam end

Connecticut Department of Transportation
Design Options
superstructure replacements

- 3 stages maintaining 2 lanes
  - $6.5 M, 18 months

- Widening maintaining 3 lanes
  - $8.0 M, 24 months

- Temporary bridge and crossover, 3 lanes
  - $7.3 M, 24 months

- Closure using SPMTs
  - $7.0 M, 230 days
Selected methodology

- Replace two deficient superstructures
- Utilize SPMTs
- 56 hour maximum closure of I-84
- Implement ABC to minimize impact to residents and businesses
- Safe work zone

“Get In, Get Out, and Stay Out”
Existing and Proposed Bridge Sections

**EXISTING SECTION**

- **Scale:** $\frac{1}{8}'' = 1'-0''$

**PROPOSED SECTION**

- **Scale:** $\frac{1}{8}'' = 1'-0''$

Connecticut Department of Transportation
PROJECT

I-84 BRIDGES OVER MARION AVENUE

An accelerated bridge construction success story in Southington, Conn.

by Andrew Lessard, Stantec
Informational meetings

- Public info in Design, October 2011
- Pre-bid conference, March 2013
- Town staff meeting, January 2014
- Reporter at jobsite, March 2014
- Traffic Coordination, SPD, April 2014
- Town Council Meeting, May 2014
- Public info in Construction, May 2014
- Project site visits, May-June 2014
- Merchant meeting, June 2014
- DOT Manager meeting, June 2014
Public Outreach

- Neighboring states: NY, MA, RI
- Emergency Management Coordinators - DESPP
- Federal Law Enforcement Agencies
- Chambers of Commerce - local businesses
- Trucking companies, hospitals, major venues
- Local residents and EMS
Detour west of project
I-84 Detour Plan
Regional And Local Variable Message Board Activation
ConnDOT to hold public hearing on I-84 bridge replacement

DOT gives details of I-84 bridge installation

Newspaper Coverage

Construction project set for I-84 bridge over Marion Avenue

The plans are set for I-84 bridge closure

Traffic To Be Diverted To Local Streets

I-84 eastbound and westbound at Exit 30 and Marion Avenue. The closure will take place during a weekend, the report said.

The state Department of Transportation (ConnDOT) has created a design plan to replace the bridges carrying I-84 eastbound and westbound at Exit 30 and Marion Avenue. The closure will take place during a weekend, the report said.

Built in 1963, each bridge along I-84 carries three lanes of traffic, averaging 81,800 vehicles daily.

The project involves the Accelerated Bridge

The project involves the Accelerated Bridge

superstructure is a portion of the bridge (similar to a deck) that primarily supports traffic loads reported.

Mary Baker of ConnDOT.

Baker said the project
Commissioner James P. Redeker
CT DOT PROJECT NUMBER
0131-0194 / 0195
REPLACEMENT OF I-84 BRIDGES
OVER MARION ROAD, SOUTHHINGTON

I-84 EASTBOUND BRIDGE NO. 01235 / 
I-84 WESTBOUND BRIDGE NO. 01236

CONSTRUCTION PASS

Connecticut Department of Transportation
Northern Construction Service, LLC
Weymouth, MA
Project awarded on June 7, 2013
Contract Amount: $6,031,429.40
Est. Revised Contract Amount: $7,400,000
Sean Hoey, Project Superintendent
Shawn Clark, Project Manager
**Contractual Items**

- **Liquidated Damages**
  - Exceeding Calendar Days
  - Lane Closures (other than weekend closure)
  - Weekend Closure

- **Incentives**
Contractual Items

Liquidated Damages – Weekend Closure

- $100,000 per hour for each direction of I-84, for each hour, or any portion thereof
- The aggregate amount of LDs assessed during the shutdown period shall not exceed $1,000,000
# Contractual Items

## Incentives

<table>
<thead>
<tr>
<th>I-84 Lanes Open to Traffic</th>
<th>Incentive Payment (Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 A.M. Sunday</td>
<td>$250,000</td>
</tr>
<tr>
<td>10:01 A.M. – 12:00 P.M. Sunday</td>
<td>$200,000</td>
</tr>
<tr>
<td>12:01 P.M. – 5:00 P.M. Sunday</td>
<td>$150,000</td>
</tr>
</tbody>
</table>

*There will be no incentive payment if the work is completed and I-84 is opened to traffic in both directions after 5:00 P.M. on the Sunday of the weekend closure.*
Construction Staging

- **Stage 1** – Median Wingwall Parapets
- **Stage 2** – Outside Wingwall Parapets
- **Stage 3** – Rapid Replacement of Superstructures
- Maintain 3 lanes of traffic in I-84 during Stages 1 & 2
- Construct New Superstructures off-line during Stages 1 & 2
Closure Schedule

