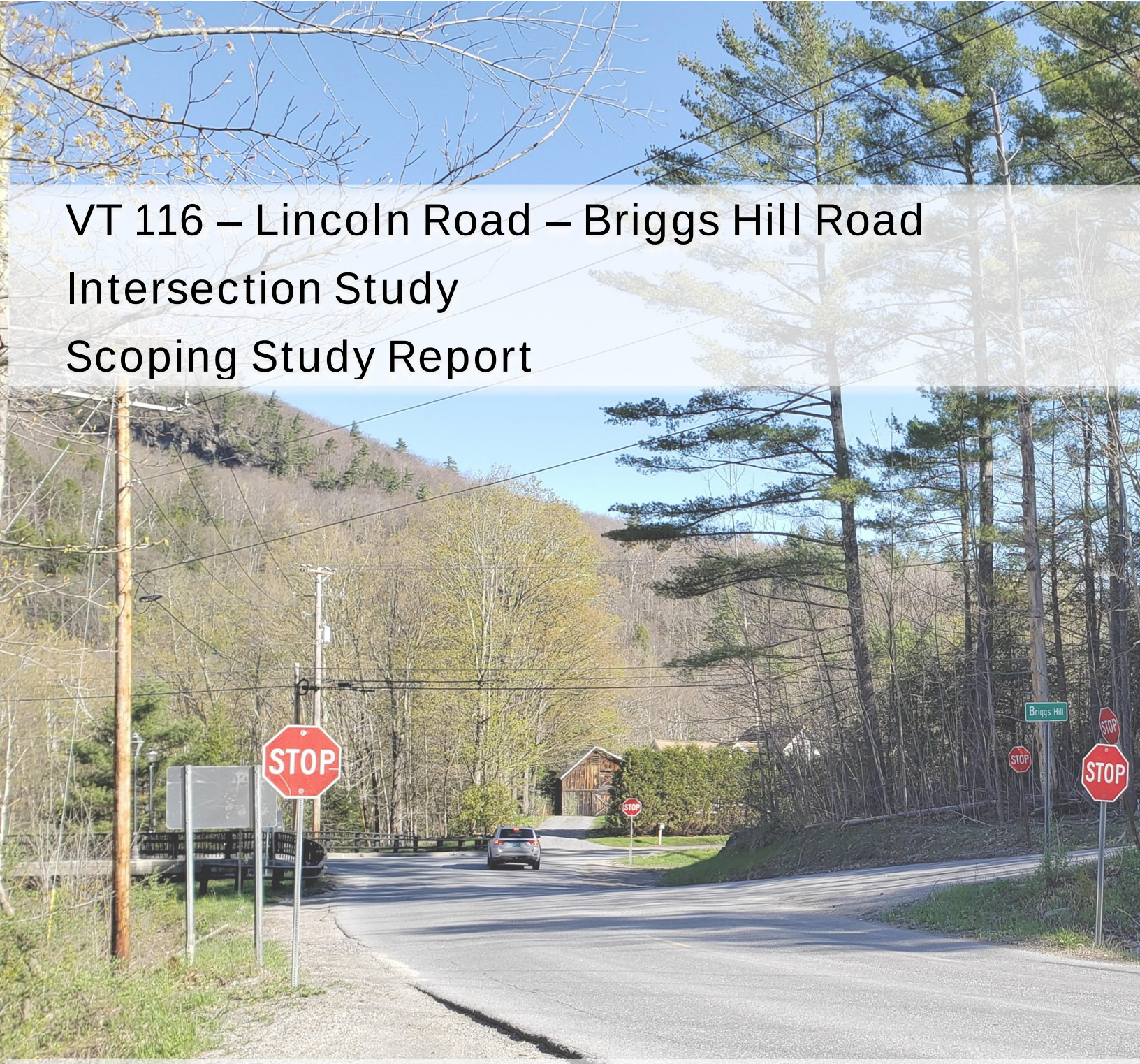
VT 116 – Lincoln Road – Briggs Hill Road Intersection Study

Scoping Study Report



for the

Town of Bristol and

Addison County Regional Planning Commission

September 2021

DuBois & King inc.

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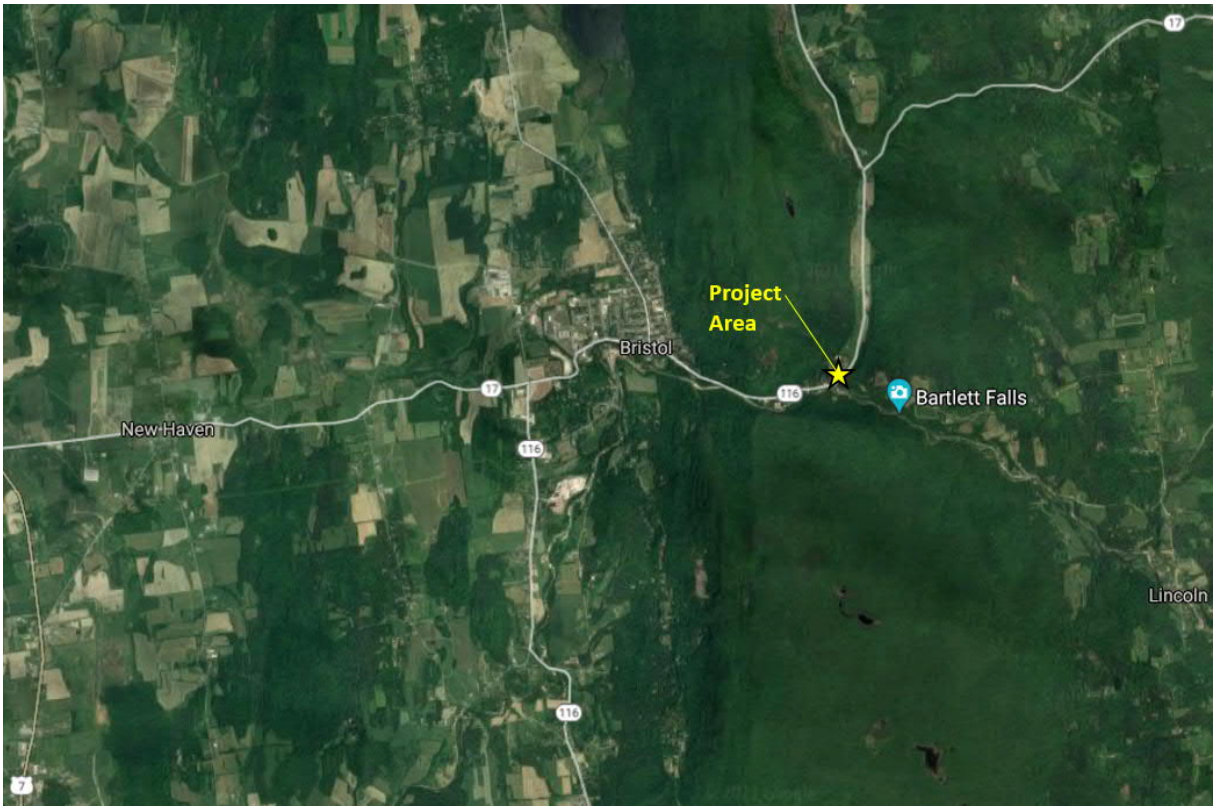
APPENDICES

1. PROJECT BACKGROUND

The Town of Bristol, Vermont has identified the VT 116, Lincoln Road, Briggs Hill Road intersection to have a number of safety issues. The Town acquired a planning grant through the Addison County Regional Planning Commission (ACRPC) to develop alternatives to address concerns at three focus areas in vicinity of this intersection. This Study has developed and evaluated alternatives for this area that the Town can use for planning potential improvements to remediate existing deficiencies in the project area. Not only has the Town of Bristol identified these concerns, but the nearby Town of Lincoln has also approached the Town regarding the need to address concerns at this project area.

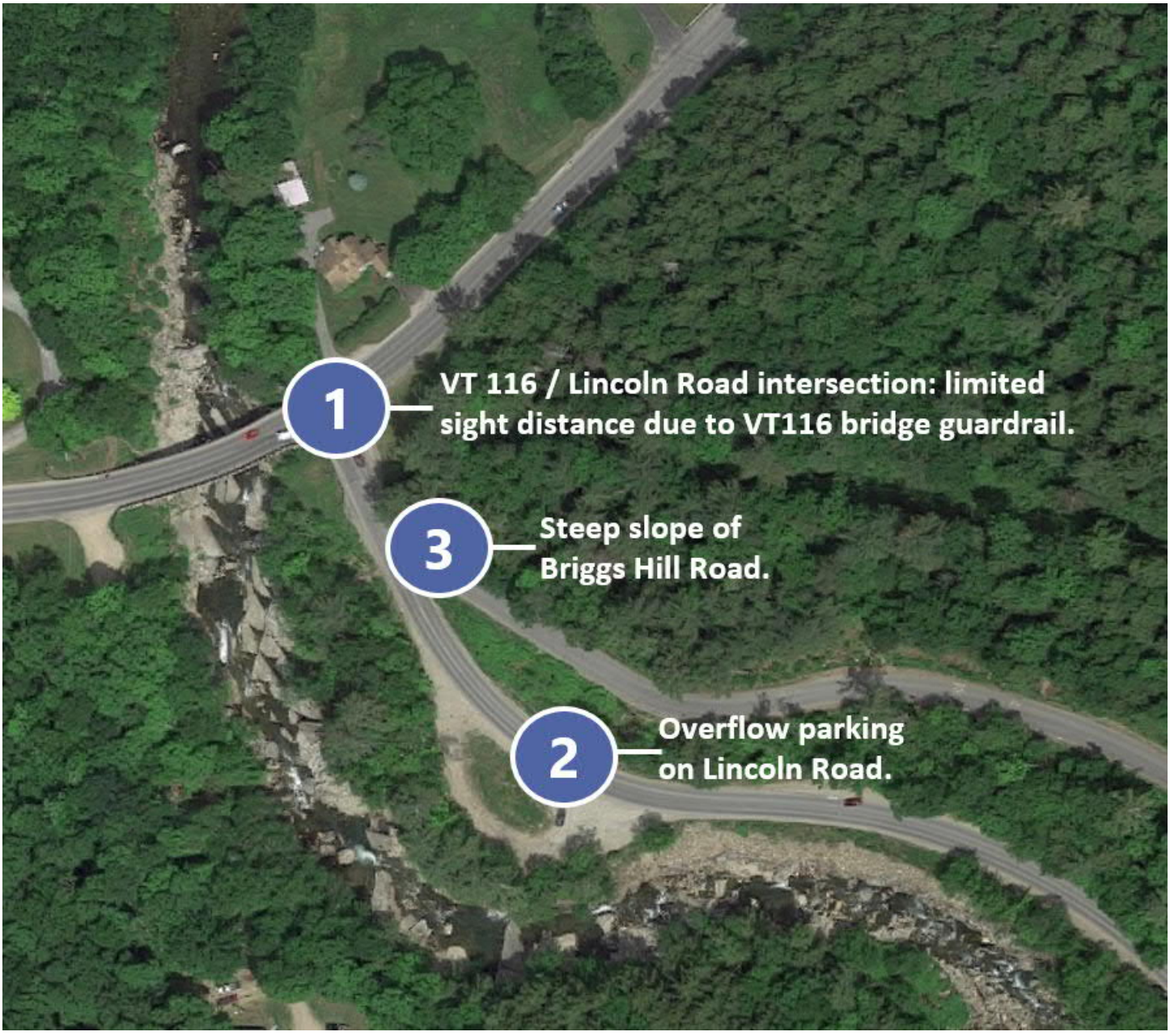
This Scoping Study involves the following process:

- Kick-Off Meeting,
- Review Existing Conditions,
- Develop Draft Alternatives,
- Alternatives Presentation Meeting,
- Alternatives Evaluations,
- Public Informational Meeting,
- Development of the Scoping Report, and
- Presentation to the ACRPC Transportation Advisory Committee (TAC)



2. THREE PROJECT AREA FOCUS AREAS

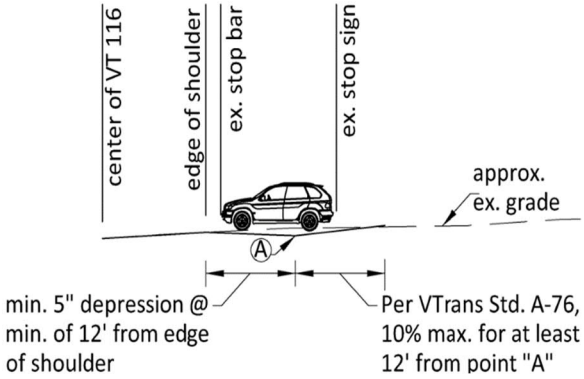
This project is broken down into three focus areas, as identified and prioritized by the Town of Bristol in the Request for Proposal (RFP) for this project, as well as through discussions at the Kick-Off Meeting. The three focus areas and primary concern for each of these areas are shown below. This project developed and evaluated alternatives specifically for each of these three focus area.



The alternatives developed for this project were such that they are aimed at addressing the specific concerns at each of the three focus areas. The following assumptions were made prior to developing the alternatives for this project:

- No alternatives related to the nearby VT 116 bridge or guardrail are being evaluated as part of this project. Based on VTrans bridge inspection data, this bridge was constructed in 2002. Based on input from the Town, the bridge is longer than the prior bridge, and its current location, length, and curvature was heavily dependent on subsurface conditions. A number of residents raised concerns regarding the height and type of guardrail on this bridge, suggesting that the current bridge guardrail has made the sight lines worse at the Lincoln Road intersection. A 2021 bridge inspection report indicates that this bridge is currently in the "good" to "very good" range in regards to bridge condition[1]. Because this is a State maintained bridge which is currently in good condition, we do not anticipate any modifications to the guardrail on this bridge are to be made in the near future.

Profile of Lincoln Road approaching VT116



- There was discussion at the Kick-Off Meeting regarding prior local input regarding the potential interest in raising the grade of the Lincoln Road approach to VT 116. Based on a cursory review of topography using contours created from LIDAR data, it is our judgment that the Lincoln Road approach currently meets VTrans standards, and raising the grade here would make it such that the approach grade would not meet State standards. Therefore, this option was not included as an alternative because it would be creating a situation where the approach does not meet State standards.
- We understand traffic speeds along VT 116 are a concern to residents. Traffic calming along VT 116 was considered to be outside of the scope of this project, therefore we are not evaluating any alternatives related to traffic speeds through this Study. There is available speed data in proximity to the project area and that information is included in this Report.

