

# **VT 116 / Lincoln Road / Briggs Hill Road Intersection Study Town of Bristol**

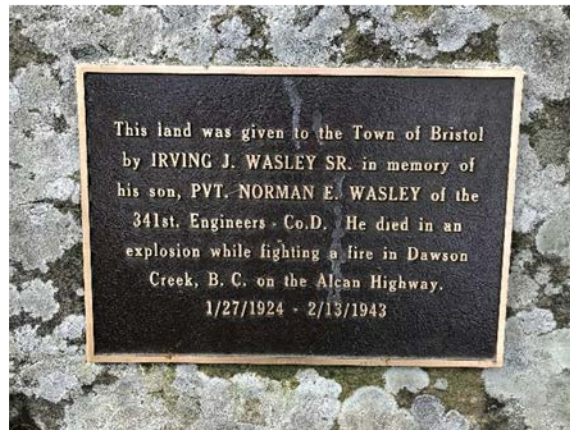
**Alternatives Presentation Meeting  
August 16, 2021**





## VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

- Project Overview
- Kick-Off Meeting
- Existing Conditions
- Project Alternatives
- Alternatives Presentation Meeting
- Alternatives Evaluation
- Public Informational Meeting
- Planning Study Report



DuBois  
& King  
INC.

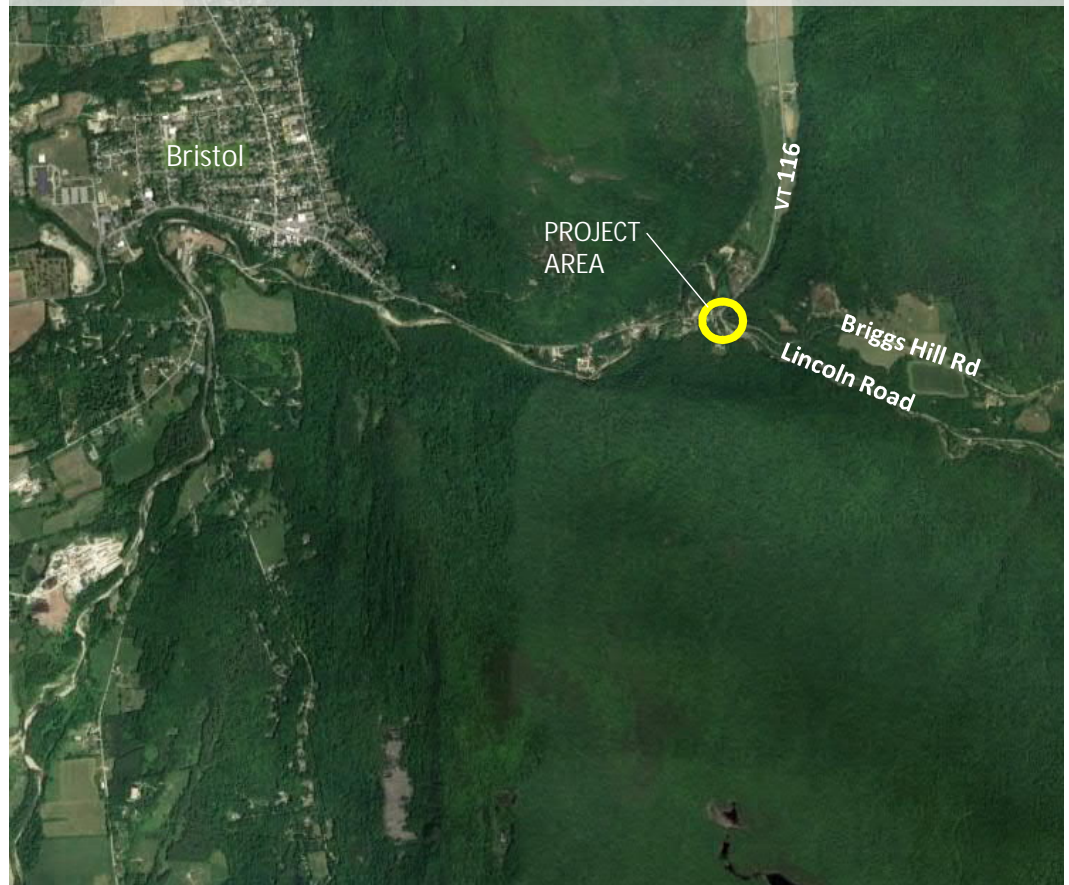


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### Project Goal:

Develop a Scoping Study Report that identifies alternatives at the project area for the Town to consider for future improvements to reduce respective concerns at the 3 focus area locations.



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### Three Project Focus Areas:

1. VT 116 / Lincoln Road Intersection
2. Summer parking along Lincoln Road
3. Briggs Hill Road / Lincoln Road intersection



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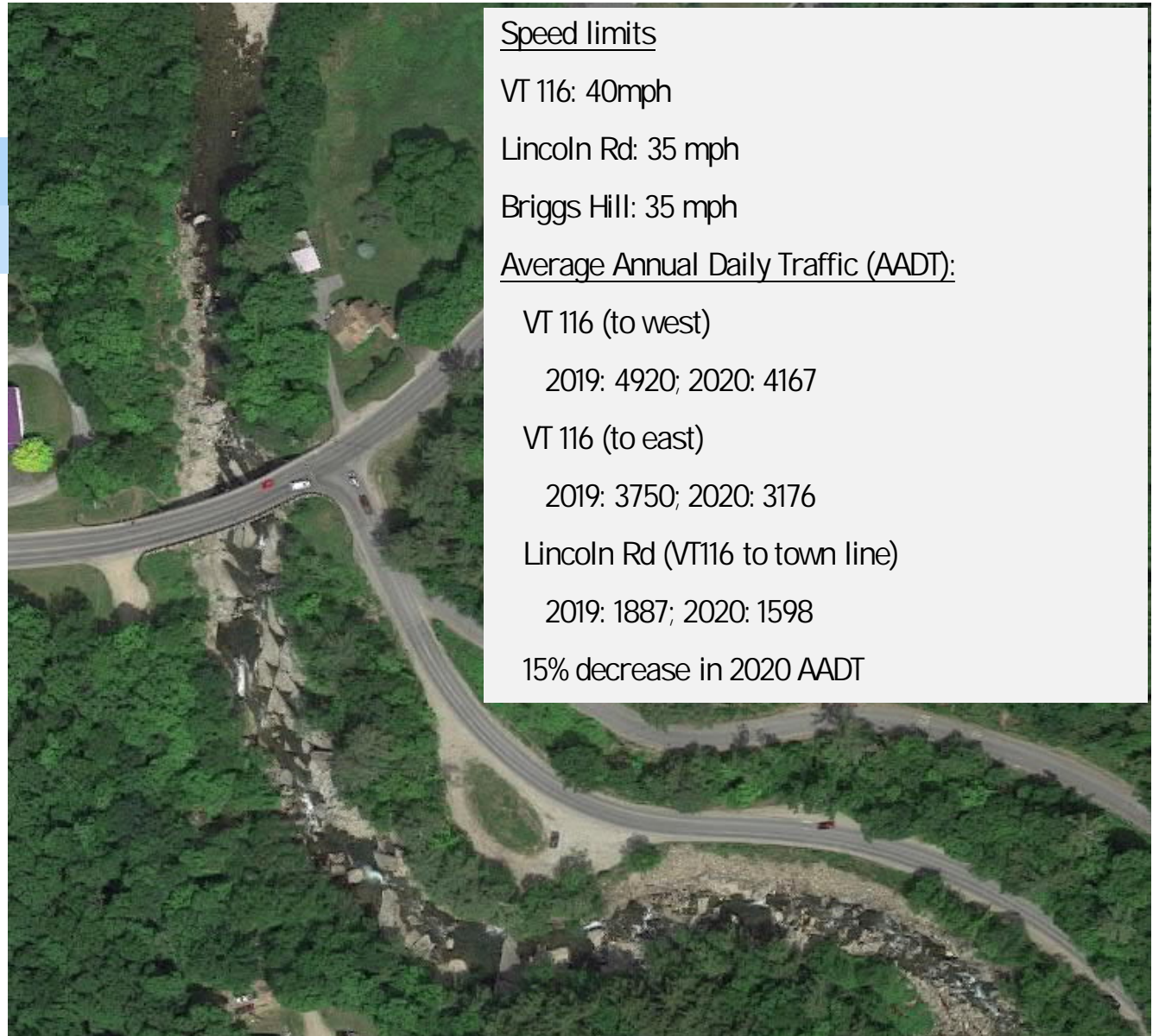
### Kick-Off Meeting:

