

This is part 2 of 2 of the presentation shown at the April 21 public workshop. This document has been edited and augmented to serve as a stand-alone document providing an overview of the key topics discussed at the Workshop.

# Public Workshop 2

April 21, 2014

## ALTERNATIVES

## Presentation and Review

## **THIS IS PART 2 of 2.**

- For additional background information on the Study, please refer to the first half of the presentation, in a separate PDF file.

# Circulation Alternatives

This section of the presentation describes three possible alternatives for changes to the street circulation network. The focus at this stage of the Study is on traffic flow direction and speeds, and how changes to the physical design of streets might improve the walking environment and enhance public spaces downtown. At key intersections such as Upper and Lower Squares and Chestnut/Third Streets, on-street parking spaces and curb cuts to off-street parking areas would be adjusted accordingly.

**Summary of Alternatives.** Below is an overview of the three circulation alternatives. Later sections of this document will explain more detail about each.

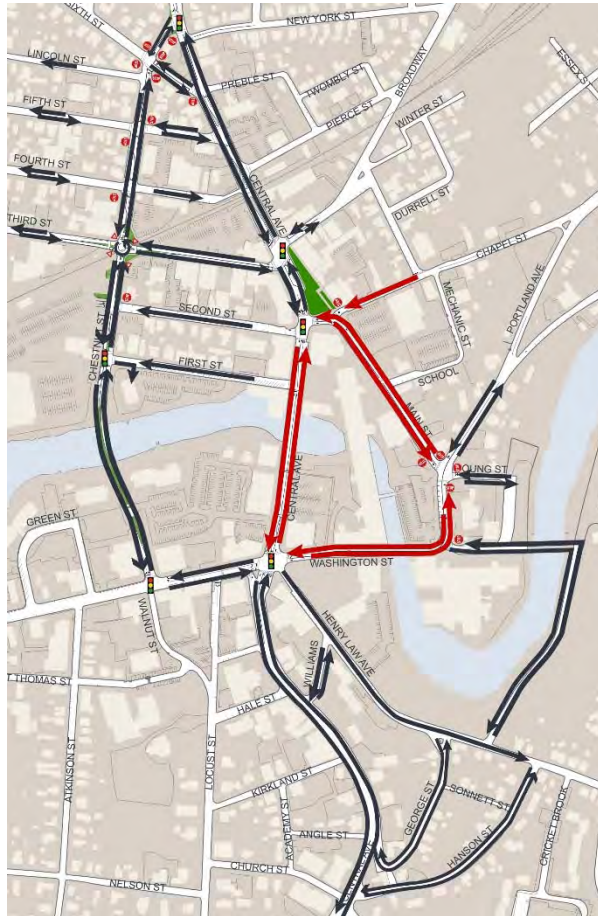
### Alternative A: Enhanced One-way Loop.

**Loop.** This keeps the traffic flow directions similar to current conditions, but makes changes to Lower and Upper Squares and Chestnut Street. It also changes Henry Law Avenue to two-way and closes it off from Lower Square.



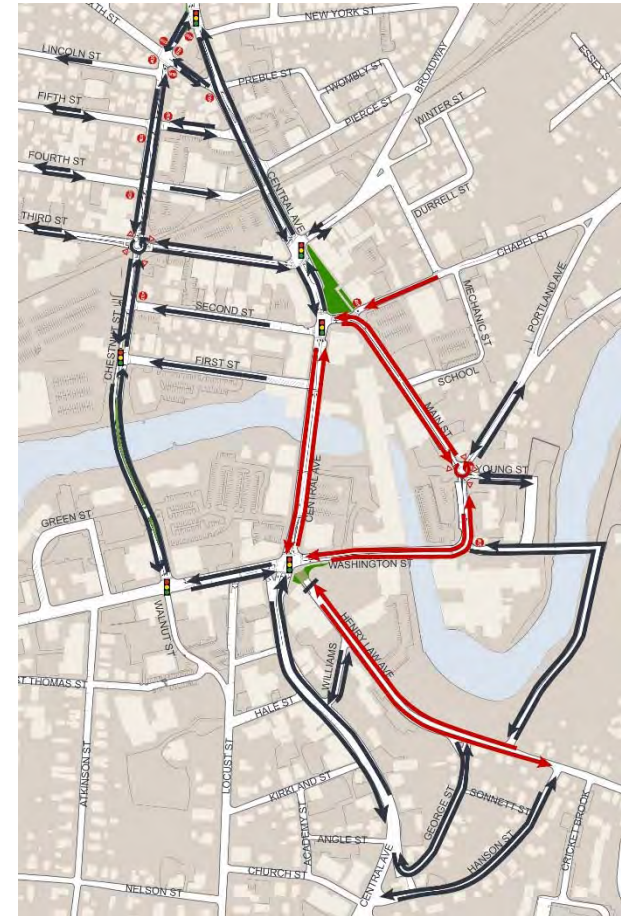
### Alternative B: Two-way Loop.

Compared to current conditions, this alternative changes the inner loop streets of Main, Washington, and Central to two-way flow; and reverses the direction on Chapel Street.



### Alternative C: Enhanced Two-way Loop.

**Loop.** This is similar to Alternative B in most respects. But like Alternative A, it changes Henry Law Avenue to two-way and closes it off from Lower Square.

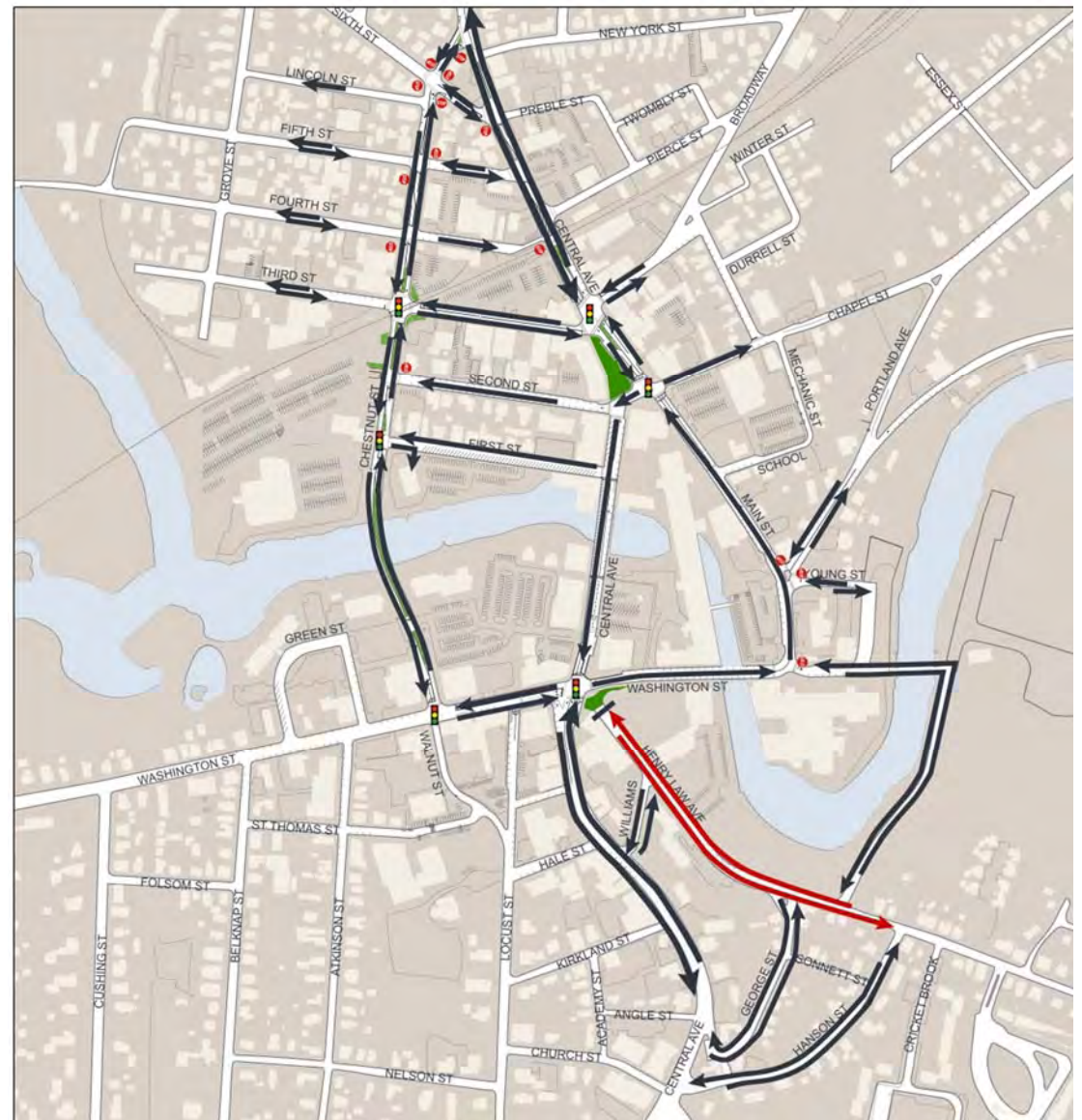


# Alternative A Enhanced One-Way Loop.

The following section describes the elements of Alternative A.

## Alternative A: Enhanced One-way Loop

- Lower Square
  - Close Henry Law Ave. access
  - Additional northbound right lane
- Upper Square
  - Plaza on western side of square
  - Road diet: Third St. to Fifth St.
- Chestnut Street
  - Road diet: Washington St. to Third St. with bike lanes and median
  - Reconfigured Third St. intersection



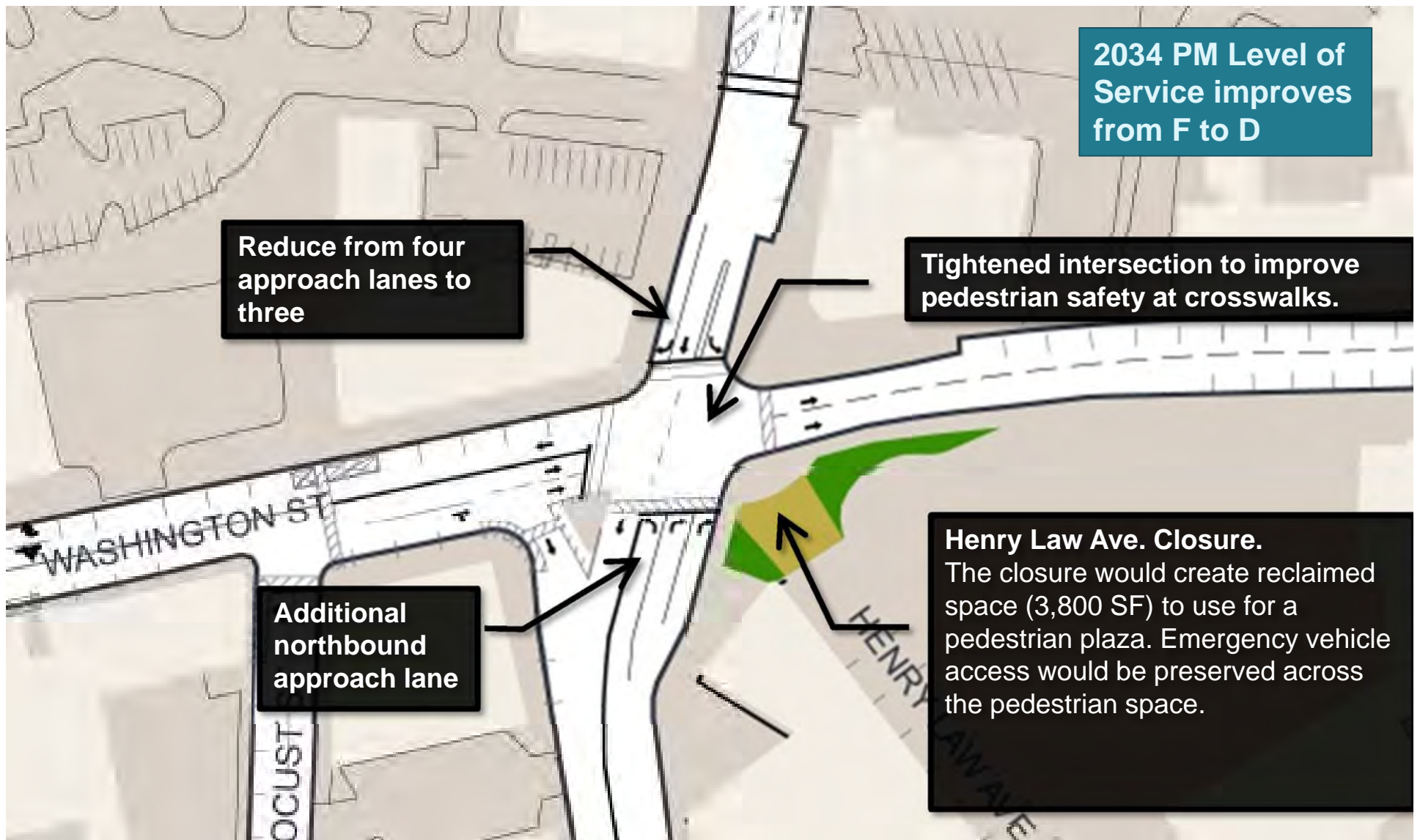
## Alternative A: Enhanced One-way Loop

At right is a conceptual drawing showing how the streetscape might be realized for the options of Alternative A.