[1] Bridge Conditions in Vermont. VTrans. https://vtransparency.vermont.gov/pages/bridges2 [queried 9/23/2021]

3. EXISTING CONDITIONS

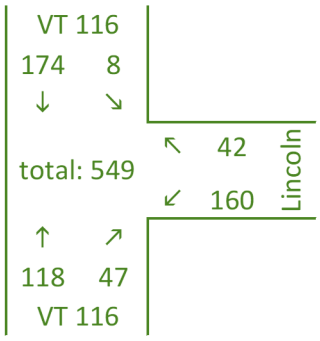
3A. Road and Traffic Characteristics

TRAFFIC CONTROL & INTERSECTION GEOMETRY - All roads within the project area have one lane in each direction. At the VT 116 / Lincoln Road intersection, Lincoln Road is a stop controlled approach. At the Lincoln Road / Briggs Hill Road intersection, both Briggs Hill Road and Lincoln Road from the east are stop controlled approaches.

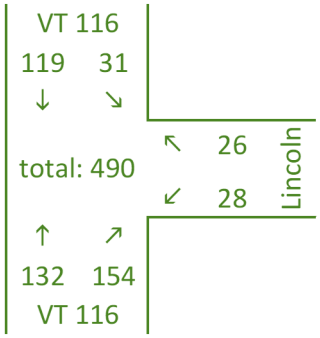
TRAFFIC VOLUMES - The VTrans 2019 AADT Report shows that the average annual daily traffic (AADT) along VT 116 was 4,920 vehicles to the west and 3,750 to the east. Year 2020 AADT data is available, however there was a 15% decrease in the AADT at the intersection from 2019 to 2020. This is likely due to the Covid pandemic, and its' impact on travel patterns. Therefore, for "baseline" conditions we assume the 2019 traffic volumes to be more indicative of "typical" traffic volumes. The 2019 AADT along Lincoln Road at the project area was 1887. There is no AADT data for Briggs Hill Road.

The weekday morning and evening peak hour traffic volumes based on the latest available VTrans count data (August 2014) for the VT 116 / Lincoln Road intersection showed 549 vehicles during the weekday am peak hour and 490 vehicles during the weekday pm peak hour (shown to the right). Additional details regarding traffic count data are included in the Appendices.

VT 116 / Lincoln Road Intersection
AM Peak Hour Traffic Volumes
(count 08/28/2014)



VT 116 / Lincoln Road Intersection
PM Peak Hour Traffic Volumes
(count 08/21/2014)



SPEED LIMITS & SPEED DATA – The speed limit along VT 116 in the project area is 40 mph. The speed limit of Lincoln Road and Briggs Hill Road are both 35 mph.

Available speed data was obtained from ACRPC and VTrans for two locations in vicinity of the project area. Speed data collected in 2017 at a point west of the intersection (between Rockydale Trailer Park and Lincoln Road) calculated an 85th percentile speed of 43 mph (85 out of every 100 vehicles at this location were traveling at 43 mph or lower), which is 3 mph over the speed limit.

The 85th percentile speed at a point along VT 116 approximately 0.9 miles northeast of the intersection was calculated in 2021 to be 59 mph. Note that the speed limit at this speed data location is 50 mph (compared to 40 mph speed limit at the project intersection).

Additional detail regarding this speed data is included in the Appendices.

3B. Sight Distance Review

Sight distance at the VT 116 / Lincoln Road intersection was measured in the field using methodology consistent with AASHTO's A Policy on Geometric Design of Highways and Streets (AASHTO "Green Book"). Sight distance recommendations per the AASHTO Green Book are shown in the table to the right.

The available sight distance is adequate looking to the east of the VT 116 / Lincoln Road intersection, and therefore not measured in the field. The available sight distance for a vehicle stopped on Lincoln Road looking west and for vehicles on VT 116 from the west to adequately see Lincoln Road vehicles turning into the intersection is approximately 395-feet.

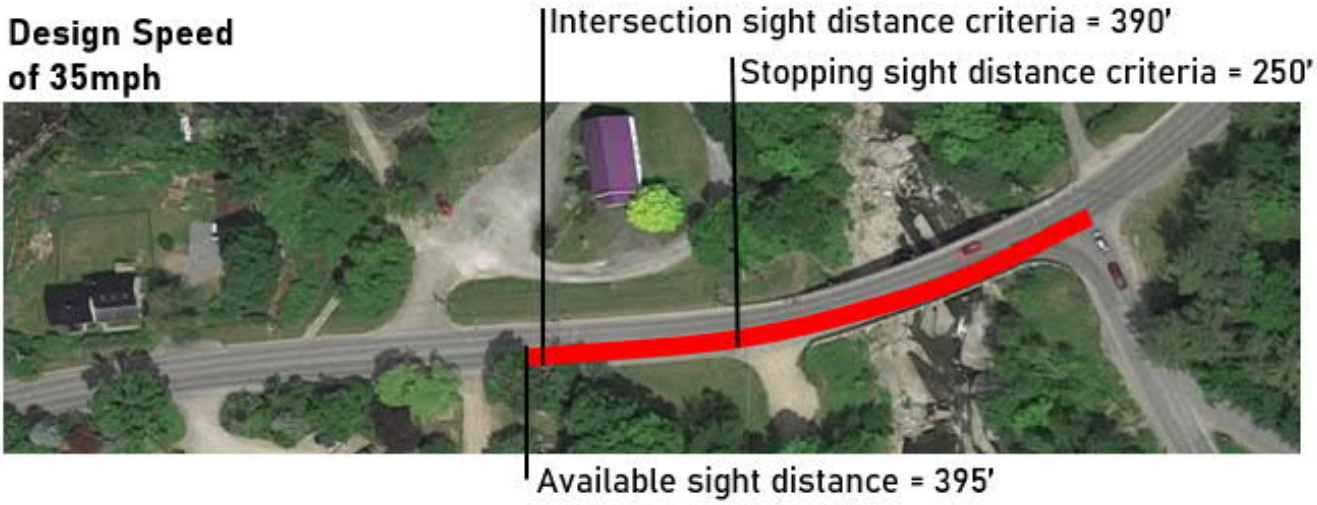
The design speed assumed for this review is 40mph, the speed limit along VT 116 at the intersection with Lincoln Road. Therefore, the stopping sight distance criteria is met for a design speed of 40mph, however, the available sight distance is 50' short of the recommendation for intersection sight distance.

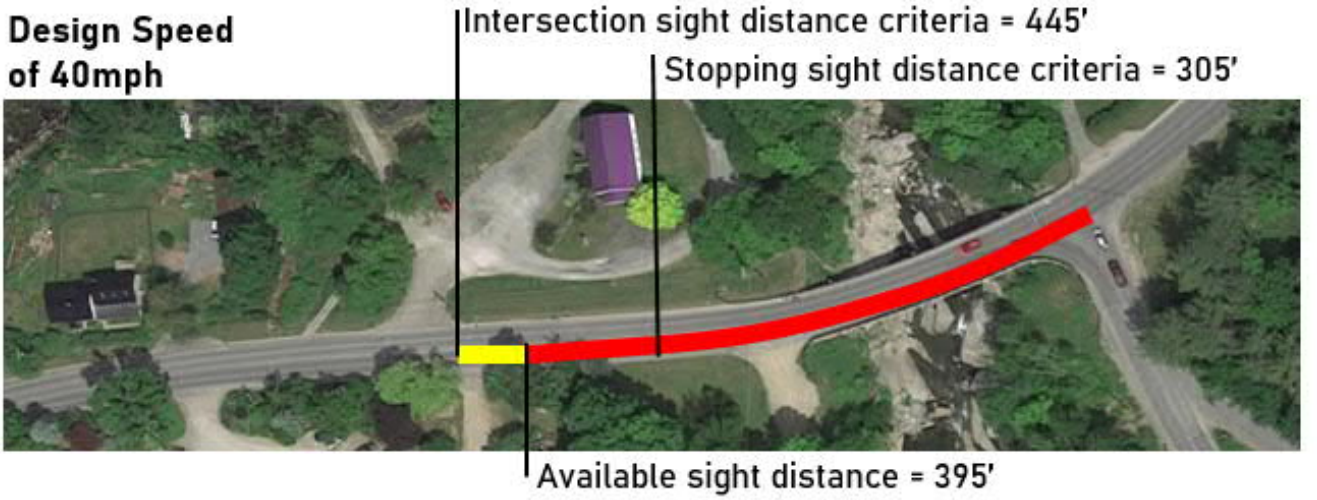
The primary obstructions to sight lines looking west from Lincoln Road are the horizontal curve of the VT 116 bridge and the guardrail on the south side of the bridge.

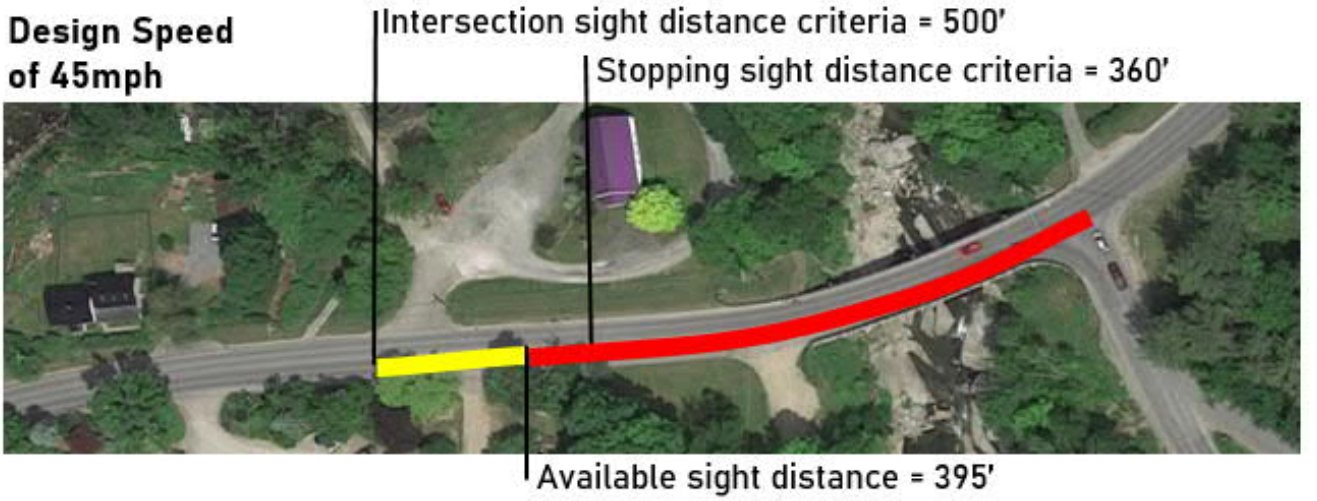
The graphics on the following page show the available sight distance relative to the sight distance criteria for varying design speeds.

Minimum Sight Distance per AASHTO Green Book

U.S. Customary			
Design Speed (mph)	Stopping Sight Distance (ft)	Intersection Sight Distance for Passenger Cars	
		Calculated (ft)	Design (ft)
15	80	165.4	170
20	115	220.5	225
25	155	275.6	280
30	200	330.8	335
35	250	385.9	390
40	305	441.0	445
45	360	496.1	500
50	425	551.3	555
55	495	606.4	610
60	570	661.5	665
65	645	716.6	720
70	730	771.8	775
75	820	826.9	830
80	910	882.0	885

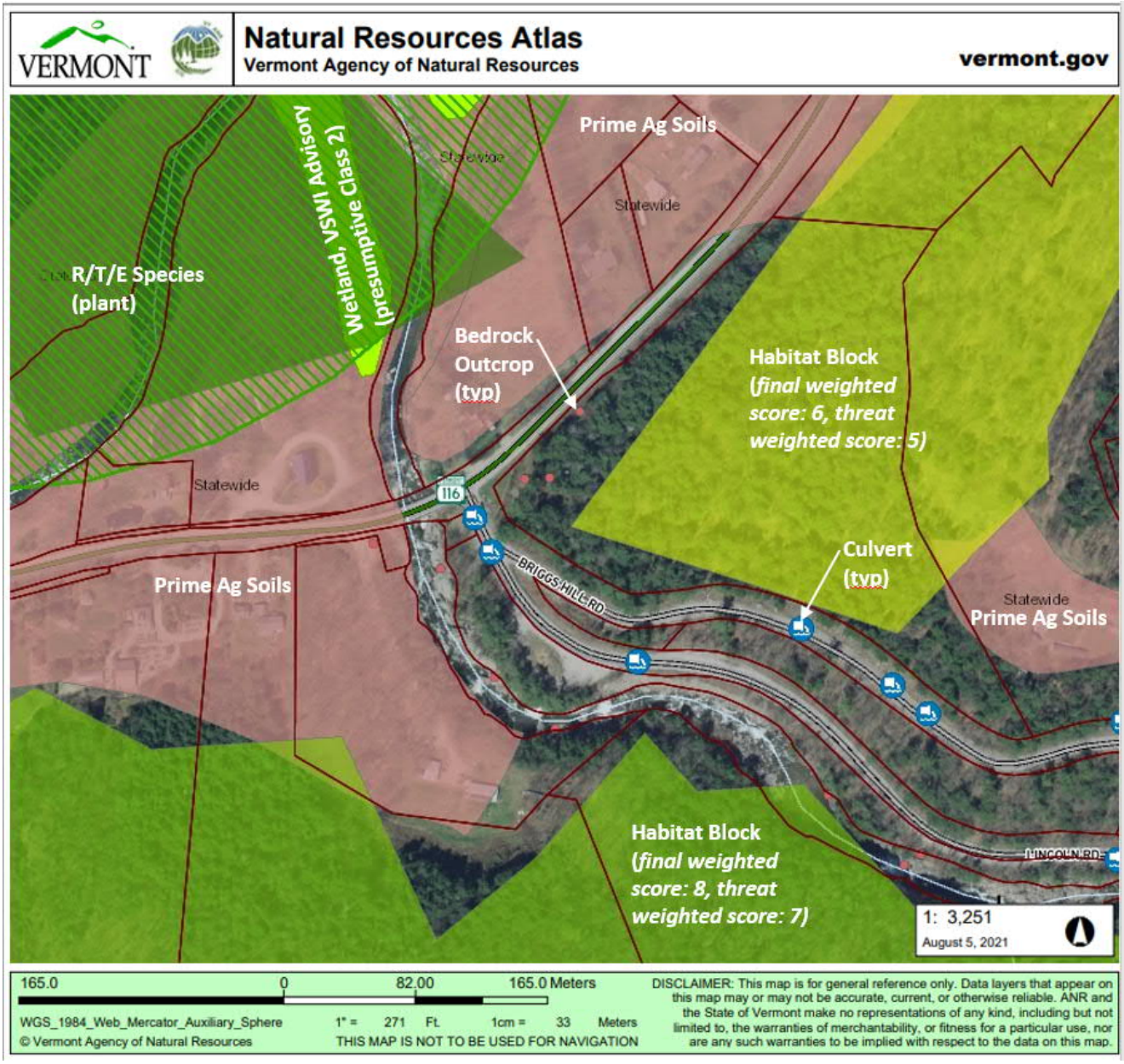

Design Speed
of 35mph
Intersection sight distance criteria = 390'
Stopping sight distance criteria = 250'
Available sight distance = 395'


Design Speed
of 40mph
Intersection sight distance criteria = 445'
Stopping sight distance criteria = 305'
Available sight distance = 395'


Design Speed
of 45mph
Intersection sight distance criteria = 500'
Stopping sight distance criteria = 360'
Available sight distance = 395'

3C. Environmental Resources Review

A preliminary environmental resources review of the project area was conducted utilizing the VT Agency of Natural Resources (VT ANR) Natural Resources ATLAS[2]. This data source includes GIS data for a number of environmental resources, including but not limited to wetlands; hazardous sites; floodplains; soils information; rare, threatened and endangered species; parcels; and much more. This database was reviewed for the project area and depicted below.