- Attended by Town, ACRPC, and D&K
- Discussed items:
  - project goals,
  - focus areas,
  - scope of work, and
  - potential alternatives
- Gathered input regarding the project area from the Town



## VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

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### Speed limits

VT 116: 40mph

Lincoln Rd: 35 mph

Briggs Hill: 35 mph

### Average Annual Daily Traffic (AADT):

VT 116 (to west)

2019: 4920; 2020: 4167

VT 116 (to east)

2019: 3750; 2020: 3176

Lincoln Rd (VT116 to town line)

2019: 1887; 2020: 1598

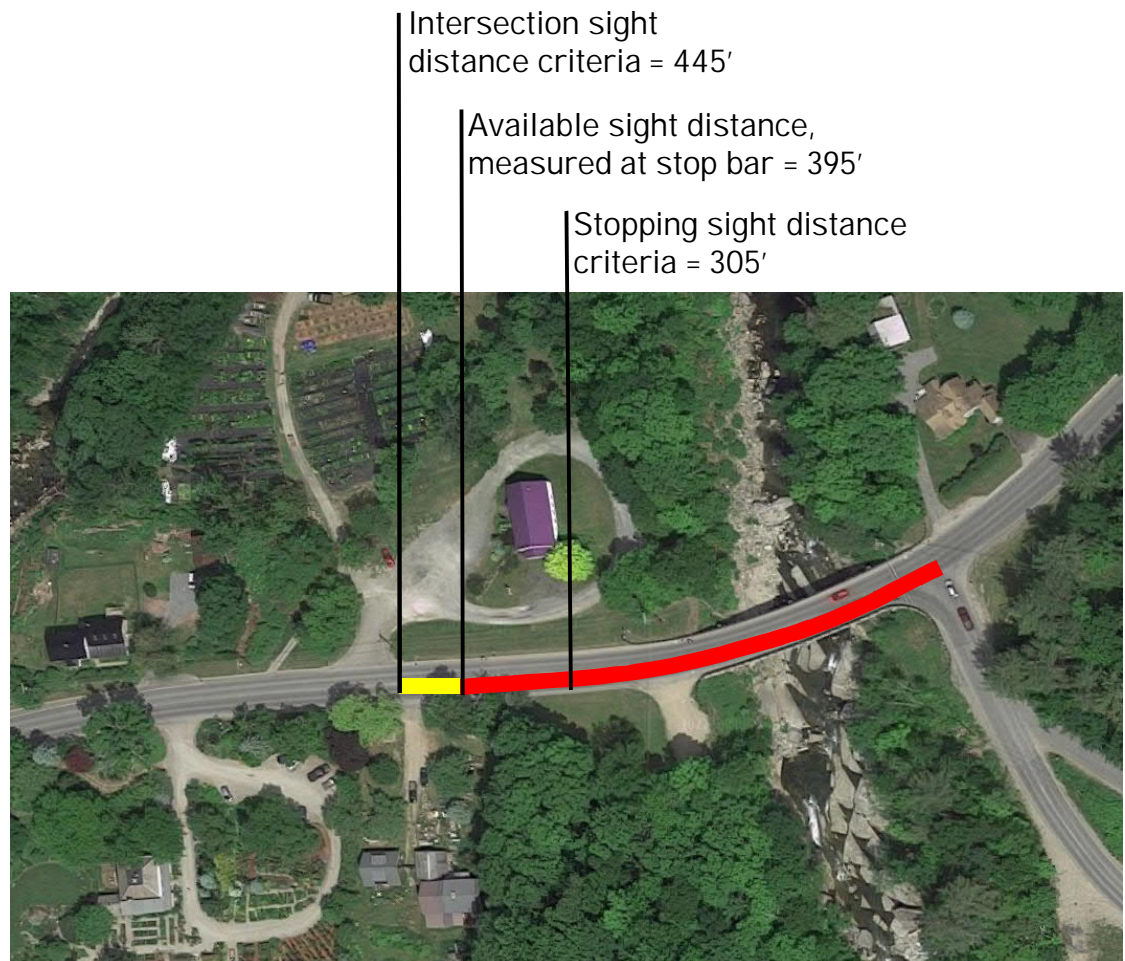
15% decrease in 2020 AADT

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## Sight Distance Review

Sight Distance Criteria based on 40mph design speed on VT 116



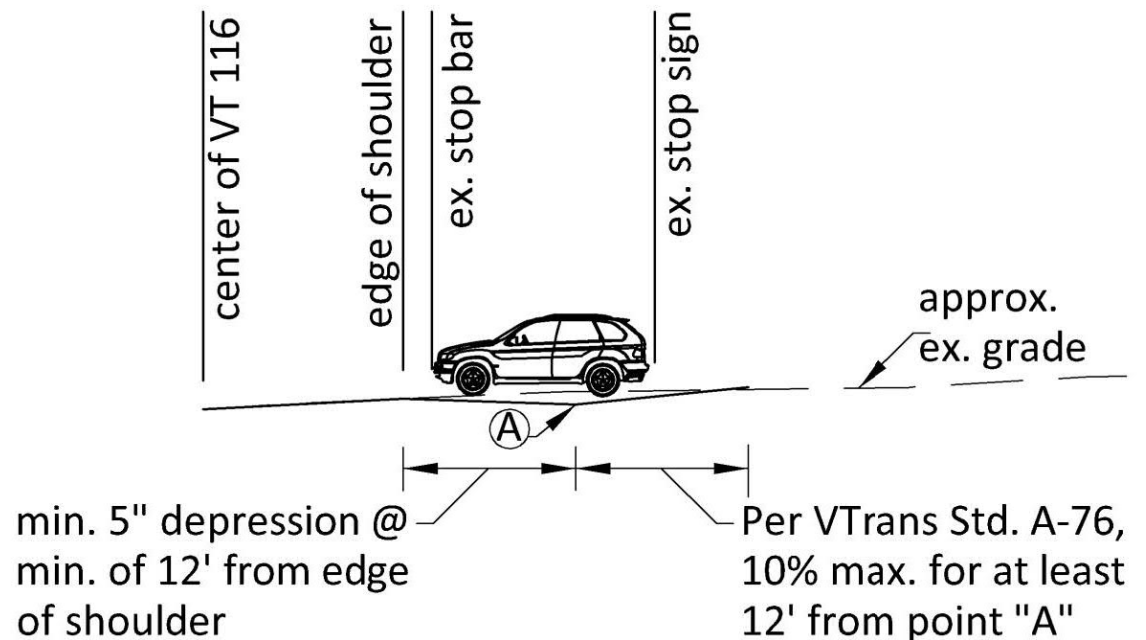
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Lincoln Road Grade at VT 116





# VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

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## Crash Data Review

- Existing Conditions

- overview
- sight distance review
- intersection approach grade

- crash data review

- environmental review

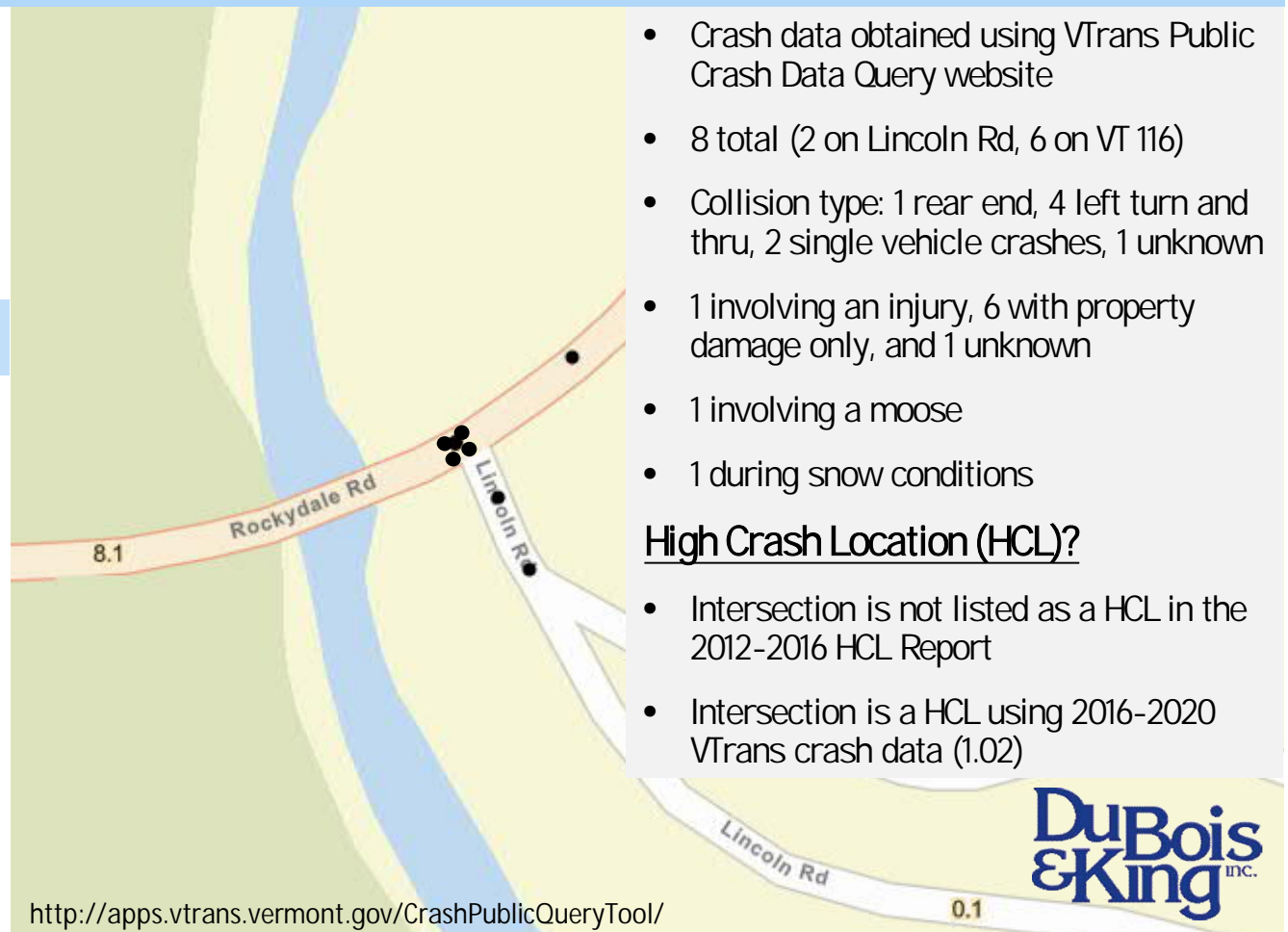
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## 2016-2020 (5-Year Data)

- Crash data obtained using VTrans Public Crash Data Query website
- 8 total (2 on Lincoln Rd, 6 on VT 116)
- Collision type: 1 rear end, 4 left turn and thru, 2 single vehicle crashes, 1 unknown
- 1 involving an injury, 6 with property damage only, and 1 unknown
- 1 involving a moose
- 1 during snow conditions

## High Crash Location (HCL)?

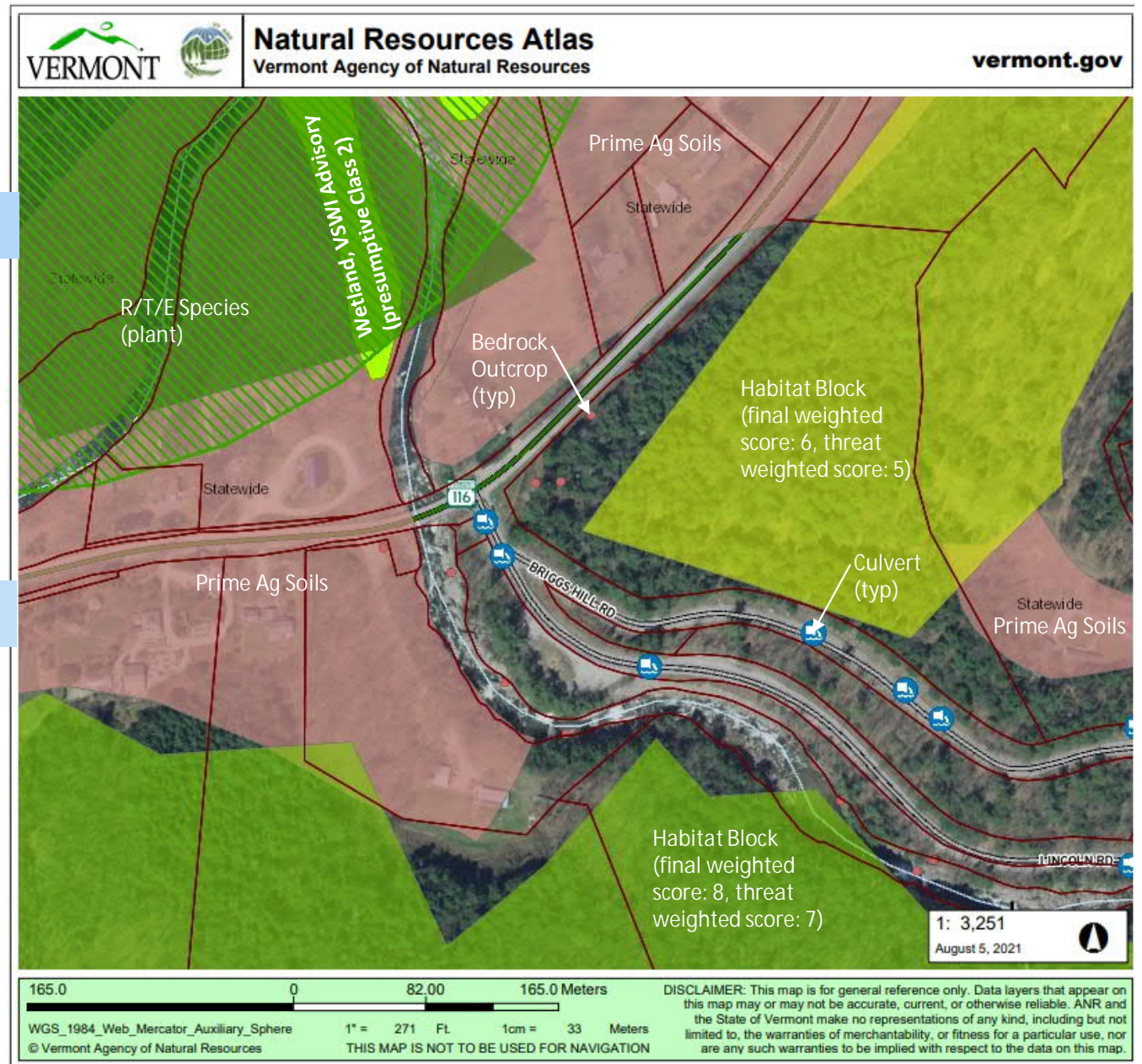
- Intersection is not listed as a HCL in the 2012-2016 HCL Report
- Intersection is a HCL using 2016-2020 VTrans crash data (1.02)



VT116 / Lincoln Road / Briggs Hill Rd Intersection Study:  
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Environmental Data Review

