

Route 110-113 Rotary Interchange Study
Study Advisory Committee (SAC) Meeting Summary
Tuesday, February 6, 2007

Searles Building
2nd Floor Conference Room
41 Pleasant Street, Methuen
3:00 – 5:00 PM

In Attendance: *Committee Members or Designated Representatives:* Tony Komornick, Frank DaSilva, Joseph Onorato, Stanley Wood, Glen Edwards, Rep. Linda-Dean Campbell, LouAnn Jendro, Colie Ryan, and Dennis DiZoglio. ***Study Team:*** Ethan Britland, Paul Nelson, George Gefrich, Joe Cahill, and Jill Barrett.

Meeting Agenda

- 1. Welcome and Introductions**
- 2. Review of Alternatives**
- 3. Next Steps**
- 4. Other Business**

1. Welcome and Introductions

Ethan Britland of the Office of Transportation Planning and Project Manager of the study welcomed attendees. He said the purpose of the meeting was to review 11 alternatives with the goal of reducing the options to a manageable number for more intensive study. Ethan stressed that the alternatives being discussed at the meeting were conceptual, just “lines on the map”. No survey has been done so alternatives shown would be subject to adjustments. Ethan said today’s discussion is the first step in the project development process. Alternatives selected for further review would be brought to the next step which looks at traffic operation and environmental impacts.

2. Review of Alternatives

George Gefrich, Project Manager of the study team said the team identified 11 alternatives and evaluated each with two primary goals: minimizing rights-of-way (ROW) impacts and prioritizing heavy traffic movements. The team began its analysis of Alternatives 6 and 7 from the Route I-93 Study and created five variations to these two alternatives. In addition, another six new alternatives were identified for review. The new concepts attempted to avoid ROW takings and environmental impacts while improving future traffic operations, mobility and LOS. New alternatives also needed to be responsive to the Study Advisory Committee (SAC) and community input.

The following is a list of alternatives with discussion and recommendations on each item by the SAC:

I-93 Study Alternative 6 (1st base alternative from prior study)

Pros

- No new or modified bridges (reduced environmental impacts and construction costs)
- Route 110 and 113 are separated on parallel alignments
- All intersections at LOS C or Better

Cons

- Number of movements require passing through 3 signalized intersections
- NB off-ramp still operates at level-of-service (LOS) F
- Requires 5 or 6-lane cross-section (width) at intersections

The following new concepts are further modifications of the original I-93 Study's Alternative 6.

Alternative Concept 1A – Frontage Road

- Builds off previous study's Split Diamond/Frontage Road Concept
- Seeks to minimize signalized crossings to allow for more efficient movements
- Route 110 and 113 are separated on parallel alignments

Pros

- Separates Route 110 and 113 traffic
- Provides free right turn for NB off-ramp to westbound Route 113

Cons

- Heavier traffic from Route 113 west of rotary to Route 110 east of rotary does not have through movement
- Property impacts
- Requires three bridges
- Still requires connector roads

Discussion: Too many turning points (six lights), four bridges (cost factor)

Recommendation: Do not carry forward into Task 4: Alternatives Analysis

Alternative Concept 1B – Frontage Road

- Similar to Concept 1A
- Eliminates one bridge for SB off-ramp by crossing through at-grade intersection

Pros

- Separates Route 110 and 113 traffic
- Provides more efficient movements
- Reduces total number of bridges from Concept 1A
- Only requires one connector road

Cons

- Heavier traffic from Route 113 west of rotary to Route 110 east of rotary does not have through movement
- Property impacts
- Requires two bridges
- Still requires a connector road

Discussion: Too many turning points (six lights), four bridges (cost factor)

Recommendation: Do not carry forward into Task 4: Alternatives Analysis

I-93 Study Alternative 7 (2nd base alternative from prior study)

Pros

- Smaller interchange footprint than alternatives three through six (I-93 Study)
- No impacts to Merrimack River bridge
- Rotary is eliminated
- Central intersection operates at LOS C in AM peak

Cons

- Central intersection at LOS E during PM peak
- NB off-ramp operates at LOS F
- Large new I-93 mainline bridge to span central intersection
- Realignment of Route 113 impacts neighborhood to west of rotary
- New I-93 mainline bridge construction complicates traffic management

The following new concepts are further modifications of the original I-93 Study's Alternative 7.