[2] VT ANR ATLAS. https://anr.vermont.gov/maps/nr-atla [queried 08.16.2021]

3D. Crash Data Review

The latest VTrans High Crash Location Report (2012-2016) was reviewed to determine if there are any high crash locations (HCLs) within the project area. There were no listed HCLs in the project area in the 2016 HCL Report.

In addition to reviewing the latest VTrans HCL Report, a review was conducted for the latest available five-year crash data (2016-2020) from the VTrans Public Crash Data Query Tool[3]. Between years 2016 and 2020 there were 8 crashes within 300 feet of the intersection (within the stopping sight distance length for a 40 mph roadway). The following is a summary of these crashes:

VT 116 & Lincoln Road Intersection Crash Data Summary (2016-2020)

- Total: 8 crashes, 6 crashes on VT 116 and 2 on Lincoln Road
- Crashes with an injury: 1
- Collision types: 1 rear end, 4 left turn and through, 2 single vehicle crashes, and 1 unknown crash type
- Crash involving animal: 1 crash involving a moose
- Weather: 1 crash involving wet/snow conditions

In order to be considered a high crash location (HCL), an intersection or segment must (1) have at least 5 crashes within a 5-year period, and (2) have an actual/critical rate ratio (as calculated using VTrans methodology in the VTrans HCL Report) over 1.0. Because there were 8 crashes within the most recent 5-year period, the actual rate to critical rate ratio was calculated to determine whether the intersection is considered to be a HCL based on 2016-2020 data.

The calculations to determine the actual/critical rate ratio are based on roadway classifications, AADTs, and the number of crashes in the 5-year period. The actual rate to critical rate ratio for 2016-2020 crash data was calculated to be 1.02. Therefore, based on this data, the VT 116 / Lincoln Road intersection is considered a high crash location intersection using 2016-2020 data. The more significant a high crash location is considered to be, the higher the number this ratio is. For perspective, in the 2012-2016 HCL report the intersection with the highest actual/critical ratio across the State of Vermont was calculated to be 3.347.

Similar calculations were computed for determining if the section of VT 116 at Lincoln Road is an HCL and the actual / critical rate ratio was calculated to be 1.01 for the 0.30-mile section of VT 116 with the Lincoln Road intersection at its' midpoint. There were 7 crashes along this section between 2016-2020.

Additional detail on the crash data review information discussed above is included in the Appendices.

[3] VTrans Public Crash Data Query Tool. http://apps.vtrans.vermont.gov/CrashPublicQueryTool . [queried 08.05.2021]

4. PROJECT ALTERNATIVES

Alternatives for each focus area were developed for this project based on the deficiencies discussed above and as identified by the Town in the RFP for this project and discussed at the Kick-Off Meeting. The following is a summary of alternatives evaluated as part of this project.

Focus Area 1: VT 116 and Lincoln Road intersection

Deficiency: Sight lines for vehicles stopped at Lincoln Road to be able to adequately see vehicles coming from the west on VT 116.

Alternative 1A: Install intersection conflict warning signage on VT 116

Description: This alternative includes two new signs, one located west of the VT 116 bridge and one located on the Lincoln Road approach to VT 116. These two signs would have the ability to "communicate" with each other via radar (or loops in the pavement), and when there is a vehicle that passes by the sign on VT 116, for example, the sign on the Lincoln Road approach will flash to warn drivers of oncoming traffic.

Goal: This alternative would not lengthen the sight lines at the intersection, but would increase drivers' awareness of vehicles within the project area.

Notes: There was discussion at the Alternatives Presentation Meeting regarding the specific placement of where the proposed signs would be located. Our recommendation for sign placement is shown in the graphic, however the exact location can be discussed by the Town if this alternative is selected to move forward.

This alternative would need State approval because it would include installing a sign on a State route. Based on input from a representative manufacturer (TAPCO), they have indicated that this sign system is MUTCD compliant, however they are not aware of any installations at the time of any of these signs systems on Vermont State roads. Additional information regarding this signage system is included in the Appendices for the Town's reference.

Alternative 1B: Review stop bar location on Lincoln Road at intersection with VT 116

Description: This alternative includes reviewing the location of the stop bar on the Lincoln Road approach of the intersection to determine whether the current stop bar location is at the most appropriate location.

Goal: To confirm that the current stop bar location is located at the location which provides optimal sight distance, and if not, relocate the Lincoln Road stop bar at this intersection

Notes: It is likely that any adjustments to the stop bar location may still not allow for the intersection sight distance to be met. Currently the stop sign for the intersection is set back further from VT 116 than the stop bar. If vehicles were to stop at the current stop sign location (#1 below), they would have slightly better sight lines beyond the bridge, but would have more difficulty seeing vehicles on the bridge. At the current stop bar location (#4 below) vehicles have a slightly better view of oncoming vehicles on the VT 116 bridge, but slightly less overall line of sight looking west past the bridge. This alternative would investigate whether there is any benefit to moving the stop bar location (potentially somewhere around photos #2 or #3 below, which are in between the stop sign and the stop bar).

Alternative 1C: Install traffic mirror on VT 116

Description: Install a traffic mirror on VT 116 across from the intersection of Lincoln Road.

Goal: This alternative would not lengthen the sight lines at the intersection, but would aim to improve visibility of approaching vehicles for cars stopped at Lincoln Road.

Notes: At the Alternatives Presentation Meeting there was reference to other traffic mirror(s) installed in Town, which have had positive feedback.

Alternative 1D: Realignment of Lincoln Road

Description: This alternative is included as an opportunity to place the intersection at a location which maximizes sight distance at a relocated intersection location such that it meets intersection sight distance criteria. This alternative would include removing a section of Lincoln Road and constructing a new roadway segment such that it intersects with VT 116 east of the current intersection. This would involve reconstruction of the Briggs Hill Road intersection and maintaining and reconstructing an entrance to the parking pull-off area on the south side of Lincoln Road. Significant earthwork would be

needed for this project, and it is likely that there would be some ledge removal needed as well.

Goal: This alternative improves sight lines for vehicles stopped at Lincoln Road at the VT 116 intersection.

Notes: While this alternative would improve sight lines, based on a preliminary review of topography in the area, it is estimated that the slope of Lincoln Road is likely to be approximately 15% approaching the VT 116 intersection. This alternative would be exchanging the current deficiency of sight lines with a new potential deficiency of a steep slope along Lincoln Road. If Briggs Hill Road were closed (see Focus Area 3 alternatives discussion) there would be the opportunity to have a less significant slope with this alternative.

Alternative 1E: Signalization of the intersection

Description: Installation of a traffic signal system at the VT 116 intersection.

Goal: This alternative would not improve sight lines, but would allow Lincoln Road traffic to enter the intersection with a reduced worry of the need to have adequate sight lines along VT 116.

Notes: This alternative would need VTrans approval because VT 116 is a State road. D&K conducted Signal warrant analyses to determine whether any traffic signal warrants were met. It was determined that no traffic signal warrants are met for this intersection for year 2021. Details of signal warrant analyses are included in the Appendices.

Alternative 1F: Do Nothing Alternative

Description: If none of the above alternatives discussed for Focus Area 1 are of interest to the Town, the Town may choose to proceed with no future improvements related to Focus Area 1.

BRISTOL VT 116 / LINCOLN RD / BRIGGS HILL RD INTERSECTION STUDY

ALTERNATIVE SKETCHES: LINCOLN ROAD INTERSECTION

1A - Install intersection conflict warning signage on VT 116, giving consideration to existing "watch for turning vehicles sign" west of intersection.

1B- Review stop bar location. Evaluate pros/cons of stop bar if placed closer to "stop" sign.

1C - Install traffic mirror on VT 116 to improve visibility for vehicles approaching the intersection from Lincoln Road to see eastbound VT116 vehicles.

1D - Realignment of Lincoln Road to improve sight lines at Lincoln Rd / VT 116 intersection. Further review of grades would be needed to determine if west end of Briggs Hill Road would need to be closed or if grades could lend to a realignment of Briggs Hill Rd at Lincoln Rd.

1E - Signalization of the intersection. A signal warrant evaluation will be conducted to determine whether signalization of the intersection is warranted. Signalization would allow Lincoln Road vehicles to enter onto VT116 without the concern of potential oncoming eastbound traffic.

8/20/2021

ALTERNATIVE 1C: INSTALL TRAFFIC MIRROR

ALTERNATIVE 1E: SIGNALIZATION OF INTERSECTION

ALTERNATIVE 1B: REVIEW STOP BAR LOCATION

ALTERNATIVE 1A: INTERSECTION CONFLICT WARNING SIGNAGE

ALTERNATIVE 1D: REALIGNMENT OF LINCOLN RD

VT 116

BRIGGS HILL ROAD

LINCOLN ROAD

GRAPHIC SCALE
80 0 40 80 160 320
(IN FEET)
1 inch = 80 ft. AT 22X34
HALF SIZE AT 11X17

Focus Area 2: Overflow Parking Along Lincoln Road

Deficiency: Vehicles parked on Lincoln Road within the project area is a safety concern.

Alternative 2A: New "No Parking" signage along Lincoln Road

Description: This alternative includes installation of new no parking signs along Lincoln Road beginning just east of the intersection with VT 116 and continuing east past the pull off area on the south side of Lincoln Road.

Goal: Deter drivers from parking along Lincoln Road.

Alternative 2B: Designated parking areas along Lincoln Road

Description: This alternative includes paving two sections along Lincoln Road which currently have relatively flat grades. Minor earthwork may be needed to ensure that the parking areas have acceptable slopes. This alternative would allow for 12 parking spaces.

Goal: Provide safe parking locations along Lincoln Road, encouraging drivers to park in locations where there is adequate pavement width to park.

Notes: If additional parking spaces along Lincoln Road are desired, the Town could investigate whether there are locations east of the project area that would be feasible for additional parking locations.

Alternative 2C: Definition of parking area on south side of Lincoln Road

Description: This alternative includes improvements to the existing pull off area on the south side of Lincoln Road. Currently, this area is very rocky, gravel, and not well-defined for parking. This alternative includes reconstruction of this area to be a paved parking area with striped parking spaces. Earthwork and potentially a retaining wall would be needed in order to maximize this space for parking.

Goal: Increase the parking capacity at the existing pull off location.

Notes: There is the opportunity for a couple small green space areas where benches and/or a picnic table could be placed to enhance the aesthetics of the overall space here.

Alternative 2D: Do Nothing Alternative

Description: If none of the above alternatives discussed for Focus Area 2 are of interest to the Town, the Town may choose to proceed with no future improvements related to Focus Area 2.

BRISTOL VT 116 / LINCOLN RD / BRIGGS HILL RD INTERSECTION STUDY

ALTERNATIVE SKETCHES: OVERFLOW PARKING ALONG LINCOLN RD

2A - New "No Parking" Signage along Lincoln Road

2B - Designated parking areas along Lincoln Road. As shown: 5 spaces on north side and 7 spaces on south side, all unmarked). Will require relocation of "stop ahead" sign in area on north side of the road.

2C - Definition of Parking Area (24 spaces). Will likely require a new retaining wall on the back side of the parking and fill within existing pull off area to meet standards. Will also require ledge removal.

8/20/2021

VT 116

BRIGGS HILL ROAD

LINCOLN ROAD

ALTERNATIVE 2A: NEW "NO PARKING" SIGNAGE (Typ.)

ALTERNATIVE 2C: DEFINITION OF PARKING AREA (24 spaces)

ALTERNATIVE 2B: DESIGNATED PARKING ALONG LINCOLN ROAD

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft. AT 22X34
HALF SIZE AT 11X17

Focus Area 3: Briggs Hill Road approach to Lincoln Road
Deficiency: Steep slope of Briggs Hill Road.

Alternative 3A: Close west end of Briggs Hill Road in winter

Description: This alternative includes closing off the west end of Briggs Hill Road for a length of approximately 200-feet during winter months by placing barricades and signage at each end of the road segment shown on the following page.

Goal: Minimize the concern of the steep slope of Briggs Hill Road at the time of year which it poses the highest concern.

Notes: Initially the proposed length of road to close was a longer segment. However, after the Alternatives Presentation Meeting the point at which to close the road was adjusted due to Town knowledge of upcoming development off Briggs Hill Road.

Alternative 3B: Close west end of Briggs Hill Road

Description: This alternative includes permanently closing off the west end of Briggs Hill Road for a length of approximately 200-feet and constructing a turnaround where vehicles can safely turn around at the new dead-end of the road.

Goal: Minimize the concern of the steep slope of Briggs Hill Road by eliminating this section of the road.

Notes: If this alternative is pursued, it is recommended that the Town work with the Town of Lincoln to review potential measures to improve sight lines at the Briggs Hill Road intersection with Atkins Road. The same note as listed for Alternative 3A applies to this alternative as well.

Alternative 3C: Do Nothing Alternative

Description: If none of the above alternatives discussed for Focus Area 3 are of interest to the Town, the Town may choose to proceed with no future improvements related to Focus Area 3.