Details of tree locations, pedestrian plazas, crosswalks, and parking spaces are for graphic representation only and do not reflect final proposed locations.

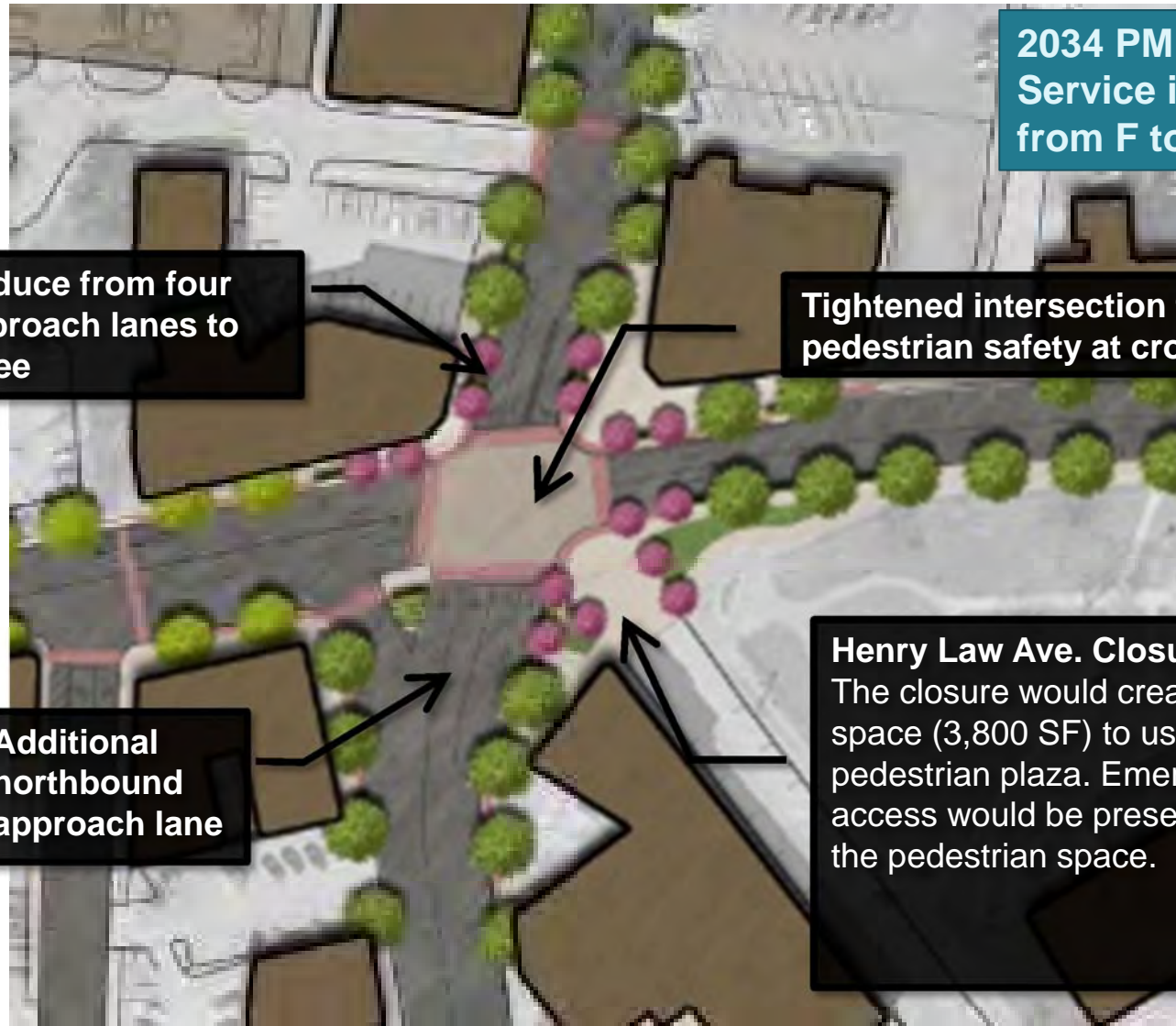


## Alternative A Focus: Lower Square Illustration





# Alternative A Focus: Lower Square Illustration



2034 PM Level of Service improves from F to D

Reduce from four approach lanes to three

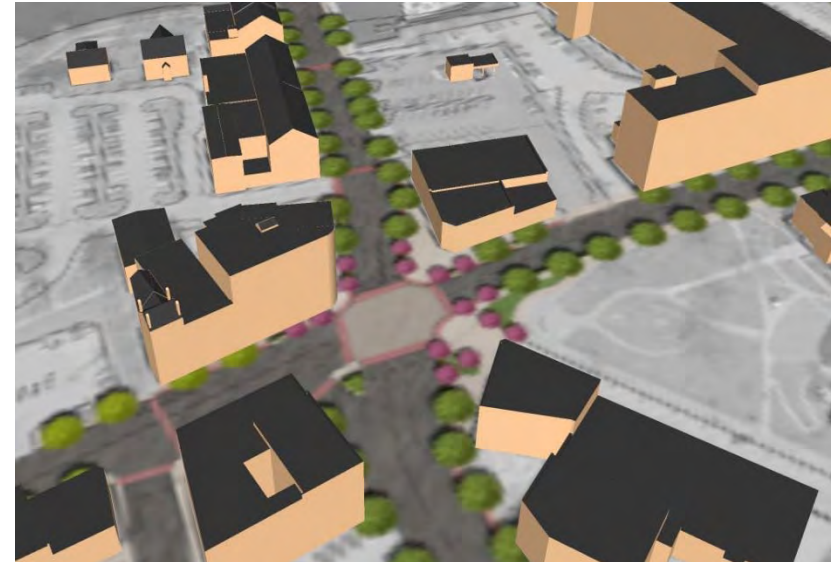
Tightened intersection to improve pedestrian safety at crosswalks.

Details of tree locations, pedestrian plazas, crosswalks, and parking spaces are for graphic representation only and do not reflect final proposed locations.

Additional northbound approach lane

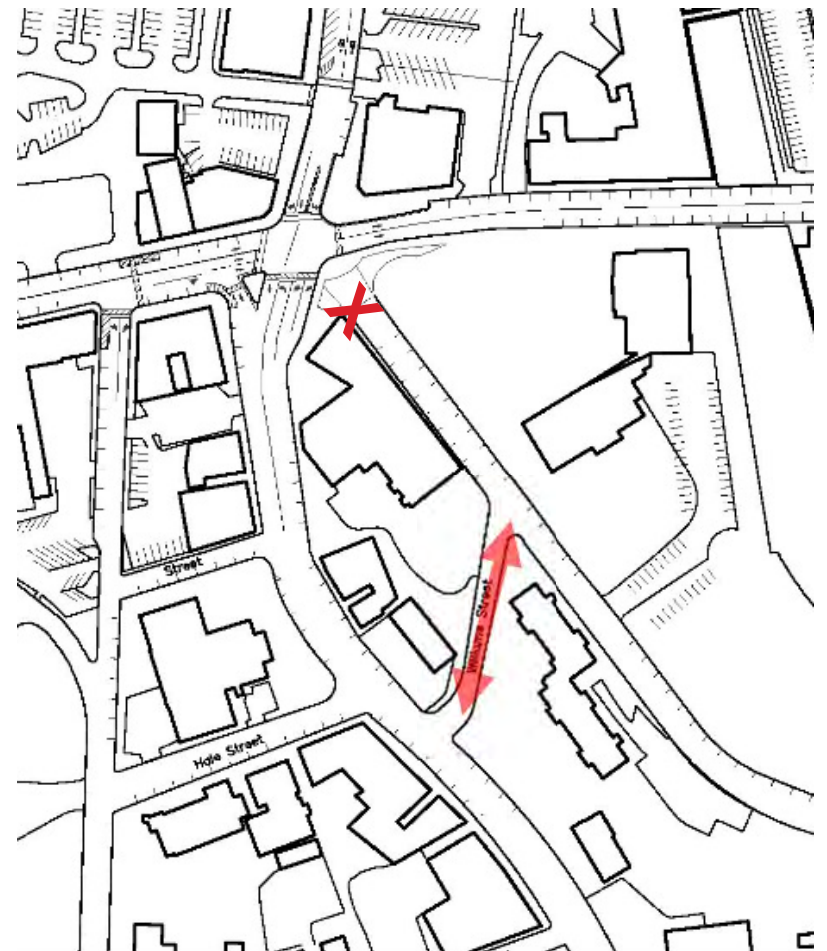
**Henry Law Ave. Closure.**  
The closure would create reclaimed space (3,800 SF) to use for a pedestrian plaza. Emergency vehicle access would be preserved across the pedestrian space.

# Alternative A Focus: Lower Square Streetscape Plan and Perspective



# Closing Henry Law Avenue

- Implications for access on Williams and George Streets



# Alternative A Focus: Upper Square



2034 PM Level of Service remains LOS D

One lane in each direction, with left turn pocket for Broadway

Signalized Intersections

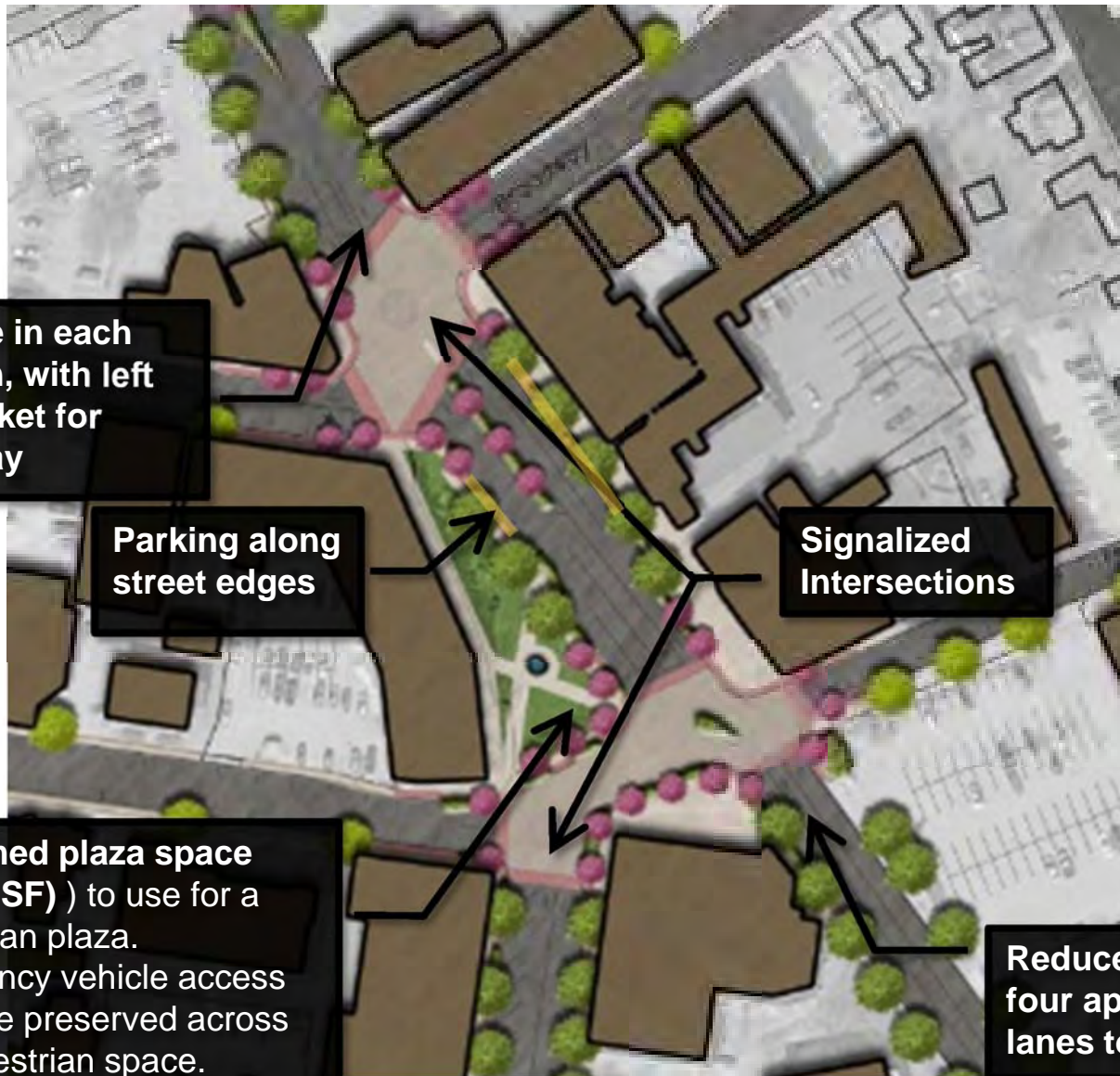
Parking along street edges

Reclaimed plaza space (11,000 SF) to use for a pedestrian plaza. Emergency vehicle access would be preserved across the pedestrian space.

Reduce from four approach lanes to three



# Alternative A Focus: Upper Square Illustration



**One lane in each direction, with left turn pocket for Broadway**

**Parking along street edges**

**Signaled Intersections**

**Reclaimed plaza space (11,000 SF)** to use for a pedestrian plaza. Emergency vehicle access would be preserved across the pedestrian space.

**Reduce from four approach lanes to three**

**2034 PM Level of Service remains LOS D**



Details of tree locations, pedestrian plazas, crosswalks, and parking spaces are for graphic representation only and do not reflect final proposed locations.

