

I-91 Interchange 19 Improvements

Northampton, MA

Project Advisory Committee

Meeting 3

February 22, 2010



Meeting Agenda

- ▶ Recap of What We've Done So Far
- ▶ Roadway Concepts
- ▶ Transit and TDM Concepts
- ▶ Bicycle and Pedestrian Concepts
- ▶ Next Steps
- ▶ Comments/Questions

Where We Are

► Connecticut River Crossing Study

- 6 roadway concepts at Interchange 19 area & a number of TDM components
- “Concept 15” identified as preferred

► This Project

- Tasked with performing a more detailed traffic analysis
- Review concepts from Connecticut River Crossing Study in light of new data and analysis
- Identify any other concepts that might improve mobility through Interchange 19/Route 9 area

Where We Are

► What We Did (Summary from PAC Meeting 1)

- Collected New Traffic Data (Turning Movement Counts, ADT, Travel Time and Delay, Origin-Destination)
- Analyzed Existing Conditions (Safety and Capacity Analyses)
- Projected Future Traffic Conditions

► What We Found (Summary from PAC Meeting 2)

- Route 9/Damon Road Intersection Operates Poorly
- Route 9/SB On-Ramp Intersection Operates Better Since Signal Installation but Expected to Worsen to Failing LOS
- Congestion on King Street (especially King St/Damon Road)

Where We Are

► What We Heard

- Traffic Conditions Generally Viewed by Some Abutting Residents as “Not That Bad,” others complained of high speeds and difficulty emerging from side streets
- Concerns with Any Alternative that Impacts Residences or the Meadows
- Interest in Traffic Calming Measures on Route 9
- Many Stakeholders Would Prefer Incremental Measures to Improve Flow through the Interchange Area Instead of a Large Project

Where We Are

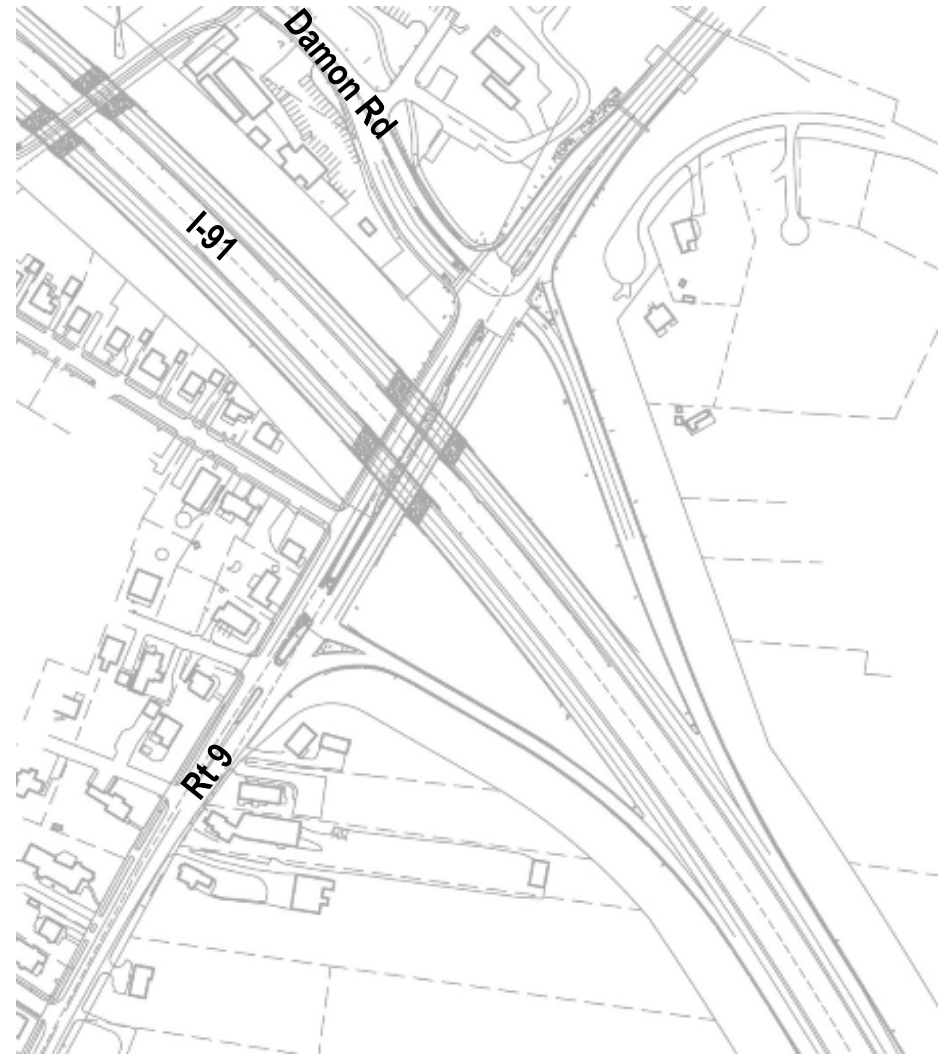
► What We're Presenting Tonight

- Concepts from Connecticut River Crossing Study and Our Modifications to Them (and New Concepts) to Better Address Project Needs
- Review of TDM Package 2 from Ct. River Crossing Study and Some Additional Possible Improvements
- We Want Your Input!

Roadway Concepts

► Concept 12 - Roundabout

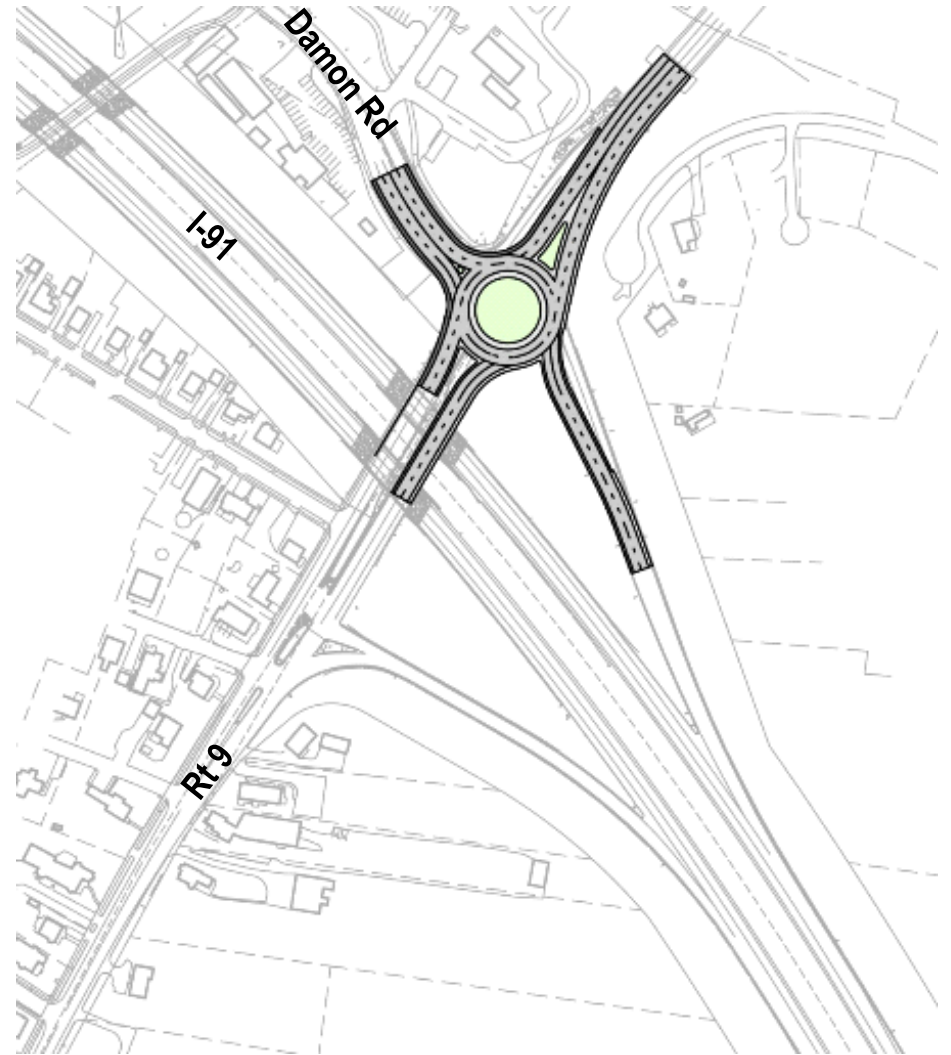
- Converts Route 9/Damon Rd. Intersection to a 2 Lane Roundabout
- Generally stays within existing roadway layout
- Introduces a degree of traffic calming
- Needs to be carefully designed to make sure it is compatible with Bicycles and Pedestrians



Roadway Concepts

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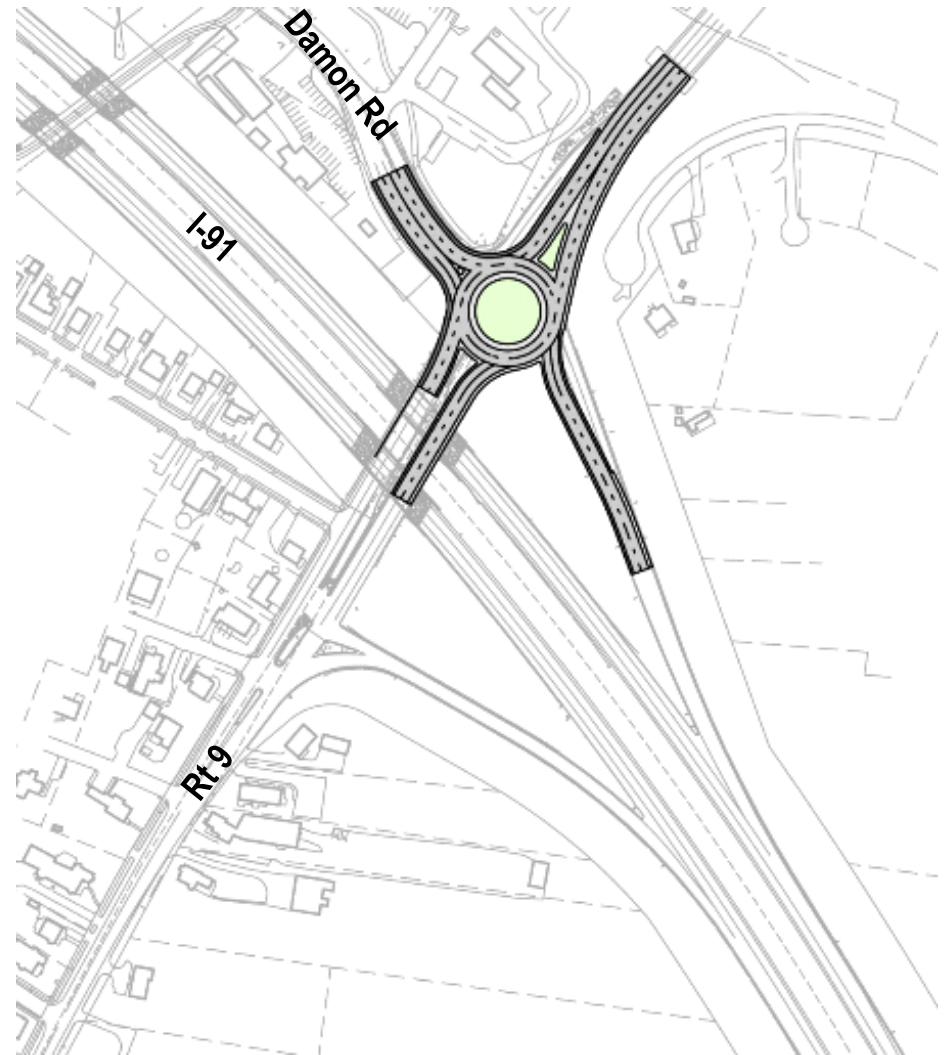
Roadway Concepts

Advantages

- Improves overall performance of the Route 9/Damon Rd intersection over existing (with addition of a bypass lane)
- Minimal ROW impacts
- Relatively low cost
- Traffic calming
- Opportunity to provide "gateway"

Disadvantages

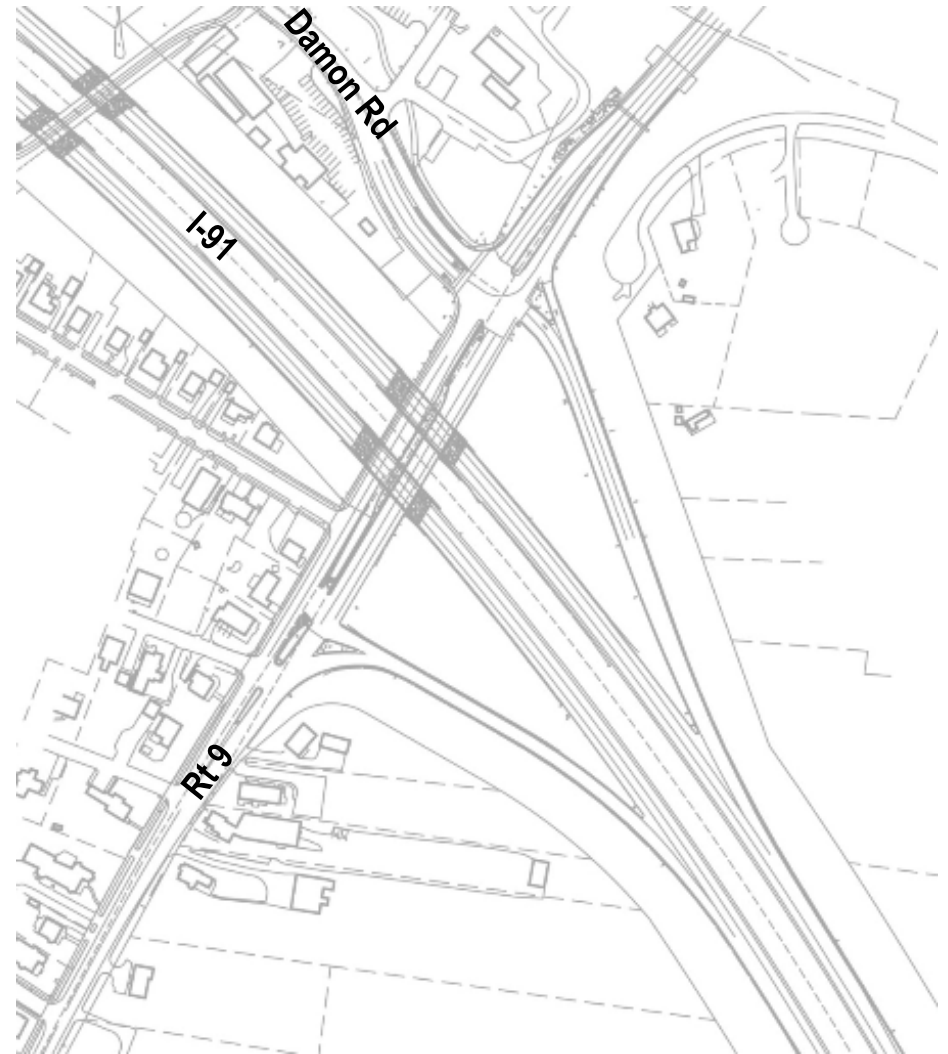
- Potential for roundabouts to "lock up" at high volumes
- Does not address SB On-Ramp/Route 9 Inters.
- Does not provide a full access interchange
- Long Delays expected on Damon Road approach to roundabout without bypass lane
- Bicycle/Pedestrian accommodations need to be carefully considered
- Does not improve King St/Damon Rd. intersection