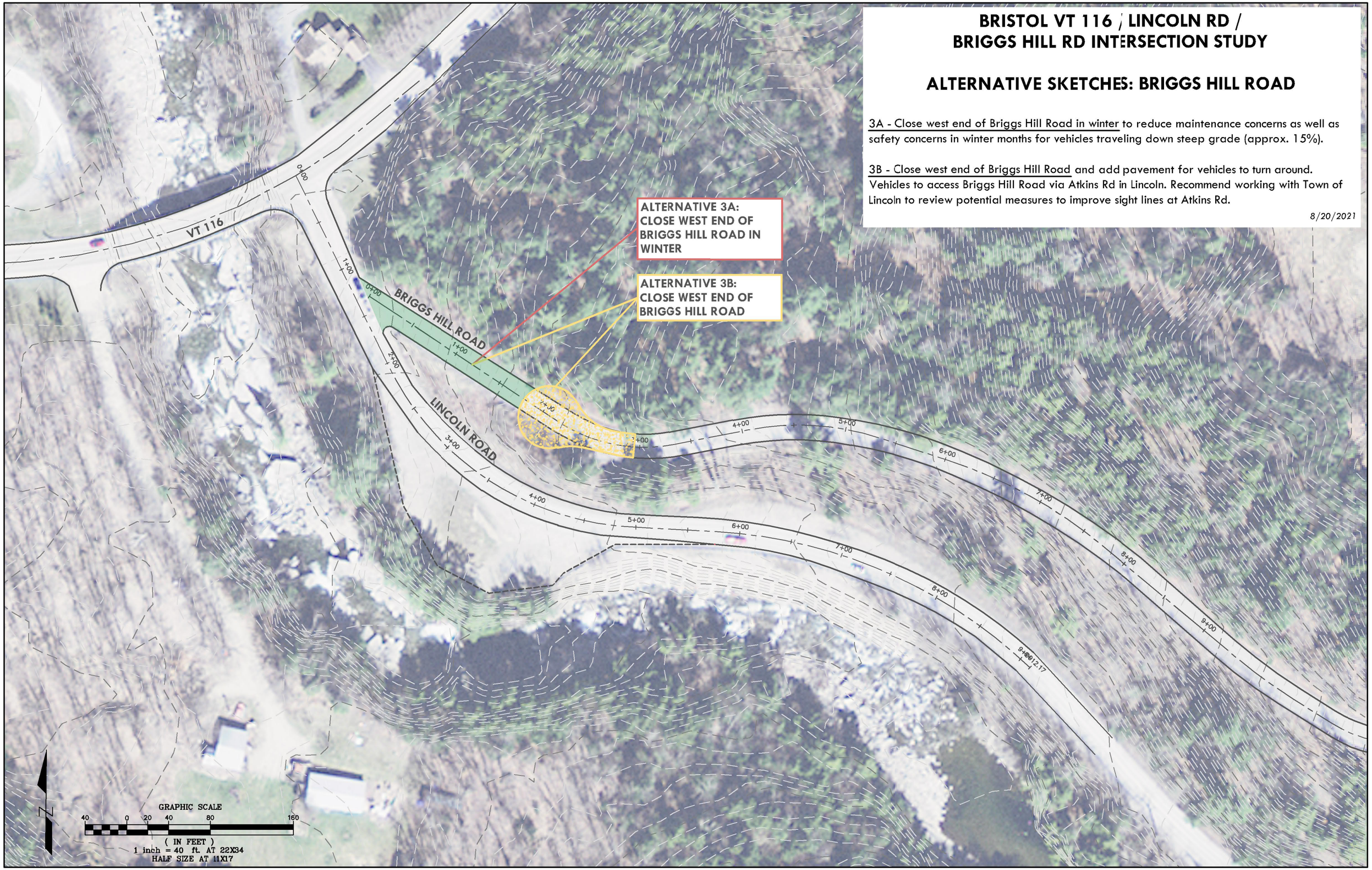
BRISTOL VT 116 / LINCOLN RD / BRIGGS HILL RD INTERSECTION STUDY

ALTERNATIVE SKETCHES: BRIGGS HILL ROAD

3A - Close west end of Briggs Hill Road in winter to reduce maintenance concerns as well as safety concerns in winter months for vehicles traveling down steep grade (approx. 15%).

3B - Close west end of Briggs Hill Road and add pavement for vehicles to turn around. Vehicles to access Briggs Hill Road via Atkins Rd in Lincoln. Recommend working with Town of Lincoln to review potential measures to improve sight lines at Atkins Rd.

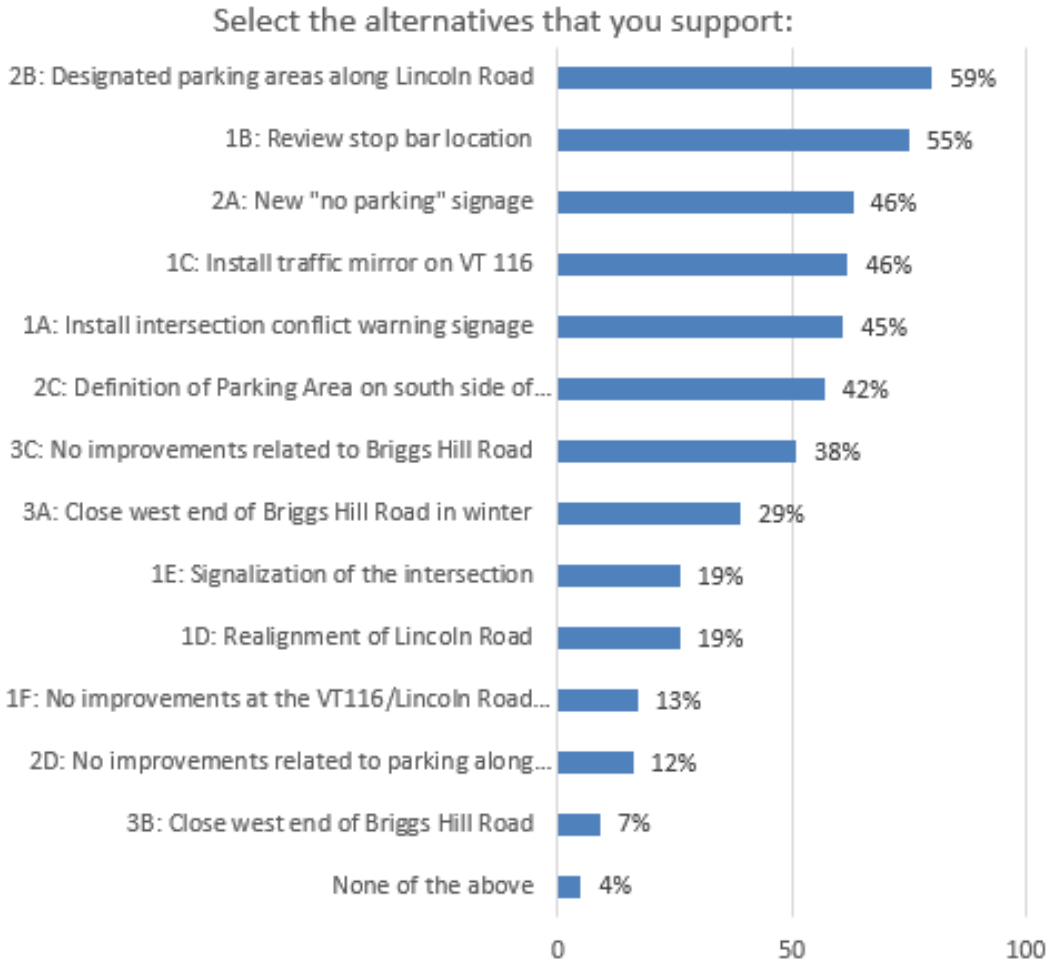
8/20/2021

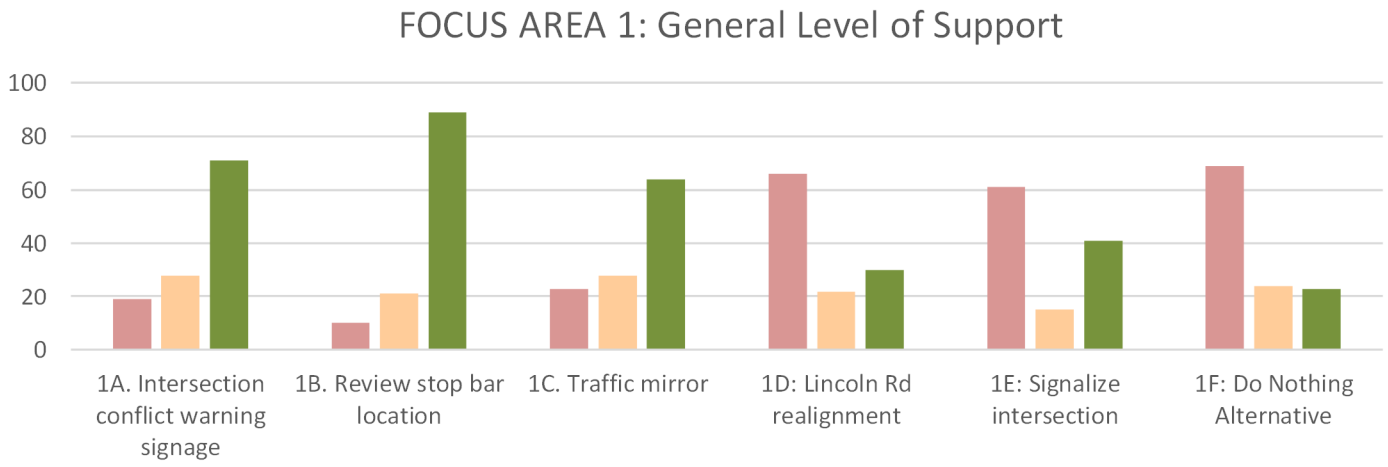


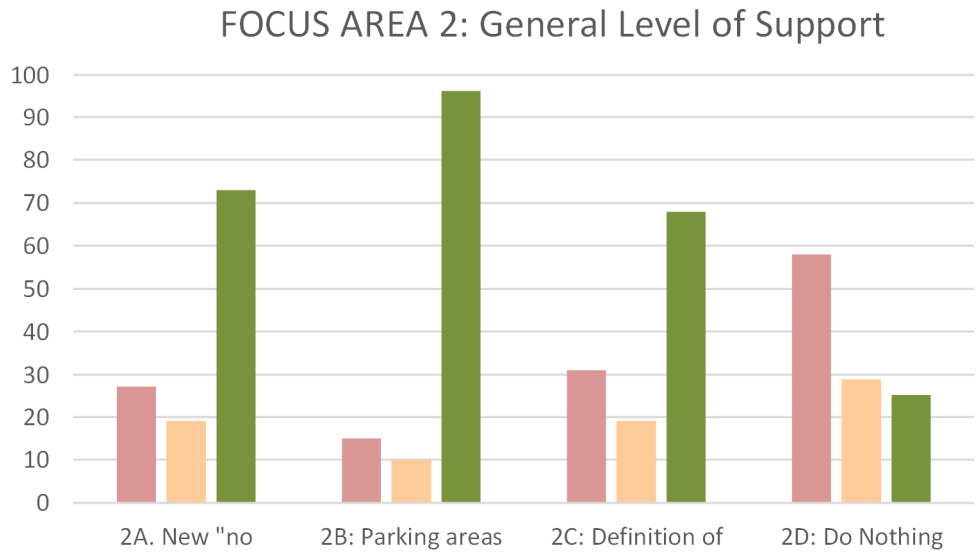
5. COMMUNITY SURVEY

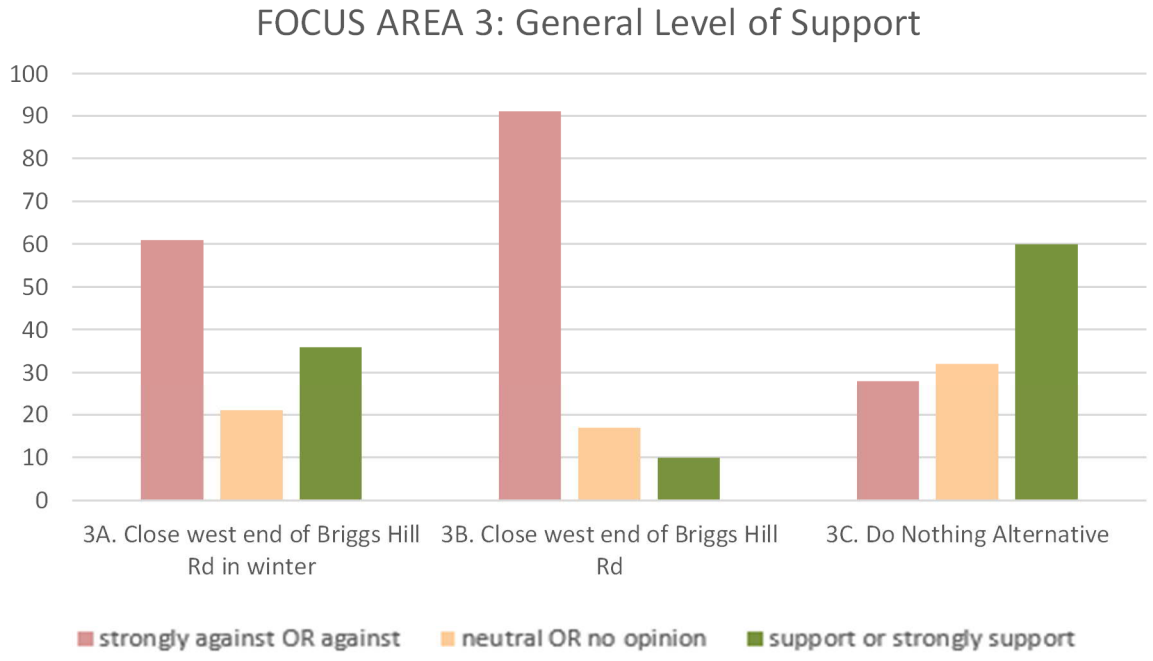
A community survey was conducted for this project to gage the level of support and interest for each alternative. Additional details on survey results can be found in the Appendices.

- Total number of responses: 136
- Response demographics: 60% live in Bristol: 60%, 31% live in Lincoln, 9% other
- Drive through VT 116 / Lincoln Rd intersection at least 2-3 times a week: 71%
- Drive through Lincoln Rd / Briggs Hill Rd intersection at least 2-3 times a week: 59%
- Frequently witnessed vehicles parking along Lincoln Rd: 86%
- Level of concern with steep slope of Briggs Hill Rd approach to Lincoln Rd
- No or slight concern: 47%, Neutral: 14%, Concerned or very concerned: 38%, N/A: 1%




FOCUS AREA 1: General Level of Support
100
80
60
40
20
0
1A. Intersection conflict warning signage
1B. Review stop bar location
1C. Traffic mirror
1D: Lincoln Rd realignment
1E: Signalize intersection
1F: Do Nothing Alternative


FOCUS AREA 2: General Level of Support
100
90
80
70
60
50
40
30
20
10
0
2A. New "no
2B: Parking areas
2C: Definition of
2D: Do Nothing


FOCUS AREA 3: General Level of Support
100
90
80
70
60
50
40
30
20
10
0
3A. Close west end of Briggs Hill Rd in winter
3B. Close west end of Briggs Hill Rd
3C. Do Nothing Alternative
strongly against OR against
neutral OR no opinion
support or strongly support

General Notes Regarding Ranking of Alternatives

- Responses were 3 times more likely to rank a Focus Area 1 alternative as top ranked priority.
- Alternative with most "support" votes was 2B: Designated parking areas along Lincoln Road
- Alternative with most #1 rankings: 1B: Review stop bar location
- Alternative with most rankings of #1, 2, or 3:
    - 1B: Review stop bar location
    - 2B: Designated parking areas along Lincoln Road
    - 1A: Install intersection conflict warning signage
- Of the Focus Area 2 alternatives, 2B (designated parking areas along Lincoln Road) had the highest number of "support" votes, but of all the Focus Area 2 support votes, 2A (no parking signs) had the highest number of #1 priority votes.
- 41 responses supported one of both Briggs Hill alternatives, but only 5 responses ranked a Focus Area 3 improvement as #1 priority.