# Alternative A Focus: Upper Square Streetscape Plan and Perspective



# Alternative A Focus: Portland Street Streetscape Plan



**Note:**  
Tree locations are for graphic representation only and do not reflect final proposed locations.

## Alternative A Focus: Chestnut Street

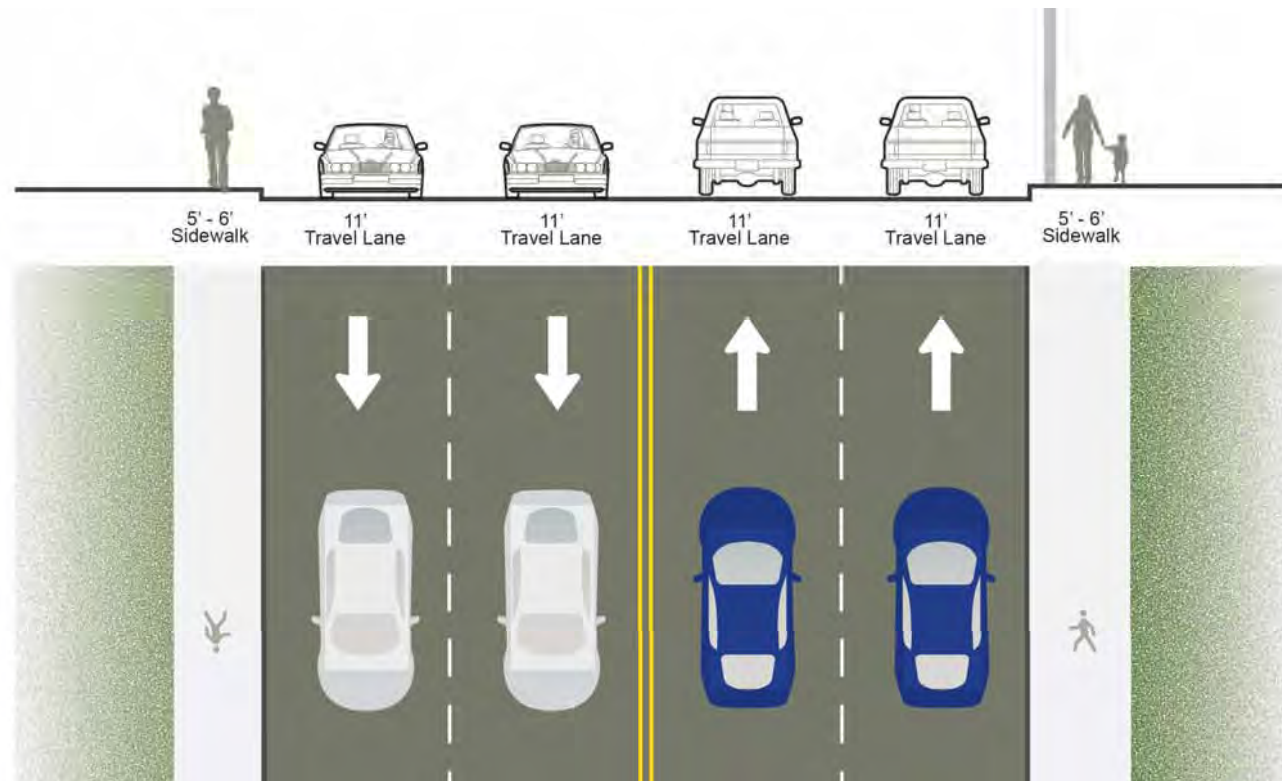
- Chestnut St. is proposed for a “road diet” – conversion from 4 travel lanes to 3 lanes, making more space for pedestrians.
  - Bike Lane: 5' lane from Washington to Fourth Street, converts to a shared lane marking further north
  - Landscaped Median: +/-6' width
- Third Street Intersection
  - Re-alignment, with reduced pavement
- Bus Stops
  - NB at Orchard Street Lot
  - SB at Riverview Apts





# Chestnut Street

- Current Conditions



# Alternative A: Chestnut Street Road Diet – Cross-Section

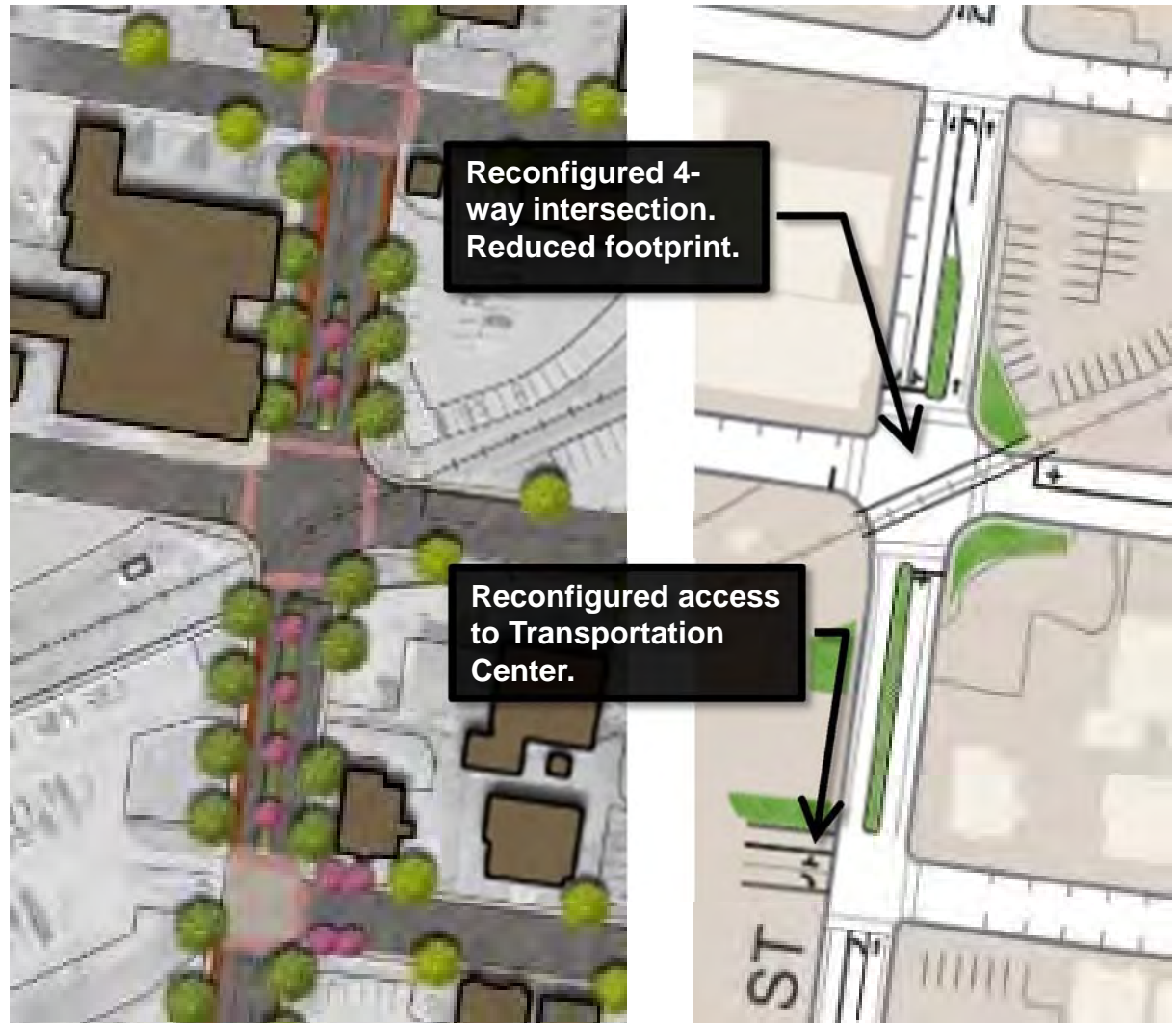
West

East



# Alternative A Focus: Third Street Intersection Illustration and Diagram

- Reconfigured intersection
- Consolidate access to Transportation Center



# Alternative A: Signalization and Traffic Control



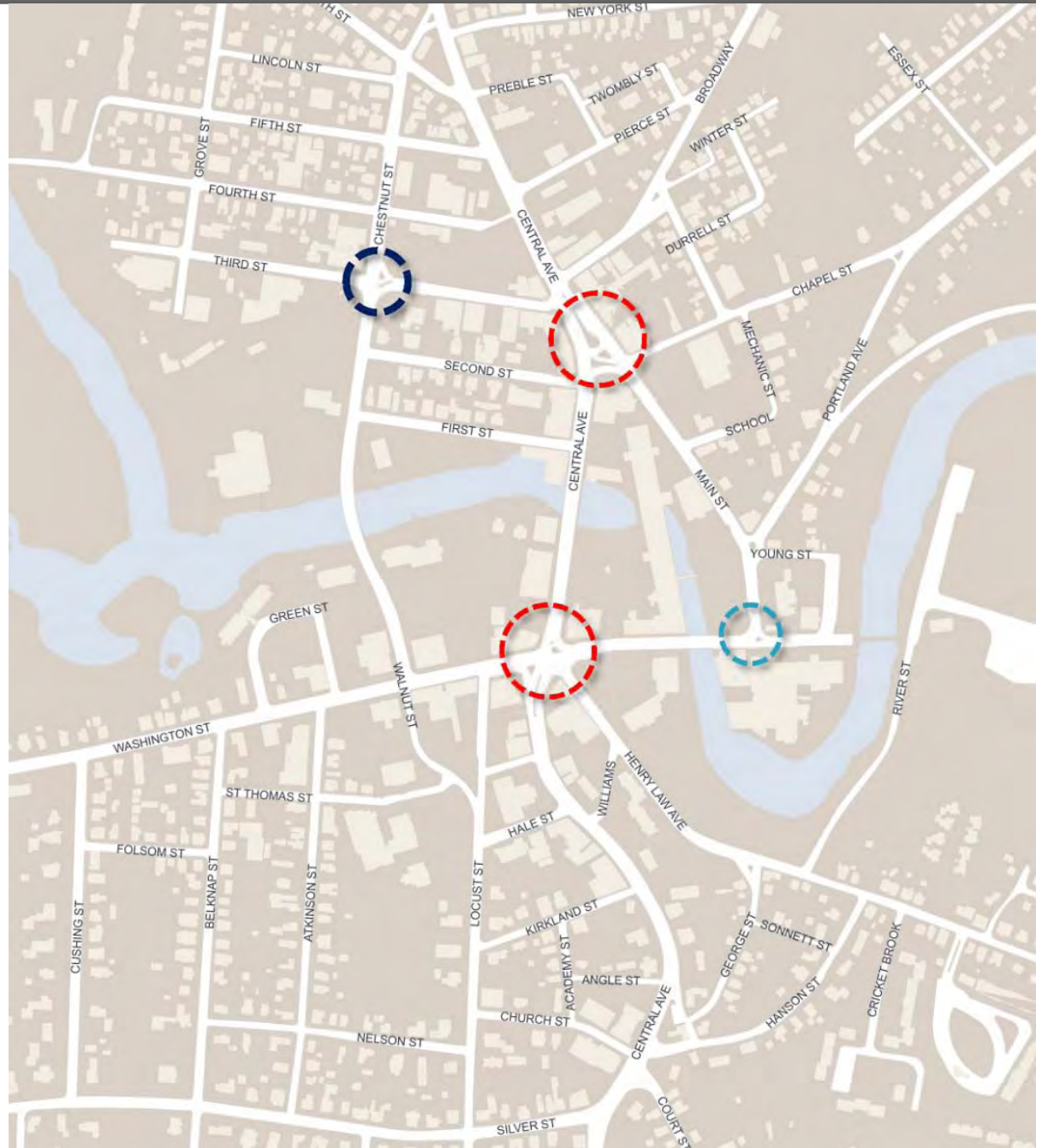
Relocated signals with intersection changes