Roadway Concepts

► Concept 13 – Intersection & Ramp Improvements

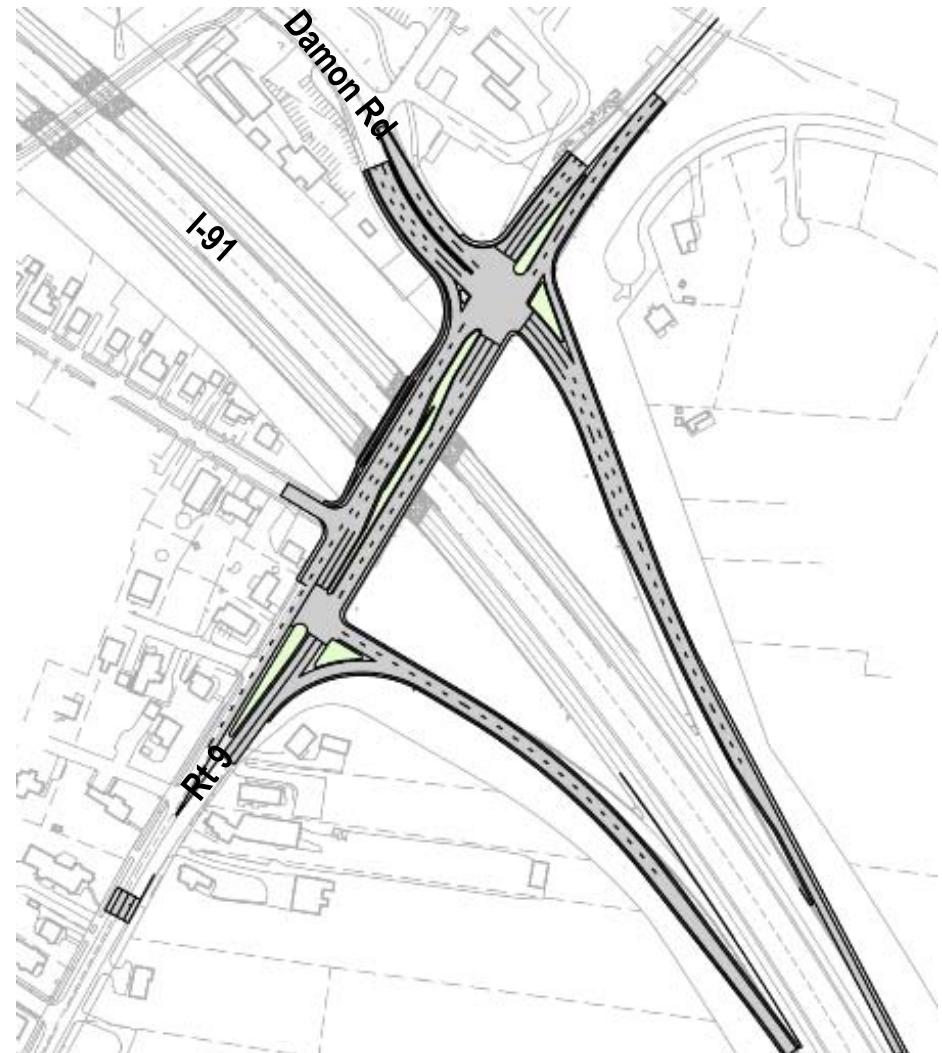
- Modified to add additional WB left turn onto SB on-ramp
- Modified to add additional NB through lane to Damon Road from NB off-ramp
- Left turn lane extended under bridge by relocating sidewalk or replacing the structures
- Improves on and off-ramps
- Does not provide a full access interchange



Roadway Concepts

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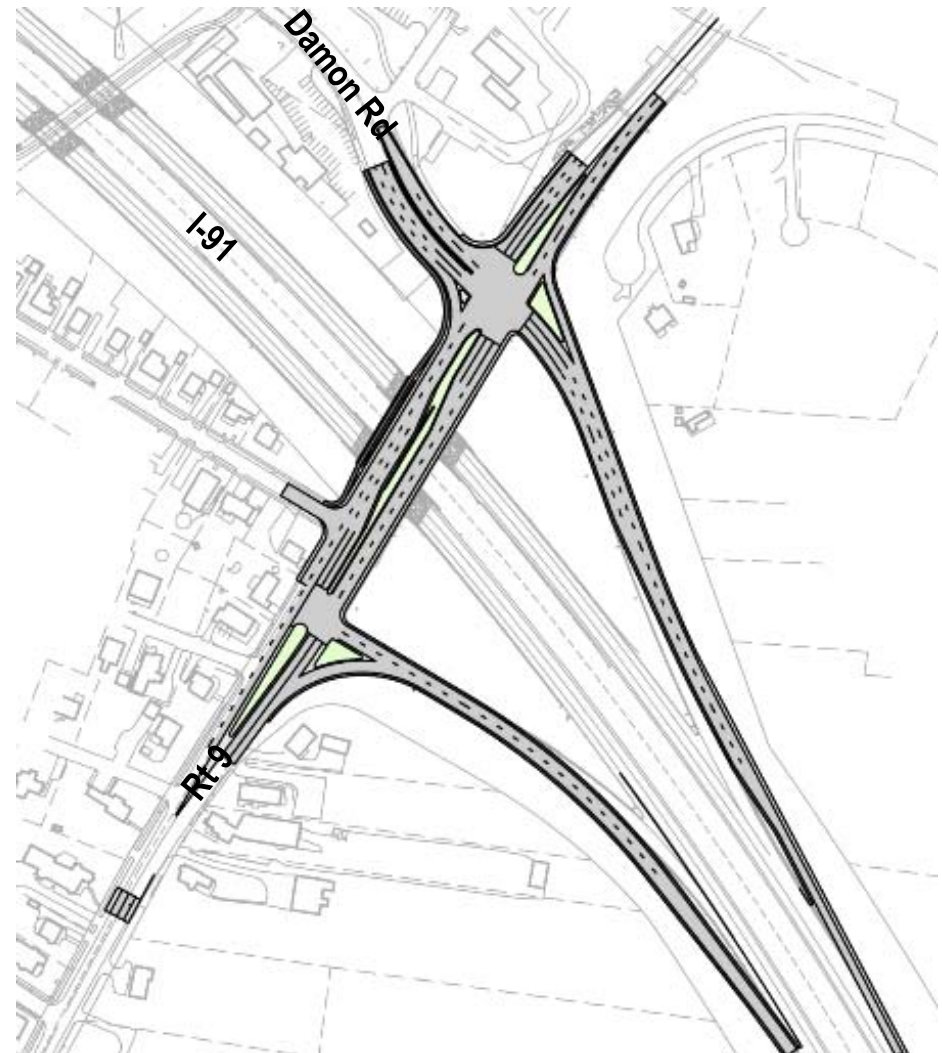
Roadway Concepts

► Advantages

- Moderate improvements to traffic operations at Route 9/Damon Road over existing conditions
- On and Off-Ramps reconfigured to improve merges with longer storage area at NB Off-Ramp
- Significant improvements to Route9/SB On-Ramp due to double left turn (design year LOS to B)
- Minor ROW impacts (generally stays within the roadway footprint)
- Relatively low cost alternative

► Disadvantages

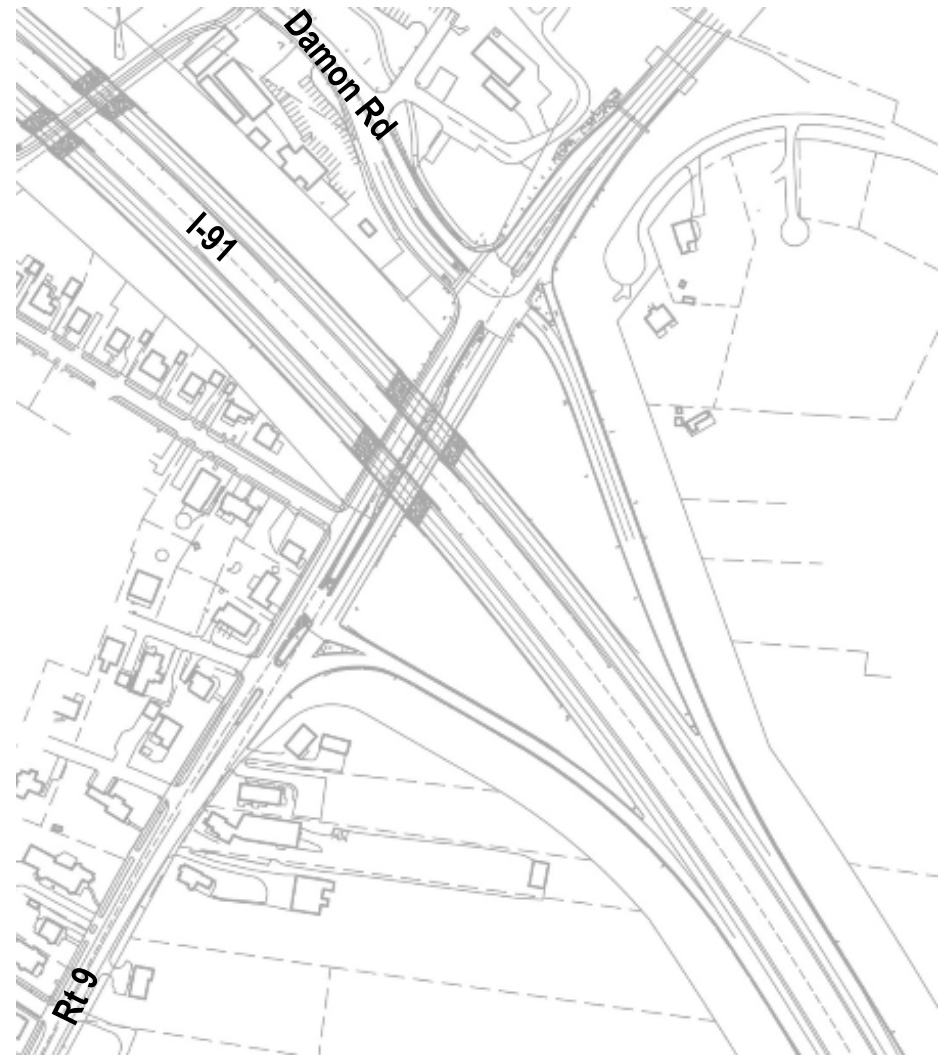
- Does not provide full access interchange (No improvements to King St/Damon Rd intersection operations)
- Does not address traffic calming concerns
- Retaining walls needed to relocate sidewalk to other side of bridge piers (or replacement of I-91 bridges)



Roadway Concepts

► Concept 13 Mod1 – Inter. & Ramp Improvements w/ Roundabout

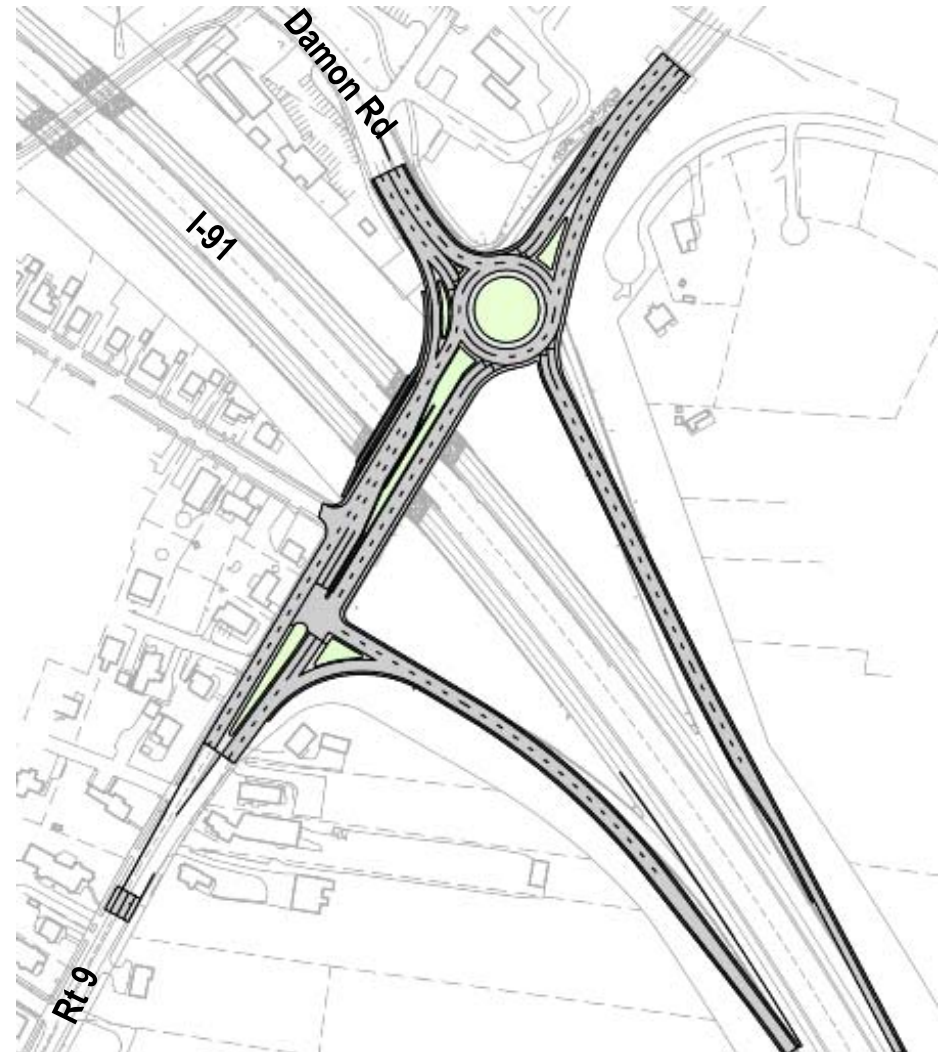
- Adds additional WB left turn onto SB on-ramp
- Converts Damon Road/Route 9 intersection to a roundabout
- Left turn lane extended under bridge by relocating sidewalk or replacing the structures
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Roadway Concepts