Concept 2A Modified SPUI (Single Point Urban Interchange)

- Builds off of previous study's SPUI
- Removes northbound off-ramp to westbound Route 110 and 113 movements from central intersection
- Route 113 west to Route 110 east are realigned to provide through movement
- Northbound off-ramp crosses over Route 110 and 113 and then goes under I-93

Pros

- Relatively small interchange footprint
- Rotary is eliminated
- Relatively low property impacts
- Heaviest movements eliminated from central intersection
- Relatively low property impacts

Cons

- Large new I-93 mainline bridge to span central intersection
- Two new I-93 mainline bridges complicates traffic management
- Elevated northbound off-ramp could cause visual and noise impacts to Noyes St.
- Counterintuitive northbound off-ramp movement (to travel west you stay right on the off-ramp)

Discussion: Alternative minimizes ROW impacts, doesn't raise elevations, has more free movement of traffic. SAC community members thought a proposed elevated northbound off-ramp would have unacceptable visual impacts and potentially increase noise for residences on side of Noyes Street.

Recommendation: Study further ONLY if northbound off-ramp location is flipped. (Elevated portion of ramp would be closest to highway, not Noyes Street).

Concept 2B Modified SPUI

- Similar to Concept 2A but northbound off-ramp loops around to northeast

- NB off-ramp traffic would pass through central intersection along Route 110 and 113

Pros

- Relatively small interchange footprint
- Rotary is eliminated
- Relatively low property impacts
- Reduced impacts to Noyes St.
- Avoids impacts to office building in northwest quadrant

Cons

- NB off-ramp traffic would now pass through central intersection
- Increased property impacts in NE quadrant

Discussion: Alternative minimizes ROW impacts, doesn't raise elevations, has more free movement of traffic. A community member on the SAC suggested the study team modify this alternative by moving the SB I-93 off-ramp in a westerly direction towards the parking lot of the industrial building and depositing cars at the newly configured 110/113 traffic signal. Team members responded this was a good idea and would look into this design suggestion.

Recommendation: Carry forward into Task 4: Alternatives Analysis

Concept 2C Modified SPUI

- Eliminates southern ramps from SPUI via two-way connector road

Pros

- Eliminates northbound off-ramp movements from central intersection
- Can utilize existing bridge

Cons

- Creates two new signalized intersections
- Requires left turns for most of the heaviest movements
- Would likely require series of five signalized intersections
- Eliminates operational benefits of SPUI

Discussion: Too many traffic lights (five) needed and doesn't have free right turns where they are most needed.

Recommendation: Do not carry forward into Task 4: Alternatives Analysis

Considering input from prior Advisory Committee Meeting comments, the Public Meeting comments, and analysis from Existing Conditions task the consultant developed new concepts in an attempt to solve congestion and mobility concerns at the Rotary and on Routes 110 and 113 while limiting local impacts. The following alternatives are a product of that effort:

Concept 3A Partial Cloverleaf

- Partial cloverleaf configuration
- Route 113 west & Route 110 east realigned as primary through movement
- Northbound off-ramp to westbound Routes 110 and 113 stays at highway level before looping down to intersect Routes 110 and 113 west of I-93

- Westbound Routes 110 and 113 to southbound on-ramp loops around and over Route 110 and 113
- Route 110 realigned to intersect Route 113 at intersection with southbound off-ramp

Pros

- Grade-separated loop ramps reduce need for left turns (free right movements)
- Eliminates rotary
- Provides Route 113 west of I-93 to Route 110 east of I-93 through movement
- Standard interchange configuration

Cons

- Property impacts to northeast and northwest quadrants
- New I-93 mainline bridge complicates traffic management

Discussion: Provides free right turn movements.