New signalized intersection

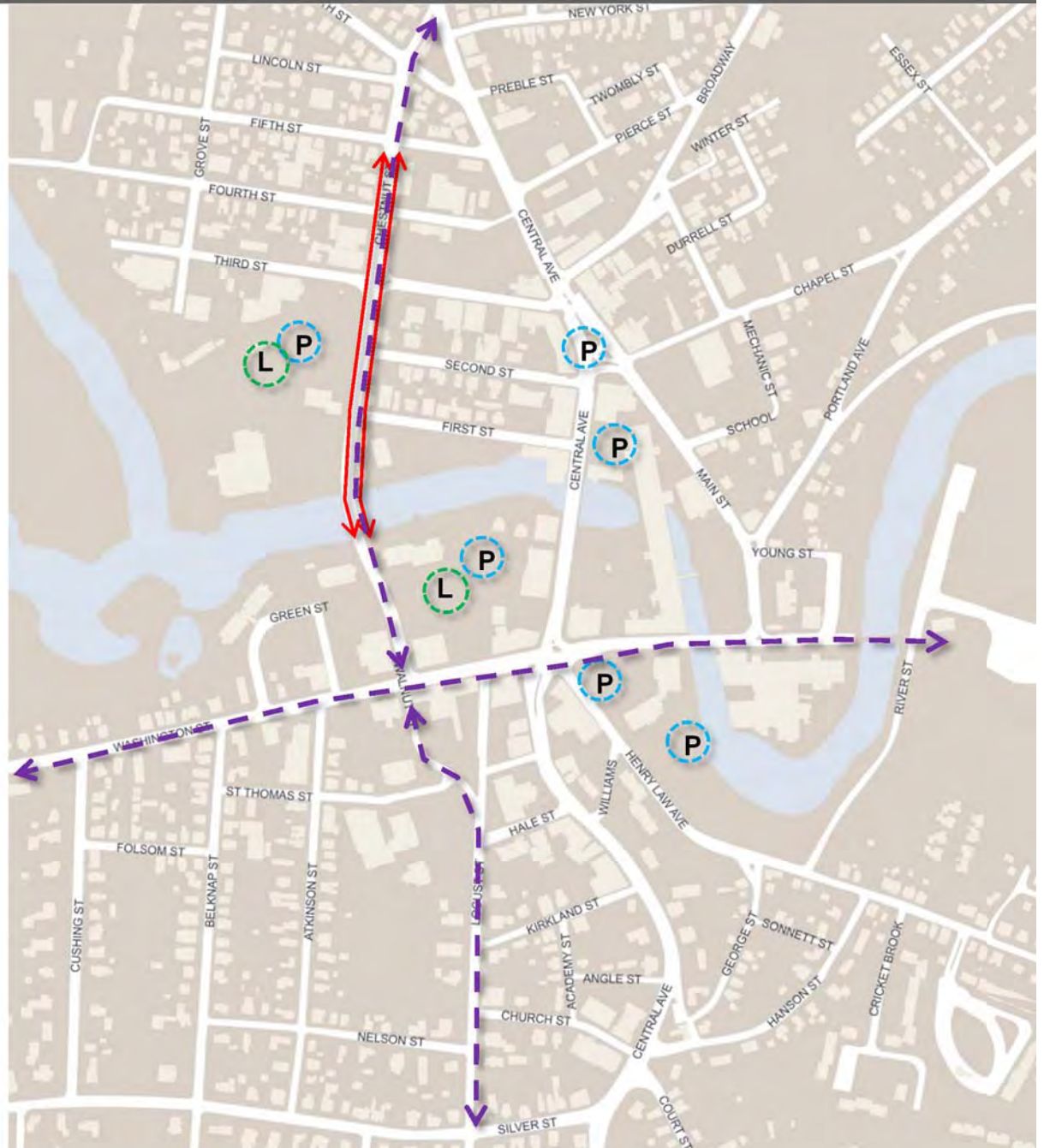


New Stop sign



# Alternative A: Proposed Bicycle Facilities

-  Bicycle lanes
-  Bicycle routes
-  Bicycle Parking/Racks
-  Bicycle Lockers



# Alternative B Two-way Loop.

The following section describes the elements of Alternative B.

## Alternative B: Two-way Loop

### ■ Lower Square

- Henry Law Ave access remains open
- Additional northbound right lane

### ■ Upper Square

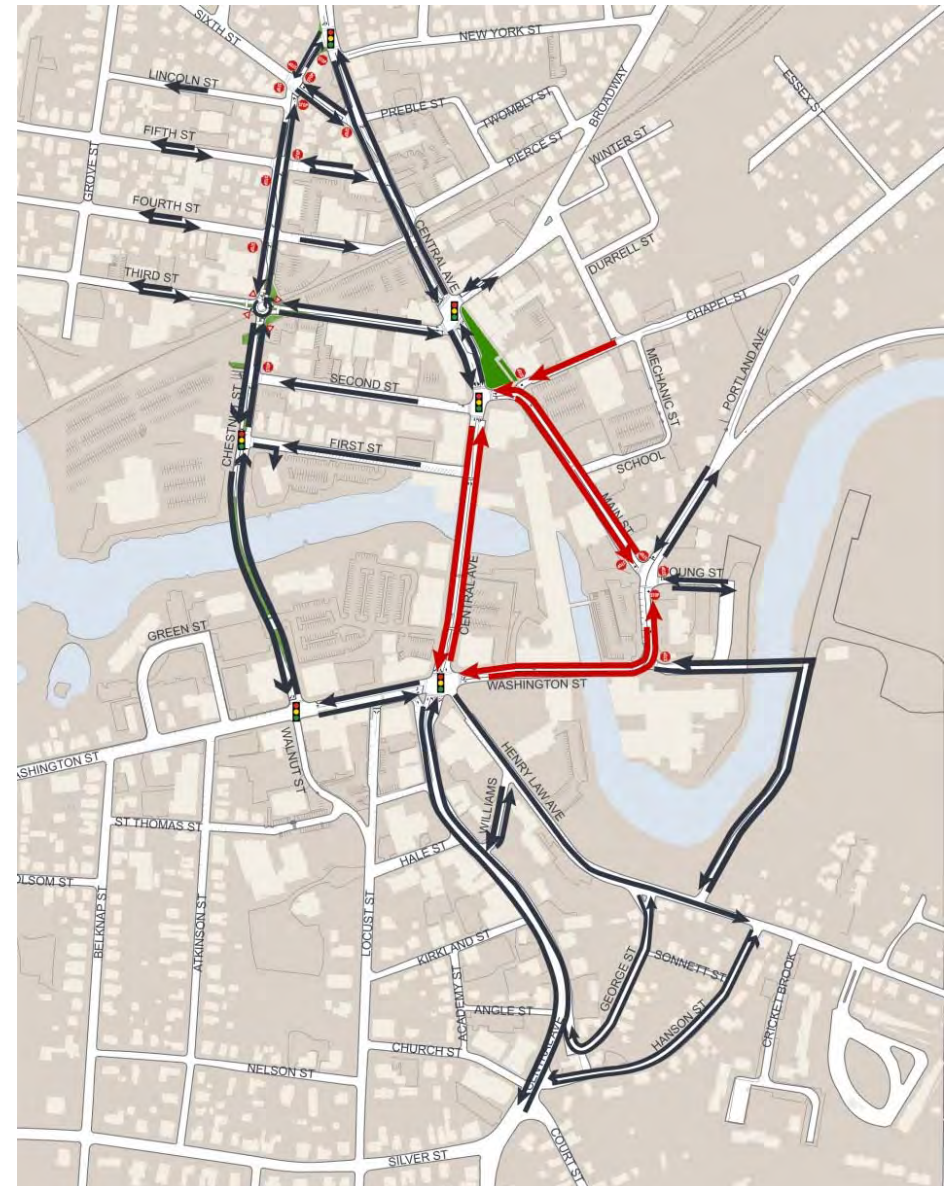
- Plaza on eastern side of square
- Reverse flow on Chapel St

### ■ Chestnut Street

- Road diet: Washington St. to Third St. with on-street parking & median
- Third St mini-roundabout
- Signal at Central Ave

### ■ Main St/Portland Ave Intersection

- Aligned with Young St + four-way stop



## Alternative B: Two-way Loop Illustration

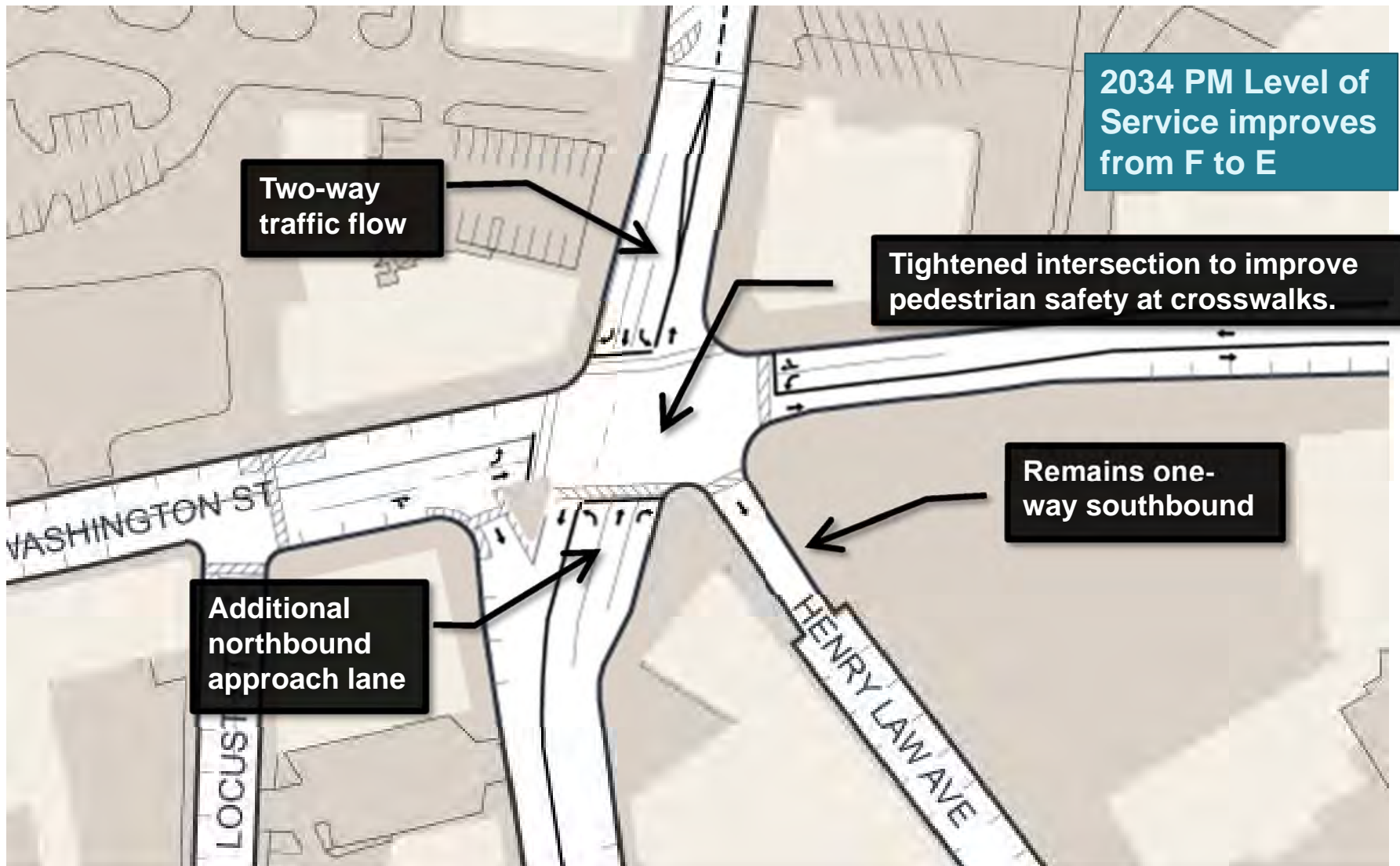
- At right is a conceptual drawing showing how the streetscape might be realized for the options of Alternative B.

Details of tree locations, pedestrian plazas, crosswalks, and parking spaces are for graphic representation only and do not reflect final proposed locations.