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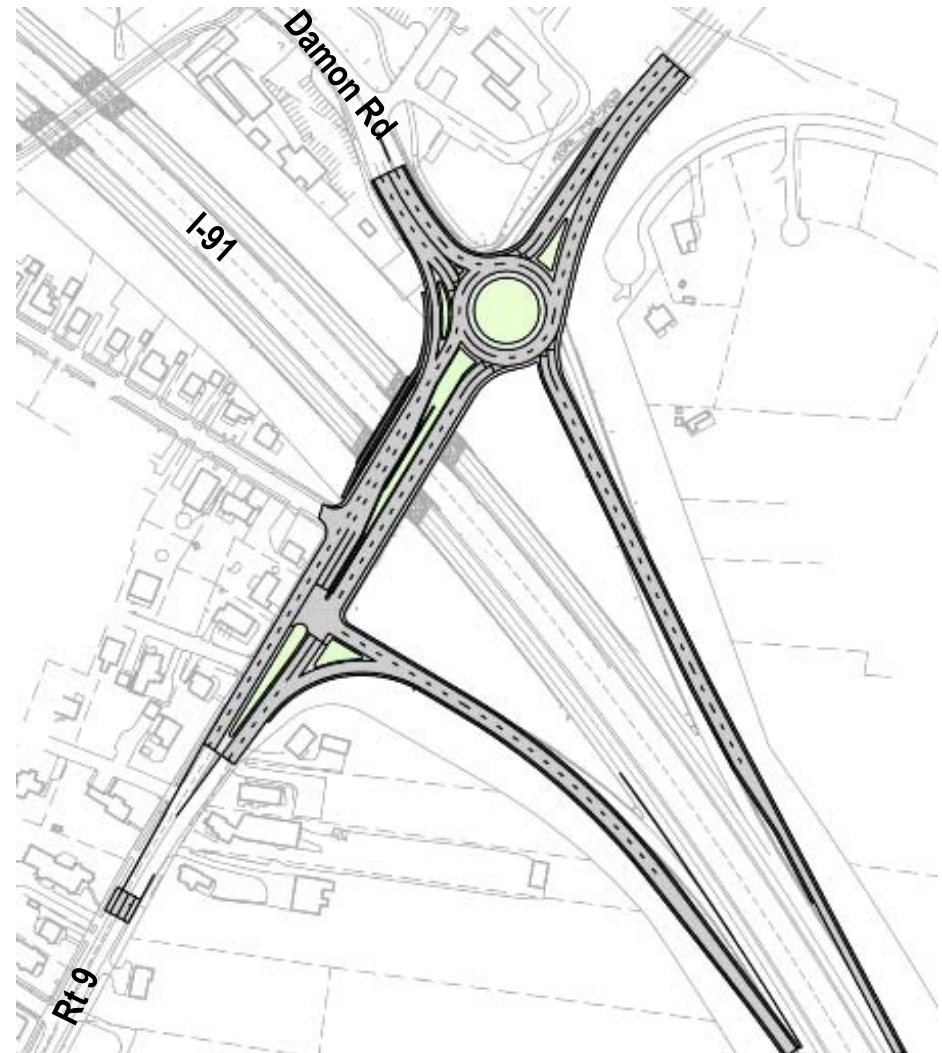
Roadway Concepts

► Advantages

- Improves overall performance of Route 9/Damon Rd intersection
- Minimal ROW
- Ramps realigned to improve merges and provide more storage
- Significant improvements to traffic operations at Route 9/SB On-Ramp
- Opportunity to provide "gateway feel"
- Traffic Calming

► Disadvantages

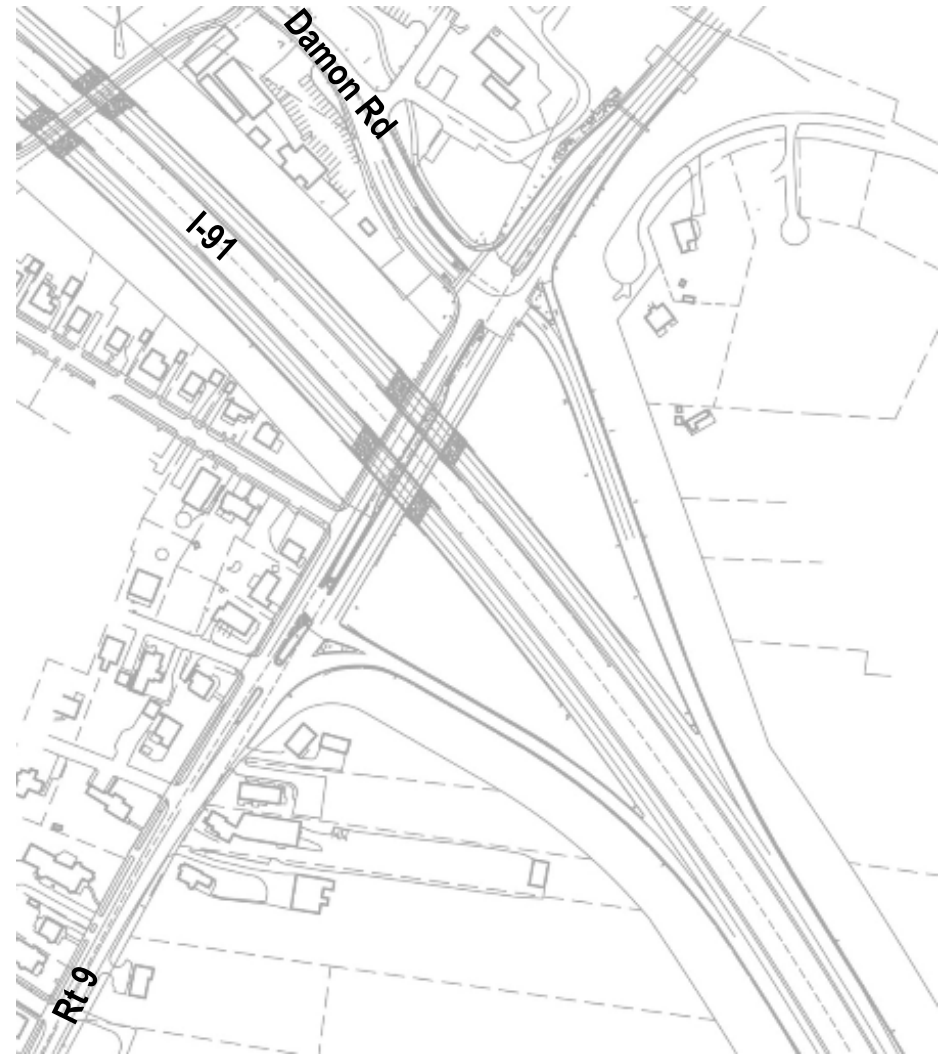
- Does not provide full access interchange (No improvements to King St/Damon Rd intersection operations)
- Retaining walls needed to relocate sidewalk to other side of bridge piers (or replacement of I-91 bridges)



Roadway Concepts

► Concept 13 Mod2 – Inter. & Ramp Improvements w/ Double Roundabout

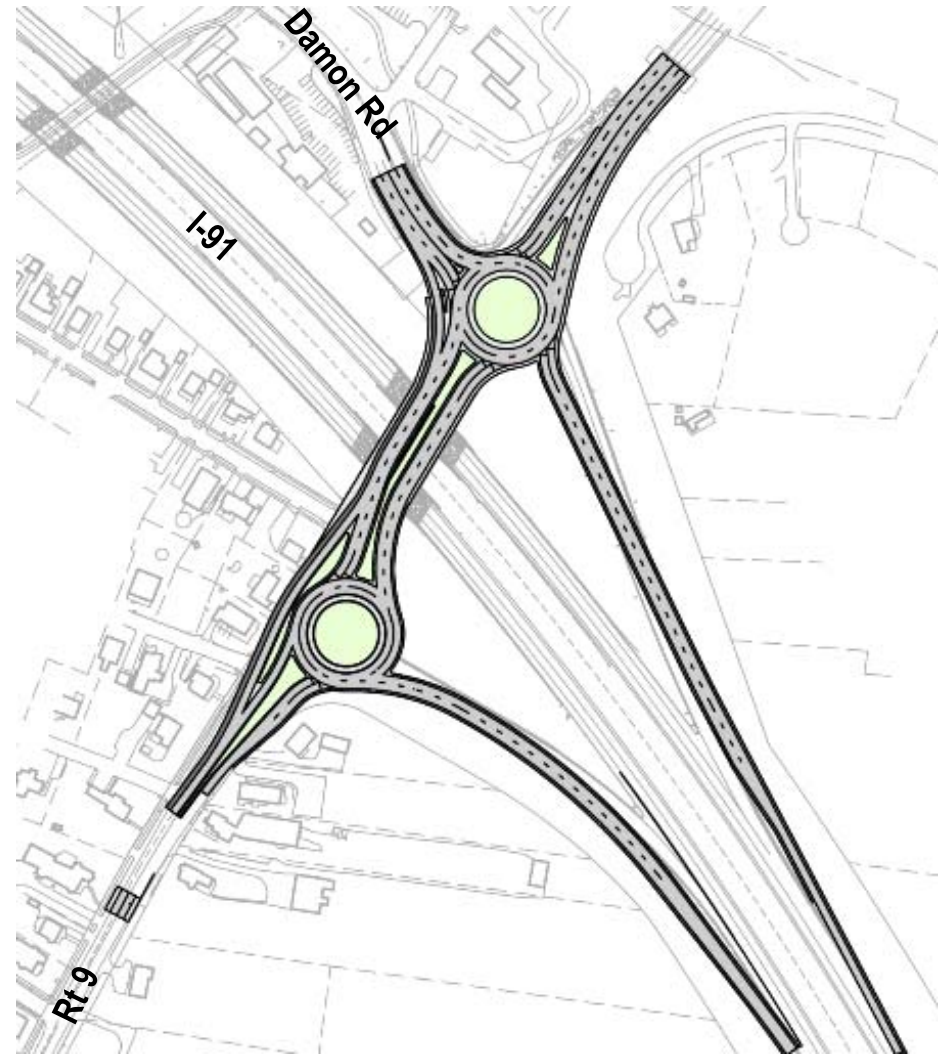
- Converts Damon Road/Route 9 & Route 9/SB On-Ramp intersection to roundabouts
- Bypass lane used for WB Route 9 traffic at western roundabout
- Improves on and off-ramps
- Does not provide a full access interchange



Roadway Concepts

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- Converts Damon Road/Route 9 & Route 9/SB On-Ramp intersection to roundabouts
- Bypass lane used for WB Route 9 traffic at western roundabout
- Improves on and off-ramps
- Does not provide a full access interchange



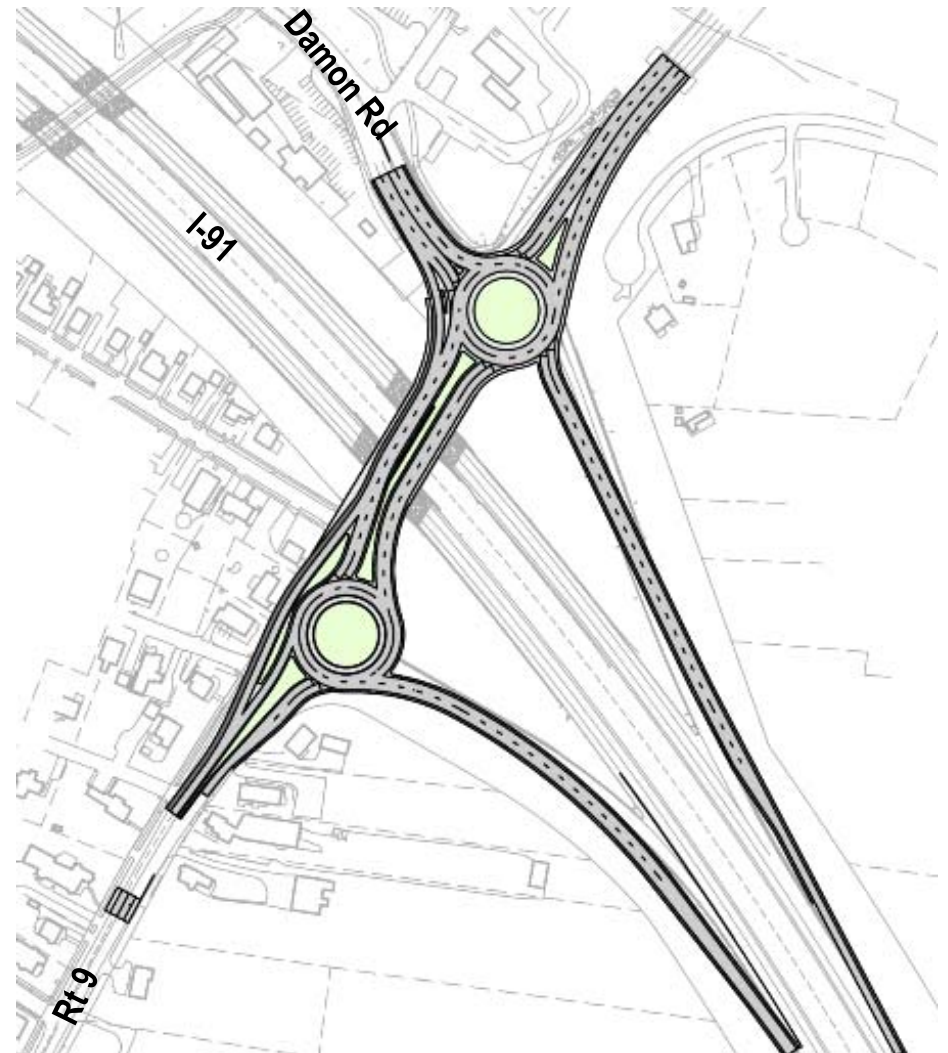
Roadway Concepts

Advantages

- Improves overall performance of Route 9/Damon Rd intersection
- Significant improvements to traffic operations at Route 9/SB on-ramp intersection
- Ramps realigned to improve merges and provide more storage
- Opportunity to provide “gateway feel”
- Substantial Traffic Calming
- Does not require significant changes to roadway cross section under bridges
- Little delay at Route 9/SB On-Ramp Roundabout

