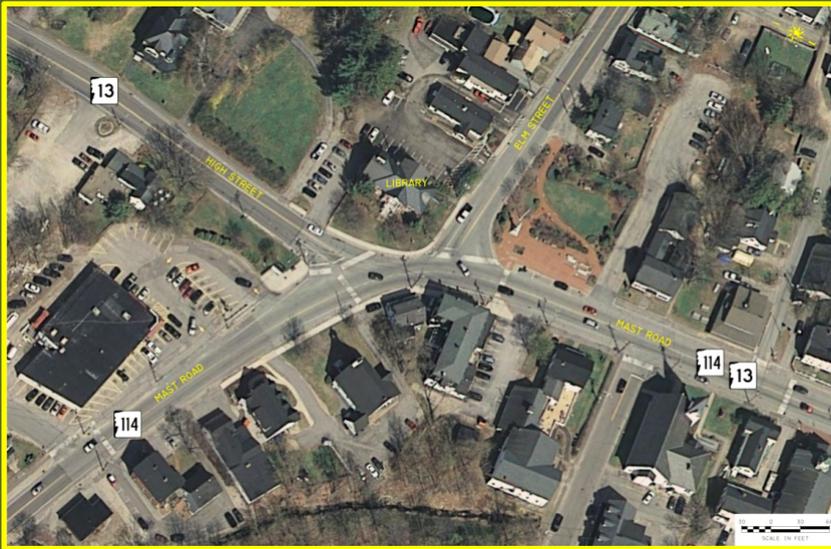


Mast Road Intersections Alternatives Workshop

Wednesday, July 31, 2013



Presented By

- Carl Quiram, P.E. – Director of Public Works
- Michael Long, P.E. – Project Manager
- Brian Colburn, P.E. – Project Engineer

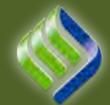
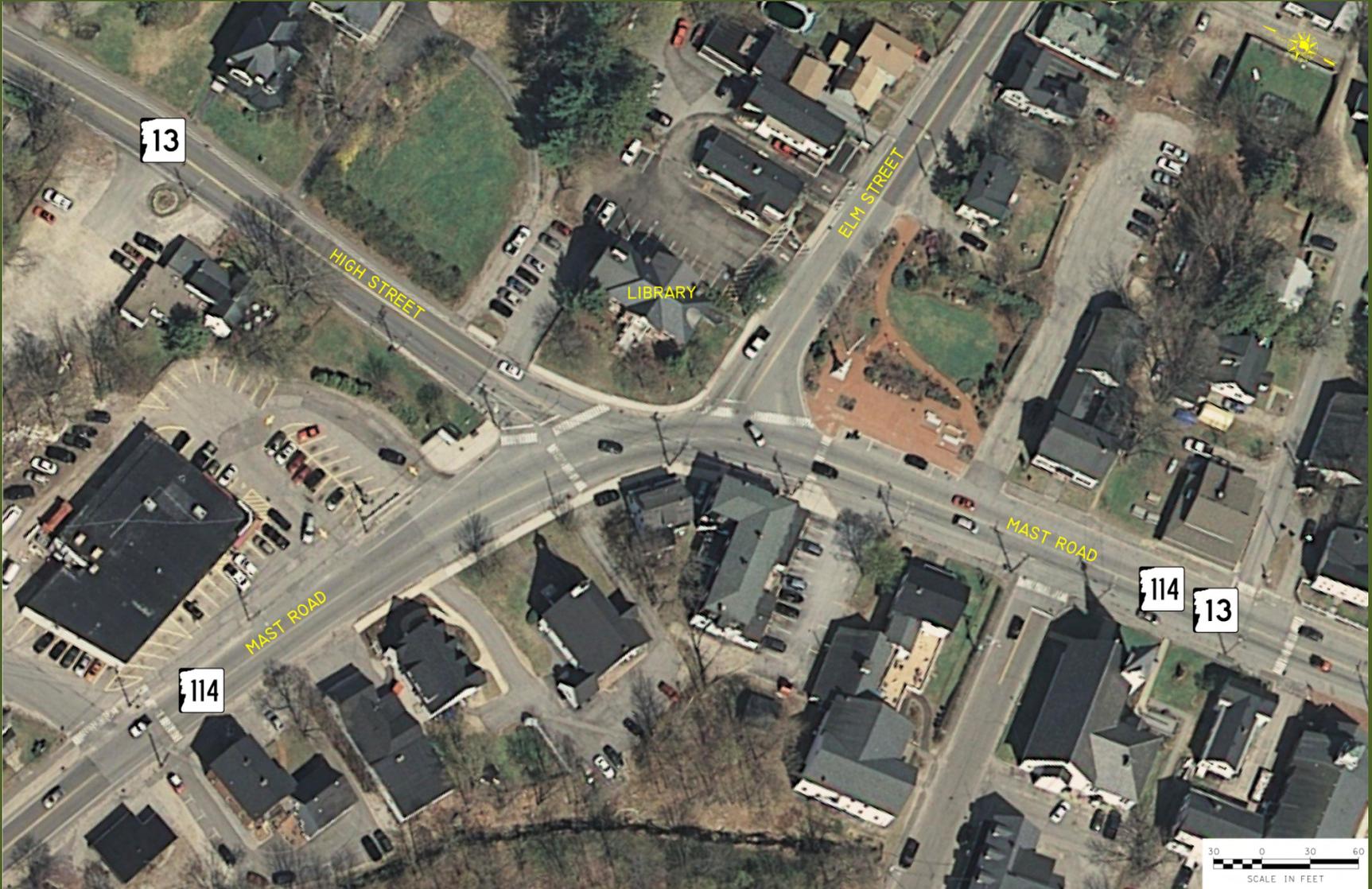


Meeting Agenda

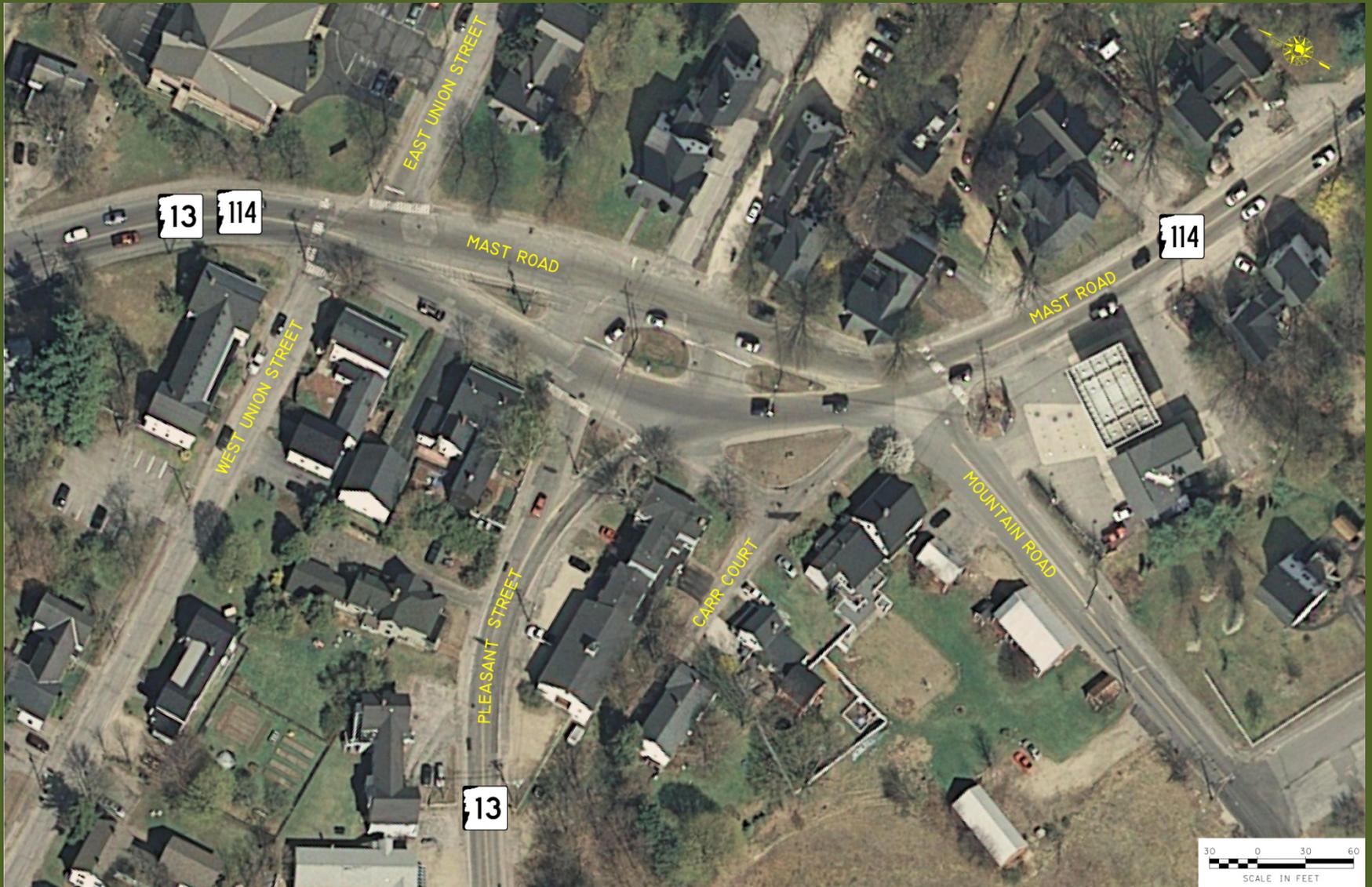
- Welcome/Introductions
- Project Overview
- Purpose and Need
- Resources
- Traffic Summary
- Alternatives
- Questions