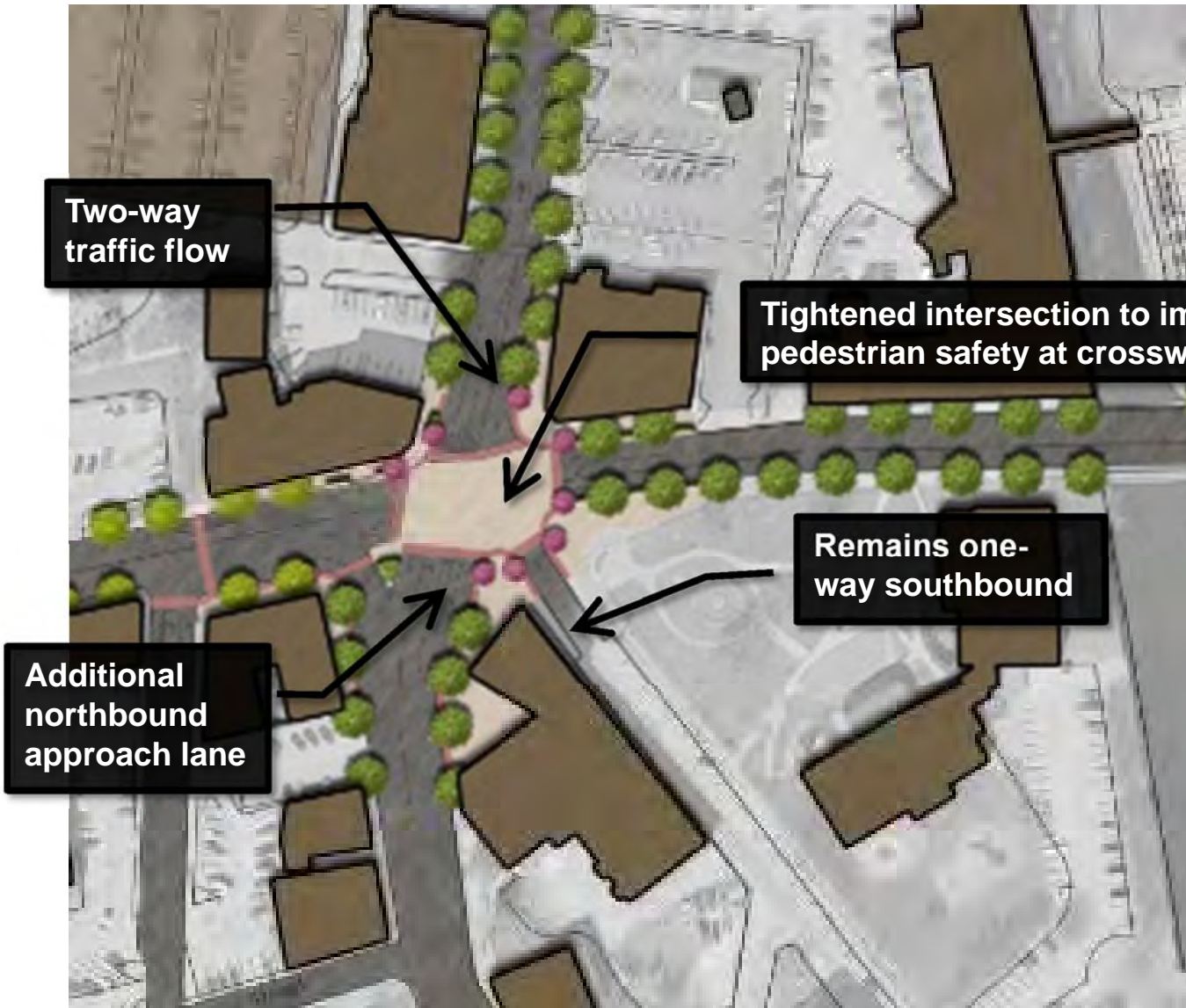




## Alternative B Focus: Lower Square



# Alternative B Focus: Lower Square Illustration

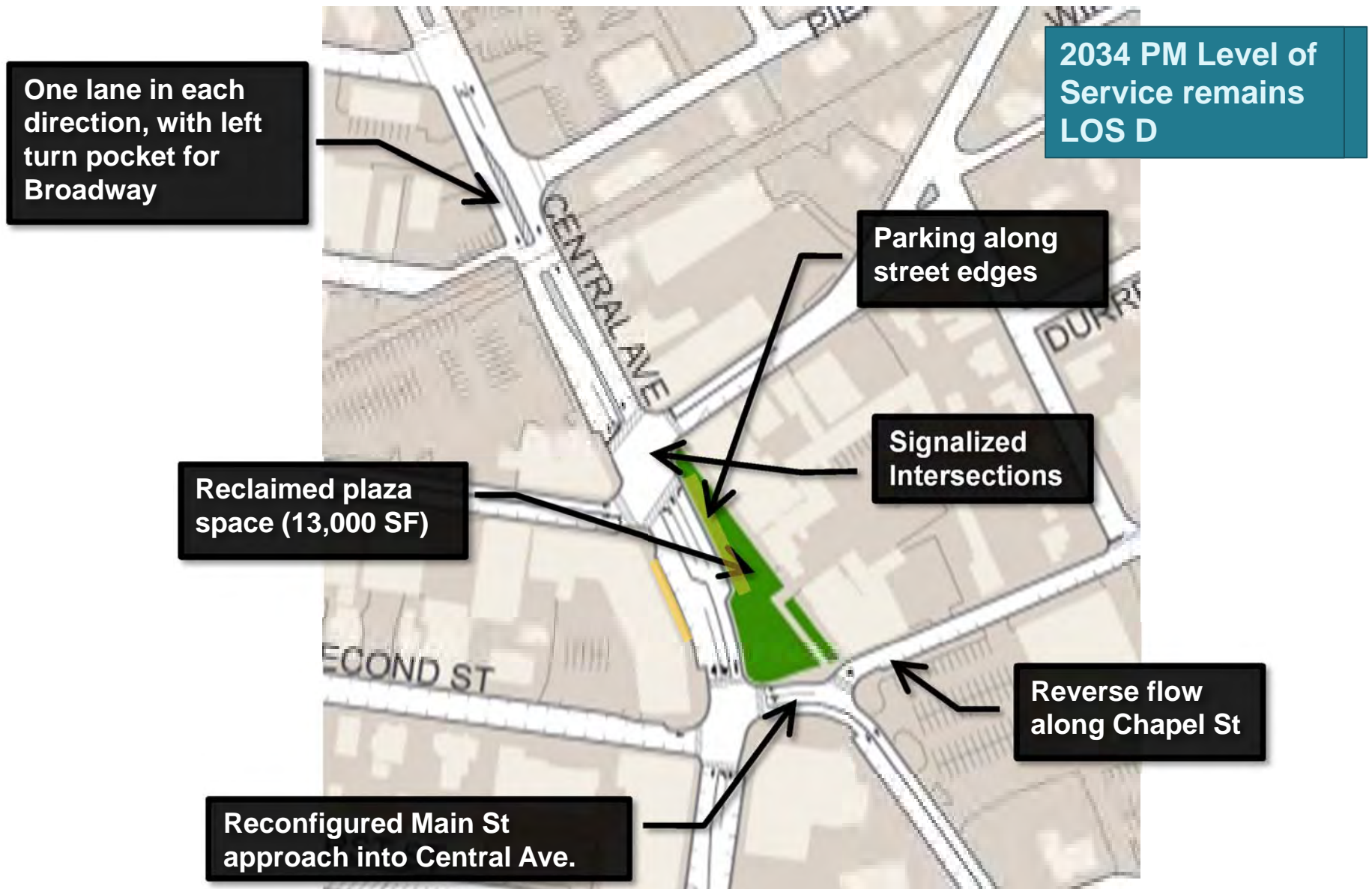


**2034 PM Level of Service improves from F to E**

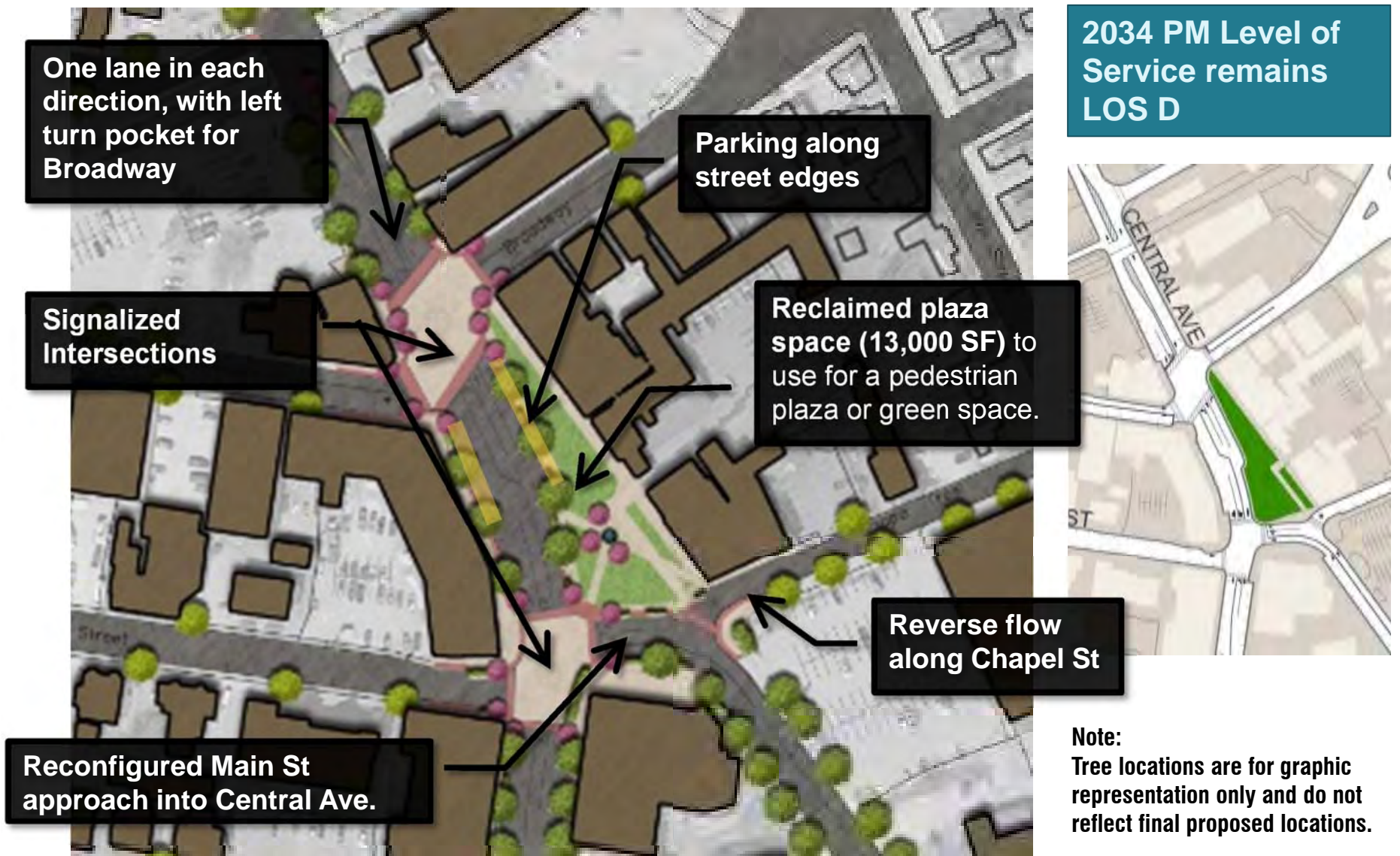


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# Alternative B Focus: Upper Square



# Alternative B Focus: Upper Square Illustration



# Alternative B Focus: Upper Square Streetscape Plan and Perspective



## Alternative B: Main St/Portland Ave

- “Square up” Intersection
- Four-way Stop Control
- LOS C/D in 2034

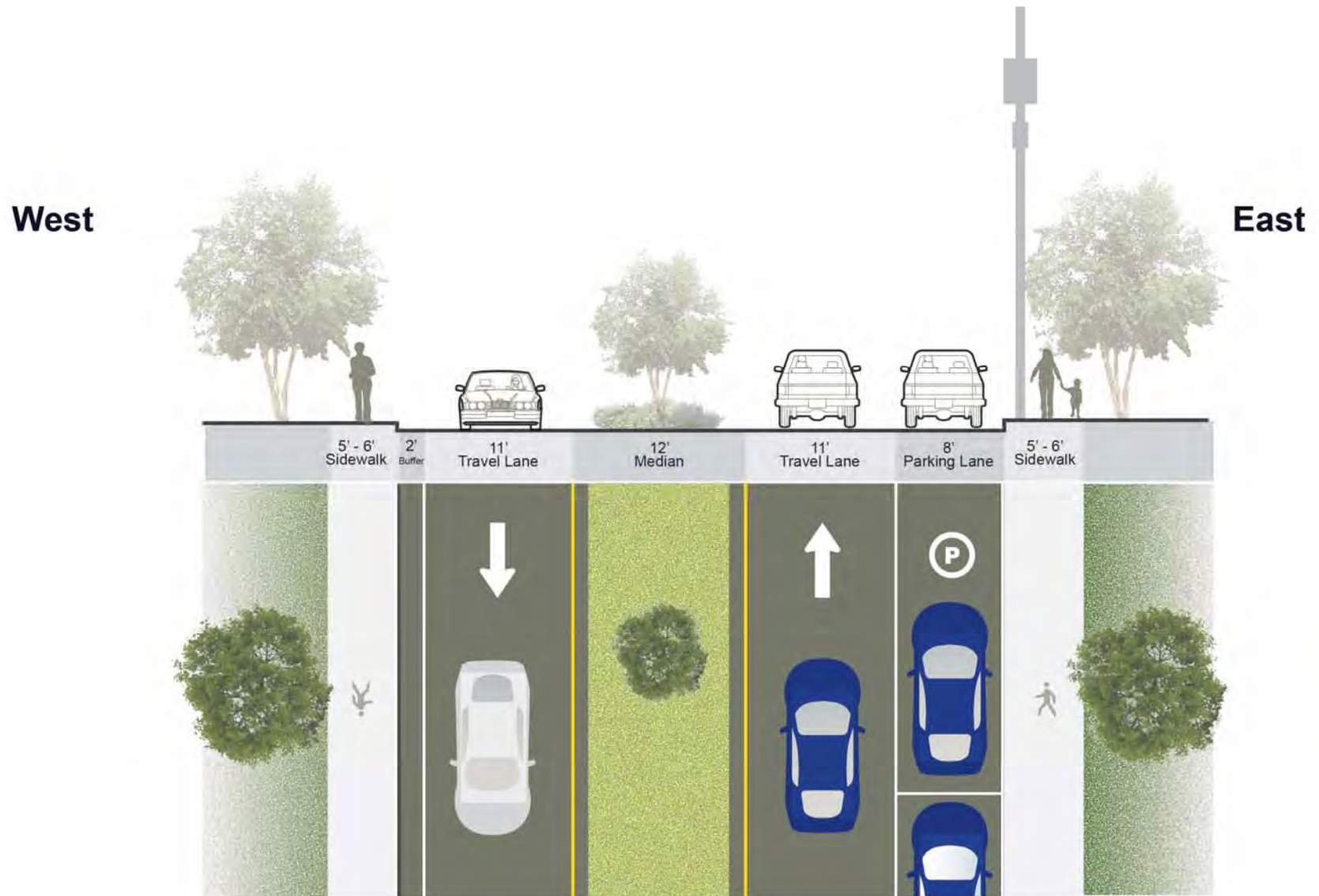


## Alternative B: Chestnut Street Illustration and Diagram

- Road Diet – Conversion from 4 lanes to 3 lanes
  - On-Street Parking:
    - *West Side – Washington to Third Street*
    - *Both Sides - North of Third Street*
  - Landscaped Median: +/-12' width
- Third Street Intersection
  - Mini-roundabout
  - Reduced pavement
- Bus Stops
  - Northbound at Orchard Street Lot
  - Southbound at Riverview Apts
- Signalized intersection at Chestnut and Central Ave