Disadvantages

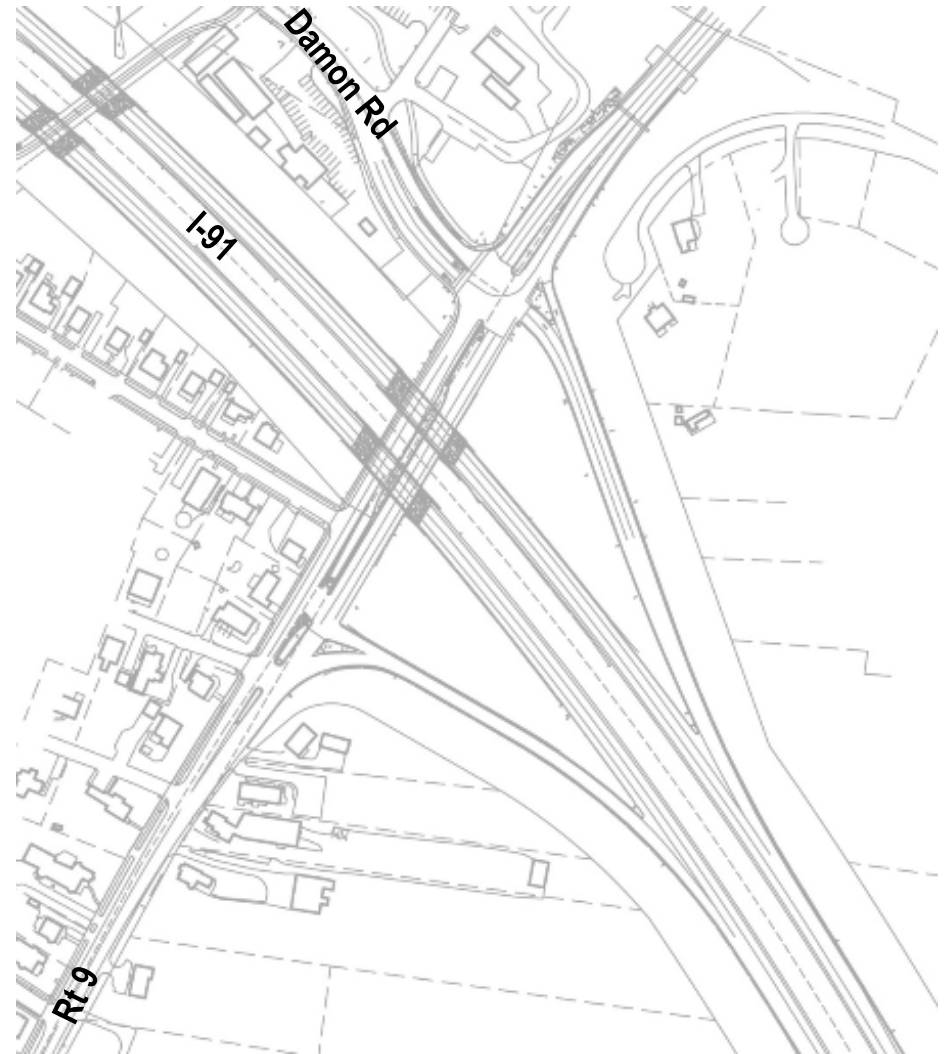
- Does not provide full access interchange (No improvements to King St/Damon Rd intersection operations)
- Introduces new complexities for bicycle and pedestrian movements through interchange
- Some ROW impacts on Route 9 near western roundabout



Roadway Concepts

► Concept 13 Mod 3– Inter. & Ramp Improvements w/ Roundabout & Relocated Damon Road

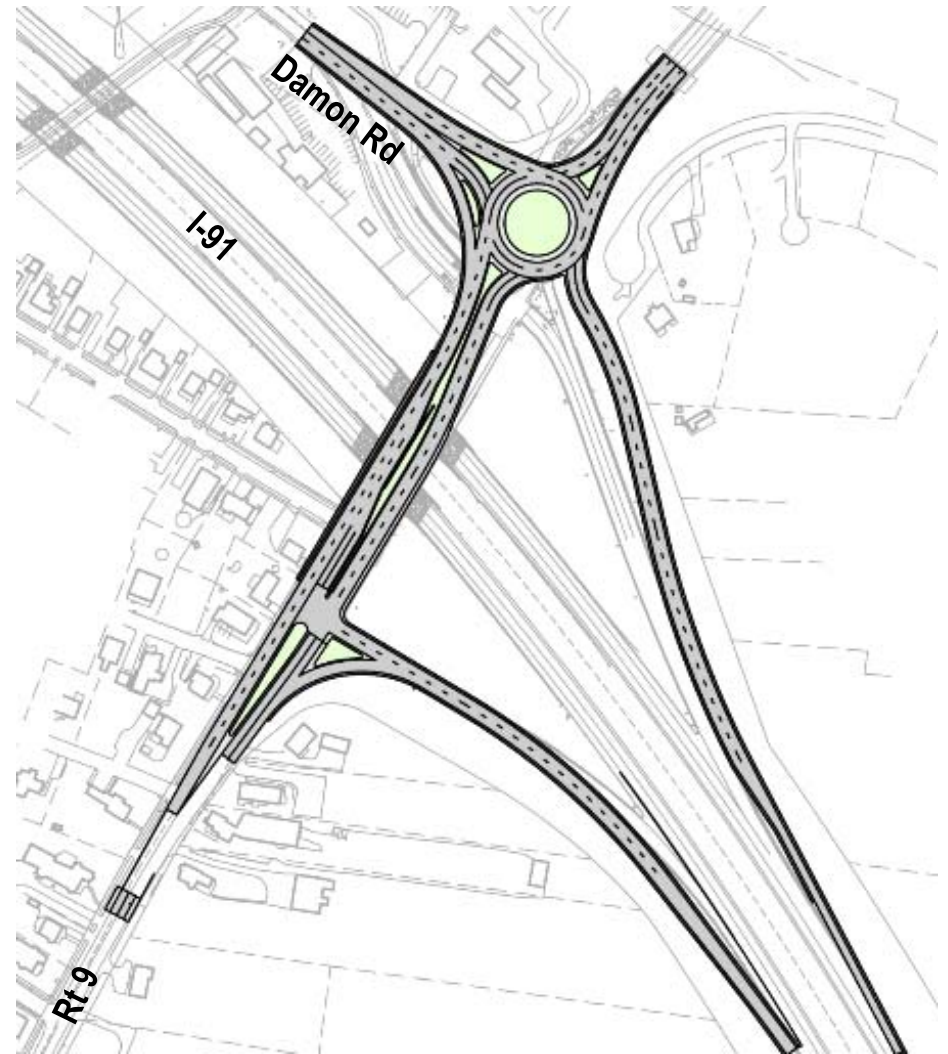
- Converts Damon Road/Route 9 intersection to a roundabout
- Shifts Damon Road eastward onto old alignment (better spacing between intersections)
- Left turn lane extended under bridge by relocating sidewalk or replacing the structures
- Improves on and off-ramps
- Does not provide a full access interchange



Roadway Concepts

► Concept 13 Mod 3– Inter. & Ramp Improvements w/ Roundabout & Relocated Damon Road

- Converts Damon Road/Route 9 intersection to a roundabout
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- Does not provide a full access interchange



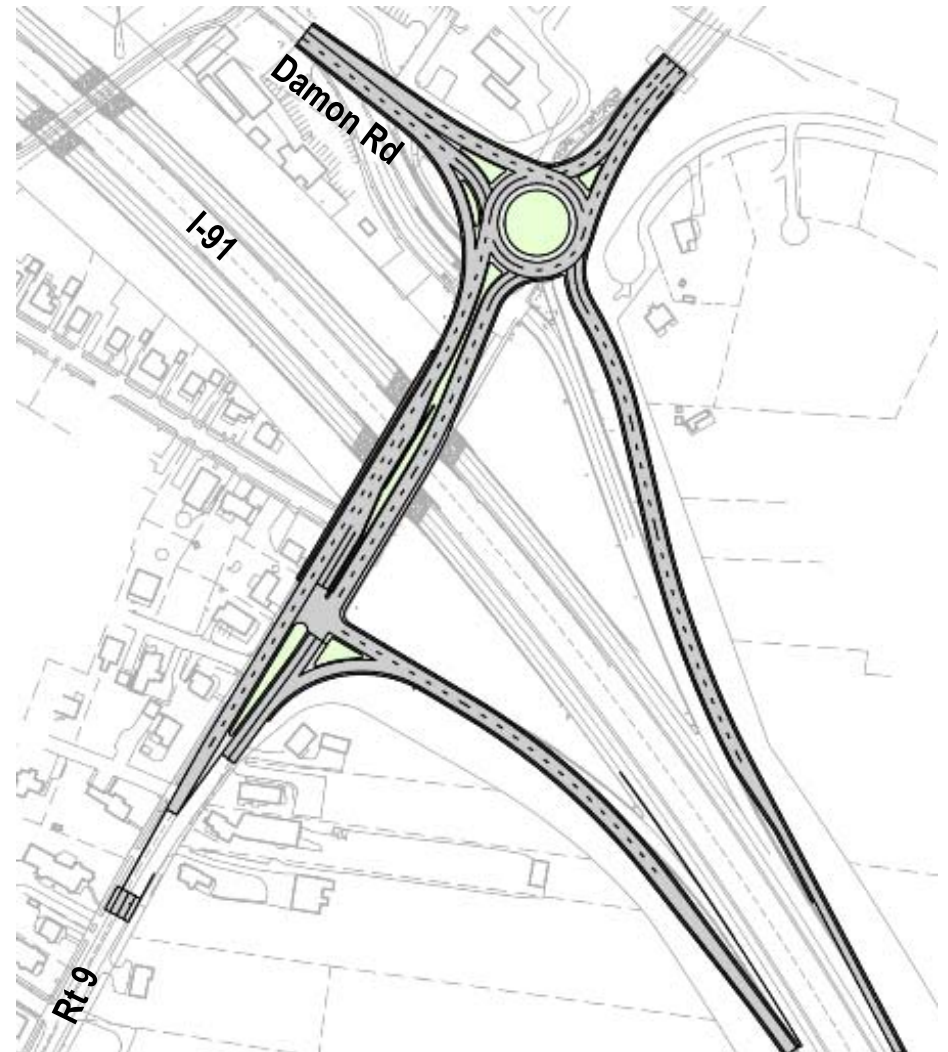
Roadway Concepts

Advantages

- Improves overall performance of Route 9/Damon Rd intersection
- Significant improvement to traffic operation at Route 9/SB on-ramp
- Ramps realigned to improve merges and provide more storage
- Left turn storage length is improved on Route 9 WB
- Opportunity to provide "gateway feel"
- Traffic Calming

Disadvantages

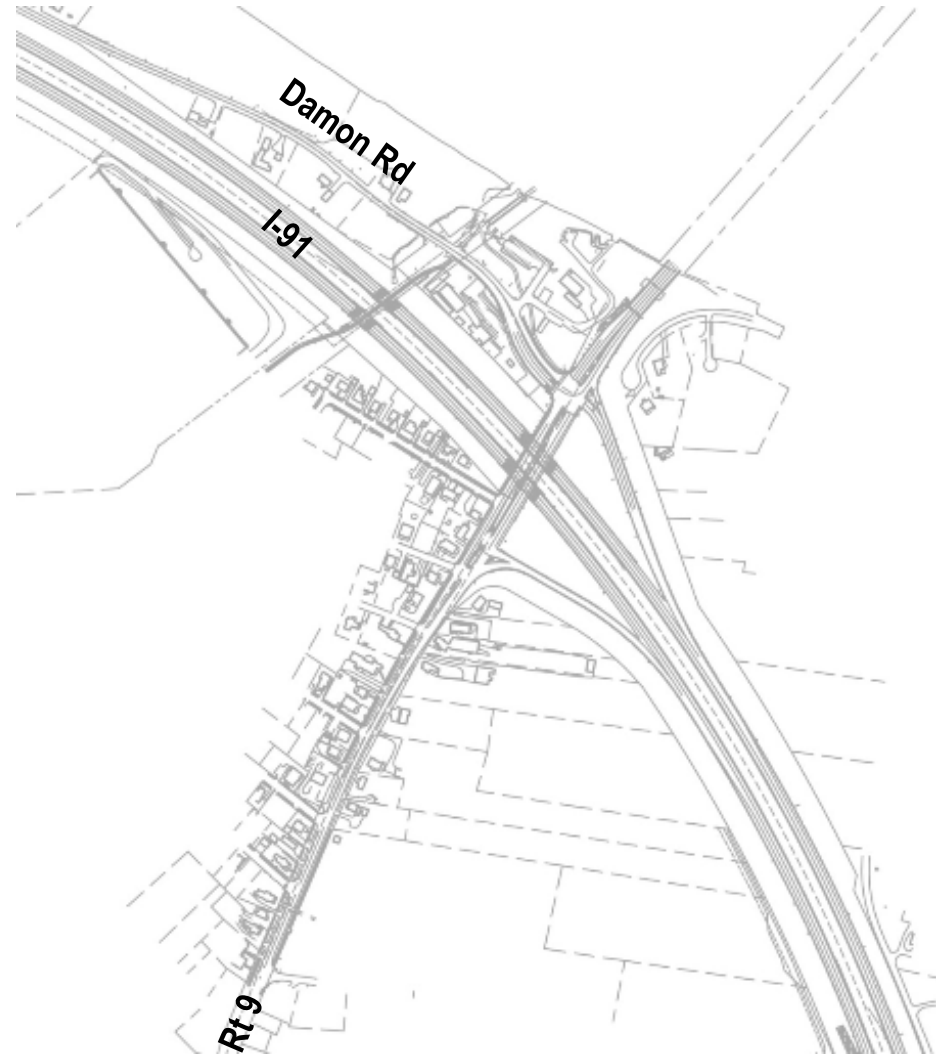
- Would result in impacts to Parkland (Chapter 97/Section 4f)
- Does not provide full access interchange (No improvements to King St/Damon Rd intersection operations)
- Retaining walls needed to relocate sidewalk to other side of bridge piers (or replacement of I-91 bridges)
- Would result in impacts to Parkland (Chapter 97/Section 4f)
- Possible impacts to Rainbow Road