Project Overview



Project Overview



Project Overview

- Previous Studies
 - Bypass Option (1970)
 - NHDOT Alternatives Study (1998)
 - Route 114 Corridor Management Plan (2003)
 - Pleasant Street Traffic Study (2006)
 - Village Planning Committee Report (2008)

Project Overview

- Funding (Federal Aid - CMAQ) (Rec'd Feb. 2011)
- Three Phase Process
 - Phase I – Conceptual Design (By August 2013)
 - Phase II – Final Design (By April 2014)
 - Phase III – Construction (Summer / Fall 2014)

Project Overview

Project Funding

- Total Funding is \$819,000
- Town Share is 45% (\$368,550)
- Tentative Split
 - \$538,400 at Pleasant Street
 - \$280,600 at High and Elm Street

Project Overview

Steering Committee

- Larry Brown – Community At Large Representative
- Don Ball – Community At Large Representative
- Ray Taber – Community At Large Representative
- Beverly Powden – Community At Large Representative
- Dave Smith – Community At Large Representative
- Cynthia Boisvert – Main Street Program Representative
- Ruth Gage – Historic District Commission Representative
- Collis Adams - Selectmen Representative
- Brian Hansen - Planning Board Representative

Listening Session – May 21, 2013

Pleasant Street Issues and Concerns Identified Include:

- Confusing Layout (Drivers Going the Wrong Way)
- Difficult Pedestrian Crossing at Union Street
- Difficult to Pull Out (But Only during Peak Hours)
- Too Many Driveways



Listening Session – May 21, 2013

High and Elm Street Issues and Concerns Identified Include:

- Long Crosswalks
- Relatively High Speed
- Long Queues on High and Elm Street
- Historic Village District



Purpose and Need

Purpose

The project's purpose is to improve safety and traffic flow for all travel modes (motor vehicles, bicyclists, and pedestrians) at the intersections of Mast Road/Main Street with High and Elm Street and with Pleasant Street while maintaining the heritage and character of the Village area in the Town of Goffstown.

Needs

- Traffic volumes are currently too large, resulting in an unacceptable level of service at each intersection.
- Extended delays for turning vehicles create driver frustration.
- Sight distance restrictions and vehicle speed contribute to the safety issues for pedestrian crossings.
- Emergency vehicles have difficulty getting through the intersections during peak traffic times.
- The existing traffic control devices at the Pleasant Street intersection are inadequate, resulting in wrong way movements.

Environmental Resources

Historic Resources
Are The Only Critical
Environmental
Concern



Traffic Analysis

Study

- New Traffic Counts (AM/PM) – May 2013
- Determined AM & PM Peak Design Hour Volumes
- Projected Volumes for the Design Year 2034
- Evaluate based on Level of Service (LOS)
- LOS Graded A to F (No Delay to Serious Delay)

Traffic Analysis

High Street / Elm Street Intersection Traffic

- Existing = LOS F (2013)
- Do Nothing = LOS F (2034)
- Crash Data = 28 Crashes in Area (5 Years)
- One Pedestrian Incident
- One Injury Crash

Traffic Analysis

Pleasant Street Intersection Traffic

- Existing = LOS F (2013)
- Do Nothing = LOS F (2034)
- Crash Data = 27 Crashes in Area (5 years)
- No Pedestrian Incidents
- One Injury Crash

Pleasant Street Alternatives Traffic Signal



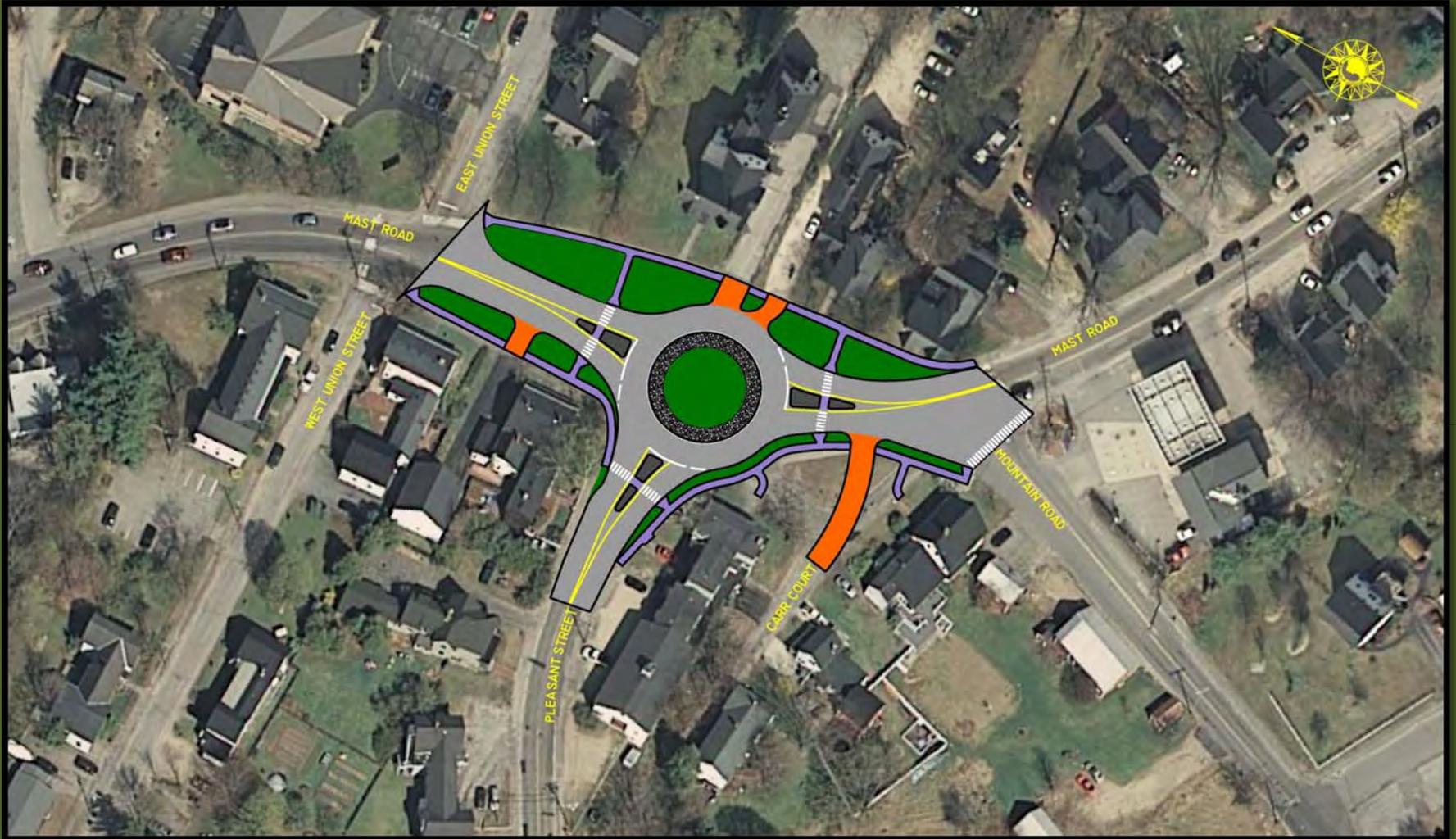
Pleasant Street Alternatives Traffic Signal