6. ALTERNATIVES EVALUATION

The above alternatives were evaluated based on a number of factors. The broad categories for comparison included:

- Project Costs
- Level of meeting goal of focus area
- Roadway or land use impacts
- Environmental / cultural resource impacts
- Potential permitting requirements
- Level of community support

On the following page is an Evaluation Matrix for the Alternatives evaluated as part of this project. The color coding on the matrix is such that boxes which suggest high cost, low level of safety improvement, high impacts, and low community support are shown as dark pink. Green indicates the opposite: low cost, high level of safety improvement, low impacts, and high community support. The various shades indicate various levels of impacts.

Bristol VT 116 / Lincoln Road / Briggs Hill Road Intersection Study - Evaluation Matrix

		LINCOLN ROAD INTERSECTION						PARKING CONCERNS ALONG LINCOLN ROAD				BRIGGS HILL ROAD		
		1A. Conflict Warning Signage	1B. Review Stop Bar Location	1C. Traffic Mirror on VT116	1D. Lincoln Road Realignment	1E. Signalization of Intersection	1F. Do Nothing Alternative	2A. New "No Parking" Signs	2B. Designated Parking along Lincoln	2C. Definition of Parking Area	2D. Do Nothing Alternative	3A. Close west end of Briggs Hill in Winter	3B. Close west end of Briggs Hill	3C. Do Nothing Alternative
Project Costs	Construction	$22,000	$400	$500	$1,100,000	$400,000	-	$4,000	$21,000	$560,000	-	$3,000	$38,000	-
	Engineering Design + Resident Engineer	-	-	-	$300,000	$100,000	-	-	$4,000	$140,000	-	-	$7,000	-
	Total Project Costs (excluding ROW)	$22,000	$400	$500	$1,400,000	$500,000	-	$4,000	$25,000	$700,000	-	$3,000	$45,000	-
Level of Meeting Goal of Focus Area	Overall Safety Improvement	MEDIUM (increases visibility, does not change overall sight lines)	MEDIUM (potential improvements to sight lines)	MEDIUM (increases visibility, does not change overall sight lines)	HIGH (improves sight lines)	MEDIUM (allows for gaps for traffic turning movements, does not change overall sight lines)	-	LOW (deters vehicles from parking on road)	MEDIUM (improves opportunities for safe locations to park)	HIGH (significantly improves opportunities for safe locations to park)	-	HIGH (removes vehicles from steep slope in winter)	HIGH (removes vehicles from steep slope year round)	-
Roadway or Land Use Impacts	ROW Impacts	-	-	-	significant	minimal	-	-	unlikely	unlikely	-	-	minimal	-
	Utility relocation	-	-	-	-	minimal	-	-	-	-	-	-	-	-
	Other	-	-	-	-	Signal is not warranted per MUTCD signal warrants	-		-	-	-	-	-	-
Environmental/Cultural Resource Impacts	Streams/Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fish & Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-
	Wetlands	-	-	-	-	-	-	-	-	-	-	-	-	-
	Wildlife/Cons. Areas	-	-	-	-	-	-	-	-	-	-	-	-	-
	Agricultural Lands	-	-	-	-	-	-	-	-	-	-	-	-	-
	Archaeological / Historic	-	-	-	unlikely	-	-	-	-	-	-	-	-	-
	Public Lands (Section 4f)	-	-	-	-	-	-	-	-	-	-	-	-	-
	LWCP (Section 6(f))	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hazardous Waste	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other	-	-	-	impact to habitat block	-	-	-	-	-	-	-	-	-
Permitting	Act 250	-	-	-	-	-	-	-	-	-	-	-	-	-
	Section 404 (wetlands)	-	-	-	-	-	-	-	-	-	-	-	-	-
	Section 401 Water Quality	-	-	-	-	-	-	-	-	-	-	-	-	-
	State Wetlands Permit	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stream Alteration Permit	-	-	-	-	-	-	-	-	-	-	-	-	-
	Construction Phase Storm Water Discharge Permit	-	-	-	potential	-	-	-	-	-	-	-	-	-
	Operational Phase Storm Water Discharge Permit	-	-	-	potential	-	-	-	-	-	-	-	-	-
	Lakes & Ponds	-	-	-	-	-	-	-	-	-	-	-	-	-
	R, T, E Species	-	-	-	-	-	-	-	-	-	-	-	-	-
	Section 1111 Permit	yes	potential	yes	yes	yes	-	-	-	-	-	-	-	-
Community Support	Level of community support	52% support	65% support	47% support	22% support	30% support	17% support	54% support	71% support	50% support	18% support	26% support	7% support	44% support

7. SUMMARY OF ALTERNATIVES

Focus Area 1: VT 116 & Lincoln Road Intersection

The three alternatives that have the highest amount of public support are 1A (intersection conflict warning signage), 1B (review stop bar location) and 1C (traffic mirror). Alternatives 1D (Lincoln Road realignment) and 1F (do nothing alternative) received low support (approximately 50% of responses were against or strongly against these two alternatives). Alternative 1D is also significantly more expensive than any of the other alternatives. Alternative 1E (signalization of intersection) is not recommended because none of the traffic signal warrants were estimated to be met.

We recommend some combination of alternatives 1A, 1B, and/or 1C. Alternative 1B is a very low-cost alternative that could easily be implemented by the Town. We would recommend that either 1A or 1C be installed, whichever is more preferred by the Town. In the event there are still concerns with sight lines after implementing one of the two, both 1A and 1C could be implemented if desired by the Town. If both 1A and 1C are implemented, we recommend consideration be given to the location of the signs and that they are not distracting to each other.

Focus Area 2: Overflow Parking on Lincoln Road

For this focus area, all of the alternatives other than the Do Nothing Alternative were generally supported by the community. The alternative with the highest level of support is Alternative 2B (parking areas along Lincoln Road), with 71% supporting this alternative. Alternatives 2A (new no parking signs) and Alternative 2C (definition of parking area) both received around 50% support. We recommend proceeding with Alternatives 2A and 2B as short term measures, as well as pursuing Alternative 2C (Definition of Parking Area) if overflow parking continues to be an issue after implementing Alternatives 2A and 2B. Alternative 2C is the most expensive alternative but will also produce the highest number of parking spaces outside of the roadway, therefore Alternative 2C would be recommended as a long-term alternative pending continued Town support and the availability of funding. In addition, there could be the opportunity to enhance this area with a couple small green space areas with Alternative 2C.

Focus Area 3: Briggs Hill Road Approach to Lincoln Road

Alternatives 3A and 3B include closing the west end of Briggs Hill Road either during the winter or permanently. The overall community input received for both Alternative 3A and 3B were against these alternatives. Results of the online survey showed 44% in favor of the Do Nothing Alternative, 26% in support of closing Briggs Hill Road for a short section just east of Lincoln Road, and 7% supported closing this short section of Briggs Hill Road. One concern raised regarding closing Briggs Hill Road at the west end would be in the event that Briggs Hill Road is needed for emergency personnel.

At this time, it is recommended that the Town not pursue either Alternative 3A or 3B. While the online survey did suggest 26% have a concern with the steep slope of Briggs Hill Road and 13% as very concerned, overall

8. ADDITIONAL CONSIDERATIONS

Over the course of the project residents at the various meetings and through the online survey have identified additional concerns at or near the project area that were outside the scope of work for this project. A summary of these are listed below.

Further Investigations Regarding VT 116 Bridge Guardrail

Several residents have noted the concern with the current guardrail on the adjacent VT 116 bridge. Specifically, they have asked whether a different guardrail could be used on the bridge that would allow for better sight lines at the Lincoln Road intersection. As noted above, investigations as to whether there is another bridge rail type that would meet State standards was not part of this project. However, we recommend that the Town reach out to the VTrans structures group to get further information about whether there is another option for guardrail on this bridge that would allow for better sight lines. If so, the Town should recommend that VTrans consider another guardrail option for this bridge in the future.

Stop Bar on Lincoln Road East of Briggs Hill Road Intersection

Concerns were raised regarding vehicles not stopping at the stop sign on Lincoln Road located on the east side of the Briggs Hill Road intersection. While there is a "stop ahead" sign in advance of the intersection, it This was not incorporated as part of the study, however we recommend that the Town maintains a stop bar at this location (with repainting as needed so that this stop bar is clearly visible).

The Town may also want to consider installing an MUTCD "side road" sign (W2-2), shown here, on Lincoln Road east of the Briggs Hill Road intersection to make drivers aware of this intersection, as some drivers may interpret the "stop ahead" sign to be for the VT 116 intersection.

Another potential measure for increasing awareness of the Briggs Hill Road intersection stop sign could be to place "stop ahead" pavement markings headed westbound prior to the Briggs Hill Road intersection, as shown in the example photo below[4].

[4] Photo credit: https://www.fhwa.dot.gov/publications/research/safety/08045/index.cfm

VT 116 – Lincoln Road – Briggs Hill Road

Intersection Study

Appendices

APPENDIX A

Traffic Data for VT 116 / Lincoln Road Intersection

Count Data from VTRans Transportation Data Management Website
Date(s): AM - Thurs., Aug. 28, 2014. PM - Thurs. Aug. 21, 2014

NB - AM

Cars						Trucks					Total				
Start Time	Left	Thru	Right	Ped	Total	Start Time	Left	Thru	Right	Total		L	T	R	Ped
6:00 AM	0	14	2	0	16	6:00 AM	0	0	0	0	6:00 AM	0	14	2	0
6:15 AM	0	15	1	0	16	6:15 AM	0	5	1	6	6:15 AM	0	20	2	0
6:30 AM	0	16	4	0	20	6:30 AM	0	1	1	2	6:30 AM	0	17	5	0
6:45 AM	0	20	3	0	23	6:45 AM	0	5	0	5	6:45 AM	0	25	3	0
7:00 AM	0	28	5	0	33	7:00 AM	0	3	1	4	7:00 AM	0	31	6	0
7:15 AM	0	35	8	0	43	7:15 AM	0	3	3	6	7:15 AM	0	38	11	0
7:30 AM	0	26	8	0	34	7:30 AM	0	1	2	3	7:30 AM	0	27	10	0
7:45 AM	0	19	14	0	33	7:45 AM	0	4	1	5	7:45 AM	0	23	15	0
8:00 AM	0	23	10	0	33	8:00 AM	0	7	1	8	8:00 AM	0	30	11	0
8:15 AM	0	27	11	0	38	8:15 AM	0	1	5	6	8:15 AM	0	28	16	0
8:30 AM	0	17	8	0	25	8:30 AM	0	2	2	4	8:30 AM	0	19	10	0
8:45 AM	0	17	16	0	33	8:45 AM	0	4	0	4	8:45 AM	0	21	16	0
9:00 AM	0	27	12	0	39	9:00 AM	0	4	0	4	9:00 AM	0	31	12	0
9:15 AM	0	16	14	0	30	9:15 AM	0	1	3	4	9:15 AM	0	17	17	0
9:30 AM	0	9	7	0	16	9:30 AM	0	2	2	4	9:30 AM	0	11	9	0
9:45 AM	0	15	7	0	22	9:45 AM	0	1	0	1	9:45 AM	0	16	7	0
10:00 AM	0	14	8	0	22	10:00 AM	0	3	1	4	10:00 AM	0	17	9	0
10:15 AM	0	15	10	0	25	10:15 AM	0	3	3	6	10:15 AM	0	18	13	0
10:30 AM	0	15	8	0	23	10:30 AM	0	3	1	4	10:30 AM	0	18	9	0
10:45 AM	0	26	8	0	34	10:45 AM	0	1	0	1	10:45 AM	0	27	8	0
11:00 AM	0	32	9	0	41	11:00 AM	0	2	1	3	11:00 AM	0	34	10	0
11:15 AM	0	19	11	0	30	11:15 AM	0	3	4	7	11:15 AM	0	22	15	0
11:30 AM	0	13	16	0	29	11:30 AM	0	4	0	4	11:30 AM	0	17	16	0
11:45 AM	0	14	14	0	28	11:45 AM	0	11	3	14	11:45 AM	0	25	17	0
Total	0	472	214	0	686	Total	0	74	35	109					

SB - AM

Cars						Trucks					Total				
Start Time	Left	Thru	Right	Ped	Total	Start Time	Left	Thru	Right	Total		L	T	R	Ped
6:00 AM	2	13	0	0	15	6:00 AM	0	1	0	1	6:00 AM	2	14	0	0
6:15 AM	0	19	0	0	19	6:15 AM	0	2	0	2	6:15 AM	0	21	0	0
6:30 AM	0	20	0	0	20	6:30 AM	0	1	0	1	6:30 AM	0	21	0	0
6:45 AM	1	21	0	0	22	6:45 AM	0	3	0	3	6:45 AM	1	24	0	0
7:00 AM	0	29	0	0	29	7:00 AM	0	1	0	1	7:00 AM	0	30	0	0
7:15 AM	0	37	0	0	37	7:15 AM	0	1	0	1	7:15 AM	0	38	0	0
7:30 AM	1	40	0	0	41	7:30 AM	0	4	0	4	7:30 AM	1	44	0	0
7:45 AM	3	37	0	0	40	7:45 AM	1	4	0	5	7:45 AM	4	41	0	0
8:00 AM	3	45	0	0	48	8:00 AM	0	6	0	6	8:00 AM	3	51	0	0
8:15 AM	3	32	0	0	35	8:15 AM	0	1	0	1	8:15 AM	3	33	0	0
8:30 AM	7	21	0	0	28	8:30 AM	0	4	0	4	8:30 AM	7	25	0	0
8:45 AM	3	30	0	0	33	8:45 AM	0	4	0	4	8:45 AM	3	34	0	0
9:00 AM	3	27	0	0	30	9:00 AM	0	4	0	4	9:00 AM	3	31	0	0
9:15 AM	3	27	0	0	30	9:15 AM	0	3	0	3	9:15 AM	3	30	0	0
9:30 AM	3	20	0	0	23	9:30 AM	0	2	0	2	9:30 AM	3	22	0	0
9:45 AM	2	18	0	0	20	9:45 AM	0	1	0	1	9:45 AM	2	19	0	0
10:00 AM	2	23	0	0	25	10:00 AM	0	2	0	2	10:00 AM	2	25	0	0
10:15 AM	3	27	0	0	30	10:15 AM	0	3	0	3	10:15 AM	3	30	0	0
10:30 AM	3	15	0	0	18	10:30 AM	0	3	0	3	10:30 AM	3	18	0	0
10:45 AM	3	24	0	0	27	10:45 AM	0	10	0	10	10:45 AM	3	34	0	0
11:00 AM	9	15	0	0	24	11:00 AM	0	4	0	4	11:00 AM	9	19	0	0
11:15 AM	4	18	0	0	22	11:15 AM	0	1	0	1	11:15 AM	4	19	0	0
11:30 AM	2	9	0	0	11	11:30 AM	0	3	0	3	11:30 AM	2	12	0	0
11:45 AM	1	23	0	0	24	11:45 AM	1	4	0	5	11:45 AM	2	27	0	0
Total	61	590	0	0	651	Total	2	72	0	74					