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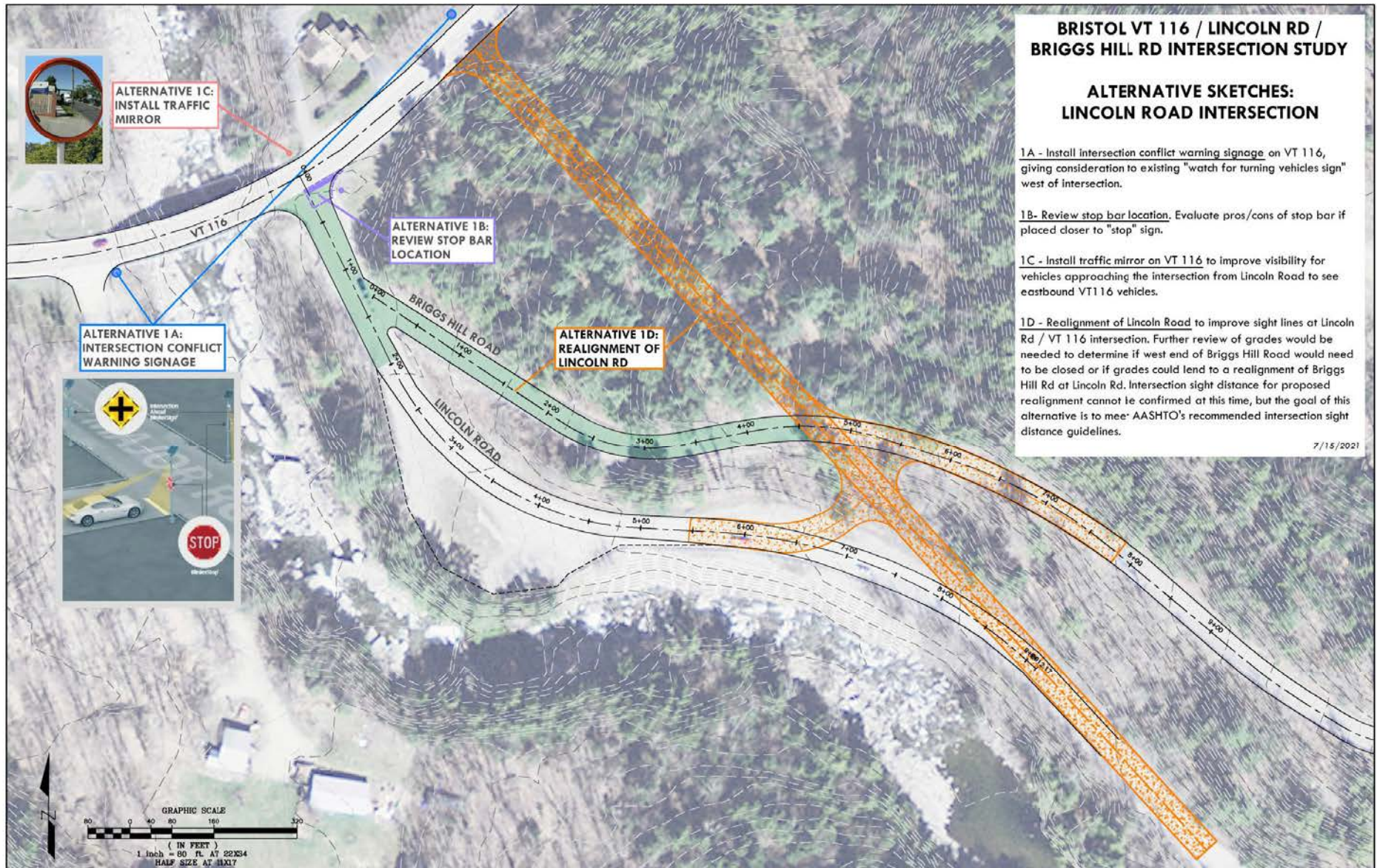
### Project Alternatives:

- Broken out into the three focus areas.
- The goals for each focus area are different, therefore there are different alternatives for each focus area.
- Short-term and long-term measures.
- Wide range of cost ranges.

# VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

## Project Alternatives:

### 1. VT 116 / Lincoln Road Intersection



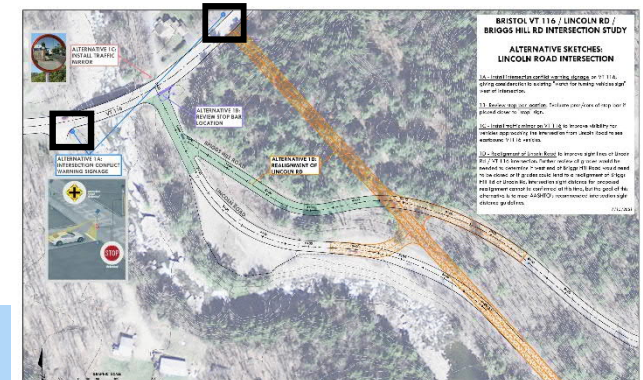


# VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

## Alternatives at Lincoln Road Intersection:

### 1A. Intersection Conflict Warning Signage

- On a State route, therefore would need VTrans support.



## SPECIALTY WARNING SOLUTIONS INTERSECTION CONFLICT WARNING SYSTEMS

## SPECIALTY WARNING SOLUTIONS INTERSECTION CONFLICT WARNING SYSTEMS

Intersection Conflict Warning Systems reduce the likelihood of collisions at dangerous two-way stop intersections by providing real-time warning to approaching drivers when cross traffic is present.

- Custom design maximizes safety for each location
- Solar power capability allows for installation in any environment
- Presence detector confirmation eliminates inductive loop maintenance calls in rural locations
- Radio communication activates all warning alerts in unison

**30% severe  
crash reduction  
at two-way stop  
intersections\***

\* MINDOT RURAL INTERSECTION CONFLICT  
WARNING SYSTEM SAFETY REPORT



Radar detection paired with presence detector



Radar detection

### MINOR ROAD DETECTION

Minor roads require two detection points:

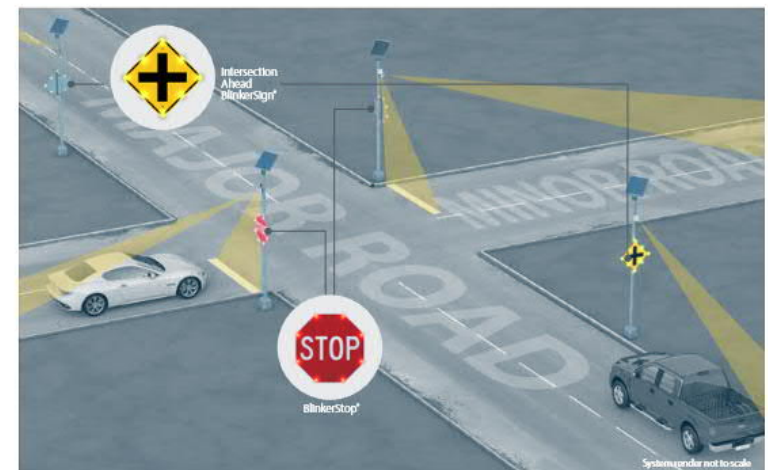
1. to detect vehicles approaching the intersection
2. to detect vehicles at the stop line

Paired with radar for advanced vehicle detection, inductive loops or pole-mounted presence detectors are used for stop line detection.

### MAJOR ROAD DETECTION

Radar detection is installed on major road warning alert poles to identify vehicles approaching the intersection.







See page 9 to learn more about these activations.



Minor road configuration using solar-powered BlinkerStop® with radar and presence detector. Major road configuration using solar-powered Intersection Ahead BlinkerSign with radar detection.




### MINOR ROAD OPTIONS

- Includes: Warning alert of choice; pole mounting hardware; radio installed in cabinet; sensor of choice with corresponding solar/battery package.
- Radar and inductive loop: 55 watt solar panel/48Ah battery package
  - Radar and presence detector: 85 watt solar panel/105Ah battery package
  - BlinkerBeacon®: comes standard with 12" red beacon LEDs and black housing.
  - Static signs and poles sold separately. See page 47 for common pole kits.

WARNING ALERTS	BLINKERSTOP® DIMENSIONS	SENSOR	POWER	PART NUMBERS
	-	Radar and Presence Detector	Solar	600370
	-	Radar and Inductive Loop	Solar	600371
	30"	Radar and Presence Detector	Solar	600372
	30"	Radar and Inductive Loop	Solar	600374
	36"	Radar and Presence Detector	Solar	600373
	36"	Radar and Inductive Loop	Solar	600375

### MAJOR ROAD OPTIONS

- Includes: Radar sensor; pole mounting hardware; radio installed in cabinet; warning alert of choice.
- BlinkerSign®: 30 watt solar panel/35Ah battery package
  - BlinkerBeacon®: 55 watt solar panel/48Ah battery package, comes standard with 12" amber beacon LEDs
  - Static signs and poles sold separately. See page 47 for common pole kits.