Key Characteristics

- Easy Construction
- Does Not Fit Village Character
- Long Term Maintenance Costs
- Long Queues
- Continues to Slow Traffic During Off-Peak Hours
- Typical Installation



Pleasant Street Alternatives Roundabout



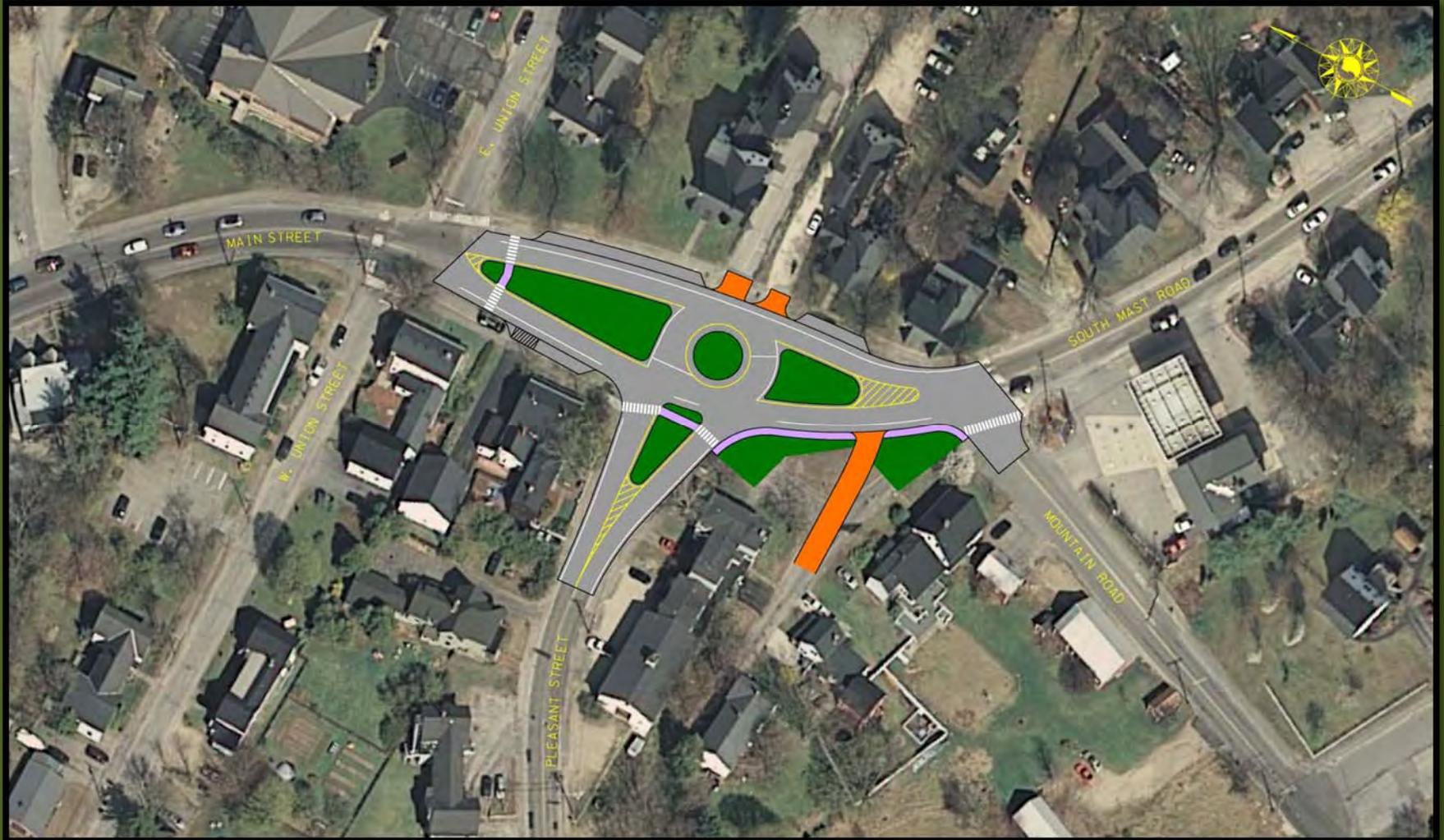
Pleasant Street Alternatives Roundabout

Key Characteristics

- Excellent Traffic Calming Feature
- Fits Village Character
- Provides Pedestrian Movements at Intersection
- Will Operate Well During Off-Peak Hours
- Larger Diameter Than Wallace Road
- Safest Option
- Long Queues



Pleasant Street Alternatives Modifications to Existing Layout (No-Build)



Pleasant Street Alternatives Modifications to Existing Layout (No-Build)

Key Characteristics

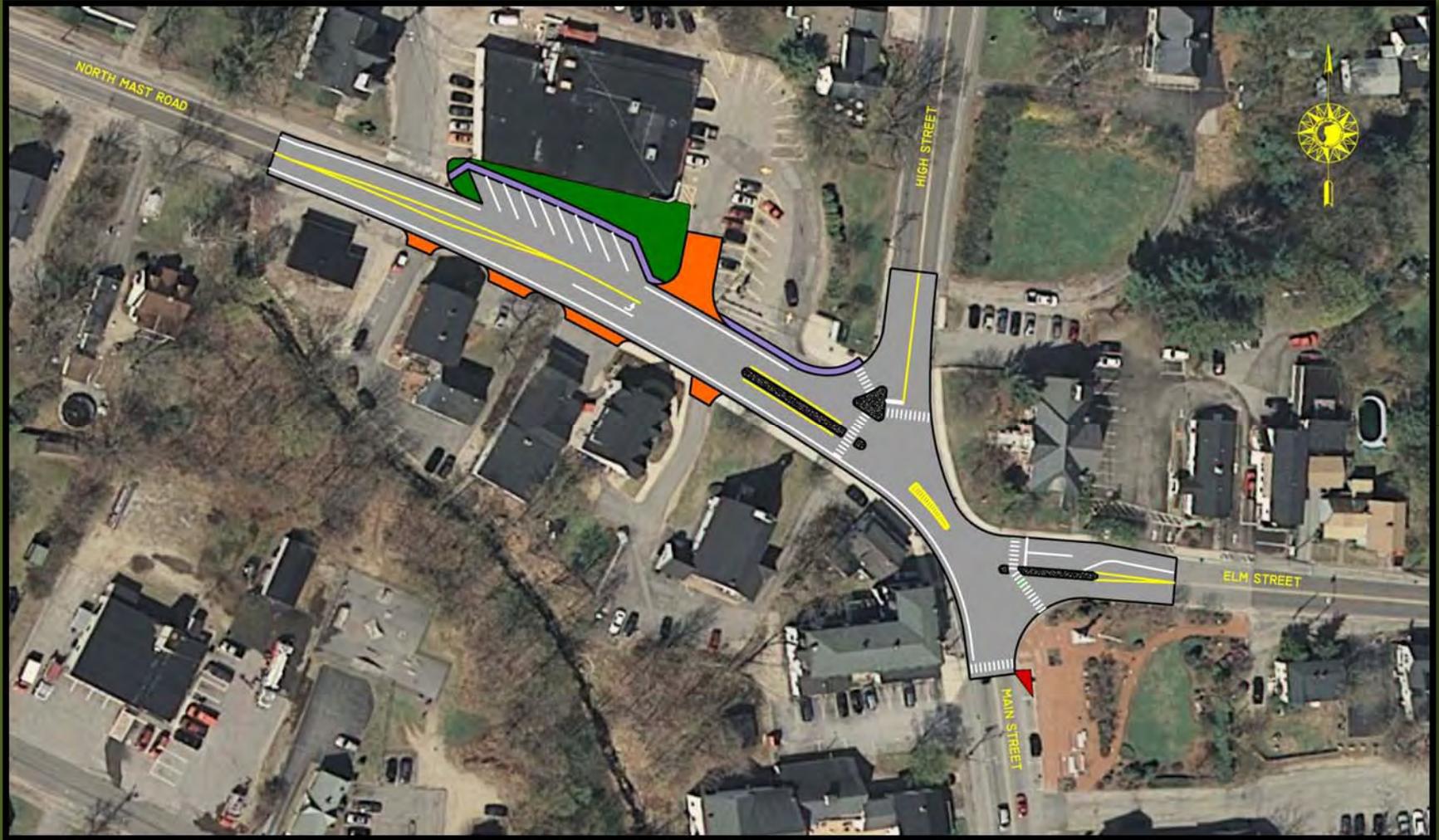
- Good Traffic Calming Feature
- Fits Village Character
- Improves Safety and Reduces Confusion
- Will Operate Well During Off-Peak Hours
- Larger Diameter Than Wallace Road
- Moves Crosswalk
- Compromise Solution
- Steering Committee Selection