WB (Lincoln Rd) - AM

Cars						Trucks					Total				
Start Time	Left	Thru	Right	Ped	Total	Start Time	Left	Thru	Right	Total		L	T	R	Ped
6:00 AM	8	0	12	0	20	6:00 AM	0	0	0	0	6:00 AM	8	0	12	0
6:15 AM	9	0	11	0	20	6:15 AM	0	0	1	1	6:15 AM	9	0	12	0
6:30 AM	12	0	6	0	18	6:30 AM	0	0	0	0	6:30 AM	12	0	6	0
6:45 AM	20	0	3	0	23	6:45 AM	4	0	0	4	6:45 AM	24	0	3	0
7:00 AM	26	0	7	0	33	7:00 AM	0	0	1	1	7:00 AM	26	0	8	0
7:15 AM	29	0	9	0	38	7:15 AM	0	0	2	2	7:15 AM	29	0	11	0
7:30 AM	39	0	13	0	52	7:30 AM	1	0	1	2	7:30 AM	40	0	14	0
7:45 AM	39	0	9	0	48	7:45 AM	0	0	0	0	7:45 AM	39	0	9	0
8:00 AM	47	0	8	0	55	8:00 AM	5	0	0	5	8:00 AM	52	0	8	0
8:15 AM	23	0	8	0	31	8:15 AM	2	0	0	2	8:15 AM	25	0	8	0
8:30 AM	26	0	7	0	33	8:30 AM	0	0	0	0	8:30 AM	26	0	7	0
8:45 AM	12	0	4	0	16	8:45 AM	0	0	0	0	8:45 AM	12	0	4	0
9:00 AM	20	0	5	0	25	9:00 AM	0	0	0	0	9:00 AM	20	0	5	0
9:15 AM	21	0	2	0	23	9:15 AM	2	0	0	2	9:15 AM	23	0	2	0
9:30 AM	11	0	5	0	16	9:30 AM	3	0	0	3	9:30 AM	14	0	5	0
9:45 AM	9	0	6	0	15	9:45 AM	1	0	0	1	9:45 AM	10	0	6	0
10:00 AM	9	0	5	0	14	10:00 AM	1	0	0	1	10:00 AM	10	0	5	0
10:15 AM	10	0	4	0	14	10:15 AM	1	0	0	1	10:15 AM	11	0	4	0
10:30 AM	13	0	3	0	16	10:30 AM	0	0	0	0	10:30 AM	13	0	3	0
10:45 AM	18	0	4	0	22	10:45 AM	2	0	0	2	10:45 AM	20	0	4	0
11:00 AM	15	0	2	0	17	11:00 AM	0	0	0	0	11:00 AM	15	0	2	0
11:15 AM	15	0	0	0	15	11:15 AM	0	0	0	0	11:15 AM	15	0	0	0
11:30 AM	8	0	1	0	9	11:30 AM	1	0	0	1	11:30 AM	9	0	1	0
11:45 AM	12	0	5	0	17	11:45 AM	0	0	0	0	11:45 AM	12	0	5	0
Total	451	0	139	0	590	Total	23	0	5	28					

COMPILED - AM

	NB (VT116)					SB (VT 116)					WB (Lincoln Rd)					
	L	T	R	ped	Tot.	L	T	R	ped	Tot.	L	T	R	ped	Tot.	Total
6:00 AM	0	14	2	0	16	2	14	0	0	16	8	0	12	0	20	52
6:15 AM	0	20	2	0	22	0	21	0	0	21	9	0	12	0	21	64
6:30 AM	0	17	5	0	22	0	21	0	0	21	12	0	6	0	18	61
6:45 AM	0	25	3	0	28	1	24	0	0	25	24	0	3	0	27	80
7:00 AM	0	31	6	0	37	0	30	0	0	30	26	0	8	0	34	101
7:15 AM	0	38	11	0	49	0	38	0	0	38	29	0	11	0	40	127
7:30 AM	0	27	10	0	37	1	44	0	0	45	40	0	14	0	54	136
7:45 AM	0	23	15	0	38	4	41	0	0	45	39	0	9	0	48	131
8:00 AM	0	30	11	0	41	3	51	0	0	54	52	0	8	0	60	155
8:15 AM	0	28	16	0	44	3	33	0	0	36	25	0	8	0	33	113
8:30 AM	0	19	10	0	29	7	25	0	0	32	26	0	7	0	33	94
8:45 AM	0	21	16	0	37	3	34	0	0	37	12	0	4	0	16	90
9:00 AM	0	31	12	0	43	3	31	0	0	34	20	0	5	0	25	102
9:15 AM	0	17	17	0	34	3	30	0	0	33	23	0	2	0	25	92
9:30 AM	0	11	9	0	20	3	22	0	0	25	14	0	5	0	19	64
9:45 AM	0	16	7	0	23	2	19	0	0	21	10	0	6	0	16	60
10:00 AM	0	17	9	0	26	2	25	0	0	27	10	0	5	0	15	68
10:15 AM	0	18	13	0	31	3	30	0	0	33	11	0	4	0	15	79
10:30 AM	0	18	9	0	27	3	18	0	0	21	13	0	3	0	16	64
10:45 AM	0	27	8	0	35	3	34	0	0	37	20	0	4	0	24	96
11:00 AM	0	34	10	0	44	9	19	0	0	28	15	0	2	0	17	89
11:15 AM	0	22	15	0	37	4	19	0	0	23	15	0	0	0	15	75
11:30 AM	0	17	16	0	33	2	12	0	0	14	9	0	1	0	10	57
11:45 AM	0	25	17	0	42	2	27	0	0	29	12	0	5	0	17	88

HOURLY VOLUMES	
6:00 AM	257
6:15 AM	306
6:30 AM	369
6:45 AM	444
7:00 AM	495
7:15 AM	549
7:30 AM	535
7:45 AM	493
8:00 AM	452
8:15 AM	399
8:30 AM	378
8:45 AM	348
9:00 AM	318
9:15 AM	284
9:30 AM	271
9:45 AM	271
10:00 AM	307
10:15 AM	328
10:30 AM	324
10:45 AM	317
11:00 AM	309
MAX	549

Count Data from VTRans Transportation Data Management Website
Date(s): AM - Thurs., Aug. 28, 2014. PM - Thurs. Aug. 21, 2014

NB - PM

Cars						Trucks					Total				
Start Time	Left	Thru	Right	Ped	Total	Start Time	Left	Thru	Right	Total		L	T	R	Ped
12:00 PM	0	18	21	0	39	12:00 PM	0	2	0	2	12:00 PM	0	20	21	0
12:15 PM	0	21	7	0	28	12:15 PM	0	4	0	4	12:15 PM	0	25	7	0
12:30 PM	0	11	8	0	19	12:30 PM	0	2	1	3	12:30 PM	0	13	9	0
12:45 PM	0	25	11	0	36	12:45 PM	0	0	0	0	12:45 PM	0	25	11	0
1:00 PM	0	23	16	0	39	1:00 PM	0	4	1	5	1:00 PM	0	27	17	0
1:15 PM	0	19	17	0	36	1:15 PM	0	0	0	0	1:15 PM	0	19	17	0
1:30 PM	0	25	11	0	36	1:30 PM	0	5	0	5	1:30 PM	0	30	11	0
1:45 PM	0	25	17	0	42	1:45 PM	0	0	1	1	1:45 PM	0	25	18	0
2:00 PM	0	25	16	0	41	2:00 PM	0	0	0	0	2:00 PM	0	25	16	0
2:15 PM	0	18	14	0	32	2:15 PM	0	2	1	3	2:15 PM	0	20	15	0
2:30 PM	0	26	27	0	53	2:30 PM	0	2	0	2	2:30 PM	0	28	27	0
2:45 PM	0	24	22	0	46	2:45 PM	0	3	0	3	2:45 PM	0	27	22	0
3:00 PM	0	35	22	0	57	3:00 PM	0	0	0	0	3:00 PM	0	35	22	0
3:15 PM	0	23	20	1	43	3:15 PM	0	2	2	4	3:15 PM	0	25	22	1
3:30 PM	0	23	32	0	55	3:30 PM	0	3	0	3	3:30 PM	0	26	32	0
3:45 PM	0	25	35	0	60	3:45 PM	0	6	0	6	3:45 PM	0	31	35	0
4:00 PM	0	27	34	0	61	4:00 PM	0	4	0	4	4:00 PM	0	31	34	0
4:15 PM	0	25	38	0	63	4:15 PM	0	7	0	7	4:15 PM	0	32	38	0
4:30 PM	0	29	38	0	67	4:30 PM	0	7	0	7	4:30 PM	0	36	38	0
4:45 PM	0	23	34	0	57	4:45 PM	0	5	0	5	4:45 PM	0	28	34	0
5:00 PM	0	29	42	0	71	5:00 PM	0	5	0	5	5:00 PM	0	34	42	0
5:15 PM	0	29	40	0	69	5:15 PM	0	5	0	5	5:15 PM	0	34	40	0
5:30 PM	0	25	40	0	65	5:30 PM	0	4	0	4	5:30 PM	0	29	40	0
5:45 PM	0	20	32	0	52	5:45 PM	0	4	0	4	5:45 PM	0	24	32	0
Total	0	573	594	1	1167	Total	0	76	6	82					

SB - PM

Cars						Trucks					Total				
Start Time	Left	Thru	Right	Ped	Total	Start Time	Left	Thru	Right	Total		L	T	R	Ped
12:00 PM	2	19	0	0	21	12:00 PM	0	3	0	3	12:00 PM	2	22	0	0
12:15 PM	1	16	0	0	17	12:15 PM	1	2	0	3	12:15 PM	2	18	0	0
12:30 PM	8	18	0	0	26	12:30 PM	1	2	0	3	12:30 PM	9	20	0	0
12:45 PM	1	30	0	0	31	12:45 PM	0	1	0	1	12:45 PM	1	31	0	0
1:00 PM	0	29	0	0	29	1:00 PM	0	2	0	2	1:00 PM	0	31	0	0
1:15 PM	3	20	0	0	23	1:15 PM	0	1	0	1	1:15 PM	3	21	0	0
1:30 PM	3	19	0	0	22	1:30 PM	0	3	0	3	1:30 PM	3	22	0	0
1:45 PM	4	10	0	0	14	1:45 PM	0	1	0	1	1:45 PM	4	11	0	0
2:00 PM	3	19	0	0	22	2:00 PM	0	3	0	3	2:00 PM	3	22	0	0
2:15 PM	3	26	0	0	29	2:15 PM	0	0	0	0	2:15 PM	3	26	0	0
2:30 PM	3	31	0	0	34	2:30 PM	0	3	0	3	2:30 PM	3	34	0	0
2:45 PM	0	25	0	0	25	2:45 PM	1	1	0	2	2:45 PM	1	26	0	0
3:00 PM	5	26	0	0	31	3:00 PM	0	2	0	2	3:00 PM	5	28	0	0
3:15 PM	4	21	0	0	25	3:15 PM	0	2	0	2	3:15 PM	4	23	0	0
3:30 PM	4	22	0	0	26	3:30 PM	0	2	0	2	3:30 PM	4	24	0	0
3:45 PM	6	27	0	0	33	3:45 PM	0	3	0	3	3:45 PM	6	30	0	0
4:00 PM	5	26	0	0	31	4:00 PM	0	1	0	1	4:00 PM	5	27	0	0
4:15 PM	6	26	0	0	32	4:15 PM	0	2	0	2	4:15 PM	6	28	0	0
4:30 PM	6	30	0	0	36	4:30 PM	0	3	0	3	4:30 PM	6	33	0	0
4:45 PM	8	23	0	0	31	4:45 PM	0	1	0	1	4:45 PM	8	24	0	0
5:00 PM	9	27	0	0	36	5:00 PM	0	3	0	3	5:00 PM	9	30	0	0
5:15 PM	8	30	0	0	38	5:15 PM	0	2	0	2	5:15 PM	8	32	0	0
5:30 PM	9	27	0	0	36	5:30 PM	0	3	0	3	5:30 PM	9	30	0	0
5:45 PM	5	26	0	0	31	5:45 PM	0	2	0	2	5:45 PM	5	28	0	0
Total	106	573	0	0	679	Total	3	48	0	51					