WARNING ALERTS	BLINKERSIGN® DIMENSIONS	POWER	PART NUMBERS
	-	Solar	600376
	30"	Solar	600379
	36"	Solar	600380

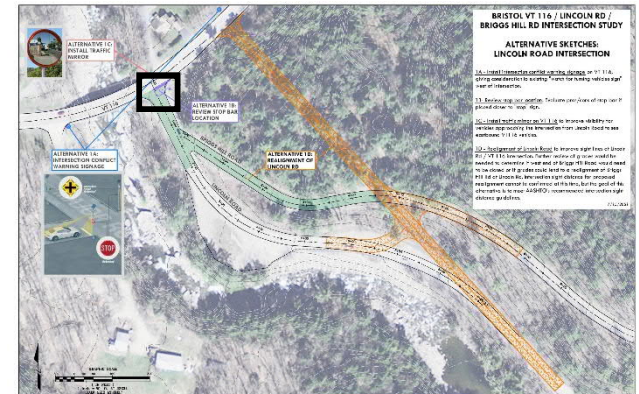


# VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

## Alternatives at Lincoln Road Intersection:

1A. Intersection Conflict Warning Signage

1B. Review Stop Bar Locations



at stop sign – can see further to the west,  
but sight limitations on west side of  
bridge

at stop bar – can see vehicles on  
bridge, but sight limitations  
seeing past bridge



Progression of photos... from "stop" sign walking towards stop bar (left to right)



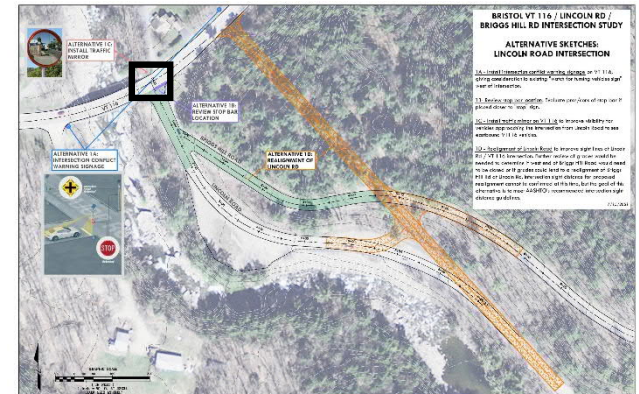
# VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

## Alternatives at Lincoln Road Intersection:

1A. Intersection Conflict Warning Signage

1B. Review Stop Bar Locations

1C. Traffic Mirror on VT 116



## Traffic Mirror on VT 116

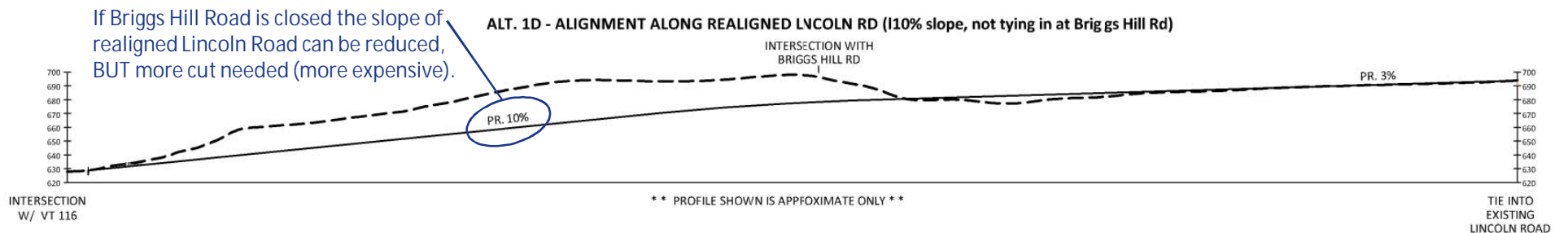
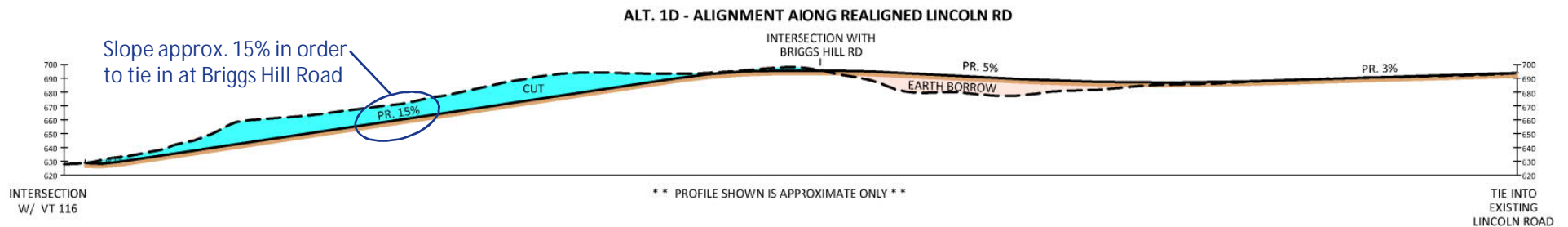
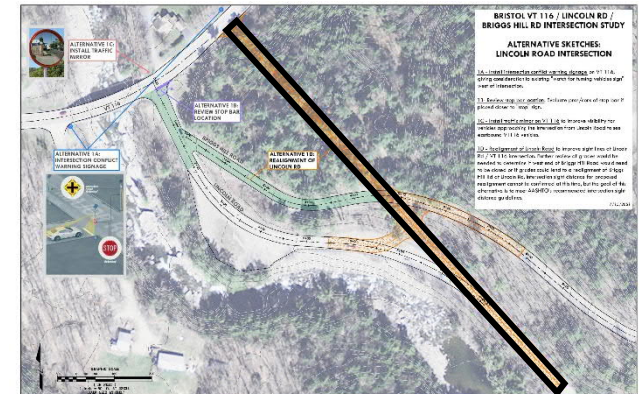
This measure will not improve the length of sight lines, however it will be an added measure to improve visibility of vehicles on VT 116 bridge.



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## Alternatives at Lincoln Road Intersection:

- 1A. Intersection Conflict Warning Signage
- 1B. Review Stop Bar Locations
- 1C. Traffic Mirror on VT 116
- 1D. Realignment of Lincoln Road