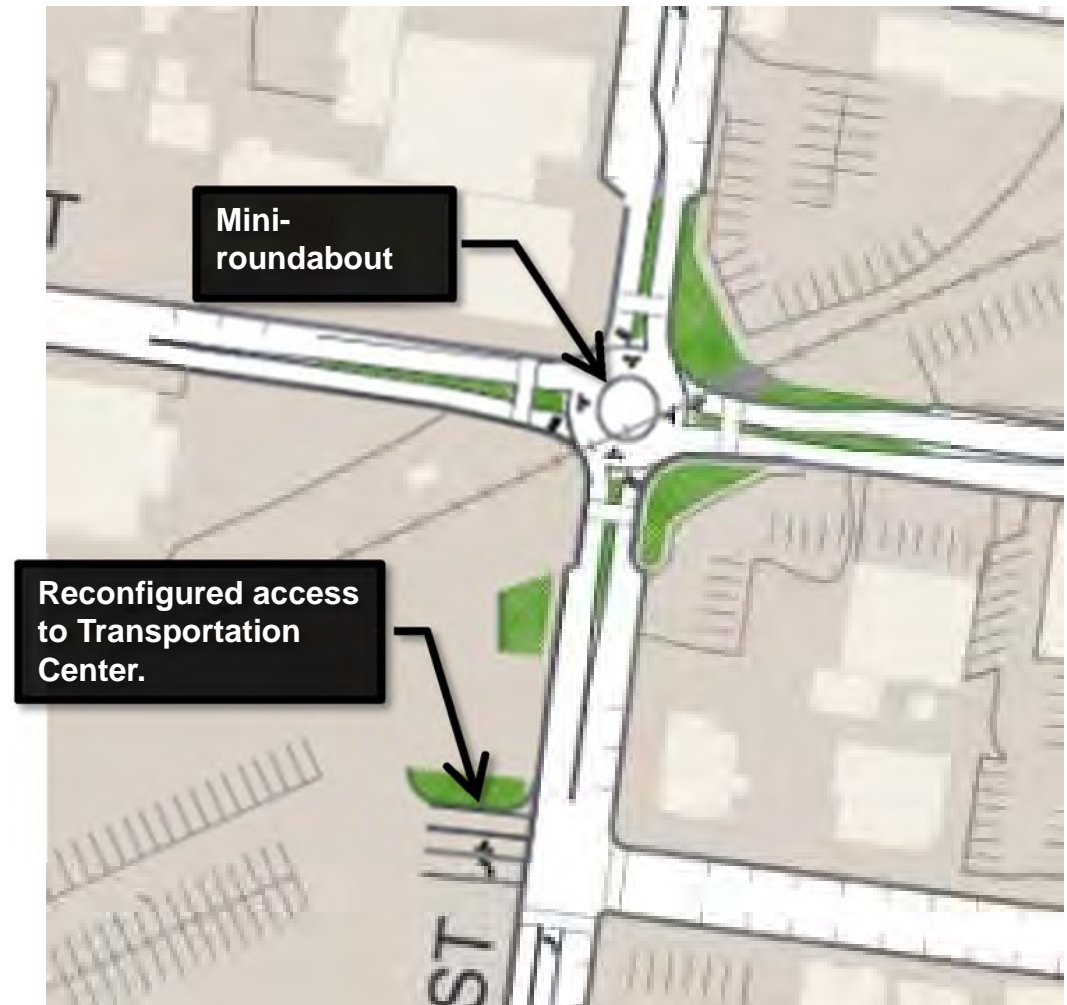
# Alternative B: Chestnut Street





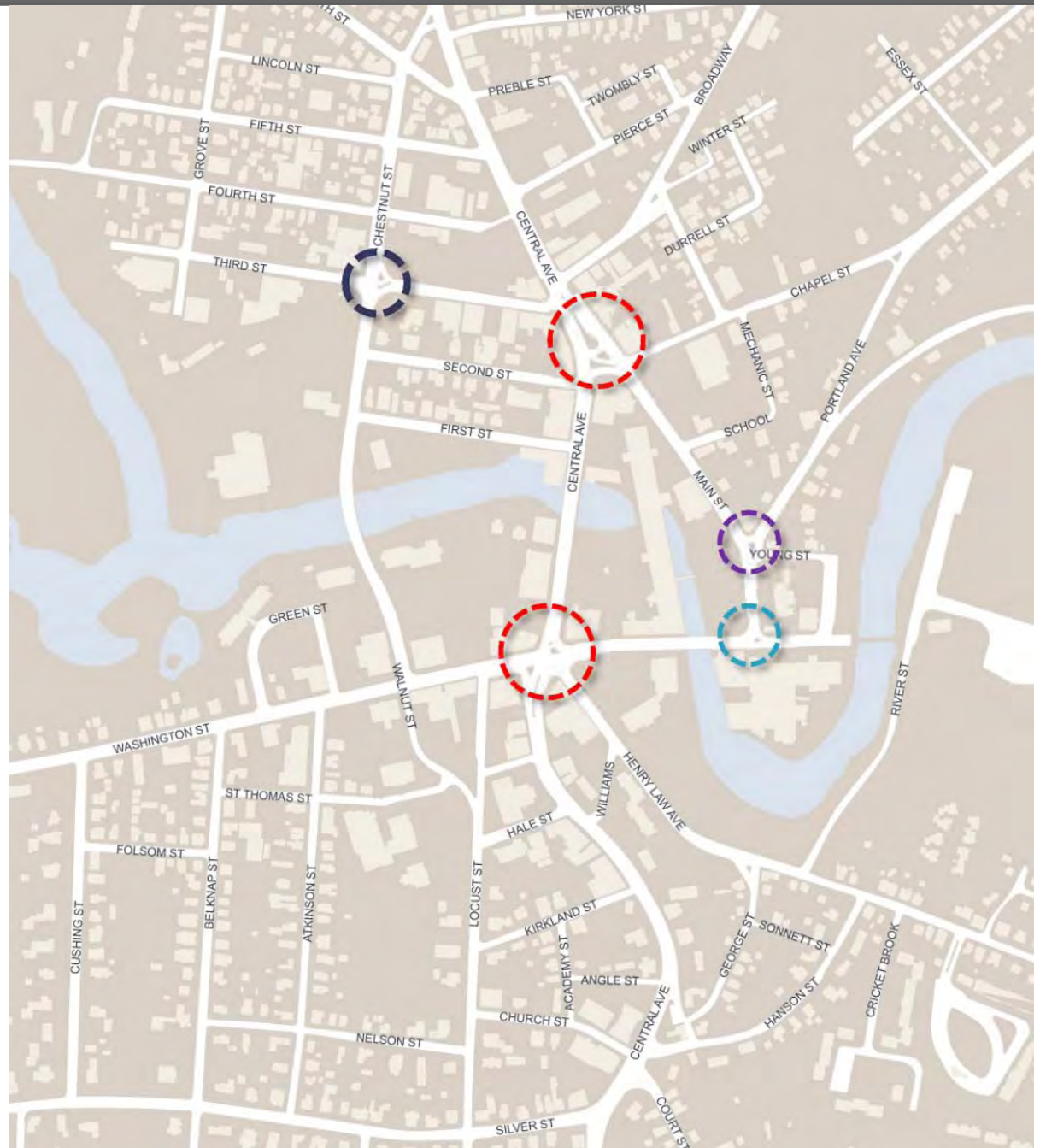
## Alternative B: Third Street Intersection

- “Mini roundabout”
- LOS B in 2034
- Consolidate access to Transportation Center






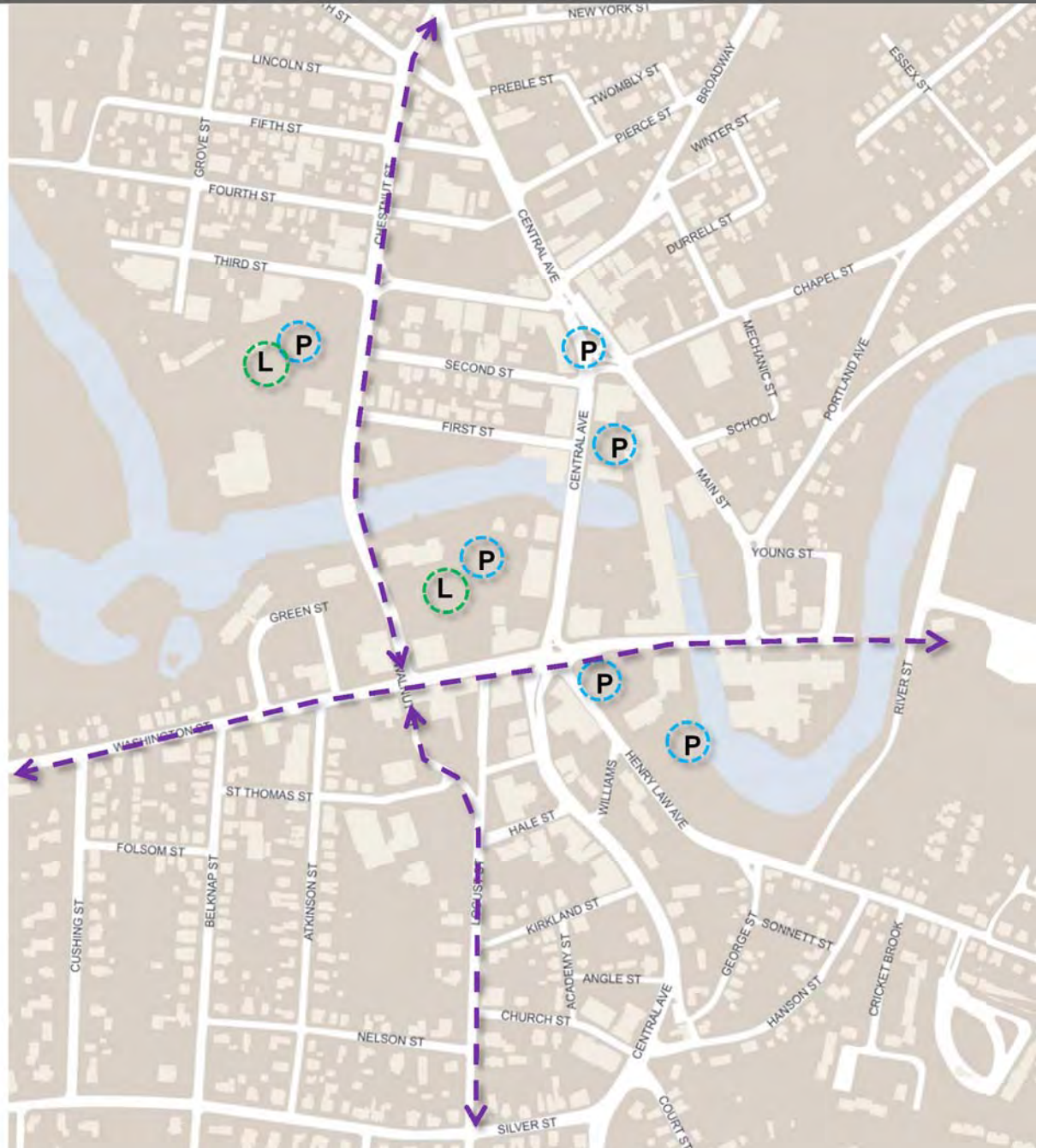
# Alternative B: Signalization and Traffic Control

-  Relocated signals with intersection changes
-  New mini roundabout
-  New Stop sign
-  Reorganized Stop signs