Pleasant Street Alternatives Summary Characteristics

CONSIDERATION	PLEASANT STREET ALTERNATIVES		
	TRAFFIC SIGNAL	ROUNDAOBOUT	"NO-BUILD"
Description	<ul style="list-style-type: none"> New Traffic Signal 	<ul style="list-style-type: none"> New Single Lane Roundabout 	<ul style="list-style-type: none"> Redefine Existing Travel Way and Parking and Refine Crosswalk Locations
Traffic Calming Potential	<ul style="list-style-type: none"> Limited 	<ul style="list-style-type: none"> Robust 	<ul style="list-style-type: none"> Limited
Intersection Level of Service (LOS)	<ul style="list-style-type: none"> 2013 AM = C 2013 PM = B 2034 AM = D 2034 PM = C 	<ul style="list-style-type: none"> 2013 AM = C 2013 PM = F 2034 AM = E 2034 PM = F 	<ul style="list-style-type: none"> 2013 AM = F 2013 PM = E 2034 AM = F 2034 PM = F
Queue Length in Design Year (in Pass. Vehicles) XX AM Queue (XX) PM Queue	<ul style="list-style-type: none"> Pleasant 14(7) NB Main Street 4 (19) SB Main Street 33 (18) 	<ul style="list-style-type: none"> Pleasant 9 (2) NB Main Street 3 (173) SB Main Street 50 (12) 	<ul style="list-style-type: none"> Pleasant 9 (11) NB Main Street 0 (0) SB Main Street 0 (0)
Safety	<ul style="list-style-type: none"> Improved 	<ul style="list-style-type: none"> Best 	<ul style="list-style-type: none"> Improved
Parking	<ul style="list-style-type: none"> Loss of Some Spaces 	<ul style="list-style-type: none"> Loss of Spaces except in Angled Parking Option 	<ul style="list-style-type: none"> Some Loss of Spaces
Pedestrian Movements	<ul style="list-style-type: none"> Better 	<ul style="list-style-type: none"> Good 	<ul style="list-style-type: none"> Slightly Improved
Aesthetics	<ul style="list-style-type: none"> Poor 	<ul style="list-style-type: none"> Significantly Better 	<ul style="list-style-type: none"> Somewhat Better
Context Sensitivity	<ul style="list-style-type: none"> Poor Fit 	<ul style="list-style-type: none"> Good Fit 	<ul style="list-style-type: none"> Good Fit
Environmental Impacts	<ul style="list-style-type: none"> Minimal 	<ul style="list-style-type: none"> Minimal 	<ul style="list-style-type: none"> None
Cost	Construction: \$450,000 Constr. Engr.: \$45,000 Total: \$495,000 Town Share: \$222,750	Construction: \$490,000 Constr. Engr.: \$50,000 Total: \$540,000 Town Share: \$243,000	Construction: \$230,000 Constr. Engr.: \$25,000 Total: \$255,000 Town Share: \$114,750
Other Advantages (Pros)	<ul style="list-style-type: none"> Easier to Construct Driver Understanding Less Parking Loss 	<ul style="list-style-type: none"> Calms Traffic/Safer Better Off Peak Performance than Signal Controls Traffic Better than "No-Build" Option Continues to Function During Power Failures Landscaping Possible Least Long Term O&M Expenses 	<ul style="list-style-type: none"> Will not Calm Traffic as well as Roundabout, but better than Signal Better Definition than Existing Configuration Continues to Function During Power Failures Landscaping Possible Least Long Term O&M Expenses
Other Disadvantages (Cons)	<ul style="list-style-type: none"> Limited Calming Long Term O&M Costs Does not Fit Context Does not Function During Power Failure 	<ul style="list-style-type: none"> Resistance from Some Drivers 	<ul style="list-style-type: none"> Uncommon Layout Does not Slow Through Traffic Traffic Control Opposite of Modern Roundabouts (Yield on Entry)

High/Elm Street Alternatives Traffic Signal (No Additional Lanes)



High/Elm Street Alternatives Traffic Signal (No Additional Lanes)