Roadway Concepts

► Concept 15 Full Access Interchange

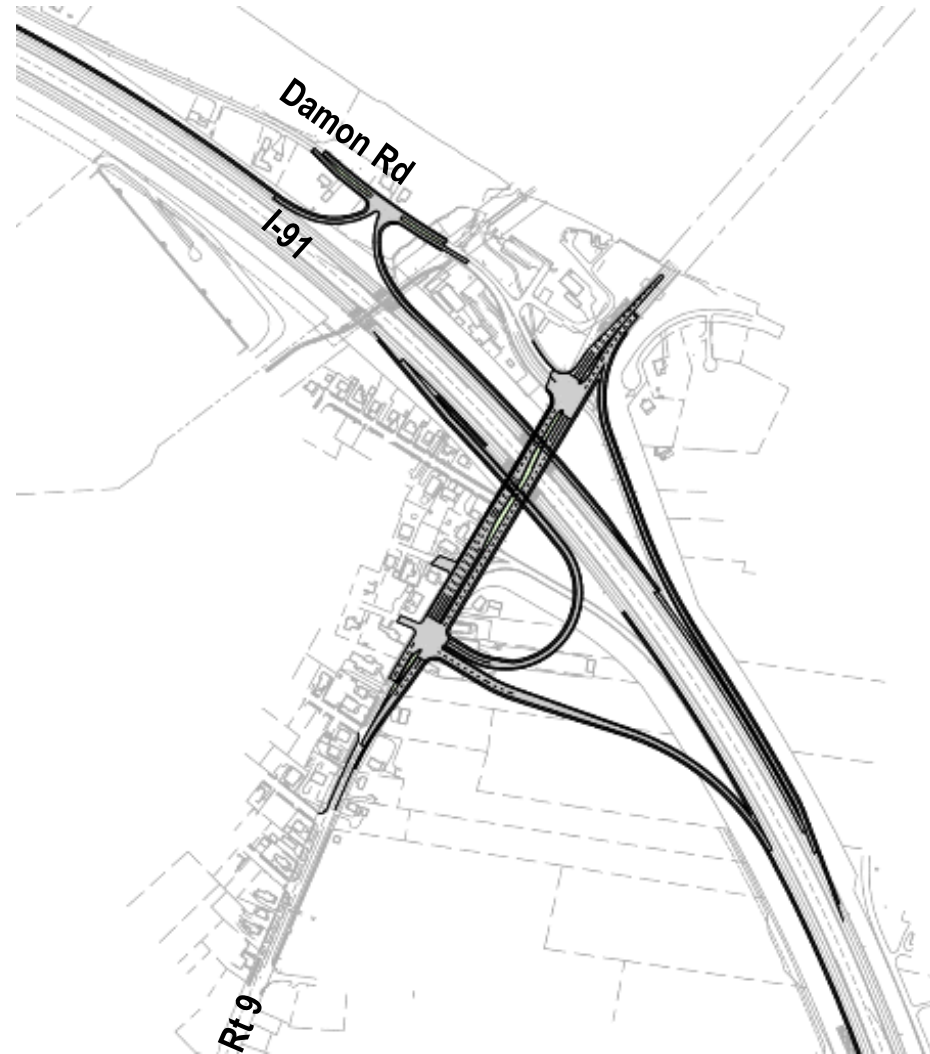
- Preferred concept from previous study
- SB Off-Ramp constructed as loop ramp
- SB On-Ramp relocated westerly
- NB Off-Ramp converted to right turn only
- Second NB Off-Ramp connects directly to Damon Road (for Damon Road & WB Route 9 movements)
- NB On-Ramp constructed off of Damon Road
- Damon Road raised by approximately 5' to accommodate ramps
- Provides full access interchange for all movements



Roadway Concepts

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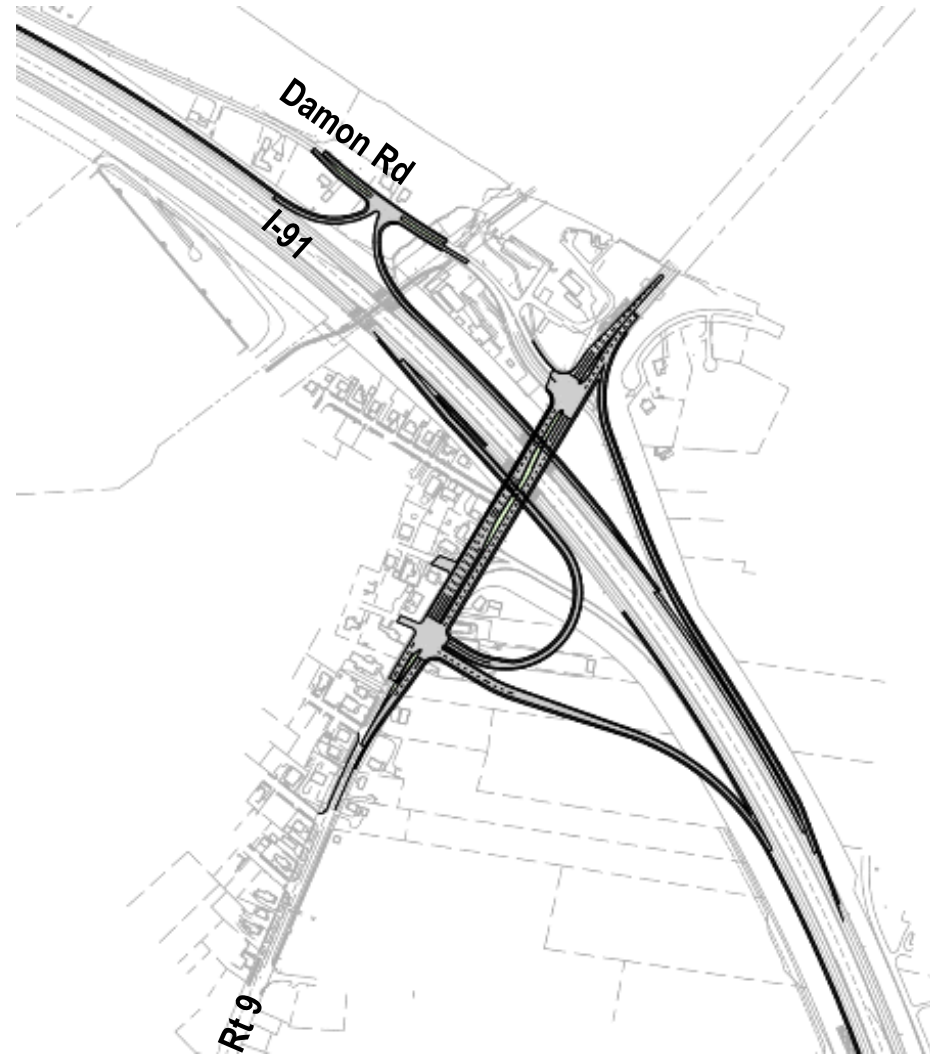
Roadway Concepts

► Advantages

- Provides full access interchange for all movements
- Reduces traffic demand at King St/Damon Road
- Significantly improves operations on Route 9
- Possible opportunity to provide tunnel under Damon Road at Trail crossing

► Disadvantages

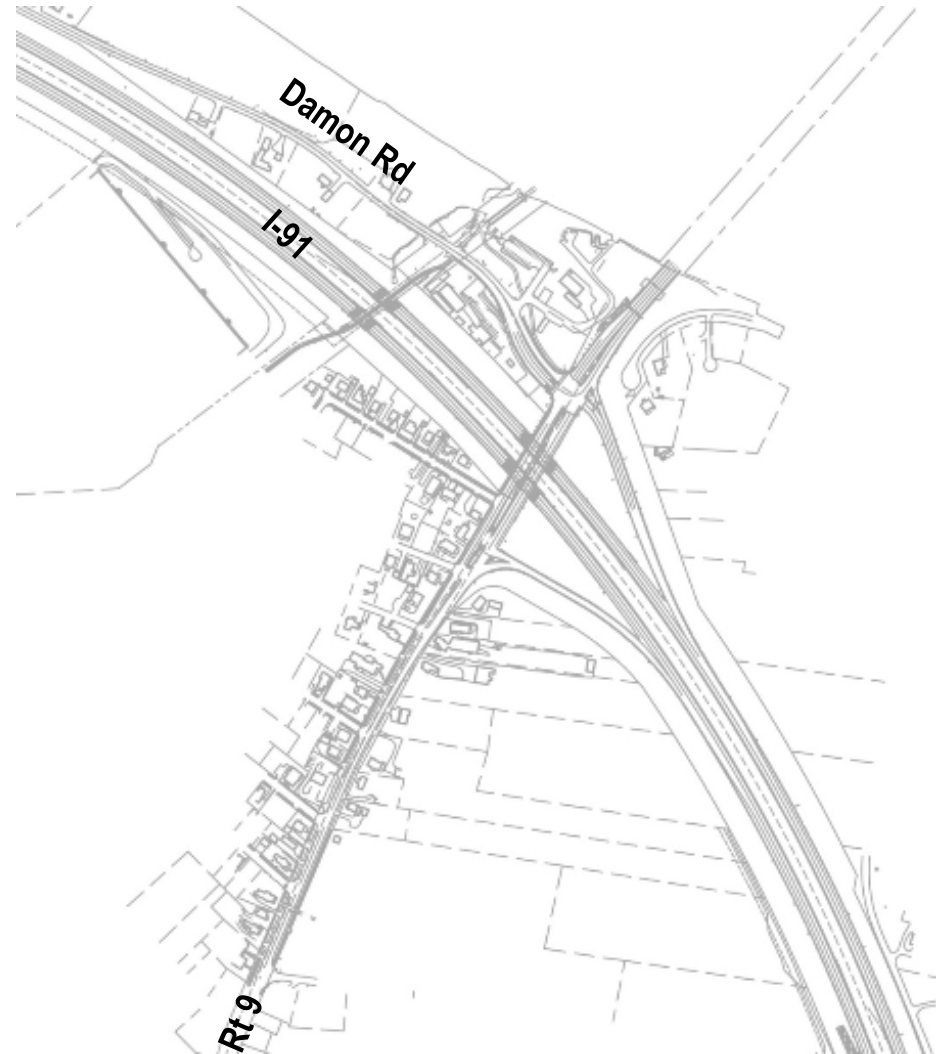
- Significant property impacts
- Impacts to The Meadows
- Substantial amount of construction
- Damon Road raised by approximately 5' to accommodate ramps
- Delays at Damon Road/NB ramps (unless Damon Rd. is widened to 2 lanes at intersection)
- Relatively high construction cost
- Undesirable alignment at NB Off-Ramp to Damon Road



Roadway Concepts

► Concept 15 Mod 1 - Full Access Interchange

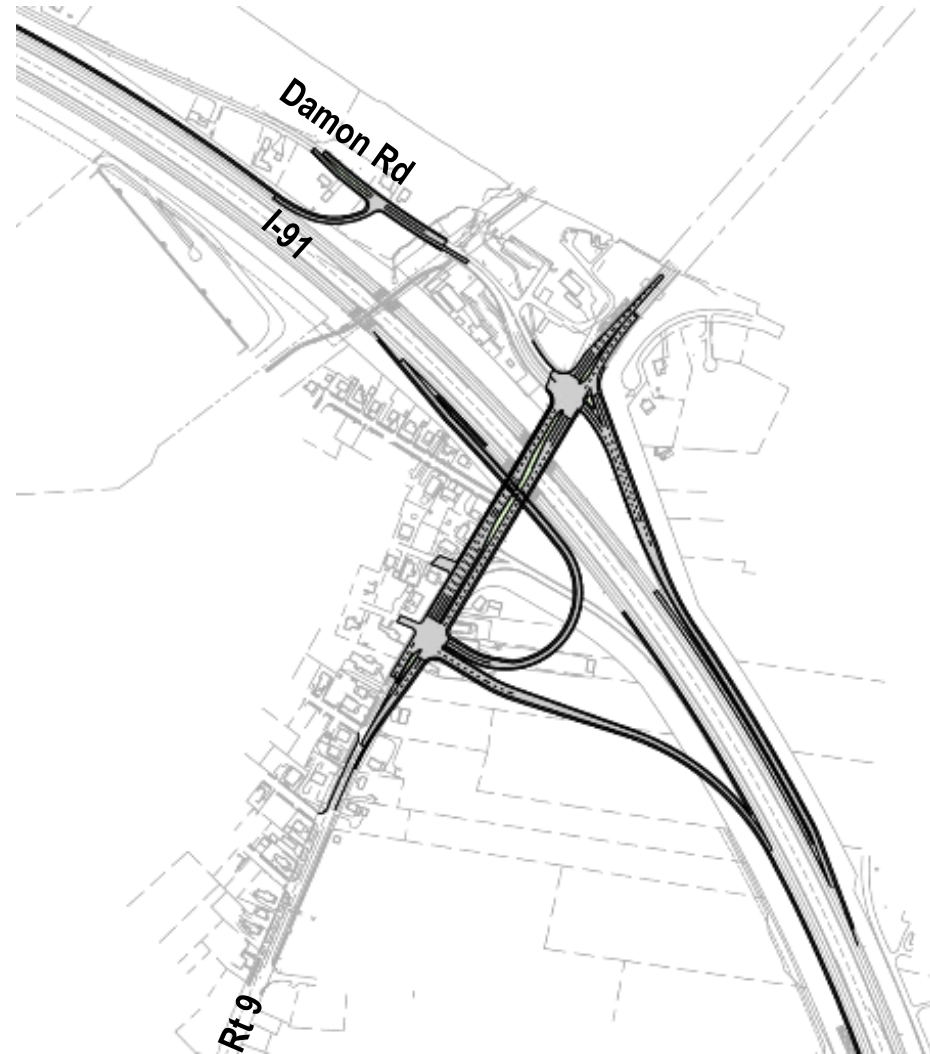
- SB Off-Ramp constructed as loop ramp
- SB On-Ramp relocated westerly
- Additional through lane added to NB Off-Ramp
- Eliminates 2nd NB Off-Ramp from C15
- NB On-Ramp constructed off of Damon Road
- Provides full access interchange for all movements
- Significant property impacts



Roadway Concepts

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- Significant property impacts



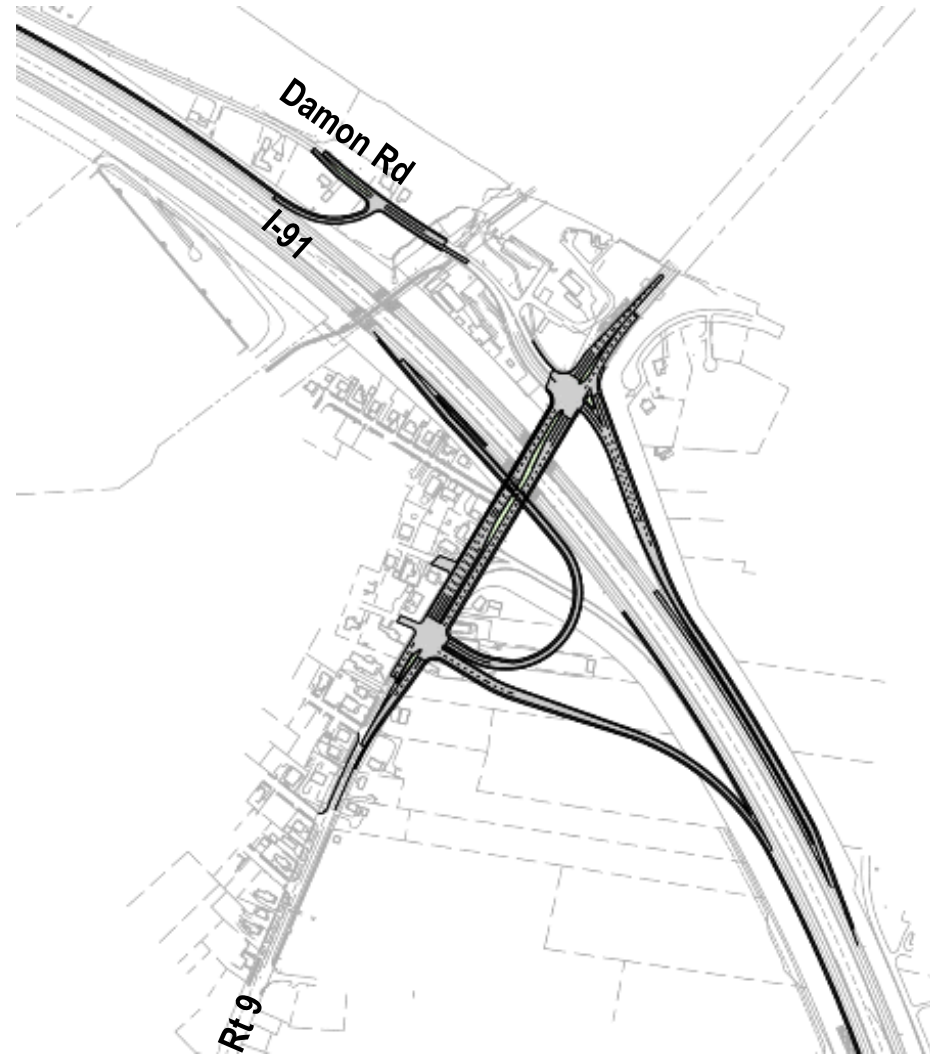
Roadway Concepts

► Advantages

- Provides full access interchange for all movements
- Reduces traffic demand at King St/Damon Road
- Significantly improves operations at Route 9 intersections
- Little delay at Damon Rd/NB On-Ramp intersection