# Alternative B: Proposed Bicycle Facilities

-  Bicycle routes
-  Bicycle Parking/Racks
-  Bicycle Lockers



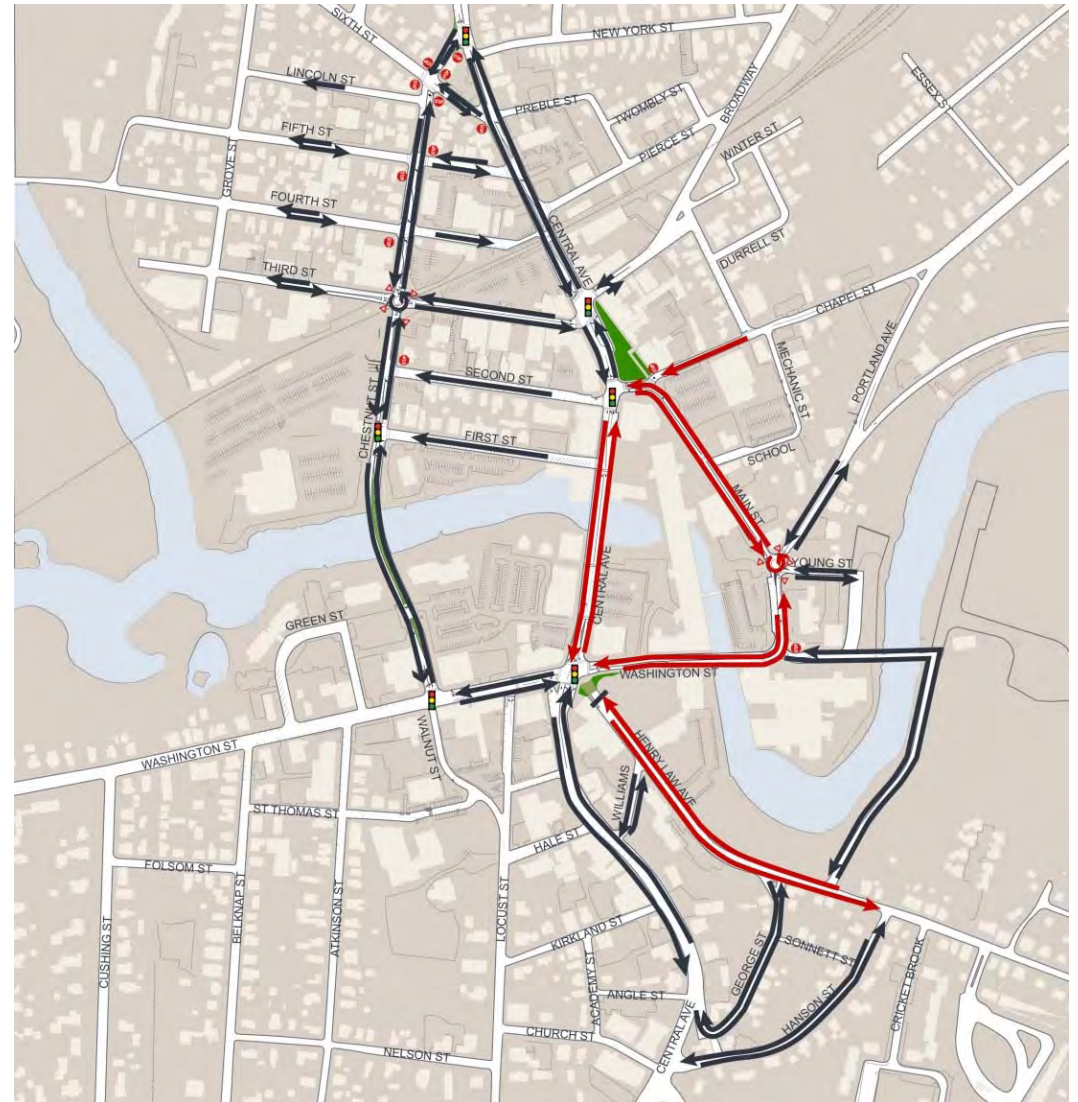
# Alternative C

## Enhanced Two-way Loop

The following section describes the elements of Alternative C.

## Alternative C: Enhanced Two-way Loop

- Lower Square
  - Close Henry Law Ave access
  - Additional northbound lane
- Upper Square
  - Plaza on eastern side of square
  - Reverse flow on Chapel St
- Chestnut Street
  - Road diet: Washington St. to Third St. with bike lane & median
  - Third St mini-roundabout
  - Signal at Central Ave
- Main St/Portland Ave Intersection
  - Mini-roundabout



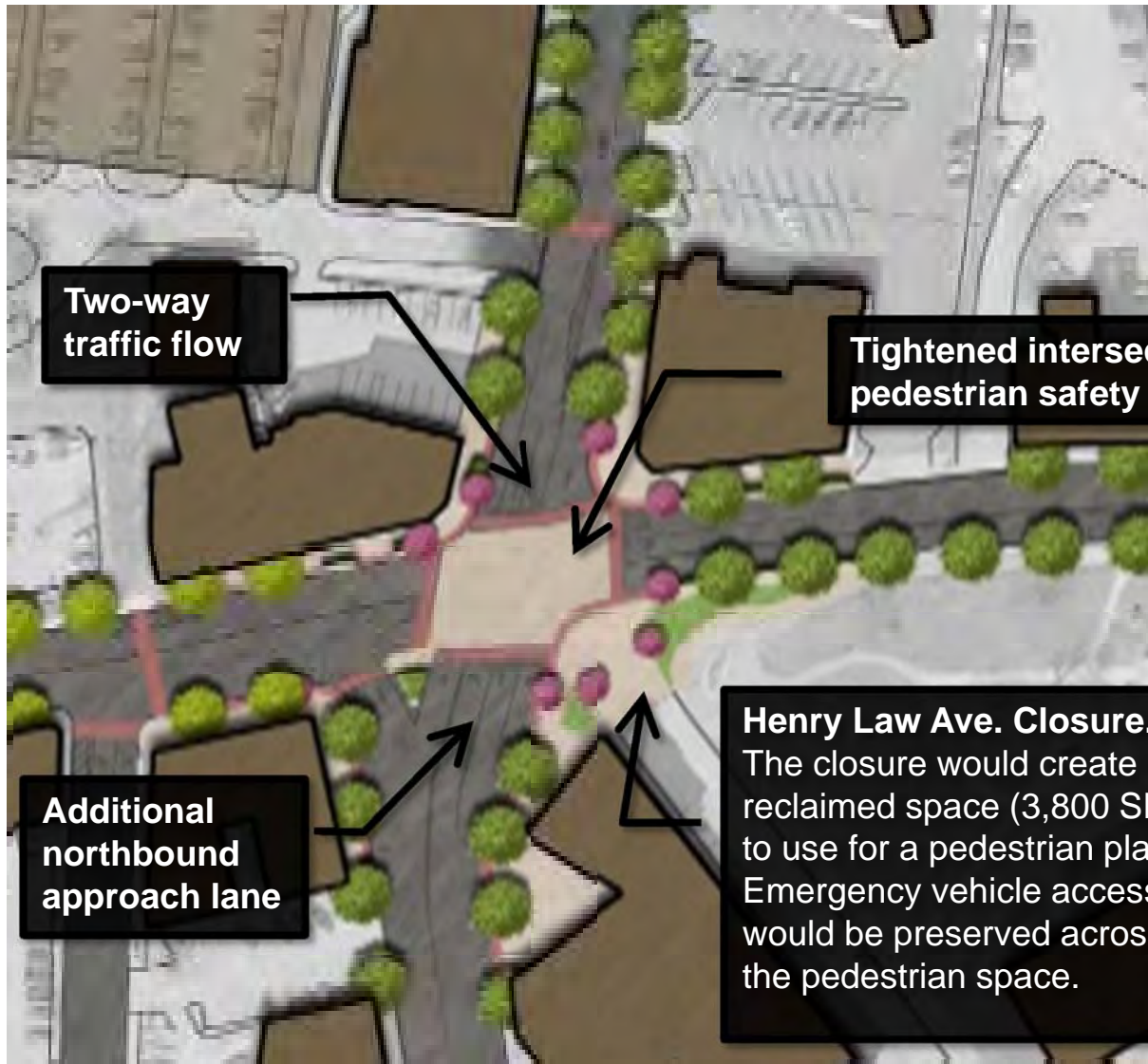
## Alternative C: Enhanced Two-way Loop

- At right is a conceptual drawing showing how the streetscape might be realized for the options of Alternative C.

Details of tree locations, pedestrian plazas, crosswalks, and parking spaces are for graphic representation only and do not reflect final proposed locations.



# Alternative C Focus: Lower Square Illustration



2034 PM Level of Service remains LOS D



**Note:**  
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# Alternative C Focus: Lower Square Streetscape Plan and Perspective

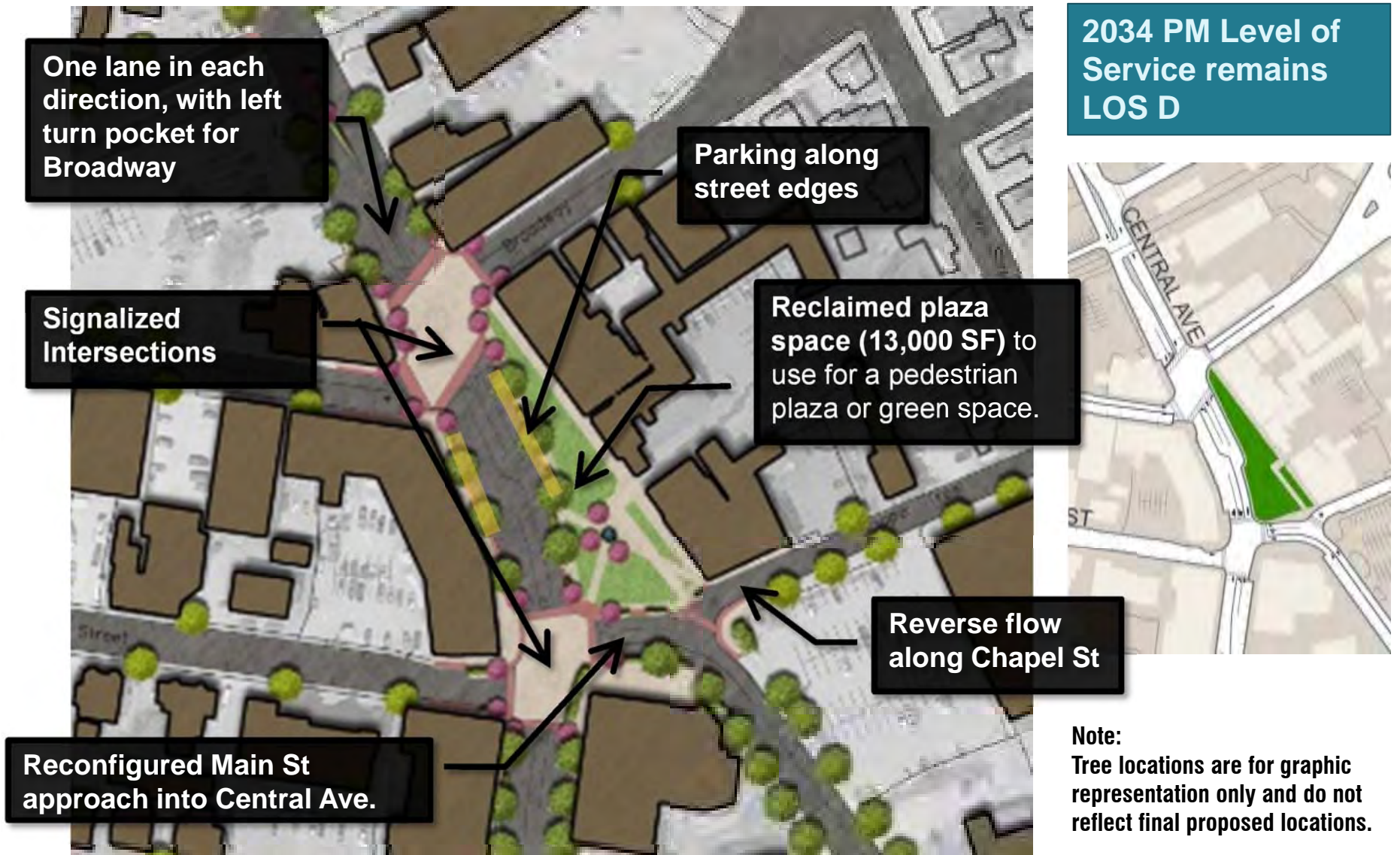




# Alternative C Focus: Upper Square



# Alternative C Focus: Upper Square Illustration



# Alternative C Focus: Upper Square Streetscape Plan and Perspective



## Alternative C: Main St/Portland Ave

- Install mini-roundabout
- Traversable center median for trucks and large emergency vehicles
- Trucks heading north would take Chapel Street, or make a left onto Main and go up Central



# Alternative C: Signalization and Traffic Control



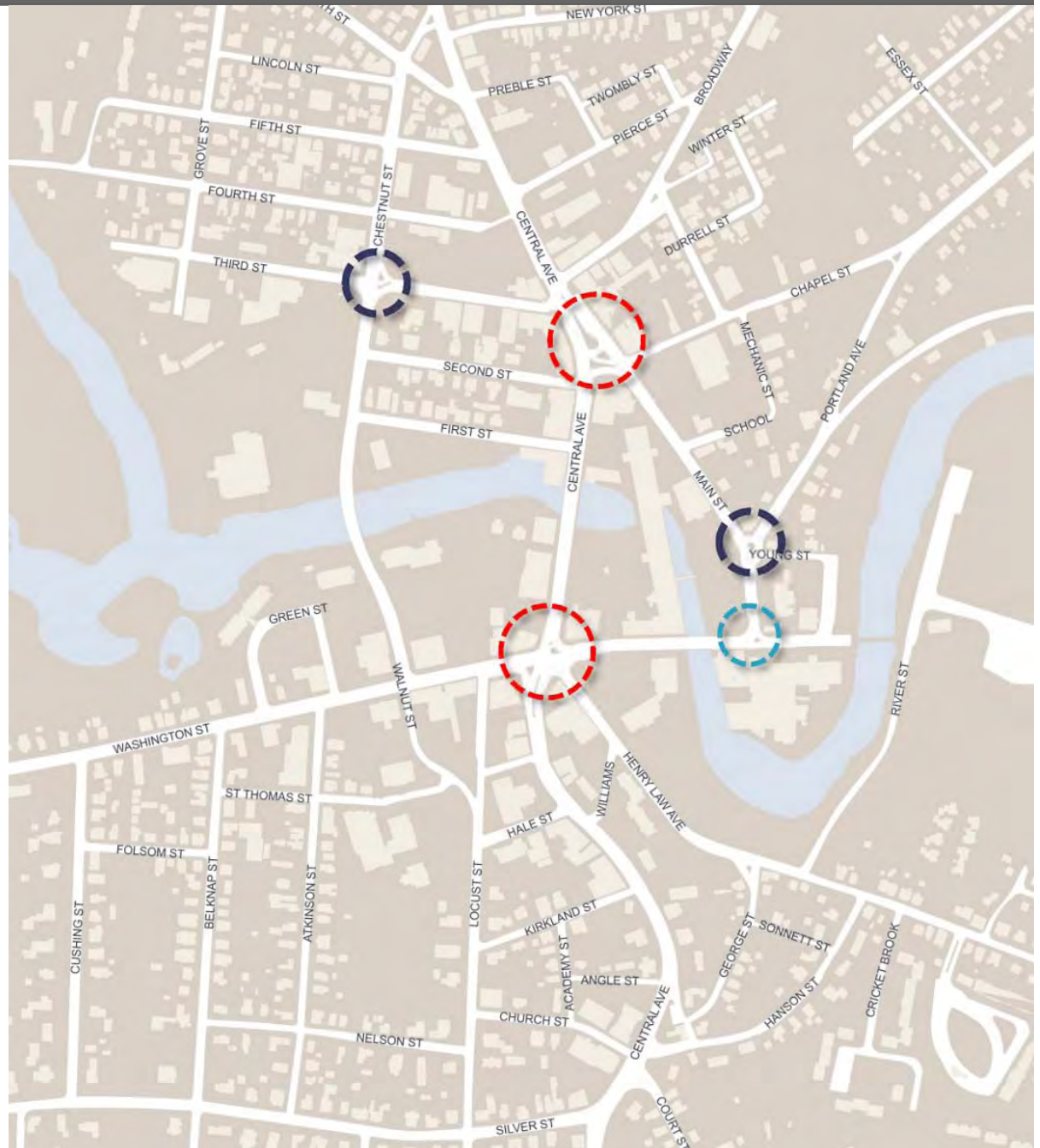
Relocated signals with intersection changes