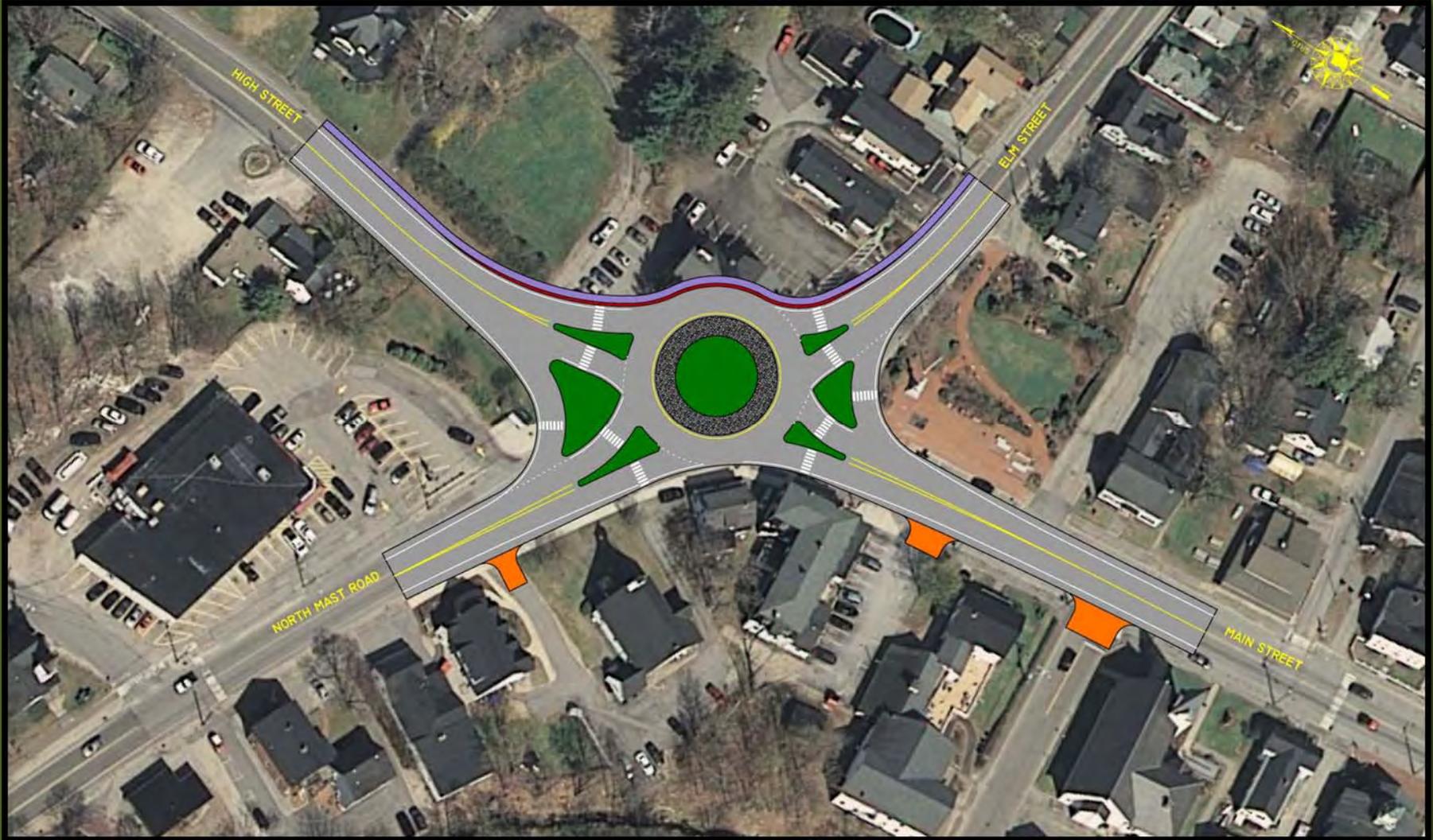
Key Characteristics

- Will Provide Pedestrian Crossing Cycle
- Does Not Fit Village Character
- Stays Within Existing Roadway Footprint
- Simple Configuration
- Long Queues

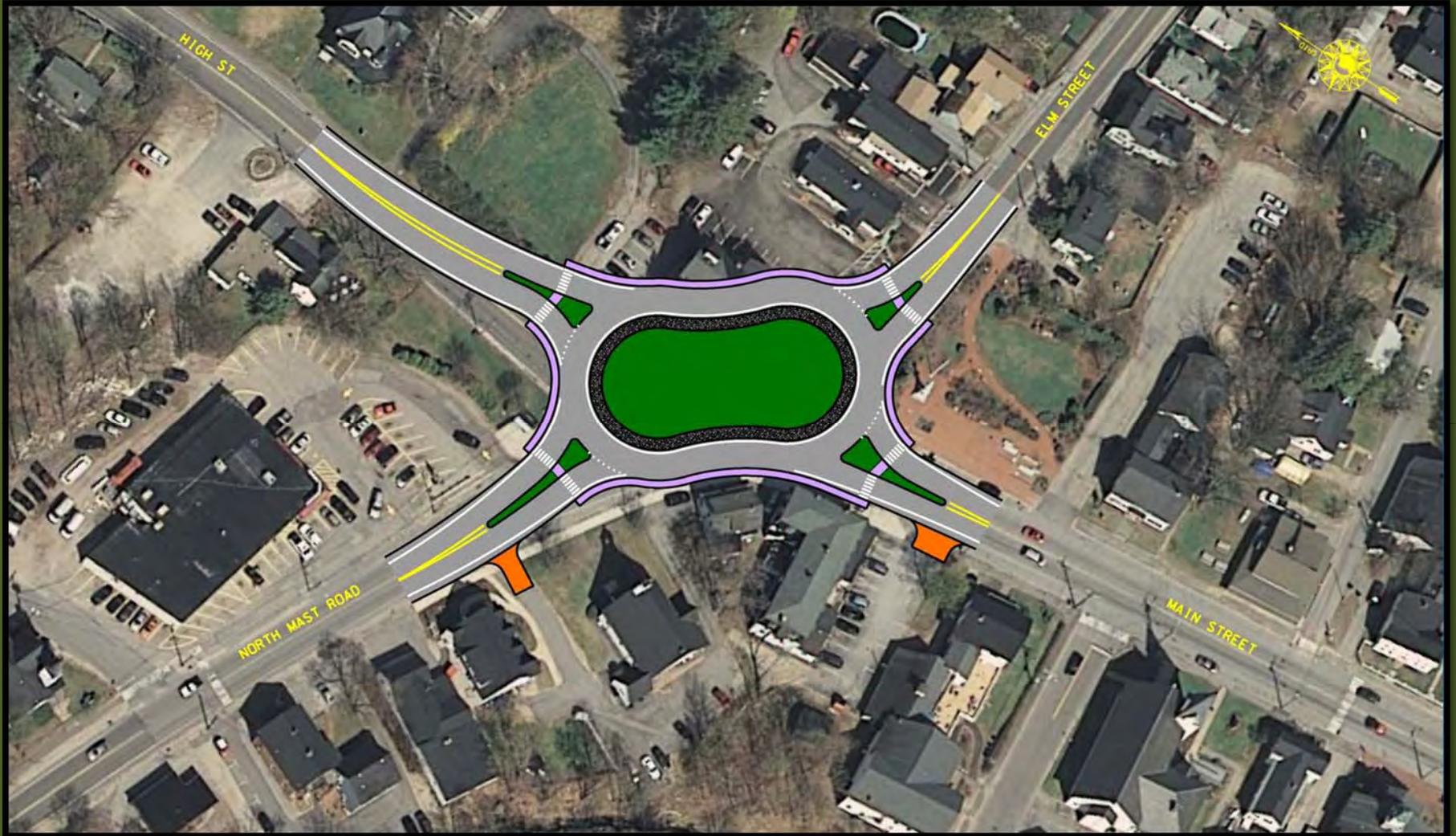


High/Elm Street Alternatives

Single Roundabout with Slip Lanes



High/Elm Street Alternatives Oval Roundabout



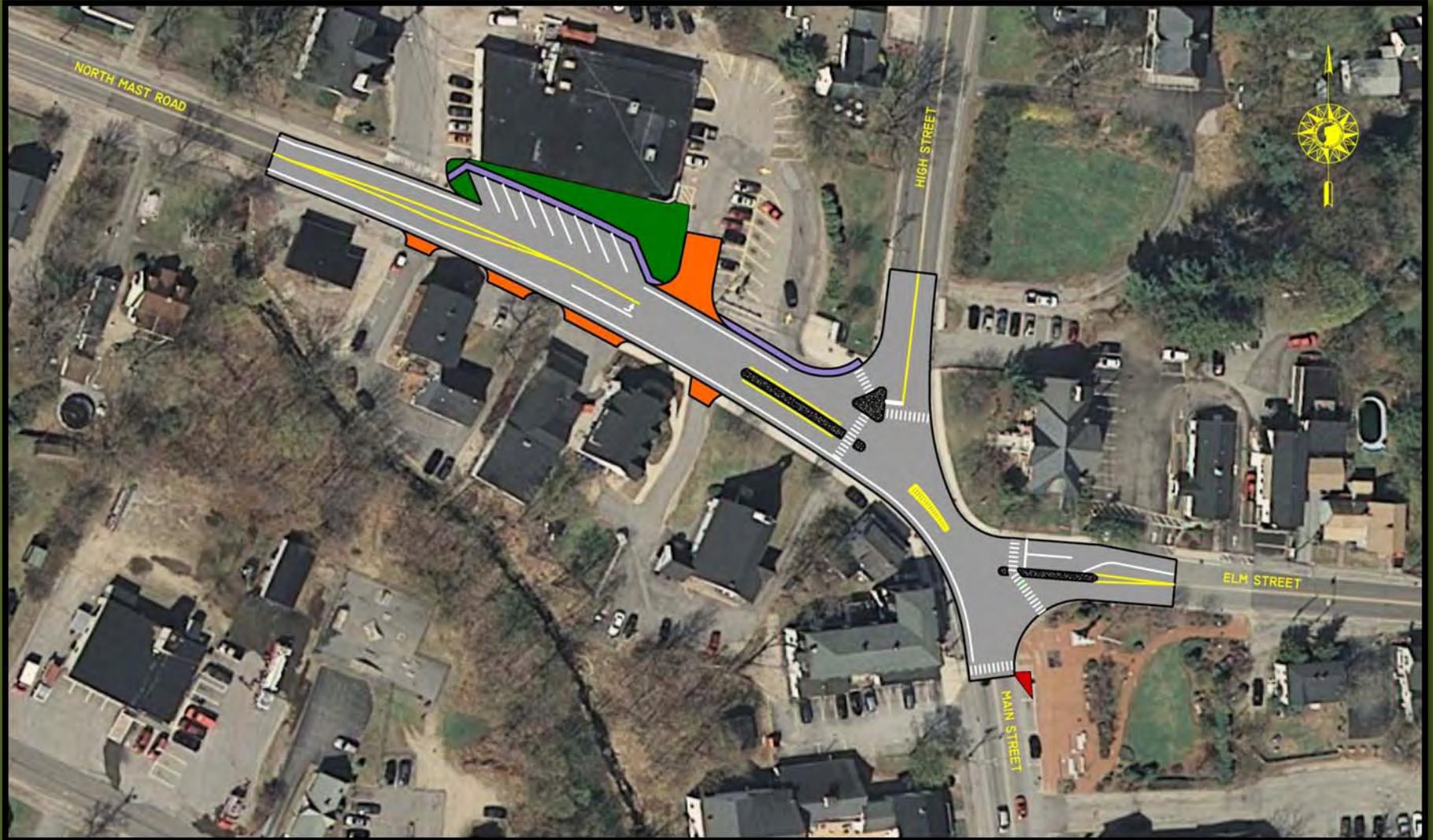
High/Elm Street Alternatives Oval Roundabout