► Disadvantages

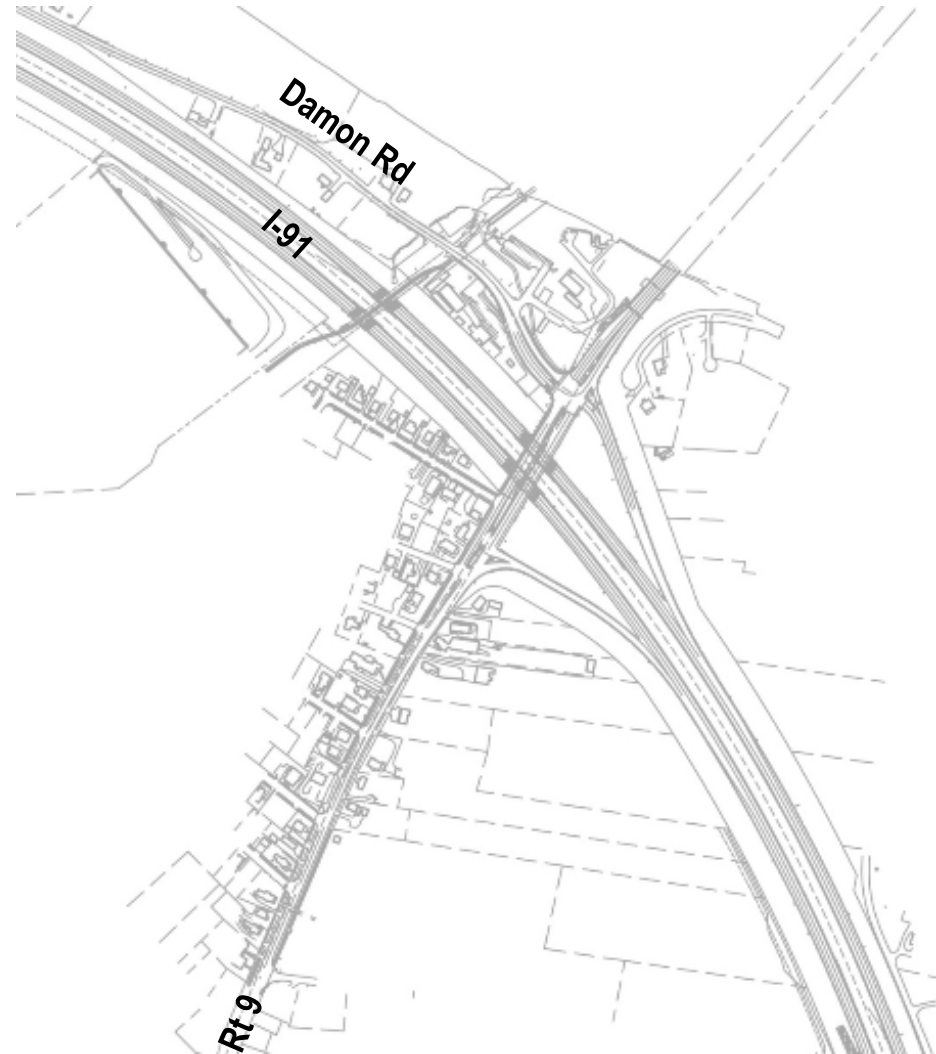
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Roadway Concepts

► Concept 16 – Single Flyover

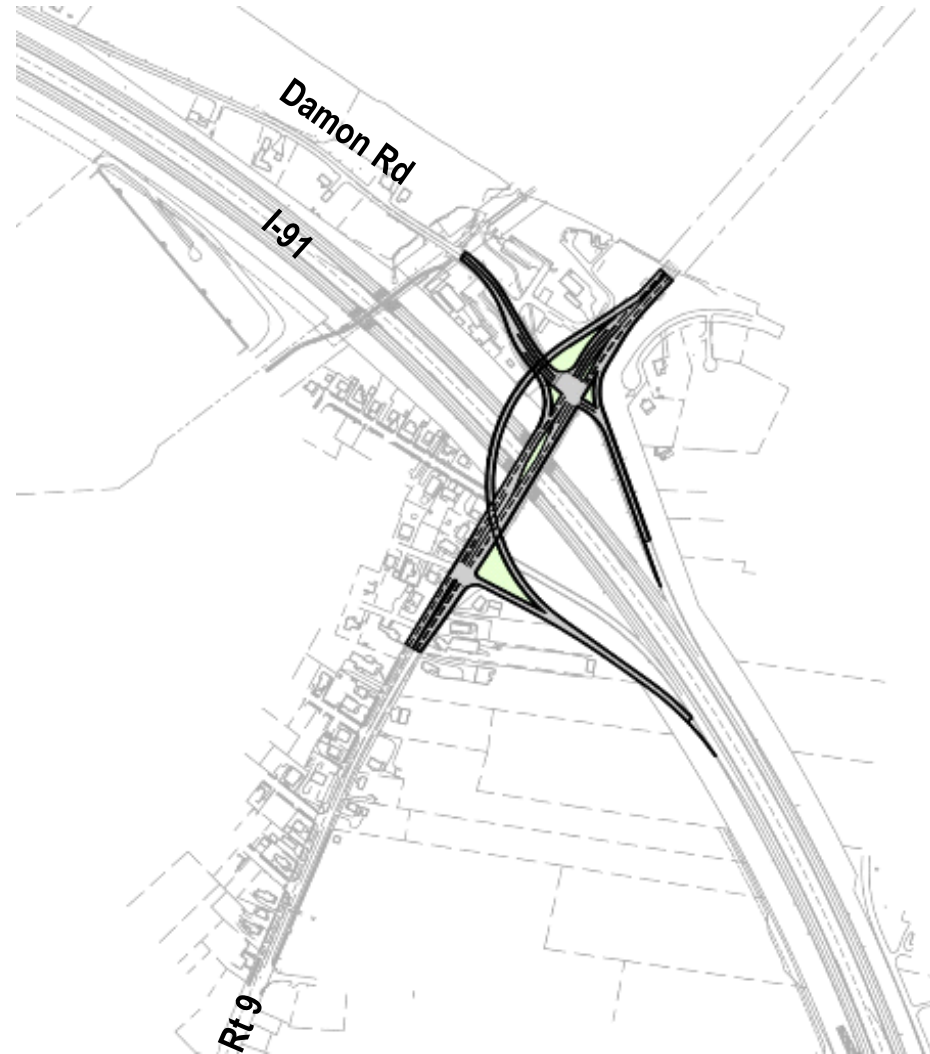
- Flyover ramp constructed from WB Route 9 to SB On-Ramp
 - Improves operations by removing large portion of left turning traffic from Route 9
- All other elements generally unchanged
- Flyover would have undesirable horizontal and vertical alignments
- Flyover would be on “3rd level” of interchange
- Does not provide full access interchange



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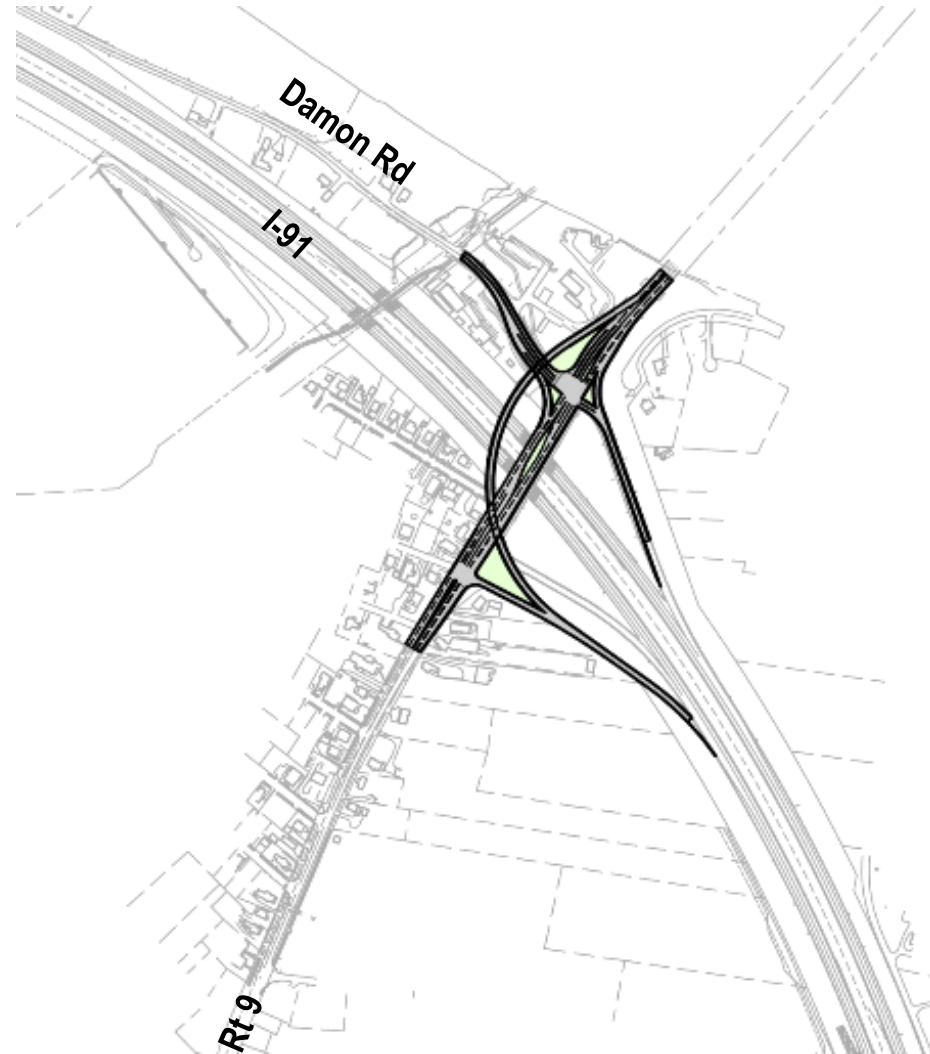
Roadway Concepts

Advantages

- Route 9 Corridor traffic operations improved by removing a large portion of left turning traffic from Route 9
- Adequate capacity on Route 9 to accommodate 2034 volumes
- Significantly improves Route 9 traffic operations

Disadvantages

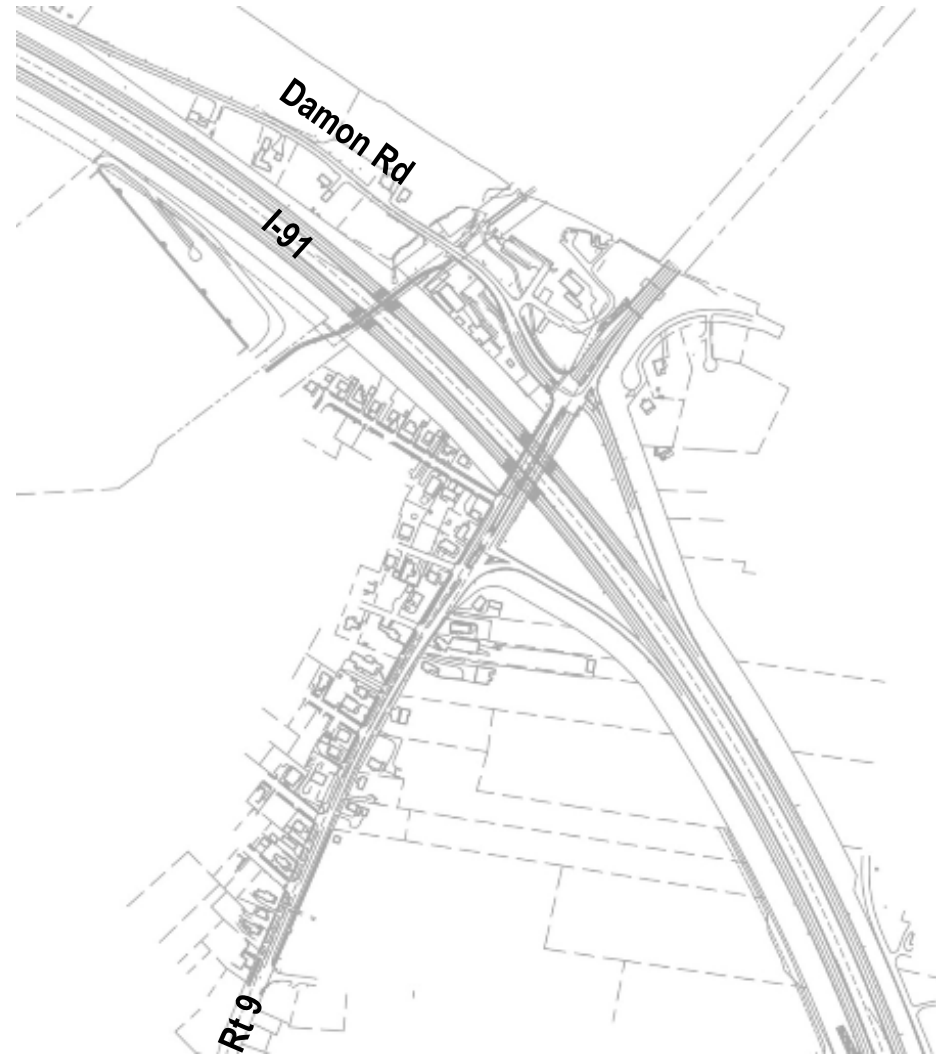
- Flyover would have substandard horizontal and vertical alignments
- Flyover would be on “3rd level” of interchange – visual and noise impacts
- Does not provide full access interchange
 - No improvement to King St./Damon Road intersection
- Relatively high construction cost
- Some property impacts
- Impacts to parkland