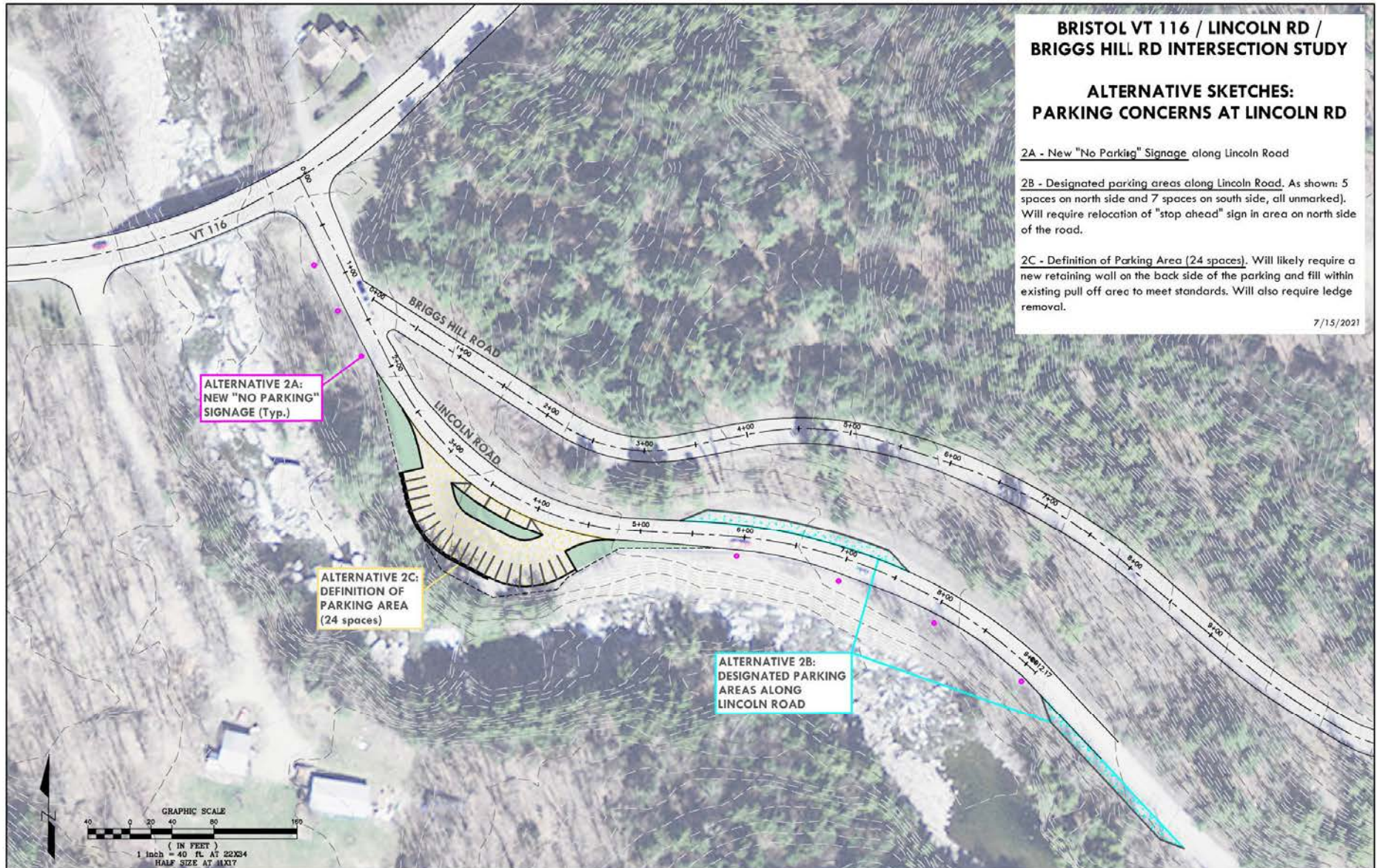




# VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

## Project Alternatives:

### 2. Parking Concerns at Lincoln Rd



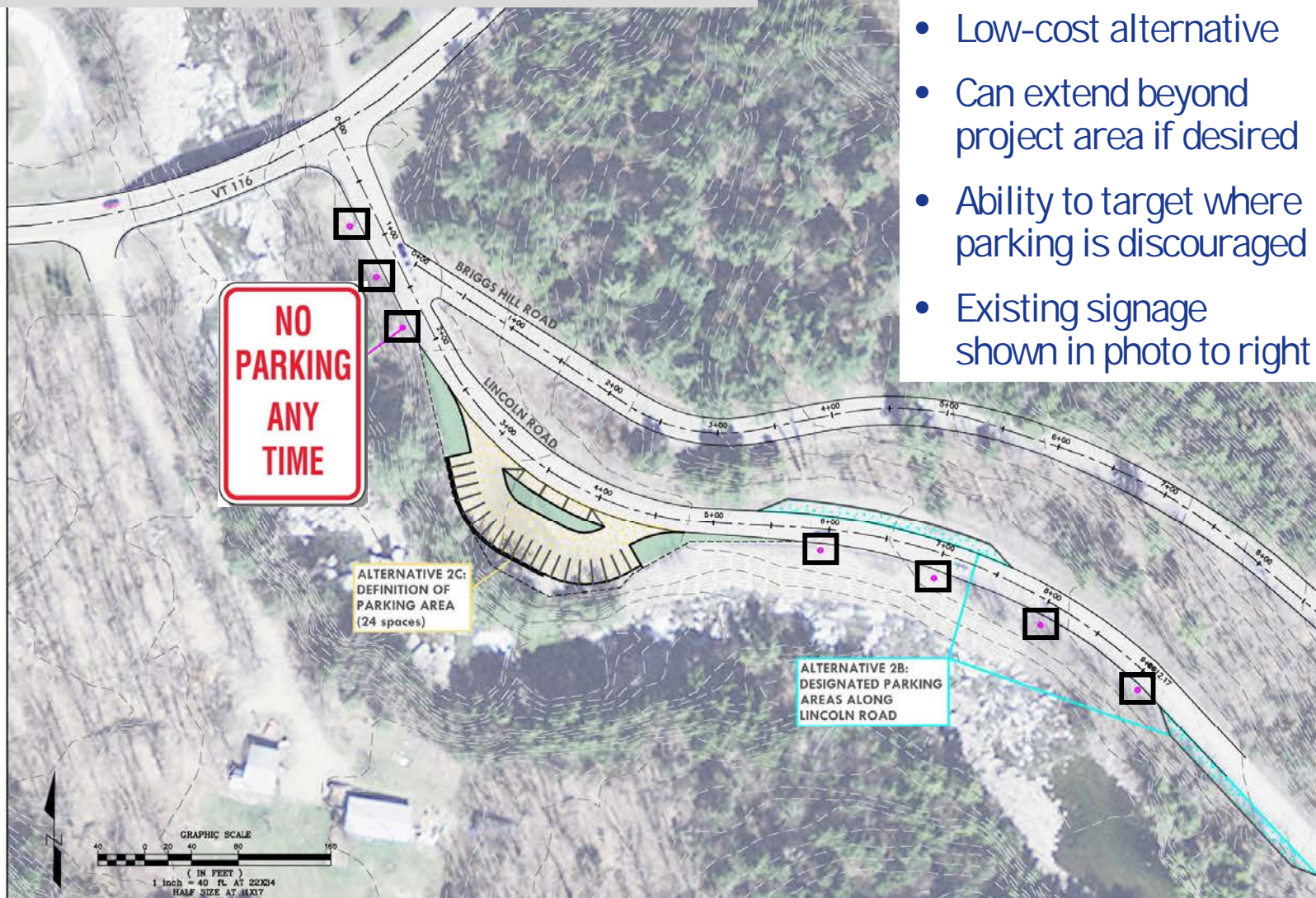


# VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

## Alternatives for Parking Concerns at Lincoln Rd:

### 2A. New "No Parking" Signs

- Low-cost alternative
- Can extend beyond project area if desired
- Ability to target where parking is discouraged
- Existing signage shown in photo to right





VT116 / Lincoln Road / Briggs Hill Rd Intersection Study:  
Alternatives Presentation Meeting

Alternatives for Parking Concerns at Lincoln Rd:

