Public Information Meeting

Aetna Viaduct Rehabilitation
Route I-84 – City of Hartford, CT
State Project No. 63-616
F.A.P. No. BHI-0843 (206)
Purpose of Tonight’s Meeting

• Present the need for the rehabilitation of the Aetna Viaduct (Project 63-616)
• Present the current condition of the Bridge
• Discuss the major work items included in this project
• Discuss the anticipated construction work areas
• Discuss the long term planning for this section of I-84
• Solicit the input of valued stakeholders
Presenters and Project Team

- Julie Georges, P.E. – Connecticut Department of Transportation—Presentation of ConnDOT process and project purpose and need
- Steven Harlacker, P.E. – Hardesty & Hanover-- Presentation of bridge condition and scope of repairs
ConnDOT Mission

Mission
To provide a safe, efficient, and cost-effective transportation system that meets the mobility needs of its users.
Role of the Bureau of Engineering and Highway Operations

Responsible for

- Engineering design, construction and inspection of all transportation improvement projects and systems.
- Operating and maintaining the state highway and bridge system.
- Traffic engineering; land acquisition and management; and research and materials testing.
Bridge Rehabilitation Program

- Bridges are inspected every two years
- Minor repairs are performed by Maintenance
- Bridges determined to be structurally deficient (needing attention) are scheduled for capital improvement
Recent Aetna Viaduct Repair Projects

- Project 63-488 minor steel repairs and pin and hanger retrofit (1992)
- Project 63-503 deck repairs by Maintenance forces (1994)
- Project 63-526 emergency deck repairs (1995)
- Project 63-565 adjacent bridge deck work—parapet modifications (2000)
Existing Bridge Description

- Steel multi-girder bridge
- Structure built in 1965
- I-84 over Amtrak Railroad, parking lots and city streets in Hartford, CT
- I-84 eastbound consists of 44 spans
- I-84 westbound consists of 42 spans
- Three lanes of mainline I-84 through traffic plus various operational exit and entrance ramps
- Overall structure length of approximately 3,200 feet
- Other on-ramp and off-ramp structures included in project
Partial Plan

Exit 48 off ramps

Broad St.

Flower St.

Amtrak R.R.

Sigourney St.

ML 19

ML 14

ML 24

ML 29

I-84 West

I-84 East

Exit 47 off ramp

Exit 47 on ramp
Existing Cross Section

Bridge 3160A
Mainline I-84 Eastbound

3 lanes @ 12' = 36'
Mainline I-84 Eastbound

2 lanes @ 12' = 24'
Off ramp

Existing Parapet (Typ.)
Existing Stringer (Typ.)
Existing Diaphragm (Typ.)
Existing Concrete Deck

Shoulder

Connecticut Department of Transportation
Existing Cross Section

SHOULDER

5 LANES @ 12’ = 60’
MAINLINE I-84 WESTBOUND

EXISTING STRINGER (TYP.)

EXISTING DIAPHRAGM (TYP.)

EXISTING PARAPET (TYP.)

EXISTING CONCRETE DECK

BRIDGE 3160B
MAINLINE I-84 WESTBOUND
Purpose of Project
No. 63-616

To improve bridge reliability and the integrity of the riding surface.

Goals and Strategy
Provide a cost effective and constructible solution to rehabilitate this deteriorating, heavily traveled bridge—focusing on strategies that extend the service life, reduce annual maintenance and provide a design and construction window for a replacement structure.
Current Condition of Existing Structure

- Deficient concrete deck slab
- Deteriorated joints
- Steel corrosion
- Reduced load capacity

Thus, the Bridge is in need of a near term rehabilitation project to ensure that existing capacity can be maintained during the planning and preparation of a longer term solution.
Scope of Work for Project No. 63-616

- Perform necessary bridge deck repairs including the replacement of deck ends
- Perform deck joint replacement to extend lifespan of supporting structures
- Repair deteriorated structural steel
- Restore load capacity
- Replace median and parapets to gain roadway width during construction along with adjacent deck
- Replace asphalt wearing surface on deck
Bridge Deck Condition
Bridge Deck Condition
Deck Joint Condition
Deck Joint Condition

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Existing Structural Steel
Existing Structural Steel
Existing Structural Steel
Existing Steel Pier Caps
Existing Steel Pier Caps
Inadequate Drainage
Inadequate Drainage
Impacts of the Current Bridge Condition