Recommendation: Carry forward into Task 4: Alternatives Analysis

Concept 3B Partial Cloverleaf

- Similar to Concept 3A
- Grade-separated loop ramp in northeast quadrant (northbound off-ramp) is looped other way (under I-93)
- Northbound off-ramp merges with southbound off-ramp before intersecting with Route 110 & 113
- Northbound off-ramp moved closer to I-93 mainline

Pros

- Loop ramps reduce need for left turns (free right movements)
- Eliminates rotary
- Provides Route 113 west of I-93 to Route 110 east of I-93 through movement
- Northbound off-ramp to westbound Routes 110 and 113 traffic bypasses interchange
- Reduced property impacts in northeast quadrant

Cons

- Elevated northbound off-ramp could cause increased visual and noise impacts to Noyes St.
- Property impacts to northwest quadrant
- Two new bridges under I-93 complicates traffic management
- Counterintuitive northbound off-ramp (to travel west you stay right on the off-ramp)

Discussion: Provides good right turn movements. SAC community members thought a proposed elevated off-ramp would have an unacceptable visual impact and may increase noise to residences on the south side of Noyes Street.

Recommendation: Study further ONLY if northbound off-ramp location is flipped. (Elevated portion of ramp would be ramp closest to highway, not Noyes Street).

Concept 4A Diverging Diamond

- Route 113 west of I-93 to Route 110 east of I-93 realigned as through movement
- Eastbound and westbound traffic are “flipped” to allow for all free left turn movements (does not require crossing opposing traffic)
- Ramps maintain diamond configuration

Pros

- Loop ramps reduce need for left turns (free right movements)
- Eliminates rotary
- Provides Route 113 west of I-93 to Route 110 east of I-93 as through movement
- Northbound off-ramp to westbound Route 110 & westbound 113 traffic bypasses interchange
- Reduced property impacts in northeast quadrant

Cons

- Elevated northbound off-ramp could cause increased visual and noise impacts to Noyes St.
- Property impacts to NW quadrant
- Two new bridges under I-93 complicate traffic management
- Counterintuitive NB off-ramp
- Maintains short vehicle storage length for heaviest movement, northbound off-ramp

Discussion: Too confusing traffic patterns off I-93 ramps

Recommendation: Do not carry forward into Task 4: Alternatives Analysis

Concept 4B Modified Diverging Diamond

- Attempt to get the benefits of Concept 4A (free left turns) without crossing traffic
- No tell-tale diverging diamond appearance
- Northbound off-ramp to Route 110 and 113 westbound traffic now looped in northeast quadrant
- Eastbound Routes 110 and 113 to northbound on-ramp required to cross under Route 110 and 113 westbound
- Route 110 and 113 eastbound would have to be depressed to get workable grades for northbound on-ramp and southbound on-ramp

Pros

- Free left and right turns
- Does not require crossing eastbound and westbound traffic

Cons

- Significant property impacts in northeast quadrant
- Requires depressing Route 110 and 113 eastbound
- Requires five bridges (Two bridges under I-93 complicates construction staging)
- Maintains short vehicle storage length for heaviest movement, northbound off-ramp

Discussion: Too confusing traffic patterns off I-93 ramps

Recommendation: Do not carry forward into Task 4: Alternatives Analysis

Concept 5A Partial Trumpet

- Most movements concentrated through single intersection to west of interchange
- Route 113 west of I-93 to Route 110 east of I-93 realigned as through movement

Pros

- Provides parallel road to reduce volume of traffic on 110/113
- Provides Route 113 west of I-93 to Route 110 east of I-93 as through movement
- Free right turns for most ramp movements

Cons

- Significant property impacts in northwest quadrant
- Long drive time in interchange for heaviest northbound off-ramp to Routes 110 & 113 westbound movements
- Two bridges under I-93 complicates construction staging

Discussion: Major property impacts in area northwest of rotary.