Key Characteristics

- Safest Solution
- Fits Village Character
- Requires Relocation of Library
- Other Minor Property Impacts
- Highest Cost
- Long Queues



High/Elm Street Alternatives Traffic Calming



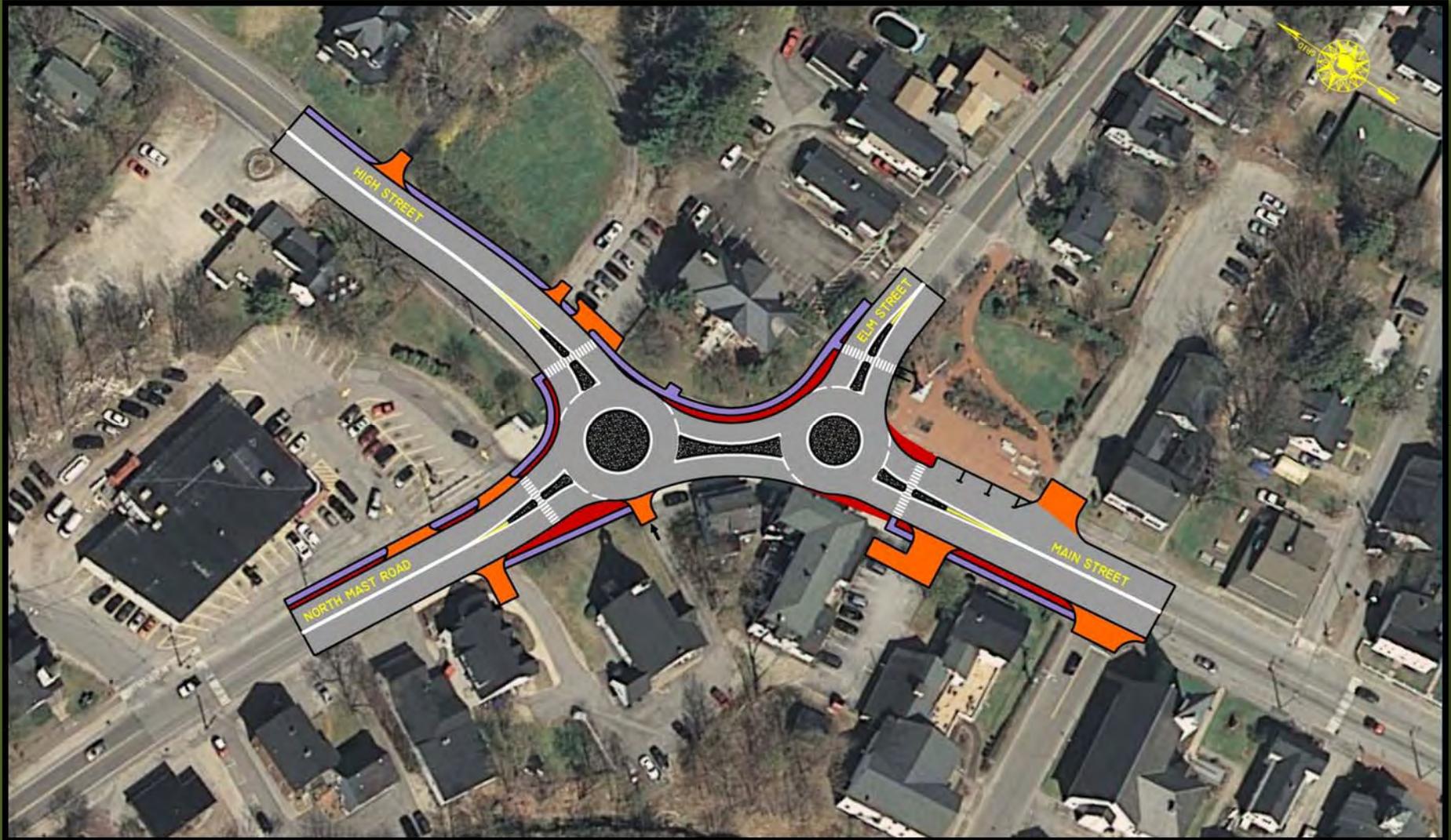
High/Elm Street Alternatives Traffic Calming

Key Characteristics

- Fits Village Character
- Low Long Term Maintenance Costs
- Traffic Islands Raised Slightly
- Shorter and More Visible Crosswalks
- Reconfigures Parking Near Sully's
- Lowest Cost
- Compromise Solution
- Steering Committee Selection



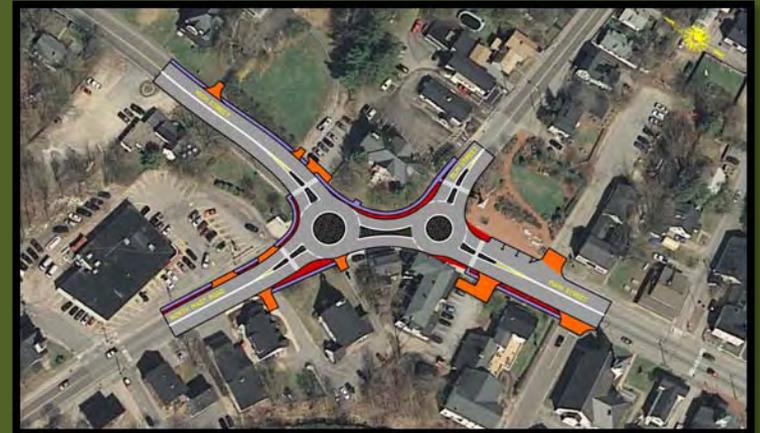
High/Elm Street Alternatives Mini-Roundabouts