- The Bridge Maintenance Department is frequently involved in repairs
  1. Expensive
  2. Time Consuming
  3. Reactive
  4. Traffic Impacts
- Increased potential for highway shutdowns for immediate repairs
- Increased time and effort during bridge inspections to evaluate and document the condition
- Increased rate of deterioration
Bridge Deck Patching
Structural Repairs
Scope of Work for Project No. 63-616

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- Restore Load Capacity
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- Replace asphalt wearing surface on deck
New Cross Section

3 LANES @ 12' = 36'
MAINLINE I-84 EASTBOUND

2 LANES @ 12' = 24'
OFF RAMP

NEW CAST-IN-PLACE DECK
ADJACENT TO PARAPET
(TYP.)

NEW CAST-IN-PLACE
PARAPET (TYP.)

PRECAST CONCRETE
DECK END

BRIDGE 3160A
MAINLINE I-84 EASTBOUND
Existing Condition
Construction Stage 1

- Remove existing parapet and deck
- Temporary barrier
Construction Stage 1
Construction Stage 1

New cast in place concrete parapet and deck
Construction Stage 1
Remove existing median and deck

Temporary barrier

Construction Stage 2
Construction Stage 2
New cast in place concrete median and deck

Construction Stage 2
Construction Stage 2
Movable temporary barrier

Construction Stage 3
Remove existing deck end

Construction Stage 3
Construction Stage 3
New precast concrete deck end

Construction Stage 3
Construction Stage 4

Shift barrier
Construction Stage 4

Remove existing deck end
Construction Stage 4
New precast concrete deck end

Construction Stage 4
Cast in place concrete parapet and deck (typ.)

Precast concrete deck end

Final Condition
Deck Joint Condition
Deck End and Joint Replacement

- New asphalt overlay
- New plug joint
- New asphalt overlay
- New or existing deck end
- Joint
- Grouted anchor
- Post tensioning rod for attachment
Temporary steel deck stages between construction

Bolt into place while in service

Temporary Deck between Construction Stages
Structural Steel Rehabilitation

- Structural Steel members govern the load capacity of the structure
  - Stringers
  - Girders
  - Pier Caps

- Additional Steel can be used to increase member capacity

- Highly deteriorated elements may be replaced entirely if possible
Existing Structural Steel
Deteriorated area

Deteriorated area

Common location of holes

New plates and angles

New plates and angles

Steel Repairs
Existing Steel Pier Caps
Pier Rehabilitation
Maintenance of Traffic Goals

- Create safe work zones to protect construction crew and motorists
- Minimize work zone impacts during peak commutation hours
- Minimize the number of lanes out of service during construction
  - Maintain three lanes during day
  - Maintain two lanes at night
- Create work zones that allow quality construction
Section B – Stage I and II
Long Term Daytime Work Zones
Stage 1
Stage 2

[Map showing road configurations and lane numbers.]
Section B – Stage III and IV
Short Term Overnight Work Zones

I-84 WB  
I-84 EB

PLAN STAGE III

PLAN STAGE IV

SECTION B-B STAGE III

SECTION B-B STAGE IV
Project Schedule

- **Design:** Mid 2008 through Fall 2009
- **Construction:** Spring 2010 through Spring 2012
Project Cost

- Estimated Construction Cost: $111,000,000 (2006 report)
- Rehabilitation will utilize 80% federal funds and 20% state funds
Long Term Planning for I-84

Next Steps

- Develop a comprehensive plan to address the future needs of this corridor
**Planning Process**

- Identify future needs considering year 2030 traffic demand
- Consider existing conditions and planned corridor initiatives
- Identify physical social and environmental constraints
- Evaluate alternatives
- Identify viable options
- Develop a recommended/preferred concept plan
- Complete required environmental documentation
Coordination and Public Outreach

Stakeholders

- Study Advisory Committee
- Federal Highway Administration/ConnDOT
- Federal and State Regulatory Agencies
- Capitol Regional Council of Governments
- City of Hartford
- Community Interests
- General Public
Contact Information

- Long term planning study
  Carmine Trotta 860-594-2134

- Bridge Rehabilitation project
  Julie Georges 860-594-3348
Thank You....

For Your Attention