I-84 Viaduct Replacement Project

“Thinking Outside the Box”
Agenda

1. Existing viaduct & 2010 CRCOG Study
   Tom Maziarz, DOT

2. At grade/below grade option
   Dave Stahnke, TranSystems

3. Current DOT study
   Rich Armstrong, DOT
Existing viaduct built 50 years ago & is due for replacement or major reconstruction
I-84 Viaduct: ¾ mile highway structure built in “1965”

Original project had dramatic impact on City landscape.
Impacts of 1965 design were extensive

Sisson Avenue ramps off I-84

neighborhoods, business districts, parks were affected
Street grid was disrupted

- streets disconnected
- virtually every road crossing is adversely affected
Viaduct helped create “no man’s land” between traditional CBD & Asylum Hill.

Key goal of 2010 study committee was to minimize separation.
Replacement presents a “rare opportunity” to alter city landscape
Question:
Can we do better than the 1965 design?
2010 CRCOG finding: yes, we can do better

Identified some unexpected & exciting design options.
Keys to study’s success:

• worked with the community
• able to “think outside the box”
Other factors to success:

**City sponsor:** goal was to evaluate options from community & economic development perspective

**Lack of funding:** forced us away from standard transportation evaluation measures

- not highly technical
- not data driven
- by necessity: devoted more resources to ‘exploring’ concepts with the community
2010 study evaluated 4 options

**Baseline**
- viaduct with some improvements

**Alternative 1**
- enhanced viaduct
- lower I-84 under Asylum

**Alternative 2**  >> focus on this morning
- surface-level highway
- lower I-84 under Asylum
- rail line relocated to west & north

**Alternative 3**
- tunnel
**NHHS rail project:** presented unique opportunity

**rail viaduct at Union Station:** over 100 years old – must be replaced

**opportunity:** consider highway & rail viaducts *at same time*

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I-84 crosses ‘over’ rail at 2 points

It is the primary reason that I-84 was built as a ‘viaduct’
Union Station
shift rail to west
Eliminating rail/highway crossings could have major benefits.....

New rail alignment remains west of I-84 through entire study area

Better urban design
- No need to elevate highway
- Rail re-alignment *drops below* Asylum Ave

Cost Savings:
- No hwy or rail viaduct required
- Viaduct construction is expensive
Opportunity to build ‘over’ I-84 & rail line reconnect downtown to Asylum Hill

Next: Dave Stahnke
Advantage of rail realignment: less ‘structure’ -> lower cost

Existing: highway mostly on structure

Alternative 2: highway mostly at or below grade
very little structure
## RR Track Relocation Design Improvements

<table>
<thead>
<tr>
<th>Rail Alignment</th>
<th>Existing</th>
<th>Proposed</th>
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</thead>
<tbody>
<tr>
<td>Minimum Radius (Horizontal Curve)</td>
<td>1040 FT</td>
<td>2080 FT</td>
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<tr>
<td>Design Speed</td>
<td>35 MPH</td>
<td>Freight - 50 MPH</td>
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<tr>
<td></td>
<td></td>
<td>Passenger - 65 MPH</td>
</tr>
<tr>
<td>Maximum Profile</td>
<td>1.1 %</td>
<td>0.5 %</td>
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<tr>
<td>Track Length Reduction</td>
<td>--</td>
<td>600 FT</td>
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<tr>
<td>Structures</td>
<td>On-Viaduct</td>
<td>In-Cut</td>
</tr>
</tbody>
</table>
Key Challenges Ahead in Redesigning Corridor?
Space Constraints Within ROW

- New Modern Designed I-84

- Improve horizontal and vertical geometry
- Improve interchange layouts and spacing
- Improve roadway cross section (lane & shoulder widths)
- ROW Must Also Support

- NHHS 2-Track Rail Corridor (Amtrak)
- Next Gen (True High Speed) 2-Track Rail Corridor
- BRT (CT Fastrak) 2 Lane Corridor
- East Coast Greenway Trail System
Constructability/Staging/Maintenance of Traffic

- Highway
- Local Roadway
- Pedestrian/Bike
- Train
- Bus (BRT, Local, Regional)
- Parking
I-84 Viaduct

So how do we move forward?
## Major Project Phases

### Preliminary Engineering
- Program Management
- QA/QC
- Engineering Management
- Transit Design
- Track Relocation Design
- Environmental Screening
- Traffic Engineering
- Highway / Interchange
- Bridge / Viaduct
- Cut / Cover Tunnel
- Alternatives Analysis
- Urban Design / TOD
- Local Roads
- Pedestrian/Bicycle
- Parks / Recreation
- Program / Stakeholder Coordination
- Agency Coordination
- Stakeholder Outreach
- Media / Logistics
- Project Controls
- Contract Packaging
- Scheduling
- Cost Estimating / Control
- Value Engineering / Risk Mitigation
- Reporting
- Document Control
- 3rd Party Coordination
- MPT
- Constructability
- Utilities
- ROW
- Lighting
- Survey
- NEPA/CEPA
- Environmental ES Coordination
- Permits
- FHWA/FTA

### Environmental (NEPA)

### Design

### Construction
I-84 Viaduct
Moving Forward

Preliminary Engineering & Environmental

NEPA

NEPA is the Roadmap
Program Management Approach

Phase I – Preliminary Engineering & NEPA

Connecticut Department of Transportation

Program Manager
TranSystems Team

NEPA
AECOM Team

Toll Study
CDM Smith Team

Rail Relocation Study
PB Team
Preliminary Engineering / Environmental Phase - Schedule

Year 1
- Data Collection
- Purpose and Need

Detailed Survey
- Existing & Future Conditions
  - Traffic Operations
  - Physical Constraints
  - Structures
  - Transit
  - City Initiatives

Year 2
- Alternatives and Risk Analysis

Environmental Analysis
- Screening Impacts Analysis

Year 3
- Construction Sequencing
- Packaging Analysis
- Value Engineering
- Financial Planning
- Advanced Work Packaging

Program Manager - TranSystems

Environmental Consultant - AECOM

Public Involvement / Agency Coordination
Stakeholder / Inter-Related Project Coordination

Go to Final Design
I-84 Viaduct
Moving Forward

Define Project “Need”

Deficiencies and Opportunities

Public and Agency Input

Purpose and Need Statement

Define Project Purpose
I-84 Viaduct
Moving Forward

Deficiencies and Opportunities

- Urban Design
- Safety
- Operational
- Access
- Modal
- Neighborhood Cohesiveness
- Environmental
- Economic Development
- Aesthetics
- Traffic
- Bike/Pedestrian
I-84 Viaduct Study
Moving Forward

Purpose and Need Statement

Deficiencies and Opportunities

Project Need

Public and Agency Input

Purpose and Need Statement
I-84 Viaduct

Moving Forward

Purpose and Need

Establish Range of Alternatives

Perform Alternatives Screening

Record of Decision or EA/FONSI

Draft EIS/EA and Preferred Alternative
I-84 Viaduct
Moving Forward

Other Considerations

Project Cost and Financing
I-84 Viaduct
Moving Forward

Other Considerations

Maintaining Existing Infrastructure in the Interim