Roadway Concepts

► Concept 17 – Double Flyover

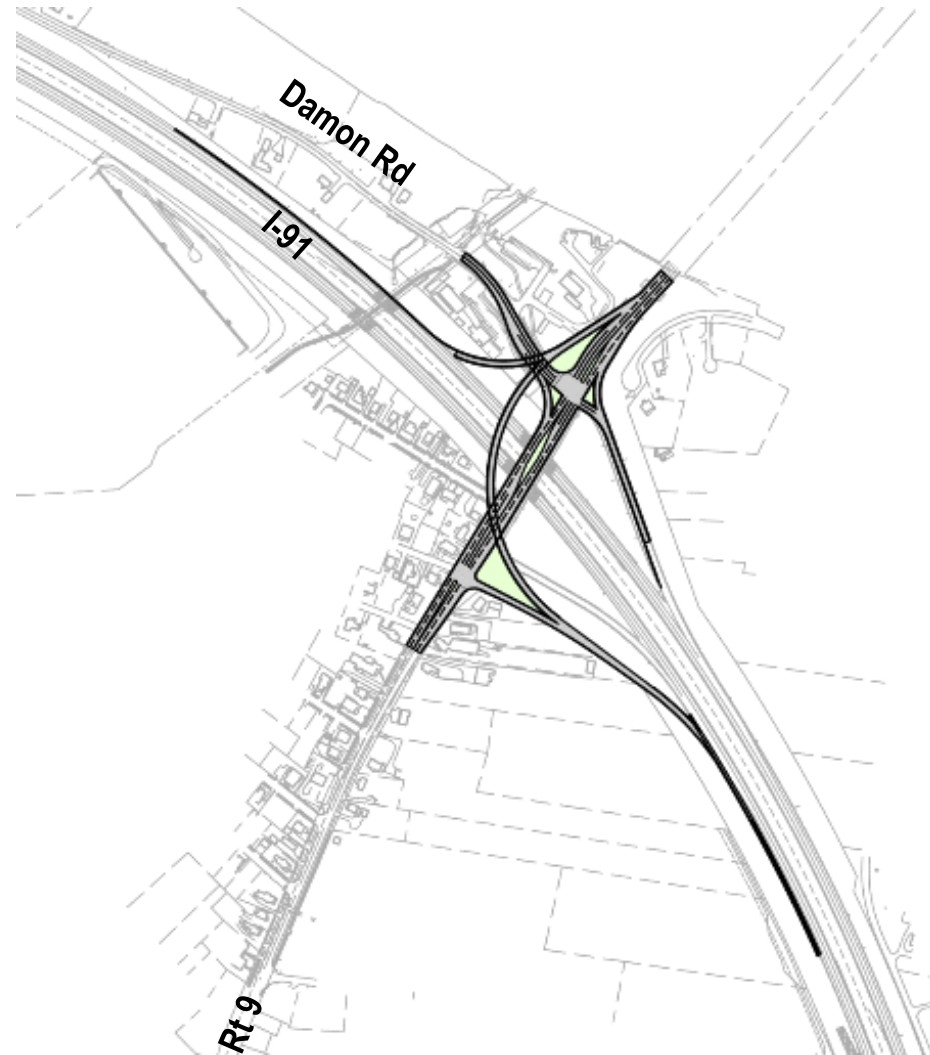
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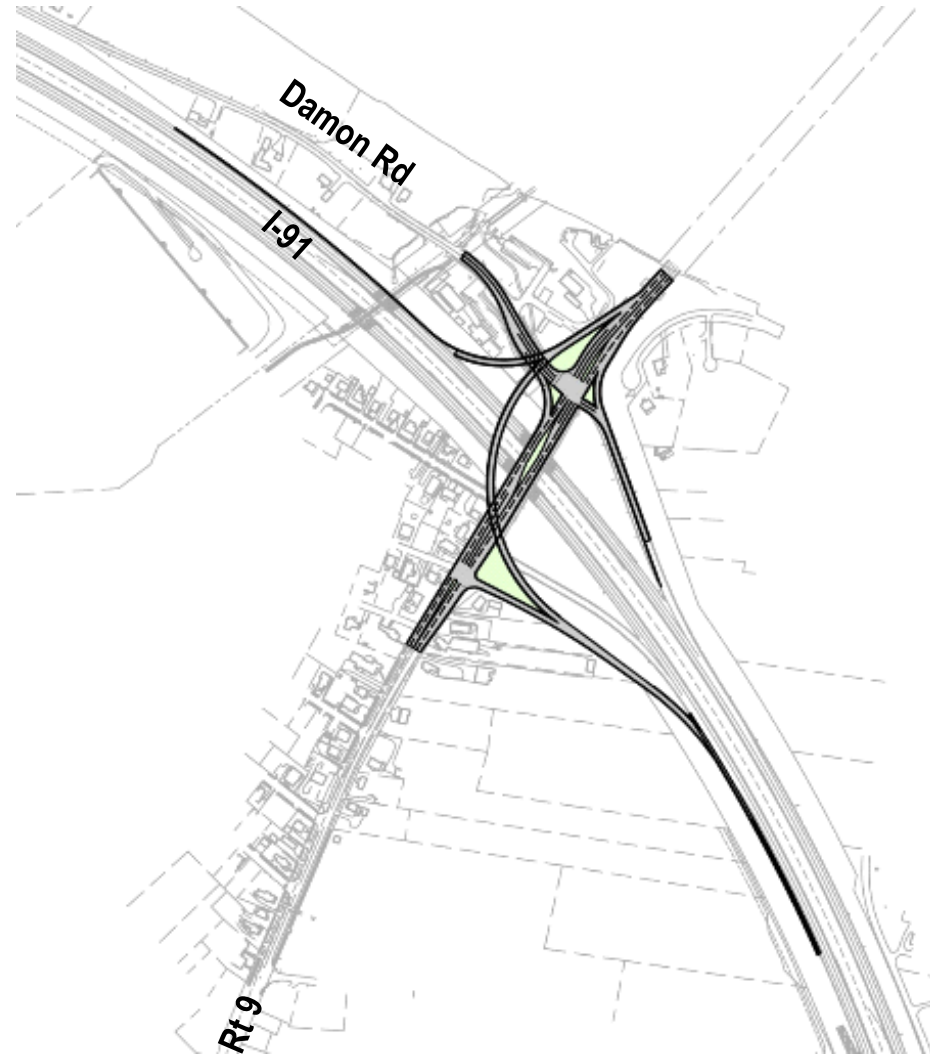
Roadway Concepts

► Advantages

- Route 9 Corridor traffic operations improved by removing a large portion of left turning traffic from Route 9
- Adequate capacity on Route 9 to accommodate 2034 volumes
- Significantly improves Route 9 traffic operations
- Improves traffic at King St/Damon Rd intersection

► Disadvantages

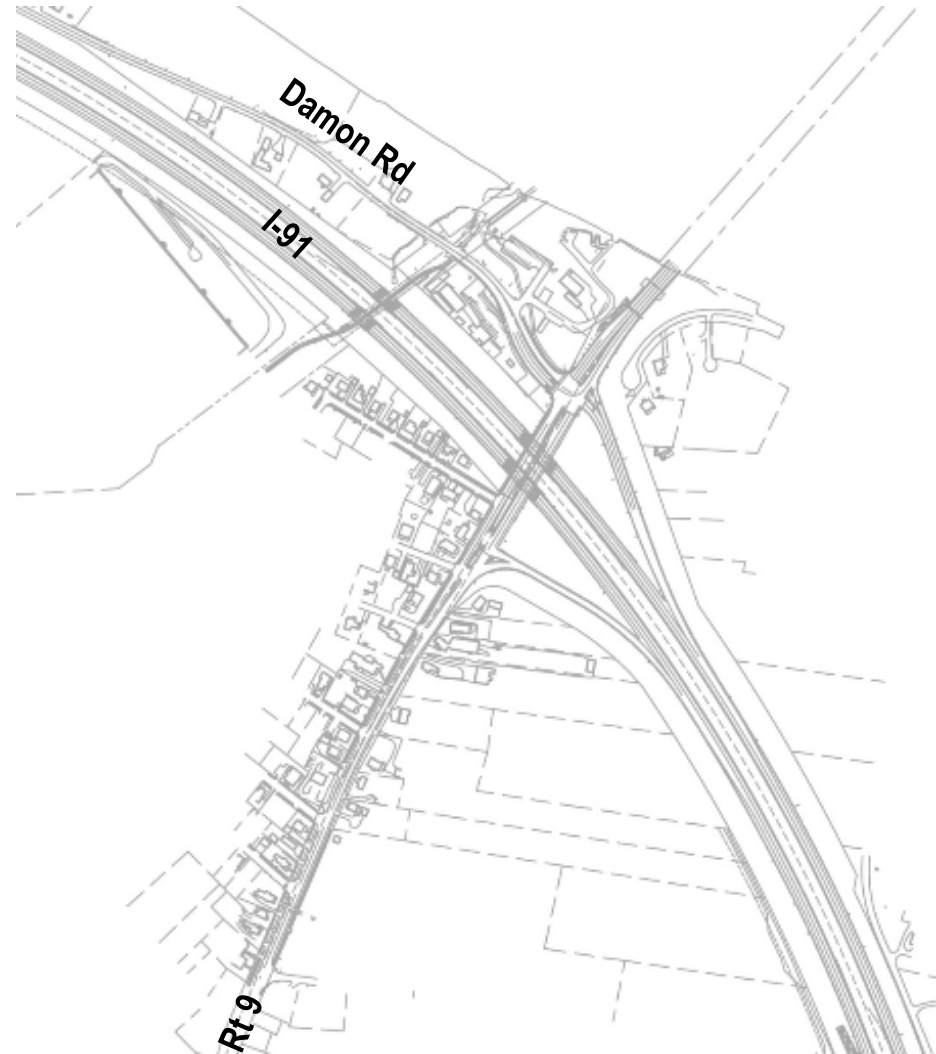
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Roadway Concepts

► Concept CD1 – Compressed Diamond

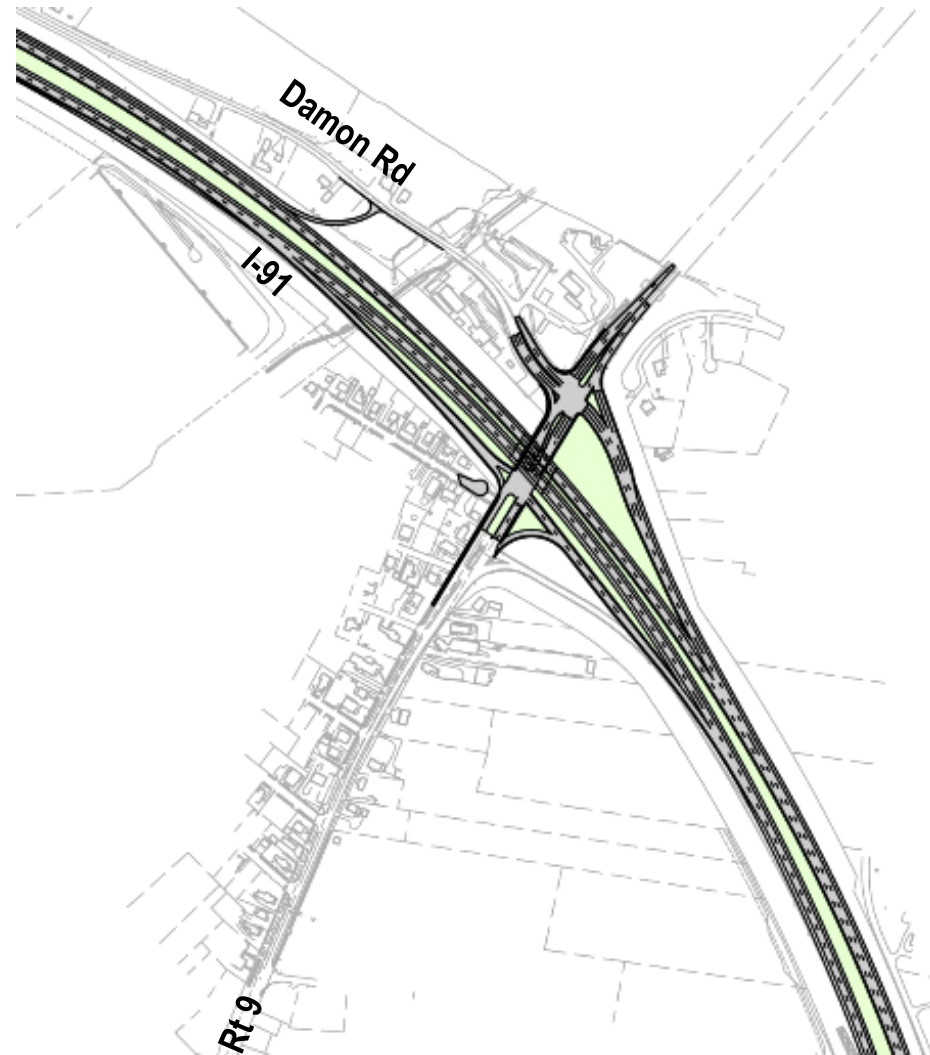
- I-91 SB shifted to median
- New SB off-ramp constructed on portion of existing I-91 SB roadway footprint
- SB on-ramp shifted easterly
- NB on-ramp constructed off of Damon Road (similar to Concept 15)
- Requires at least 3 new bridges on I-91
- Provides full access interchange
- Special treatment required for Damon Road accepting lanes