New mini roundabouts

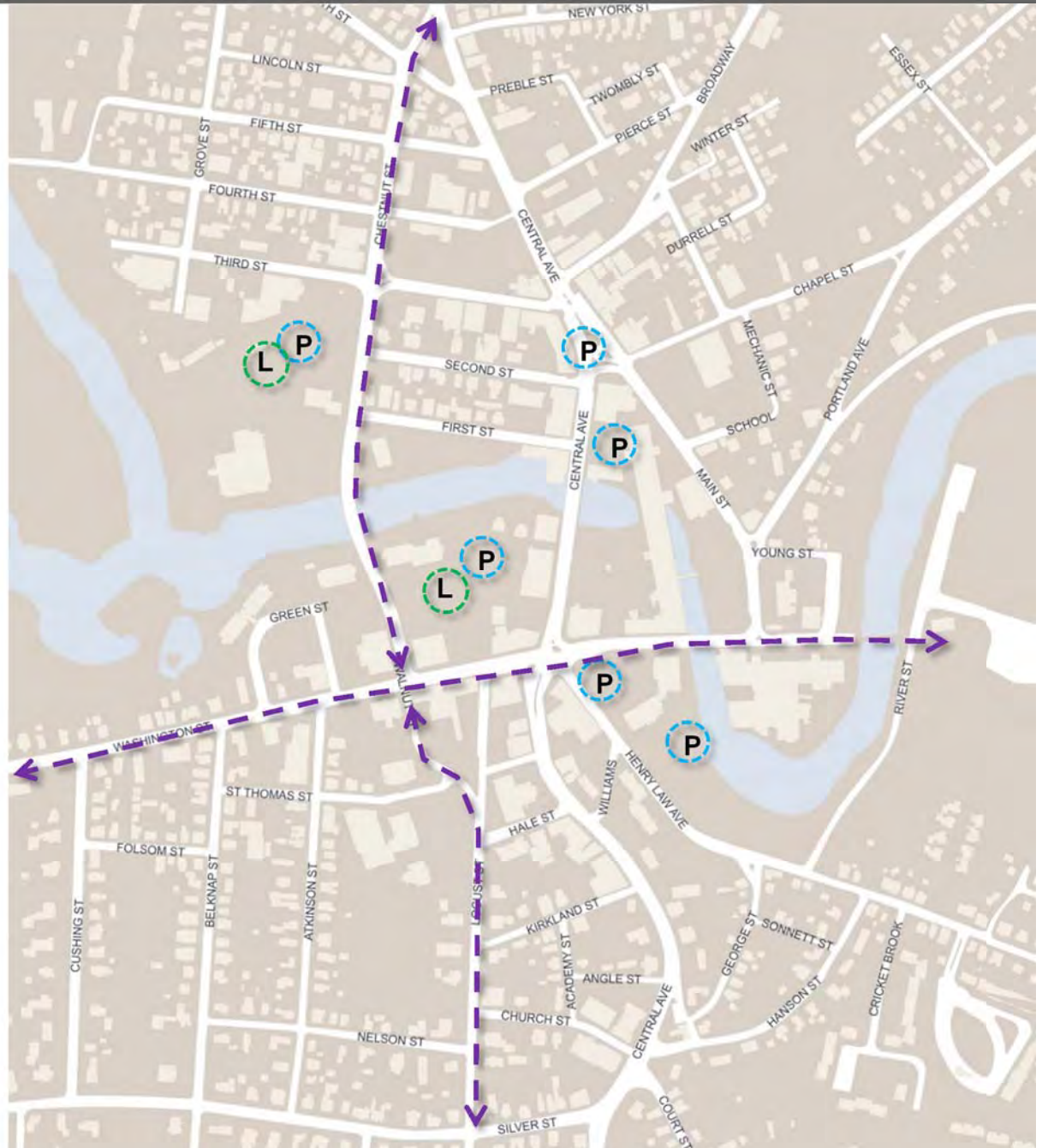


New Stop sign



# Alternative C: Proposed Bicycle Facilities

-  Bicycle lanes
-  Bicycle routes
-  Bicycle Parking/Racks
-  Bicycle Lockers



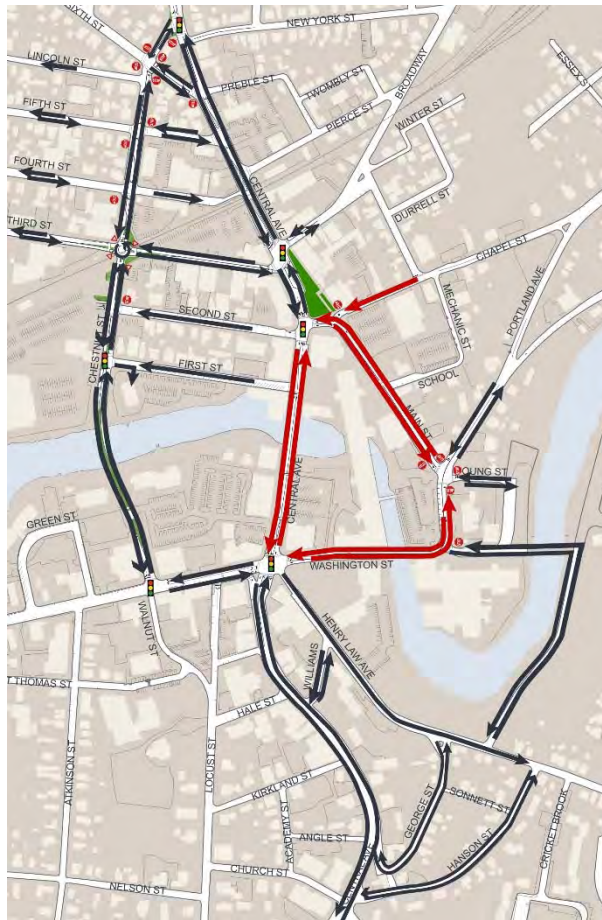
# Circulation Alternatives: Summary and Comparative Evaluations

# Summary of Alternatives

## Alt A: Enhanced One-way Loop



## Alt B: Two-way Loop



## Alt C: Enhanced Two-way Loop





# Alternatives

## Alt A: Enhanced One-way Loop



DOVER (Pedestrian and Vehicular Access and Streetscape Study)  
Alternative A: One-way Loop

## Alt B: Two-way Loop



DOVER (Pedestrian and Vehicular Access and Streetscape Study)  
Alternative B: Two-way Loop

## Alt C: Enhanced Two way loop



DOVER (Pedestrian and Vehicular Access and Streetscape Study)  
Alternative C: Two-way Loop, with Mini-Roundabout

# Congestion

	2014 PM Peak Hour			
	No Build	Alt A	Alt B	Alt C
Upper Square	D	D	D	D
Lower Square	E	D	D	D
Main St/Portland Ave	C	C	C	C
Main St/Washington St	C	C	C	C

	2034 PM Peak Hour			
	No Build	Alt A	Alt B	Alt C
Upper Square	D	D	D	D
Lower Square	F	D	E	D
Main St/Portland Ave	D	D	D	D
Main St/Washington St	E	F	D	D

# Performance Indicators

	Alternative A: Enhanced One way Loop	Alternative B: Two way Loop	Alternative C: Enhanced Two way Loop
Traffic Capacity	+++	+++	+++
Traffic Mobility	+++	+++	+++
Safety Enhancement	+++	+++	+++
Vehicle Emissions	+++	+++	+++
Ped/bike Mobility	+++	+++	+++
Reclaimed Space	+++	+++	+++
	<b>9</b>	<b>12</b>	<b>15</b>

# Alternatives Evaluation Matrix: Safety and Operations

	Alternative A: Enhanced One way Loop	Alternative B: Two way Loop	Alternative C: Enhanced Two way Loop
Traffic Capacity	+ + +	+ + +	+ + +
Traffic Mobility	+ + +	+ + +	+ + +
Safety Enhancement	+ + +	+ + +	+ + +
Vehicle Emissions	+ + +	+ + +	+ + +
Ped/bike Mobility	+ + +	+ + +	+ + +
Reclaimed Space	+ + +	+ + +	+ + +
	<b>9</b>	<b>12</b>	<b>15</b>

# Comparative Cost Implications

	Alternative A		Alternative B		Alternative C	
	Type/ Approximate Length (linear feet)	Relative Cost Factor	Type/ Approximate Length (linear feet)	Relative Cost Factor	Type/ Approximate Length (linear feet)	Relative Cost Factor
<b>Major Intersection Reconfiguration</b>						
Upper Square	reconstruct	high	reconstruct	high	reconstruct	high
Lower Square	reconstruct	high	reconstruct	high	reconstruct	high
Portland Street	reconstruct	high	reconstruct	high	reconstruct	high
Chestnut at Third Street	minor change	low	roundabout	high	roundabout	high
<b>New Intersection Signalization</b>						
Chestnut at Third Street	1 new signal	high	N/A	N/A	N/A	N/A
<b>Major Street Reconfiguration</b>						
Chestnut Street	1,450 LF	high	1,300 LF	high	1,300 LF	high
<b>Street and Streetscape Improvements</b>						
Central Avenue	1680 LF	low	1680 LF	low	1680 LF	low
Main Street	680 LF	low	680 LF	low	680 LF	low
Chestnut Street	950 LF	low	950 LF	low	950 LF	low
Williams Street	380 LF	moderate	N/A**	N/A**	380 LF	moderate
George Street	600 LF	moderate	N/A**	N/A**	600 LF	moderate
<b>Streetscape/Sidewalk Improvements</b>						
First through Sixth Streets	3,000 LF	moderate	3,000 LF	moderate	3,000 LF	moderate
Washington Street	420 LF	low	420 LF	low	420 LF	low
<b>Pedestrian Paths</b>						
Enhanced Off-Street Paths	3,470 LF	low	3,470 LF	low	3,470 LF	low

\* Costs are relative costs for this type of improvement based on typical area or linear footage (LF) of construction

\*\* Improvements to Williams Street and George Street for vehicles and pedestrians are advisable, regardless of whether access is retained or removed from the intersection of Washington Street and Chestnut Street

## Comparative Cost Implications

- **Total costs are comparable among all three alternatives**
- All three alternatives propose substantial reconfiguration of Upper Square, Lower Square and Portland Street/Main Street, and lower Chestnut Street - regardless of the decisions on street directions
- Alternative A proposes a new signalized intersection at Chestnut/Third Street, while Alternatives B and C would provide an unsignalized roundabout; the costs would likely be somewhat higher for the roundabout solution.
- Alternative A and C would require traffic and pedestrian improvements for Williams Street and George Street, if the intersection of Henry Law at Washington Street/Central Avenue is removed. However, both streets and overall circulation would benefit from improvements to these streets, regardless of the circulation decision.

## Comparative Phasing Implications

- **Construction phasing options for all three alternatives are generally comparable**
- The Chestnut Street improvements and many streetscape improvements could be accomplished incrementally, and are not dependent upon the overall circulation scheme.
- In general, two-way street systems tend to be more adaptable and flexible for accommodating construction over time, because they provide redundant routes.
- For any of the alternatives, improvements could occur incrementally, in association with a sequence of major intersection changes followed by lane reassignments.

# Next Steps

## Next Steps

### On-line presentation and information (**this document**)

- Access through [www.ci.dover.nh.us](http://www.ci.dover.nh.us) (Planning and Community Development)

### On-line survey:

- Access beginning April 28 on-line through [www.ci.dover.nh.us](http://www.ci.dover.nh.us) (Planning and Community Development)

### Alternatives Open House

- Additional discussion and input
- May 15, 6 to 8 PM
- McConnell Center Media room, 61 Locust Street

### May-June: selection and refinement of preferred alternative

### June: Public Workshop #3