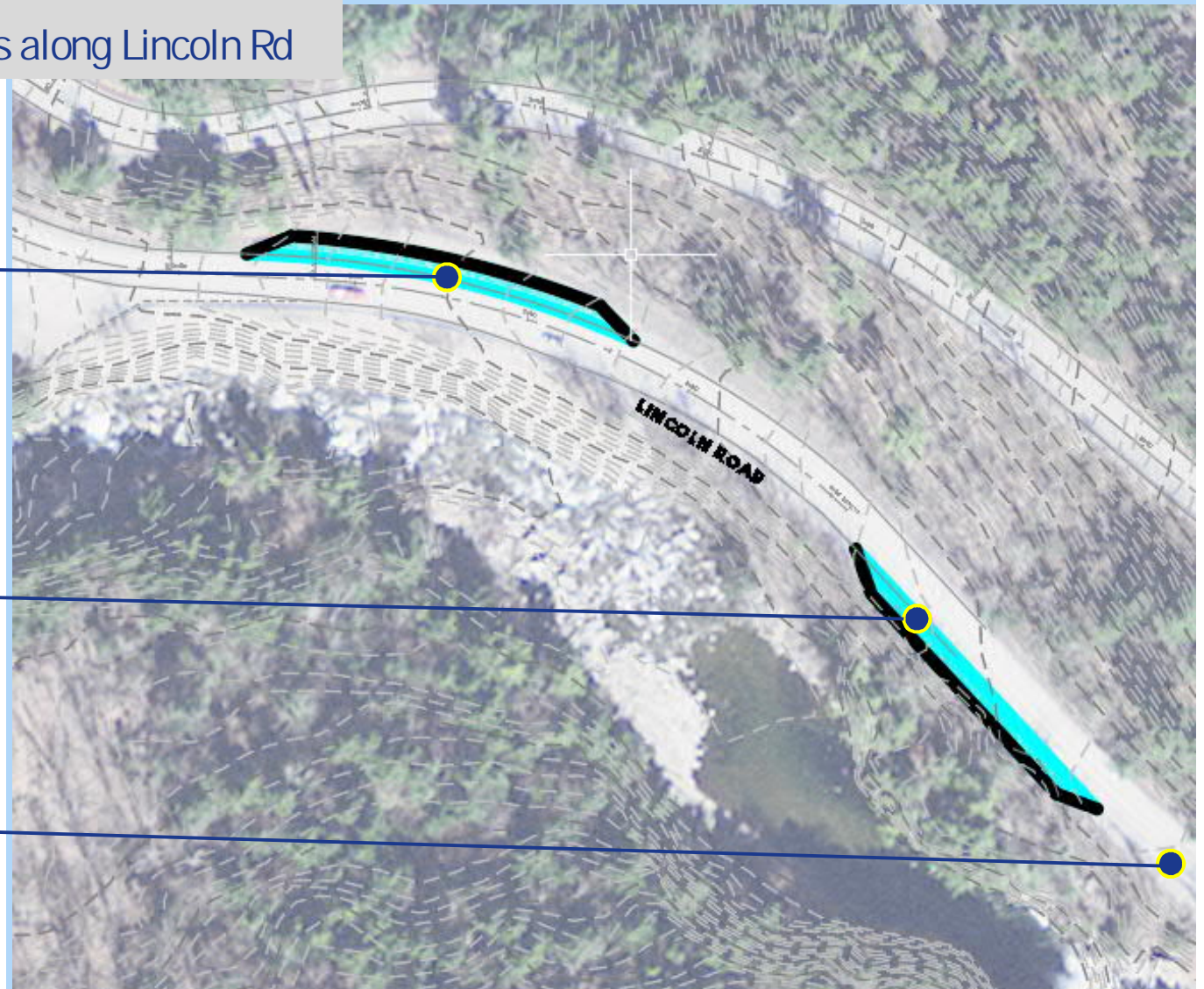
2A. New "No Parking" Signs

2B. Designated parking areas along Lincoln Rd

New paved areas to  
discourage parking on road

As shown, 9' parking space  
width, plus 2' buffer

Town could consider  
additional location(s)



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Alternatives for Parking Concerns at Lincoln Rd:

2A. New "No Parking" Signs

2B. Designated parking areas along Lincoln Rd

2C. Definition of Parking Area

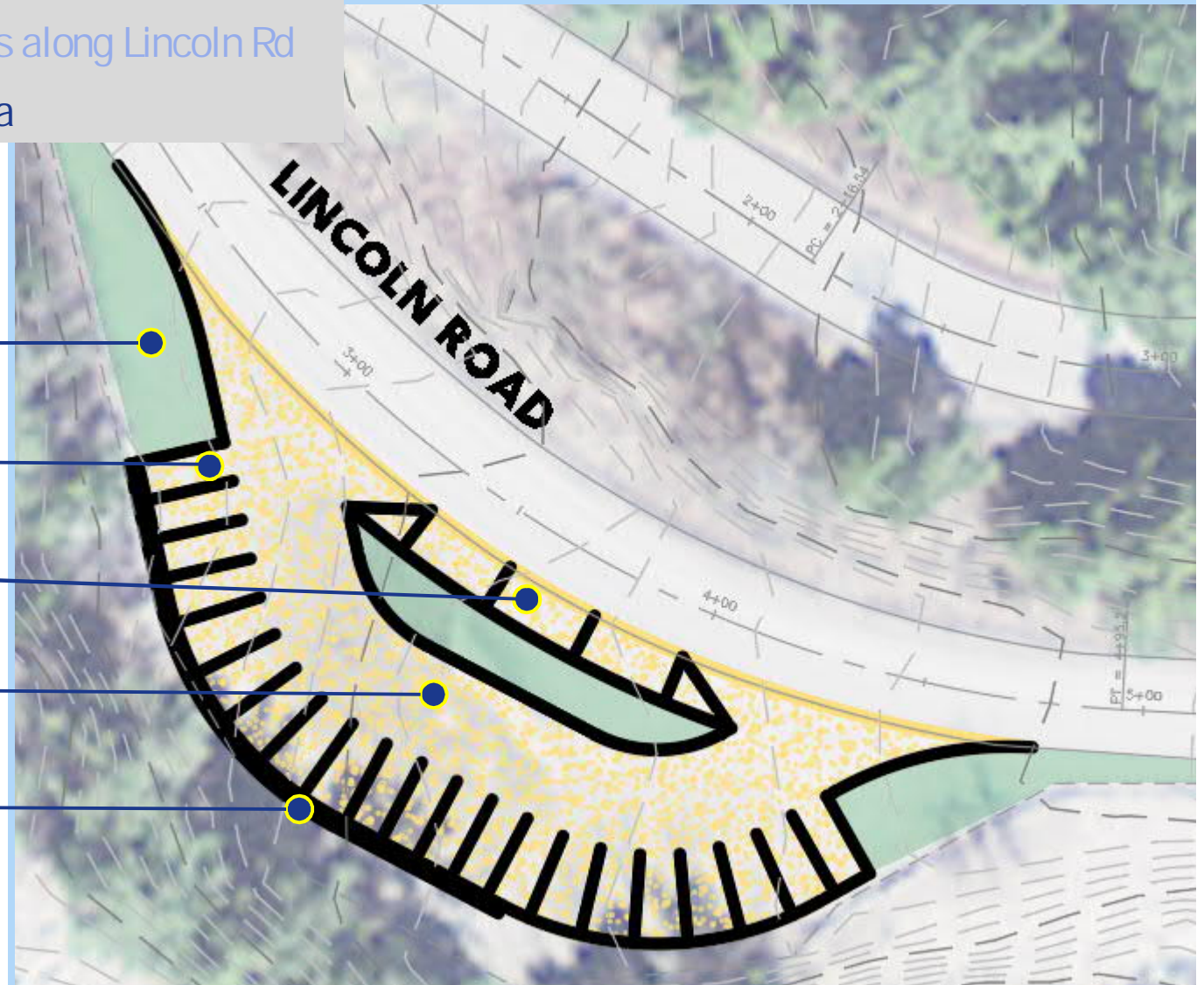
Green space opportunities

Increased parking capacity  
over existing conditions

Opportunity for bus parking

New paved surface

Retaining wall may be  
needed (further evaluations  
would be needed to  
determine if necessary,  
height needed, etc.)