Roadway Concepts

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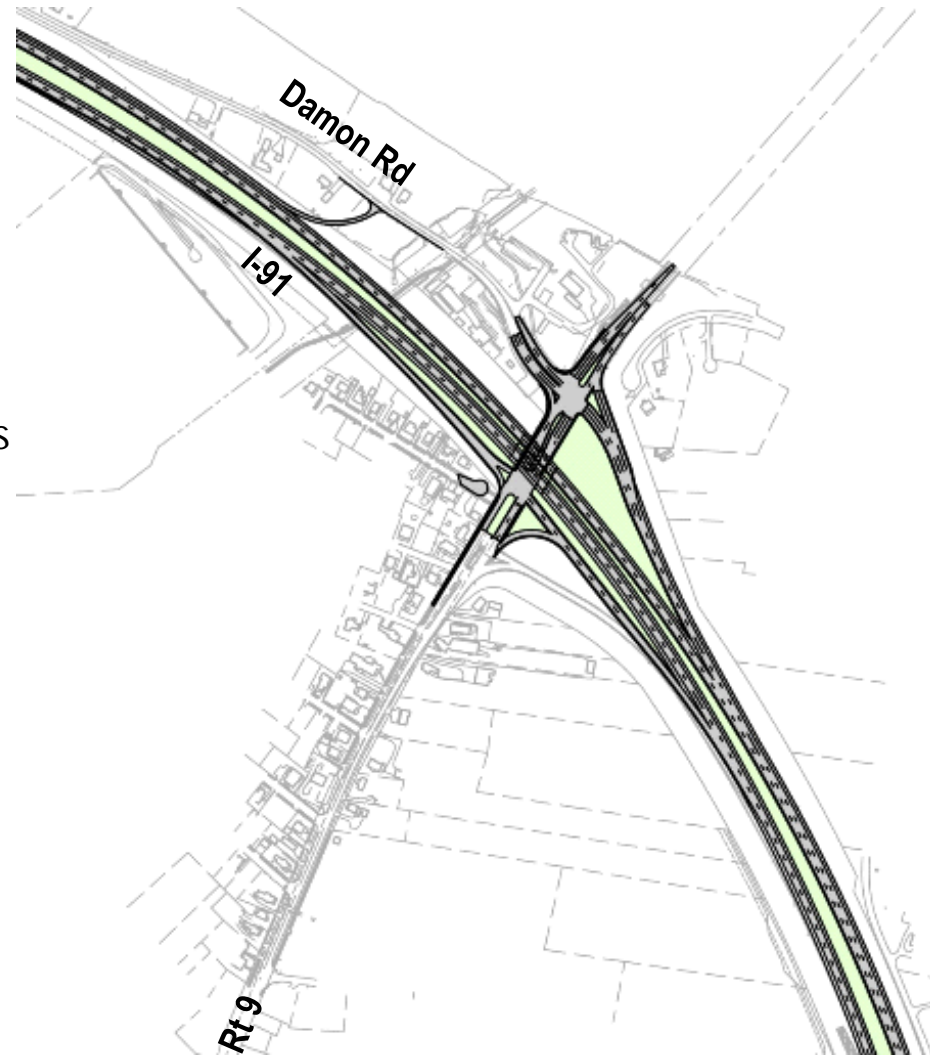
Roadway Concepts

► Advantages

- Provides full access interchange for all movements
- Reduces traffic demand at King St/Damon Road
- Significantly reduces property impacts from Concept 15
- Pulls SB On-Ramp farther away from residences

► Disadvantages

- High construction cost
- Requires at least 3 new bridges on I-91
- Insufficient storage length between intersections on Route 9
- Minor improvement to Route 9 traffic operations
- Substantial amount of construction
- Would require dead ending Marshall St.



Transit and TDM Concepts

- ▶ Goal: divert vehicle trips that would otherwise go through the Route 9, Damon Rd, and Interchange 19 intersection.
- ▶ TDM projects identified in Connecticut River Crossing Study (2004)
- ▶ Update to reflect projects implemented or planned since then.
- ▶ Taking into account:
 - License plate survey
 - Intersection delay data
 - Available transit, bicycle, and pedestrian data

Transit and TDM Concepts-Express Bus



Transit and TDM Concepts-Route 9 Express Bus

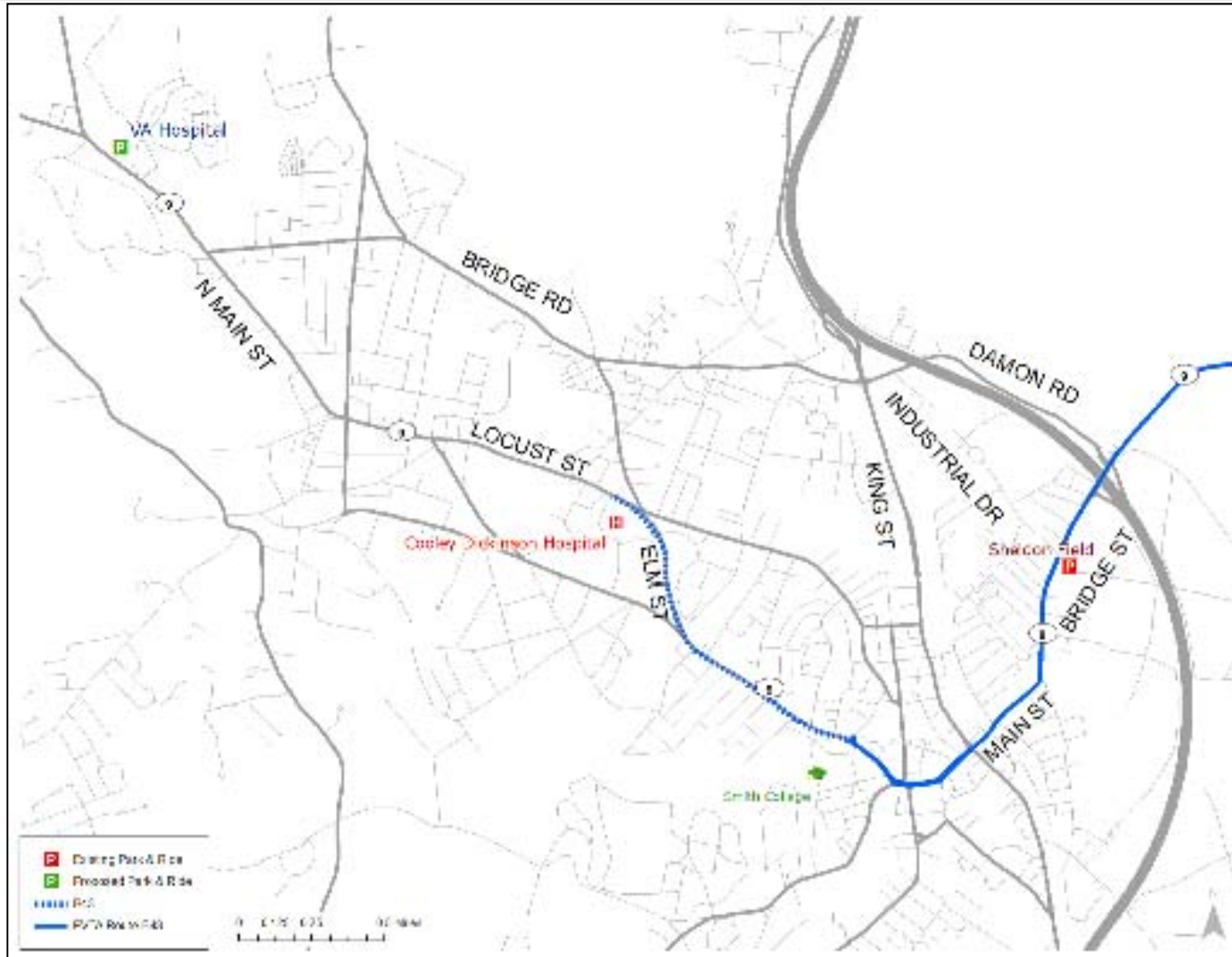
► M40 Minuteman Express

- limited stops, weekdays, school year only

► Potential Improvements

1. Extend service west to planned new Park and Ride at the V.A. Hospital in Leeds.
2. Alternate route via Bridge Road-Damon Road.
3. New Park and Ride on King St, Industrial Drive, or expanded Sheldon Field
4. Add service evenings, weekends, and during the summer.
5. Add trips (based on loading data).

Transit and TDM Concepts-Route 9 Bus Local Bus



I-91 Interchange 19
February 22, 2010



Transit and TDM Concepts-Route 9 Local Bus

► B43

- Frequent service, 6 am to 11:30 pm or later, all local stops.

► Planned Improvements

- Grant application for six articulated buses for various routes, potentially including B43

► Potential Improvements

1. Increase frequency of service to alleviate crowding, particularly during school hours (afternoon).
2. Extend west to serve Cooley Dickinson Hospital.

Park and Ride Lots-Transit and TDM Concepts

► Existing

- Sheldon Field

► Planned

- V.A. Hospital, Leeds

► Potential

- Expand Sheldon Field P&R
- Hill & Dale Shopping Center, Bridge Rd at Rt 5 & 10 (King St)
- Industrial Drive sites



Transit and TDM Concepts-Transit Signal Priority (TSP)

Existing

- Sumner Avenue, Springfield
- State Street, Springfield (signal equipment installed)

Planned Improvements

- 24 intersections on Rt 9 from the V.A. Hospital to Amherst, to the extent that existing equipment is capable

Potential Improvements

- Provide new equipment where needed on Route 9



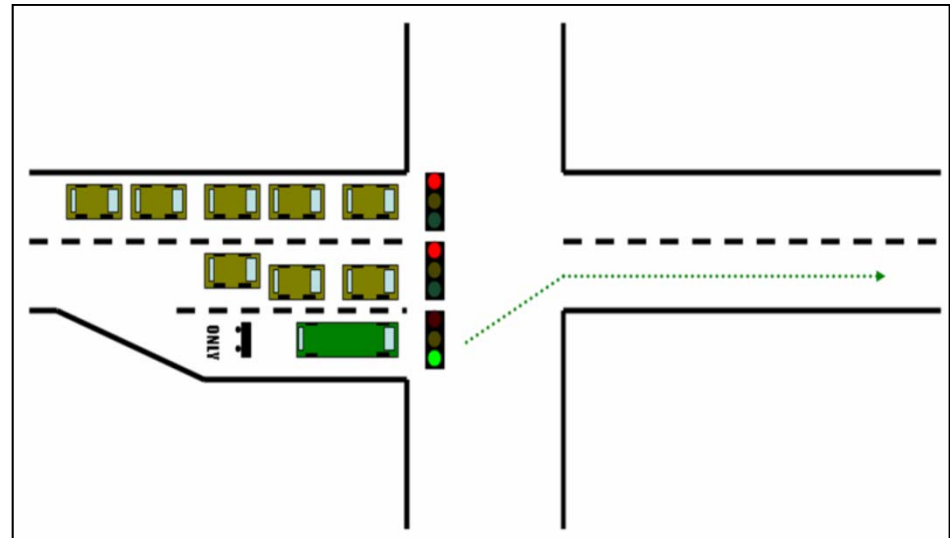
Transit and TDM Concepts-Queue Jump Lanes

► Types

- Shared with right or left-turn lane
- Added short bus lane
- Often best combined with TSP

► Potential

1. Route 9 at Damon Rd
 - WB in existing right-turn lane
 - EB in new bus lane.
2. Route 9 at Routes 5 & 10
 - Add combined right-turn lane and bus queue jump to far-side stop
3. Route 9 in Hadley
 - As part of road widening (if the project goes forward)



Transit and TDM Concepts-Shelters and Amenities

► Planned

- Solar-powered lights

► Potential

1. Solar-powered shelters
2. Advertising-supported shelters
3. Improved passenger information



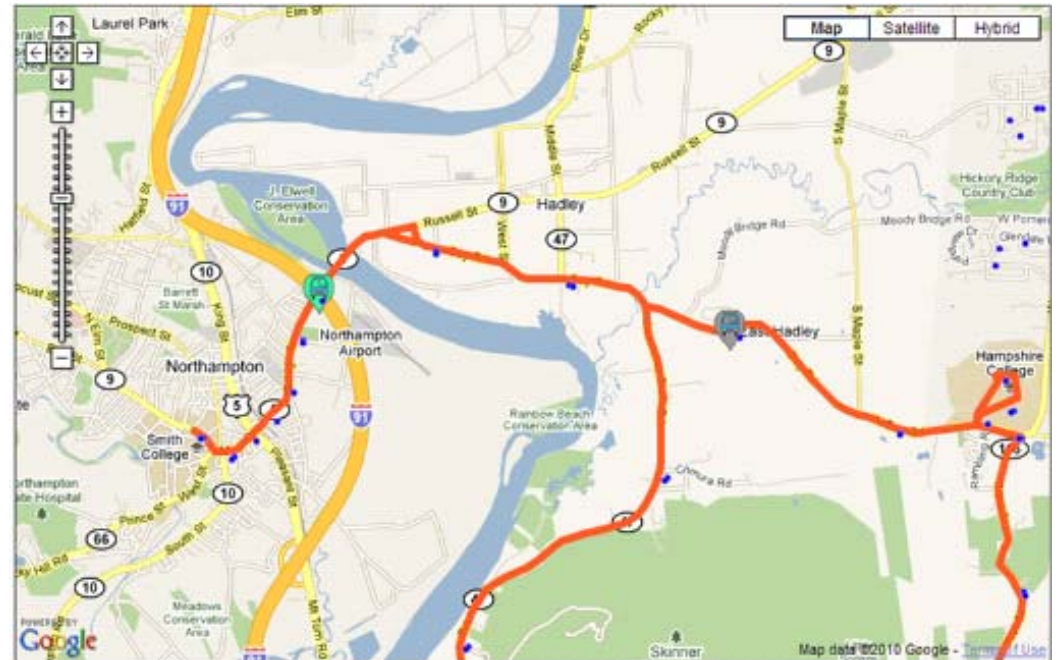
Transit and TDM Concepts-Intelligent Transportation Systems

Existing

- Automatic vehicle location, UMass Transit

Planned

- Automatic vehicle location
- Automatic stop announcements
- Automatic passenger counters
- Smart Card readers
- Signal priority



Transit and TDM Concepts-Transportation Demand Management

Existing

- Universal Transit Pass for all 5 College students, faculty & staff
- Ridebuzz.org



Potential

- Expand Universal Pass at universities to include vacations and summer period
- Expand Universal Pass program beyond colleges and universities
- Promote Parking Cash Out



Pedestrian-Related Concepts

► Planned

- Damon Road sidewalks

► Potential

- Add pedestrian signals and crosswalks
 - Bridge St at Damon Rd, south side (if needed)
 - Route 9 in Hadley (Home Depot and elsewhere)
- Add or repair existing sidewalks
 - Bridge St at Damon Rd
 - Bridge St, south side from Sheldon Field to Damon Rd
 - Bridge St, north side from Damon Rd to Hubbard Av

Bicycle-Related Concepts

► Recently Completed

- Bike racks on the PVRTA increased to 3-bike capacity
- Directional signs at the end of the Norwottuck Rail Trail on Woodmont Street

► Planned

- Wider Damon Rd
- Resurface and widen Norwottuck Rail Trail
- Tunnel under active rail line as part of Knowledge Corridor project (also Bike Station)
- Widening of Route 9 in Hadley

Bicycle-Related Concepts

► Potential

1. Shoulder paving and widening or restriping and other bicycle-related improvements, Route 9, Hadley to Amherst
2. Winter maintenance of bicycle paths
3. Add signal, Rt 9 at West St, Hadley, to permit movement from Norwottuck Trail to south side of West St and Route 9
4. Reconfigure South Maple St, Norwottuck Trail to Rt 9, from 4 to 3 lanes (1 wide in each direction plus center left turn).
5. Bike path from Elm Street Extension in Hatfield, south along the banks of the CT River and crossing Damon Road before connecting with the rest of the Northampton Bikeway network.

Next Steps

- Refine Alternatives Incorporating Comments Heard Tonight
- Evaluate Alternatives
- Hold Public Meeting
- Narrow Down List of Alternatives
- Identify Preferred Alternative
- Hold Public Meeting

Comments & Questions