Recommendation: Do not carry forward into Task 4: Alternatives Analysis

Concept 5B Partial Trumpet

- Partial Trumpet similar to Concept 5A but flipped to reduce property impacts
- Grade-separated loop ramp is now in SE quadrant
- Primary intersection point is at similar location to Concept 5A
- Northbound off-ramp to Routes 110 & 113 eastbound extended to intersect east of Route 110/113 intersection

Pros

- Reduces property impacts in northeast quadrant
- Single long bridge under I-93 near existing crossing

Cons

- Heaviest movements require left turns
- Long drive time in interchange for heaviest northbound off-ramp to Routes 110 & 113 westbound movements
- Still have relatively high property impacts

Discussion: No free right turns for heaviest movements.

Recommendation: Do not carry forward into Task 4: Alternatives Analysis

Summary of recommendations: The SAC recommended further study of four design concepts:

Concept 2A Modified SPUI (Single Point Urban Interchange) [if proposed modifications to location of northbound off-ramps are conceptually feasible]

Concept 2B Modified SPUI

Concept 3A Partial Cloverleaf

Concept 3B Partial Cloverleaf – [if proposed modifications to location of northbound off-ramps are conceptually feasible]

Short-term improvements

The SAC reviewed two short-term improvements that could be implemented within the next few years that are designed to improve the function of the rotary area pending the

arrival long-term improvements. SAC members suggested the approved earmark money should be used for this purpose.

Short term improvement 1: *Slightly widen northbound off-ramp to provide a separate dedicated lane to Route 110 eastbound and slightly widen southbound on-ramp to provide a separate dedicated lane from Route 110 eastbound.* This would allow heavy northbound off-ramp to Route 110 eastbound traffic, and Route 110 eastbound to southbound on-ramp vehicles to bypass rotary. To implement this improvement requires box widening of both ramps and physical separation between lanes may present additional maintenance concerns (plowing, etc.)

Short term improvement 2: *Realign westbound lanes out of rotary towards the south. Tie relocated roadway to original alignment prior to current signal.* This shifts rotary exit point away from southbound off-ramp to reduce “sling shot” effect and provides greater weaving distance in rotary between southbound off-ramp and Routes 110/113 westbound while not requiring significant changes to existing Route 110/113 intersection. However, this modification to the existing roadway requires complete realignment of Route 110/113 westbound and does not address the short weave between Route 110/113 eastbound and southbound on-ramp.

Other improvements:

- Review and make improvements as possible to the western Route 110/113 intersection and eastern Route 110/113 signals
- Reconfigure striping on mainline I-93 to provide better lane definition for the northbound off-ramp
- Clear trees in the northwest quadrant to improve sight lines for vehicles exiting rotary to Routes 110 and 113 westbound
- Install warning signs for WB vehicles exiting the rotary to watch for stopped traffic ahead

General Discussion

SAC members concluded it was important to move ahead with implementing the proposed short-term improvement because it’s important for the public to seeing progress is being made.

A SAC member suggested putting a dedicated lane on the southbound I-93 off-ramp to Route 113 (similar to the dedicated lane to Route 110 on the northbound off-ramp exit).

SAC members agreed with the study team’s priorities for evaluating alternatives – place a priority on areas where traffic movements were heaviest and minimize land takings.

SAC members also said another criteria – quality of life - was very important to residents living in the project when evaluating alternatives. Residents would be concerned about increased levels on noise or adverse visual impacts of elevated structures. The committee member said nearby residents worried about a potential loss of enjoyment of their

properties (and property values) if the project resulted in greater encroachment than what currently exists.

3. Next Steps

- Review of MHD Highway Design and the Task Force's input on the alternatives
- Apply future traffic forecast projections for 2026 to short listed set of alternatives
- Conduct traffic operations and level-of-service analysis for each of the short listed alternatives
- Review traffic findings with EOT
- Prepare written analysis for review with the Task Force for possible identification of a preferred alternative
- Schedule Task Force and Public meetings

The meeting adjourned at 6 PM.