Friday, 6/27/14
9 am – Southington Rest Area, I-84 East Closed

5 pm to 9 pm - I-84 Exit 30 Off and On Ramps Closed
  Marion Avenue closed at ramps- no through traffic

6 pm - One lane taken on I-84 East at Exit 27 (I-691)
7 pm - One lane taken at Exit 31 (Rt 229)
8 pm - Two lanes taken at EB Exit 27 and WB Exit 31 with one travel lane open
9 pm - I-84 Closed, one lane of traffic off at Exit 30 and Exit 29 On and Off Ramps at Route 10 Closed

Monday, 6/30/14  5 am
I-84 OPEN ALL LANES IN BOTH DIRECTIONS and I-84 East Southington Rest Area reopens
Demo Plan W.B

Connecticut Department of Transportation
Demo procedure W.B

Connecticut Department of Transportation
Making It On Time

- Traffic Management Unified Command Center
- DOT CHAMP (CT Highway Assistant Motorist Patrol) vehicles
- Incident Management response
- Traffic Management Plan
- Contractor Contingency plan
Detour Notification Strategies

- Use Intelligent Transportation System (ITS) technology
  - Cameras, Message Boards, Advisory Radio
  - Massachusetts, Rhode Island, New York, and New Jersey travel alert systems
- Officers located at project site and along detour routes
- Local Fire and Police paid through the DOT project
- Project Website
Rehabilitation of Bridge Numbers 01235 and 01236, Interstate 84 over Marion Avenue in Southington
DOT Project No. 0131-0194/195

TRAVEL ALERT - REVISED SCHEDULE!
FULL CLOSURE OF INTERSTATE 84 AT EXIT 30 SCHEDULED FOR WEEKEND OF JUNE 27-30, 2014

Interstate 84 in both directions is scheduled to be closed at Exit 30, Marion Avenue, June 27-30. Interstate 84 will be reduced to a single lane entering the area and traffic will be directed off the ramps at Exit 30 in both directions and back onto the highway from the on ramps.

The hours of full closure are scheduled to occur starting at 9 p.m. on Friday, June 27 through 5 a.m. Monday, June 30, 2014. The rain date will be 9 p.m. on Friday, July 11, through 5 a.m. on Monday July 14, 2014.

Currently, shoulder closures are in place in both directions and lane closures are allowed on Monday through Thursday from 9 a.m. to 3 p.m. and 6 p.m. to 6 a.m. and on Friday from 6 p.m. to 6 a.m. on Monday.

Marion Avenue closures will occur between the hours of 9 a.m. and 3 p.m. Monday – Friday and on Saturday and Sunday before 10 a.m. and after 6 p.m.
Lessons Learned

• Lighter weight superstructure
• Max grade for SPMTs
• Adequate travel path width
• Incentive/disincentives
• Advance utility/IMS relocation
• Local review of traffic plan
• Consider use of alternate bids and alternate contracting method to allow innovation and minimize risk for stakeholders.
Lessons Learned

- Time for Working Drawing Review
- More detailed TMP
- Staging area – contract items
- Bearing plate shims
- Contractor Survey
- DOT Construction project conflicts
- Site Accessibility
CTDOT Successful Completion

Bridge Opening EB: Sunday 4:40 p.m.
WB: Sunday 8:15 p.m.
CTDOT ABC Look ahead

- PBUs – Route 4, Harwinton
- GRS-IBS abutments – I-84 off-ramp, Manchester
- Slide – I-95, Waterford
- SPMTs -Route 1 over I-95, Stamford
- SPMTs – Metro North RR over Atlantic St., Stamford
# ABC Decision Matrix - Implementation

## Preliminary Cost Evaluation

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
<td>Project Bridge</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Total Estimated Bridge</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Estimated CEBI Costs per month</td>
<td>$1,500</td>
</tr>
<tr>
<td>Declared today, not affected in mainwork</td>
<td>$5,000</td>
</tr>
<tr>
<td>Total CEBI Monthly Cost</td>
<td>$2,000</td>
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Notes: Small office - base per month
Medium office - Base in mainwork
Large office - Base per month

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<tr>
<td>Net time savings for ABC</td>
<td>$1,000</td>
</tr>
<tr>
<td>Estimated Percent Premium for ABC</td>
<td>10%</td>
</tr>
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## ABC Ratings

### Cost Analysis

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<tbody>
<tr>
<td>Premium for ABC</td>
<td>100%</td>
</tr>
<tr>
<td>CEI Cost Savings</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>MPT Ratings with ABC</td>
<td>100%</td>
</tr>
<tr>
<td>Net cost change for ABC</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>ABC is less expensive than conventional</td>
<td>75%</td>
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## Site Conditions

### Work Zone Geometry

<table>
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<tr>
<td>Short distance with good pavement</td>
<td>1</td>
</tr>
<tr>
<td>Clear right-of-way</td>
<td>1</td>
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<td>Smooth pavement</td>
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## ABC Rating

67
Contact Information

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