High/Elm Street Alternatives Mini-Roundabouts

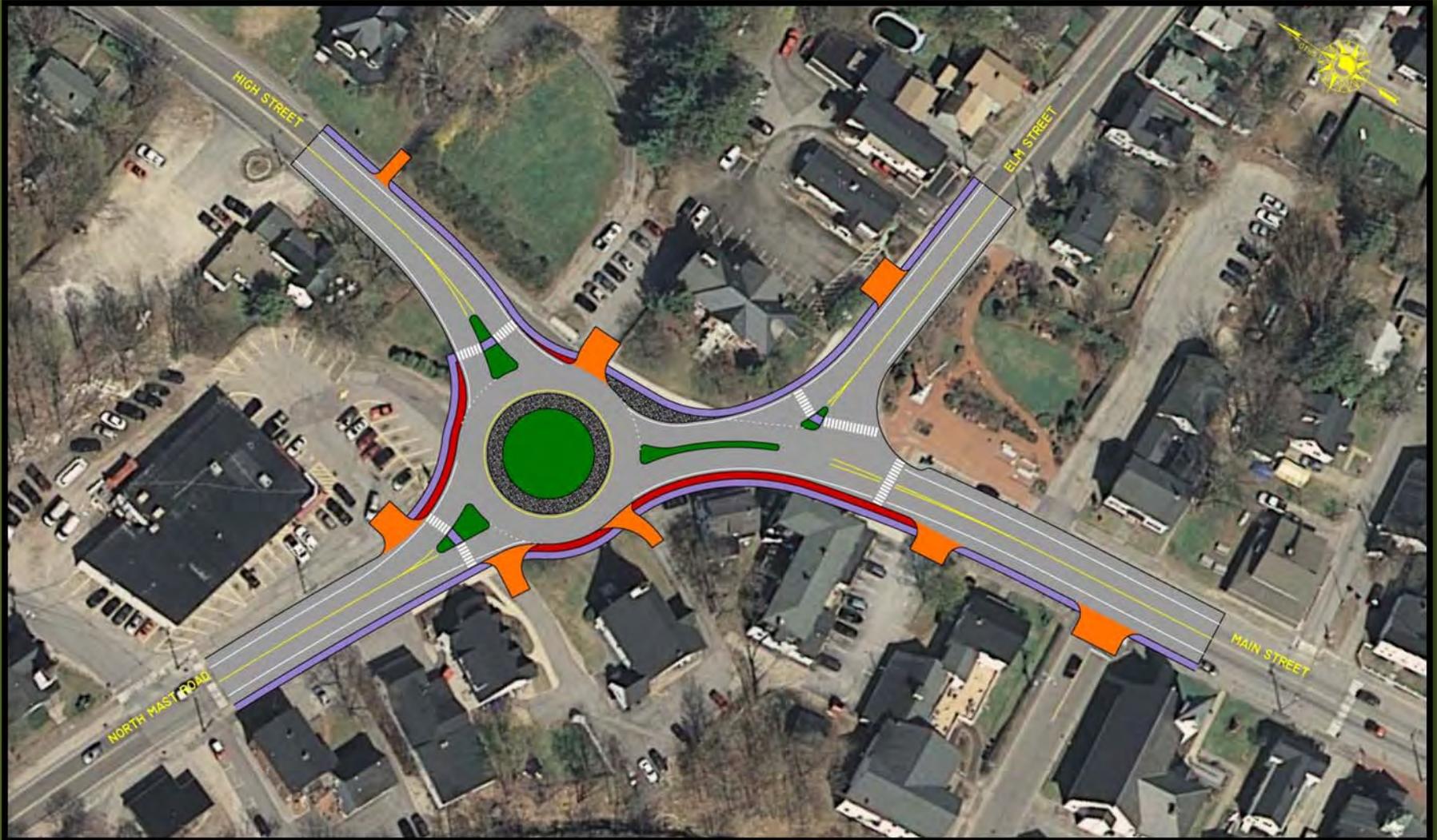
Key Characteristics

- Calms Traffic
- Fits Village Character
- Low Long Term Maintenance Costs
- Provides Shorter and More Visible Crosswalks
- Stays within Existing Footprint
- Maintains Most Parking
- Uncommon in USA at This Time
- Long Queues



High/Elm Street Alternatives

Single Roundabout at High Street



High/Elm Street Alternatives

Single Roundabout at High Street

Key Characteristics

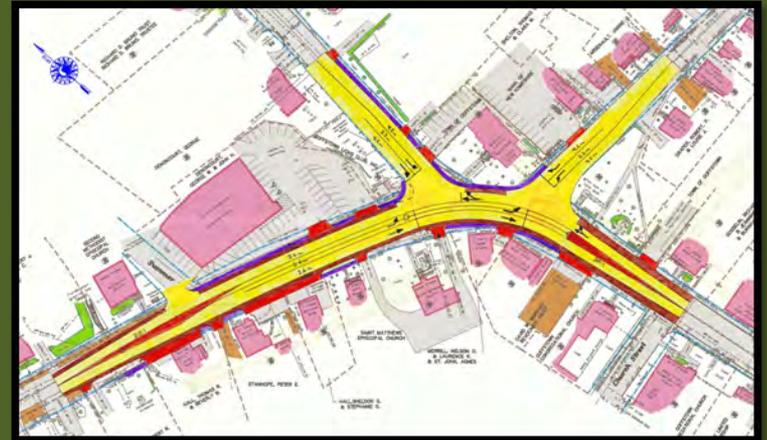
- Calms Traffic
- Requires Elm Street Traffic to U-Turn
- Provides Shorter and More Visible Crosswalks
- Fits Village Character
- Low Long Term Maintenance Costs
- Some Property Impacts
- Long Queues



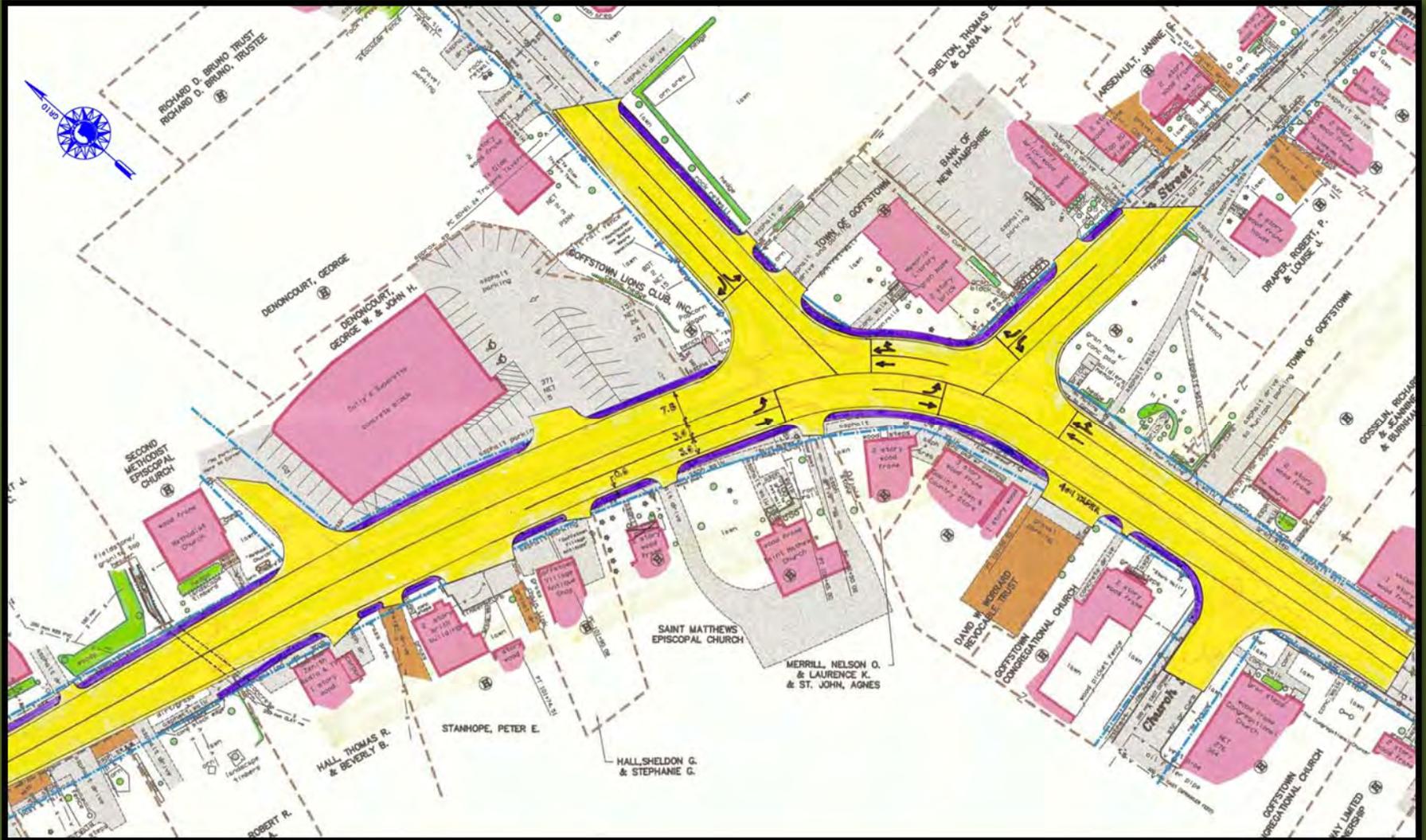
High/Elm Street Alternatives NHDOT Three Lane Concept