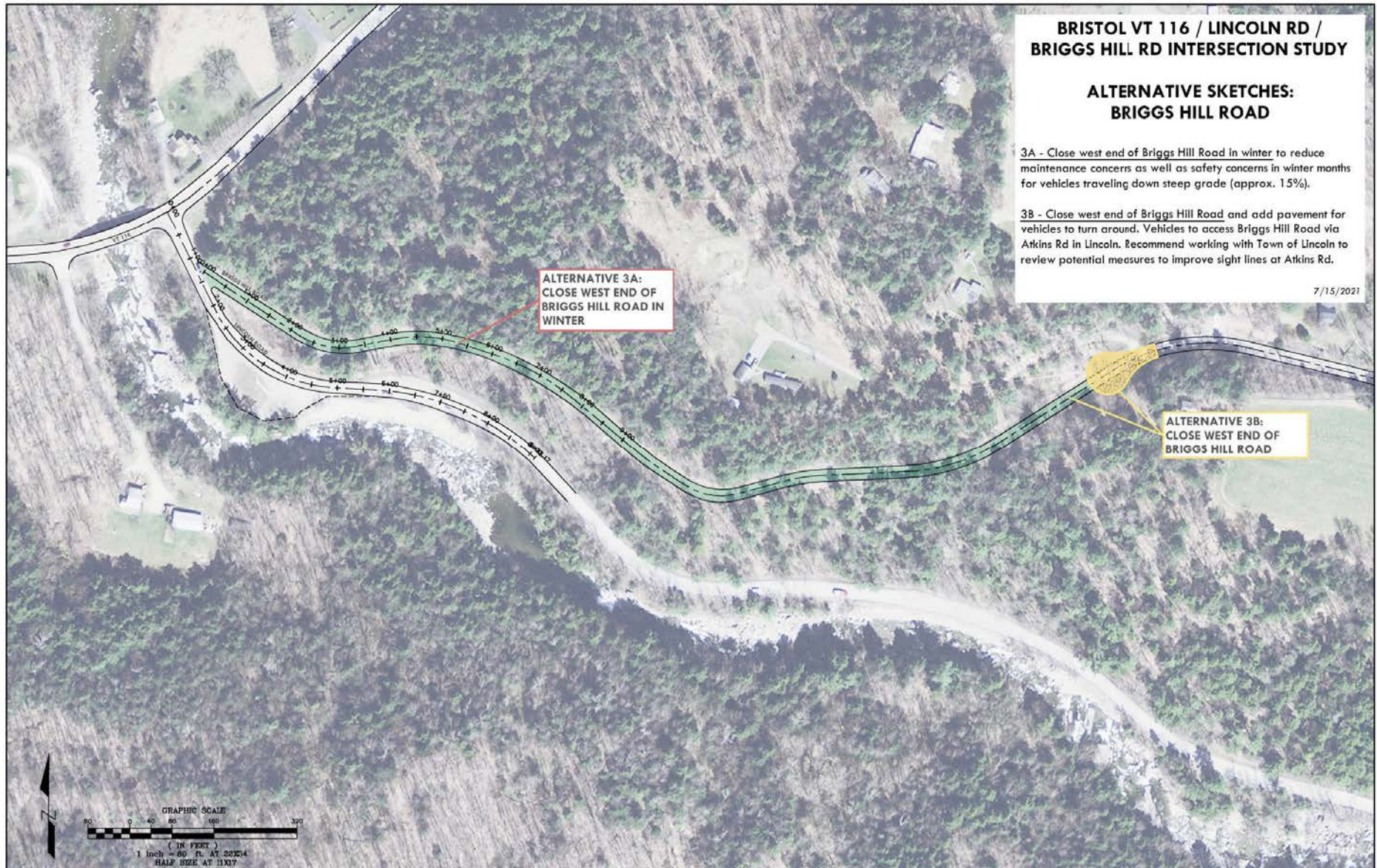




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## Project Alternatives:

### 3. Briggs Hill Road





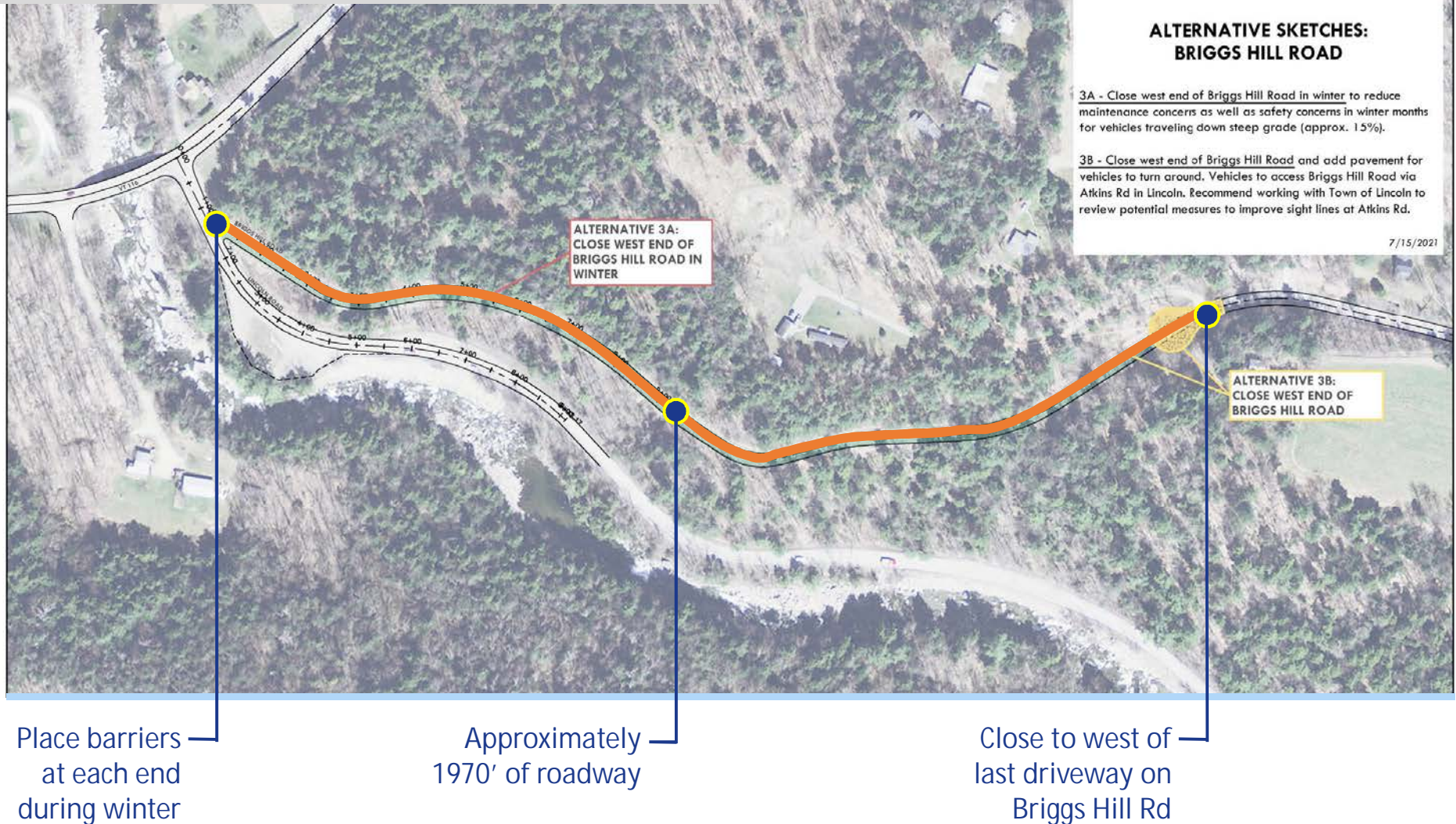
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## Project Alternatives:

### Alternatives for Briggs Hill Rd approach:

#### 3A. Close west end of Briggs Hill Road in winter

#### 3. Briggs Hill Road





# VT116 / Lincoln Road / Briggs Hill Rd Intersection Study: Alternatives Presentation Meeting

## Project Alternatives:

### 3. Briggs Hill Road

#### Alternatives for Briggs Hill Rd approach:

3A. Close west end of Briggs Hill Road in winter

3B. Close west end of Briggs Hill Road



Removes  
safety concern  
of steep slope  
at intersection

Removal of  
approximately  
1970' of roadway

Close at last  
driveway on  
Briggs Hill Rd,  
new turnaround

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### Alternatives - Preliminary Evaluations:

- **Environmental resources review:** The only preliminary finding of potential environmental impacts is to a “habitat block” for the Lincoln Road realignment alternative.
- **Historical/Archaeological:** Impacts unlikely, but would need to be reviewed for any roadway realignment alternatives.
- **ROW impacts:** ROW impacts for any road realignment alternative(s).
- **Conceptual Costs:** (see following pages)



VT116 / Lincoln Road / Briggs Hill Rd Intersection Study:  
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Alternatives – Conceptual Costs:

- Project Overview

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1. Lincoln Road alternatives

1A. Intersection Conflict Warning Signage - \$22,000

1B. Review Stop Bar Locations - \$400

1C. Traffic Mirror on VT 116 - \$500

1D. Realignment of Lincoln Road\* - \$835,000

2. Parking concerns at Lincoln Road

2A. New “No Parking” signs - \$4,000

2B. Designated parking along Lincoln Rd\* - \$27,000

2C. Definition of parking area\* - \$650,000

3. Briggs Hill Road

3A. Close west end of Briggs Hill Rd in winter - \$3,000

3B. Close west end of Briggs Hill Rd\* - \$140,000

\* Includes, where applicable, engineering design and construction inspection estimates.

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### Meeting Goals:

- Present alternatives to public (today!)
- Gather input on alternatives: pros/cons, gather a sense of community support or whether there are any concerns or issues not identified.
- Post-Meeting: follow up with Town and ACRPC to determine if any edits are needed to the list of alternatives.



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### Next Steps:

- **Alternatives Evaluation:** If needed, tweak alternative(s). Finalize alternative evaluations and prepare evaluation matrix.
- **Public Informational Meeting:** Present final evaluations (Sept. 2021)
- **Planning Study Report:** Summarize project into a Report.
- **ACRPC Meeting:** Present Project to ACRPC Transportation Advisory Committee (Sept. 2021)

# **VT 116 / Lincoln Road / Briggs Hill Road Intersection Study**

**Questions? Comments!**



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