WB (Lincoln Rd) - PM

Cars						Trucks					Total				
Start Time	Left	Thru	Right	Ped	Total	Start Time	Left	Thru	Right	Total		L	T	R	Ped
12:00 PM	11	0	2	0	13	12:00 PM	1	0	1	2	12:00 PM	12	0	3	0
12:15 PM	6	0	2	0	8	12:15 PM	1	0	0	1	12:15 PM	7	0	2	0
12:30 PM	14	0	1	0	15	12:30 PM	0	0	0	0	12:30 PM	14	0	1	0
12:45 PM	18	0	2	0	20	12:45 PM	0	0	0	0	12:45 PM	18	0	2	0
1:00 PM	13	0	2	0	15	1:00 PM	1	0	0	1	1:00 PM	14	0	2	0
1:15 PM	9	0	3	0	12	1:15 PM	0	0	0	0	1:15 PM	9	0	3	0
1:30 PM	23	0	3	0	26	1:30 PM	0	0	1	1	1:30 PM	23	0	4	0
1:45 PM	12	0	0	0	12	1:45 PM	0	0	1	1	1:45 PM	12	0	1	0
2:00 PM	12	0	1	0	13	2:00 PM	0	0	0	0	2:00 PM	12	0	1	0
2:15 PM	13	0	5	0	18	2:15 PM	2	0	0	2	2:15 PM	15	0	5	0
2:30 PM	11	0	5	0	16	2:30 PM	0	0	0	0	2:30 PM	11	0	5	0
2:45 PM	10	0	1	0	11	2:45 PM	0	0	0	0	2:45 PM	10	0	1	0
3:00 PM	16	0	2	0	18	3:00 PM	1	0	0	1	3:00 PM	17	0	2	0
3:15 PM	13	0	4	0	17	3:15 PM	0	0	0	0	3:15 PM	13	0	4	0
3:30 PM	5	0	4	1	9	3:30 PM	1	0	0	1	3:30 PM	6	0	4	1
3:45 PM	7	0	7	0	14	3:45 PM	0	0	0	0	3:45 PM	7	0	7	0
4:00 PM	8	0	6	0	14	4:00 PM	0	0	0	0	4:00 PM	8	0	6	0
4:15 PM	7	0	5	0	12	4:15 PM	0	0	0	0	4:15 PM	7	0	5	0
4:30 PM	5	0	4	0	9	4:30 PM	0	0	0	0	4:30 PM	5	0	4	0
4:45 PM	8	0	8	0	16	4:45 PM	0	0	0	0	4:45 PM	8	0	8	0
5:00 PM	8	0	6	0	14	5:00 PM	0	0	0	0	5:00 PM	8	0	6	0
5:15 PM	7	0	8	0	15	5:15 PM	0	0	0	0	5:15 PM	7	0	8	0
5:30 PM	3	0	3	0	6	5:30 PM	0	0	0	0	5:30 PM	3	0	3	0
5:45 PM	7	0	6	0	13	5:45 PM	0	0	0	0	5:45 PM	7	0	6	0
Total	246	0	90	1	336	Total	7	0	3	10					

COMPILED - AM

	NB (VT116)					SB (VT 116)					WB (Lincoln Rd)					
	L	T	R	ped	Tot.	L	T	R	ped	Tot.	L	T	R	ped	Tot.	Total
12:00 PM	0	20	21	0	41	2	22	0	0	24	12	0	3	0	15	80
12:15 PM	0	25	7	0	32	2	18	0	0	20	7	0	2	0	9	61
12:30 PM	0	13	9	0	22	9	20	0	0	29	14	0	1	0	15	66
12:45 PM	0	25	11	0	36	1	31	0	0	32	18	0	2	0	20	88
1:00 PM	0	27	17	0	44	0	31	0	0	31	14	0	2	0	16	91
1:15 PM	0	19	17	0	36	3	21	0	0	24	9	0	3	0	12	72
1:30 PM	0	30	11	0	41	3	22	0	0	25	23	0	4	0	27	93
1:45 PM	0	25	18	0	43	4	11	0	0	15	12	0	1	0	13	71
2:00 PM	0	25	16	0	41	3	22	0	0	25	12	0	1	0	13	79
2:15 PM	0	20	15	0	35	3	26	0	0	29	15	0	5	0	20	84
2:30 PM	0	28	27	0	55	3	34	0	0	37	11	0	5	0	16	108
2:45 PM	0	27	22	0	49	1	26	0	0	27	10	0	1	0	11	87
3:00 PM	0	35	22	0	57	5	28	0	0	33	17	0	2	0	19	109
3:15 PM	0	25	22	1	47	4	23	0	0	27	13	0	4	0	17	91
3:30 PM	0	26	32	0	58	4	24	0	0	28	6	0	4	1	10	96
3:45 PM	0	31	35	0	66	6	30	0	0	36	7	0	7	0	14	116
4:00 PM	0	31	34	0	65	5	27	0	0	32	8	0	6	0	14	111
4:15 PM	0	32	38	0	70	6	28	0	0	34	7	0	5	0	12	116
4:30 PM	0	36	38	0	74	6	33	0	0	39	5	0	4	0	9	122
4:45 PM	0	28	34	0	62	8	24	0	0	32	8	0	8	0	16	110
5:00 PM	0	34	42	0	76	9	30	0	0	39	8	0	6	0	14	129
5:15 PM	0	34	40	0	74	8	32	0	0	40	7	0	8	0	15	129
5:30 PM	0	29	40	0	69	9	30	0	0	39	3	0	3	0	6	114
5:45 PM	0	24	32	0	56	5	28	0	0	33	7	0	6	0	13	102

HOURLY VOLUMES	
12:00 PM	295
12:15 PM	306
12:30 PM	317
12:45 PM	344
01:00 PM	327
01:15 PM	315
01:30 PM	327
01:45 PM	342
02:00 PM	358
02:15 PM	388
02:30 PM	395
02:45 PM	383
03:00 PM	412
03:15 PM	414
03:30 PM	439
03:45 PM	465
04:00 PM	459
04:15 PM	477
04:30 PM	490
04:45 PM	482
05:00 PM	474
MAX	490

APPENDIX B

Speed Data

Jenny Austin <jaustin@dubois-king.com>

VT 116/Lincoln Rd follow-up

Mike Winslow <mwinslow@acrpc.org> Tue, Aug 17, 2021 at 9:58 AM
To: Valerie Capels <townadmin@bristolvt.org>, Jenny Austin <jaustin@dubois-king.com>

Hello Jenny and Valerie,
Thank you for the presentation last night. I was impressed with the degree of citizen engagement. Would it be helpful to have a debrief conversation?
Valerie, if you would like, I can get some speed counts set up later this week. Jenny, since it will take until early September to recover the data you can probably work with what's already available. Below is a summary of the speed data available for VT 116 around the Lincoln Rd. intersection. I'm not sure how much the stopping distance analysis would change between the design speed of 40mph and the 85th percentile speed of 43mph.

Data from: https://vtrans.public.ms2soft.com/tcds/tsearch.asp?loc=Vtrans&mod More granular information is available at the link.

Between Rockydale Trailer Park and Lincoln Road 44.128201, -73.057098

Date	Int	Pace	85th	Total
Wed 7/5/2017	15	35 - 45	43	6,118
Tue 7/4/2017	15	35 - 45	42	5,643
Mon 7/3/2017	15	35 - 45	43	6,517
Sun 7/2/2017	15	35 - 45	43	5,436
Sat 7/1/2017	15	35 - 45	43	5,431
Fri 6/30/2017	15	35 - 45	43	6,011
Thu 6/29/2017	15	35 - 45	43	5,786
Wed 6/28/2017	15	35 - 45	43	5,886

North of Lincoln Rd. intersection at 44.141701, -73.045502

Date	Int	Pace	85th	Total
Thu 6/18/2015	15	45 - 55	55	3,890
Wed 6/17/2015	15	45 - 55	54	4,060
Tue 6/16/2015	15	45 - 55	55	3,784
Mon 6/15/2015	15	45 - 55	54	3,535
Sun 6/14/2015	15	45 - 55	53	3,802
Sat 6/13/2015	15	45 - 55	53	4,247

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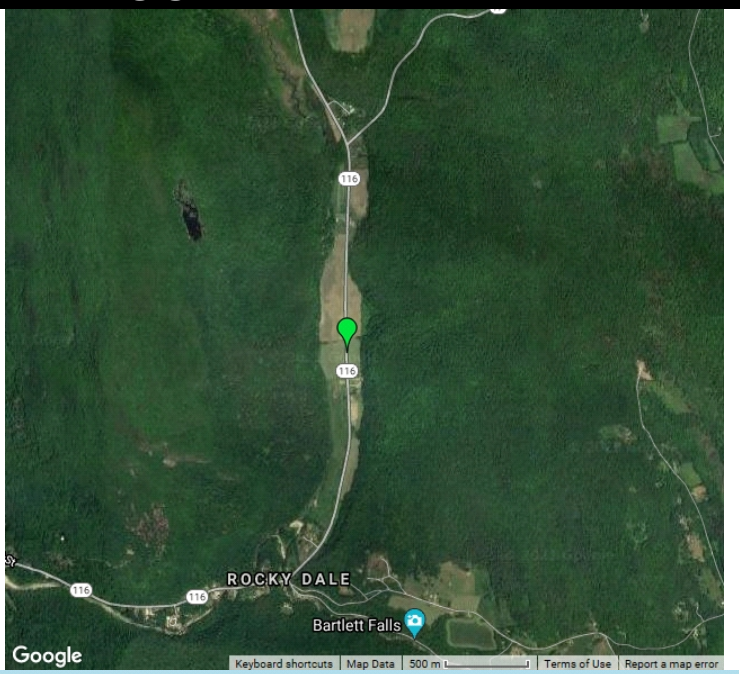
Mike Winslow
Transportation Planner

ADDISON COUNTY REGIONAL PLANNING COMMISSION
14 Seminary Street
Middlebury, VT 05753

SPEED DATA ANALYSIS

Location

VT 116 north of Lincoln Road intersection in Bristol, VT
Latitude: 44.141599
Longitude: -73.045470



Analysis Time Period

Start	End
08/20/2021 10:08	08/31/2021 02:36

Vehicles Analyzed

39,944

Speed Limit

50

Peak Time of Violations

08/27/2021 04:08

Average Speed

52

85th Percentile Speed

59

10 MPH Pace Speed

48-57

Fastest Speed

192

APPENDIX C

Crash Data Review

Crash Rate Calculations
INTERSECTION: VT 116 / Lincoln Rd
2016-2020 Data
Calculated by JDA, 08.05.2021

Critical Rate

Rc = Ra + K x sqrt (Ra/M) - 1/(2xM)

Ra = 0.616 (minor arterial and major collector)

K = 2.58 (per VTrans HCL Report)

M,intersection = (AADT all legs / 2) x 365 x (No. Years) / 1,000,000

AADT all legs =
6222
* For VT 116 use average of east/west (4920/3750)
* AADT Lincoln Rd = 1887

Mintersection = 5.678

Rc = 1.38

Actual Rate (for an Intersection)

AR = # Crashes / (incoming AADT x 365 x No. Years / 1,000,000)

Crashes = 8

incoming AADT= 3111

AR = 1.41

Actual Rate / Critical Rate

AR / CR = 1.023

Crash Data, 2016-2020
INTERSECTION: VT 116 / Lincoln Road

Crash Date	AOT Route	Crash Type	Collision Direction	Weather	AOT Actual Milepoint	Animal	Involving	Road Condition	Street Address	Surface Condition
December 29, 2016, 11:30 AM	LINCOLN RD	Property Damage Only	Single Vehicle Crash	Freezing Precipitation	0.01	None/Other	None	Road Surface Condition(wet,snow, etc)	Lincoln Road	Snow
November 3, 2020, 6:53 AM	LINCOLN RD				0.02				Lincoln RD	
July 30, 2017, 3:05 PM	VT-116	Property Damage Only	Rear End	Clear	8.15	None/Other	Motorcycle	None	VT RT 116	Dry
May 30, 2018, 1:57 PM	VT-116	Property Damage Only	Left Turn and Thru, Angle Broadside -->v--	Clear	8.15	None/Other	None	None	19 N 116	Dry
September 20, 2018, 3:51 PM	VT-116	Property Damage Only	Left Turn and Thru, Angle Broadside -->v--	Cloudy	8.15	None/Other	None	None	4 N. VT 116	Dry
February 23, 2019, 8:15 AM	VT-116	Property Damage Only	Left Turn and Thru, Broadside v<--	Cloudy	8.15	None/Other	None	None	19 VT-116	Dry
March 15, 2020, 12:20 PM	VT-116	Injury	Left Turn and Thru, Broadside v<--	Clear	8.15	None/Other	None	None	19 VT Route 116	
September 14, 2018, 12:15 AM	VT-116	Property Damage Only	Single Vehicle Crash	Cloudy	8.17	Moose	None	None	19 VT-116	Dry

Crash Rate Calculations
SECTION: VT 116 mm 8.0 - mm 8.3 (centered @ Lincoln Rd intersection)
2016-2020 Data
Calculated by JDA, 08.31.2021

Critical Rate

Rc = Ra + K x sqrt (Ra/M) - 1/(2xM)

Ra = 1.2485 (minor arterial)

K = 2.58 (per VTrans HCL Report)

M,section = (AADT x L x 365 x Number Years) / 1,000,000

AADT all legs =
4335
* For VT 116 use average of east/west (4920/3750)

L = 0.3 miles

Mintersection = 2.373

Rc = 2.91

Actual Rate (for a section)

RMVM = (C x 1,000,000) / (AADT x L x 365 x N)

Crashes = 7

AADT = Current AADT for this Section =
4335

AR = 2.95

Actual Rate / Critical Rate

AR / CR = 1.014

Crash Data, 2016-2020
SECTION: VT 116 mm. 8.00 - 8.30 (midpoint @ Lincoln Road intersection)

Crash Date	AOT Route	Crash Type	Collision Direction	Weather	AOT Actual Milepoint	Animal	Involving	Road Condition	Street Address	Surface Condition
July 31, 2018, 9:01 AM	VT-116	Injury	Left Turn and Thru, Broadside v<--	Cloudy	8.06	None/Other	None	None	839 VT-116	Dry
July 30, 2017, 3:05 PM	VT-116	Property Damage Only	Rear End	Clear	8.15	None/Other	Motorcycle	None	VT RT 116	Dry
May 30, 2018, 1:57 PM	VT-116	Property Damage Only	Left Turn and Thru, Angle Broadside -->v--	Clear	8.15	None/Other	None	None	19 N 116	Dry
September 20, 2018, 3:51 PM	VT-116	Property Damage Only	Left Turn and Thru, Angle Broadside -->v--	Cloudy	8.15	None/Other	None	None	4 N. VT 116	Dry
February 23, 2019, 8:15 AM	VT-116	Property Damage Only	Left Turn and Thru, Broadside v<--	Cloudy	8.15	None/Other	None	None	19 VT-116	Dry
March 15, 2020, 12:20 PM	VT-116	Injury	Left Turn and Thru, Broadside v<--	Clear	8.15	None/Other	None	None	19 VT Route 116	
September 14, 2018, 12:15 AM	VT-116	Property Damage Only	Single Vehicle Crash	Cloudy	8.17	Moose	None	None	19 VT-116	Dry

VTrans Office of Highway Safety
Data Unit

SUMMARY STATEWIDE AVERAGE CRASH RATES
2012-2016

SECTIONS

	Functional Classification	Rate (Crashes/MVM *)
Rural:		
1	Interstate	1.8289
2	Principal Arterial	1.1393
6	Minor Arterial	1.2485
7	Major Collector	1.1938
8	Minor Collector	1.3991
9	Local	1.4298
Urban:		
11	Interstate	5.9573
12	Other Freeways and Expressways	3.8558
14	Principal Arterial	5.1796
16	Minor Arterial	3.7627
17	Urban Collector	3.0806
19	Local	2.6200

INTERSECTIONS

	Rate (Crashes/MV **)	# Occurrences
Interstate, Rural (r)/Minor Arterial (r)	6.762	1
Interstate, Urban (u)/Minor Arterial (u)	9.792	1
Principal Arterial (r)/ Minor Arterial (r)	0.511	16
Principal Arterial (r)/Major Collector (r)	0.432	60
Freeway/Expressway (u)/Principal Arterial (u)	0.680	3
Principal Arterial (u)/Urban Collector (u)	0.517	114
Freeway/Expressway (u)/Minor Arterial (u)	0.528	10
Principal Arterial (u)/Minor Arterial (u)	0.919	51
Freeway/Expressway (u)/Urban Collector	0.052	3
Principal Arterial (u)	0.572	46
Major Collector (r)	0.434	238
Minor Arterial (u)	0.450	68
Minor Arterial (u)/Urban Collector (u)	0.512	109
Minor Arterial (r)/Major Collector (r)	0.616	151
Principal Arterial (r)	0.381	19
Urban Collector (u)	0.416	148
Minor Arterial (r)	0.366	60
Major Collector (r)/Non-Federal Aid Collectors (r)	0.760	6
Minor Arterial (r)/Non-Federal Aid Collectors (r)	0.693	2
Freeway/Expressway (u)	0.116	10
Non-Federal Aid Collectors (r)	0.275	1

* Crashes per Million Vehicle Miles.
** Crashes per Million Vehicles.