Key Characteristics

- Simple Layout
- May Trap Vehicles
- Provides Pedestrian Crossing Cycle
- Does Not Fit Village Character
- Long Term Maintenance Costs
- Eliminates Some Parking
- Long Queues



High/Elm Street Alternatives NHDOT Four Lane Concept



High/Elm Street Alternatives NHDOT Four Lane Concept

Key Characteristics

- Relatively Simple Layout
- May Trap Vehicles
- Provides Pedestrian Crossing Cycle
- Does Not Fit Village Character
- Long Term Maintenance Costs
- Eliminates Most Parking
- Long Queues



High/Elm Street Alternatives Summary Characteristics

Two Intersections on NH 114 and NH 13 - Alternatives Comparison Matrix

CONSIDERATION	HIGH/ELM ALTERNATIVES						
	TRAFFIC SIGNAL (NO ADDITIONAL LANES)	SINGLE ROUNDABOUT (OVAL or ROUND/with SLIP LANES)	TRAFFIC CALMING	MINI-ROUNDABOUTS	ROUNDABOUT AT HIGH STREET (STOP CONTROL ON ELM)	NHDOT 3 LANE	NHDOT 4 LANE
Description	• New Coordinated Traffic Signal at Both Intersections	• New Single Lane Roundabout	• Reduce Crosswalk Lengths and Confine Travel Way	• Twin Mini-Roundabouts	• Roundabout at High Street with No Left Turn out of Elm Street	• Three Lane Traffic Signal Option Developed in 1998	• Four Lane Traffic Signal Option Developed in 1998
Traffic Calming Potential	• Limited	• Robust	• Improved	• Robust	• Good	• Limited	• Limited
Intersection Level of Service (LOS)	• 2013 AM = C • 2013 PM = C • 2034 AM = C • 2034 PM = F	• 2013 AM = E • 2013 PM = F • 2034 AM = F • 2034 PM = F	• 2013 AM = F • 2013 PM = F • 2034 AM = F • 2034 PM = F	• 2013 AM = C • 2013 PM = E • 2034 AM = E • 2034 PM = F	• 2013 AM = D • 2013 PM = F • 2034 AM = F • 2034 PM = F	• 2013 AM = N/A • 2013 PM = N/A • 2034 AM = B/F (Est.) • 2034 PM = F/F (Est.)	• 2013 AM = N/A • 2013 PM = N/A • 2034 AM = D (Est.) • 2034 PM = F (Est.)
Queue Length in Design Year (In Pass. Vehicles) XX AM XX PM	• High Street = 10 (6) • Elm Street = 5 (21) • NB Main St. = 40 (15) • EB Mast Rd. = 10 (52)	• High Street = 1 (2) • Elm Street = 1 (35) • NB Main St. = 112 (9) • EB Mast Rd. = 4 (119)	• High Street = 9 (37) • Elm Street =>200 (>200) • NB Main St. = 0 (0) • EB Mast Rd. = 0 (0)	• High Street = 1 (3) • Elm Street = 1 (56) • NB Main St. = 4 (188) • EB Mast Rd. = 69 (5)	• High Street = 1 (2) • Elm Street = 1 (23) • NB Main St. = 3 (327) • EB Mast Rd. = 76 (6)	• High Street = 3(3) • Elm Street = 3(24) • NB Main St. = 14(44) • EB Mast Rd. = 9(13)	• High Street = N/A • Elm Street = N/A • NB Main St. = N/A (12) • EB Mast Rd. = 12 (N/A)
Safety	• Improved	• Best	• Improved	• Improved	• Improved	• Improved	• Improved
Parking	• Loss of Some Spaces	• Loss of Some Spaces	• Some Loss of Spaces	• Loss of Some Spaces	• Loss of Some Spaces	• Loss of Most Spaces	• Total Loss of Parking
Pedestrian Movements	• Better	• Good	• Some Improvement	• Good	• Better	• Better	• Better
Aesthetics	• Poor	• Good	• Better	• Good	• Better	• Poor	• Poor
Context Sensitivity	• Poor Fit	• Good Fit	• Good Fit	• Good Fit	• Good Fit	• Poor	• Poor
Environmental and ROW Impacts	• Minimal	• Relocates Library and Impacts Bank	• None	• Minimal	• Impacts Library Parcel	• Minor Impacts	• Minor Impacts
Cost	Construction \$380,000 Constr. Engr. \$40,000 Total: \$420,000 Town Share: \$189,000	Construction: \$1,130,000 Constr. Engr. \$70,000 Total: \$1,200,000 Town Share: \$540,000	Construction: \$150,000 Constr. Engr. \$15,000 Total: \$165,000 Town Share: \$74,250	Construction \$610,000 Constr. Engr. \$60,000 Total: \$670,000 Town Share: \$301,500	Construction: \$610,000 Constr. Engr. \$60,000 Total: \$670,000 Town Share: \$301,500	Construction: \$710,000 Constr. Engr. \$70,000 Total: \$780,000 Town Share: \$351,000	Construction: \$760,000 Constr. Engr. \$80,000 Total: \$840,000 Town Share: \$378,000
Other Advantages (Pros)	• Simple Layout	• Calms Traffic/Safer • Better Off Peak Performance than Signal • Continues to Function During Power Failures • Landscaping Possible • Least Long Term O&M Expenses	• Calms Traffic • Low Long Term O&M Expenses	• Calms Traffic • Better Off Peak Performance than Signal • Continues to Function During Power Failures • Least Long Term O&M Expenses	• Calms Traffic/Safer • Better Off Peak Performance than Signal • Continues to Function During Power Failures • Landscaping Possible • Least Long Term O&M Expenses	• Relatively Simple Layout	• Relatively Simple Layout
Other Disadvantages (Cons)	• Limited Calming • Long Term O&M Costs • Does not Fit Context • Does not Function During Power Failure	• Substantial Property Impacts	• Some Islands Must be Mountable to Allow Trucks (Compromises Pedestrian Safety Benefit)	• Some Islands Must be Mountable to Allow Trucks (Compromises Pedestrian Safety Benefit) • Uncommon in US	• Some Property Impacts • All Elm Street Vehicles Must Turn Right	• Limited Calming • Long Term O&M Costs • Does not Fit Context • Does not Function During Power Failure	• Limited Calming • Long Term O&M Costs • Does not Fit Context • Does not Function During Power Failure

High/Elm Street Alternatives One Way Loop

Requires Further Study

- South Mast Road and Main Street – 2 Lanes WB
- EB Route is Unknown
- Not Within Current Scope
- Will Discuss Next Steps With NHDOT

Next Steps

- Gather Comments From Tonight's Meeting
- Selectboard Meets To Decide on Preferred Option
- Submit Design Report to NHDOT
- Begin Final Design
- Develop Plans for Construction in 2014

Questions? Comments?

*Meghan Theriault, P.E.
Town Engineer
(603) 469-3617 Ext. 280
mtheriault@goffstownnh.gov*

*Michael Long, P.E.
McFarland-Johnson, Inc.
(603) 225-2978
mlong@mjinc.com*

www.goffstown.com/CMAQ