NOTES:
(r) = Rural
(u) = Urban

Z:\Highways\OHS\HighwaySafetyDataUnit\Crash\High Crash Location\2012-2016 HCL Files

VERMONT AGENCY OF TRANSPORTATION
HIGHWAY DIVISION
Traffic Research Unit

ROUTE	FC	R/U	TOWN	ROUTE NAME	BEGIN MM	BEGIN NAME	BEGIN NUMBER	END MM	END NAME	END NUMBER	ATR	PERM	2019 AADT	2019 STATUS	2020 AADT	2020 STATUS
V113	5	R	WEST FAIRLEE		0	VERSHIRE TL	TL	1.979	BEANVILLE RD/FAIRLEE HILL RD	TH3/TH28			919	E	778	E
V113	5	R	WEST FAIRLEE		1.979	BEANVILLE RD/FAIRLEE HILL RD	TH3/TH28	2.848	THETFORD TL	TL	N135		1755	E	1486	E
V113	5	R	THETFORD		0	W FAIRLEE TL	TL	0.016	W VALLEY CROSS RD	TH2			1755	E	1486	E
V113	5	R	THETFORD		0.016	W VALLEY CROSS RD	TH2	0.813	VT 244	VT244	N390		2689	E	2278	E
V113	5	R	THETFORD		0.813	VT 244	VT244	4.763	TUCKER HILL RD	TH29	N138		1903	E	1612	E
V113	5	R	THETFORD		4.763	TUCKER HILL RD	TH29	6.949	I 91 RAMPS A/C: EXIT 14	I091-SR014A/I091-SR014C	N201		2617	E	2217	E
V113	5	R	THETFORD		6.949	I 91 RAMPS A/C: EXIT 14	I091-SR014A/I091-SR014C	7.137	I 91 RAMPS B/D: EXIT 14	I091-NR014B/I091-NR014D			2606	E	2207	E
V113	5	R	THETFORD		7.137	I 91 RAMPS B/D: EXIT 14	I091-NR014B/I091-NR014D	8.505	US 5 (JOINS US 5 FOR 290 FT, SPLITS)	US5	N139		2647	E	2242	E
V113	5	R	THETFORD		8.505	US 5	US5	8.773	NEW HAMPSHIRE SL	SL	N150		2167	E	1992	A
V114	5	R	LYNDON		0	US 5	US5	3.035	BROOK RD	TH19	30307745_E		5300	E	4489	E
V114	5	R	LYNDON		3.035	BROOK RD	TH19	4.03	BURKE TL	TL			4086	E	3441	E
V114	5	R	BURKE		0	LYNDON TL	TL	0.686	BURKE MOUNTAIN RD	MC0268	C043	CTC	4086	A	3441	A
V114	5	R	BURKE		0.686	BURKE MOUNTAIN RD	MC0268	5.013	E HAVEN TL	TL	C127		1924	E	1630	E
V114	5	R	EAST HAVEN		0	BURKE TL	TL	0.176	SCHOOL ST	TH1	E708		1924	E	1630	E
V114	5	R	EAST HAVEN		0.176	SCHOOL ST	TH1	2.22	NEWARK TL	TL			1011	E	856	E
V114	5	R	NEWARK		0	E HAVEN TL	TL	5.245	BRIGHTON TL	TL	C128		1011	E	856	E
V114	5	R	BRIGHTON		0	NEWARK TL	TL	4.472	VT 105 W (JOINS VT 105 FOR 2.1 MI)	VT105	E121		1138	E	964	E
V114	5	R	BRIGHTON		4.472	CROSS ST	VT105 E	5.069	MIDDLE ST	TH4	E142		1160	E	983	E
V114	5	R	BRIGHTON		5.069	MIDDLE ST	TH4	7.227	VT 111	VT111	E117		1014	E	859	E
V114	5	R	BRIGHTON		7.227	VT 111	VT111	7.391	MORGAN TL	TL			510	E	432	E
V114	5	R	MORGAN		0	BRIGHTON TL	TL	3.082	WARREN GORE TL	TL	P705		510	E	432	E
V114	5	R	WARRENS GORE		0	MORGAN TL	TL	4.793	NORTON TL	TL	E116		510	E	432	E
V114	5	R	NORTON		0	WARREN GORE TL	TL	0.49	LAKE STATION RD	PVT	E711		510	E	432	E
V114	5	R	NORTON		0.49	LAKE STATION RD	PVT	5.357	VT 147	VT147	EYAC		633	E	536	E
V114	5	R	NORTON		5.357	VT 147	VT147	9.397	NORTON ST HWY S	NSH-NSH	E122		576	E	488	E
V114	5	R	NORTON		9.397	NORTON ST HWY S	NSH-NSH	9.891	NORTON ST HWY N	NSH-NSH	E223		540	E	457	E
V114	5	R	NORTON		9.891	NORTON ST HWY N	NSH-NSH	9.982	AVERILL TL	TL			601	E	509	E
V114	5	R	AVERILL		0	NORTON TL	TL	0.872	CANAAN TL	TL	E704		601	E	509	E
V114	5	R	CANAAN		0	AVERILL TL	TL	3.516	WALLACE POND HAMLET	PVT	E115		601	E	509	E
V114	5	R	CANAAN		3.516	WALLACE POND HAMLET	PVT	7.037	VT 141	VT141	E125		968	E	820	E
V114	5	R	CANAAN		7.037	VT 141	VT141	8.177	VT 102/VT253	VT102/VT253	E114		1492	E	1264	E
V114	5	R	CANAAN		8.177	VT 102/VT 253	VT102/VT253	8.358	NEW HAMPSHIRE SL	SL	E128		2565	E	2070	A
V116	4	U	MIDDLEBURY		0	US 7	US7	0.585	VT 125	VT125	A132		1331	E	1095	E
V116	4	U	MIDDLEBURY		0.585	VT 125	VT125	3.107	RURAL/URBAN LIMIT	R/U	A429		2628	A	2163	E
V116	4	R	MIDDLEBURY		3.107	RURAL/URBAN LIMIT	R/U	4.108	QUARRY RD	TH7			2628	E	2226	E
V116	4	R	MIDDLEBURY		4.108	QUARRY RD	TH7	6.587	BRISTOL TL	TL	A130		2549	E	2159	E
V116	4	R	BRISTOL		0	MIDDLEBURY TL	TL	3.408	RIVER RD	MC0183	A129		2549	E	2159	E
V116	4	R	BRISTOL		3.408	RIVER RD	MC0183	5.475	VT 17 W	VT17	A128		4381	E	3711	E
V116	4	R	BRISTOL		5.475	VT 17 W	VT17	8.152	LINCOLN RD	MC0188	A127		4920	E	4167	E
V116	4	R	BRISTOL		8.152	LINCOLN RD	MC0188	9.865	VT 17 E	VT17	A125		3750	E	3176	E
V116	4	R	BRISTOL		9.865	VT 17 E	VT17	12.248	STARKSBORO TL	TL			2779	E	2354	E

4 = Minor Arterial

VERMONT AGENCY OF TRANSPORTATION
HIGHWAY DIVISION
Traffic Research Unit

				BEGIN			END				2019		2020	
ROUTE	FC	R/U	TOWN	ROUTE NAME	MM	BEGIN NAME	BEGIN NUMBER	MM	END NAME	END NUMBER	ATR	PERM AADT	STATUS	AADT	STATUS
S0177	5	R	THETFORD	VT132 STRAFFORD RD	0	STRAFFORD TL	TL	5.17	NORWICH TL	TL	N358	880	E	745	E
S0177	5	R	NORWICH	VT132 COPPER MINE RD	0	THETFORD TL	TL	0.9	UNION VILLAGE RD	minor0622	YXQB	880	E	745	E
S0177	5	R	NORWICH	VT132 COPPER MINE RD	0.9	UNION VILLAGE RD	minor0622	2.83	US 5	US5	Y314	253	E	214	E
S0179	5	R	HARTFORD	TH4 W HARTFORD-QUECHEE RD	0	WATERMAN HILL	MC0168	0.84	QUECHEE MAIN ST	TH3	Y327	1282	E	1086	E
S0179	5	R	HARTFORD	TH4 MAIN QUECHEE WEST	0.84	QUECHEE MAIN ST	TH3	5.99	POMFRET RD	MC0166	Y329	392	E	332	E
S0181	5	R	WEYBRIDGE	WEYBRIDGE RD	0	MIDDLEBURY TL	TL	2.06	QUAKER VILLAGE RD	TH2	A371	1495	E	1266	E
S0181	5	R	WEYBRIDGE	WEYBRIDGE RD	2.06	QUAKER VILLAGE RD	TH2	6.6	VT 17	VT17	A009	791	E	670	E
S0182	5	R	VERGENNES	TH7 MONKTON RD	0	VT 22A	VT22A(TH1)	0.37	FERRISBURGH TL	TL	A194	3798	E	3217	E
S0182	5	R	FERRISBURGH	TH2 LIME KILN RD	0	VERGENNES TL	TL	0.12	US 7	US7	30105715_W	3798	E	3217	E
S0183	5	R	NEW HAVEN	TH2 RIVER RD	0	US 7	US7	4.72	BRISTOL TL	TL	A322	1578	E	1337	E
S0183	5	R	BRISTOL	TH2 NEW HAVEN MILLS RD	0	NEW HAVEN TL	TL	0.43	VT 116	VT116		1578	E	1337	E
S0184	5	R	PANTON	TH1 PANTON RD	0	JERSEY ST/ADAMS FERRY RD	minor0652/TH8	2.9	BASIN HARBOR RD	MC0186	A432	1495	E	1266	E
S0185	5	R	WARREN	TH5 SUGARBUSH ACCESS RD	0	VT 100	VT100	1.95	GERMAN FLATS RD/SUGARBUSH ACC. RD	MC0203/MC0185	W369	2543	E	2205	E
S0185	5	R	WARREN	TH6 GERMAN FLATS RD	1.95	GERMAN FLATS RD/SUGARBUSH ACC. RD	MC0203/0185	2.95	FAYSTON TL	TL		1716	E	1453	E
S0185	5	R	FAYSTON	TH2 GERMAN FLATS RD	0	WARREN TL	TL	1.5	SUGARBUSH NORTH ACCESS	MC0195	W354	1716	E	1453	E
S0185	5	R	FAYSTON	TH2 GERMAN FLATS RD	1.5	SUGARBUSH NORTH ACCESS	TH23 (S 0195)	2.6	VT 17	VT17	W023	1924	E	1630	E
S0186	5	R	FERRISBURGH	TH3 BASIN HARBOR RD	0	TRAILS END PVT	PVT	0.77	BUTTON BAY RD	minor0652	A305	1256	E	1064	E
S0186	5	R	FERRISBURGH	TH3 BASIN HARBOR RD	0.77	BUTTON BAY RD	minor0652	4.68	PANTON TL	TL	A307	1730	E	1465	E
S0186	5	R	PANTON	TH3 BASIN HARBOR RD	0	FERRISBURGH TL	TL	0.53	PANTON RD	MC0184		1730	E	1465	E
S0186	5	R	PANTON	TH1 BASIN HARBOR RD	0.53	PANTON RD	MC0184	1.34	VERGENNES CL	CL	A308	2663	E	2256	E
S0186	5	R	VERGENNES	TH3 PANTON RD	0	PANTON TL	TL	0.4	WEST ST	TH142		2663	E	2256	E
S0186	5	R	VERGENNES	TH3 PANTON RD	0.4	WEST ST	TH142	0.57	VT 22A	VT22A	A201	4127	A	3496	E
S0188	5	R	BRISTOL	TH3 LINCOLN RD	0	VT 116	VT116	1.1	LINCOLN TL	TL		1887	E	1598	E
S0188	5	R	LINCOLN	TH1 MAIN RD	0	BRISTOL TL	TL	2.3	QUAKER ST/GOVE HILL RD	minor0654/TH9	A334	1887	E	1598	E

5 = Major Collector

APPENDIX D

Intersection Conflict Warning Signage Information

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*

* MNDOT 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

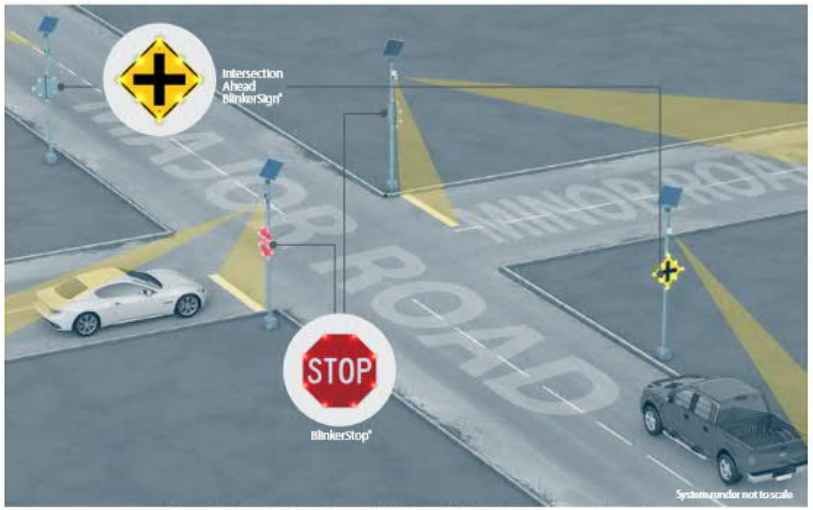
Paired with radar for advanced vehicle detection, inductive loops or pole-mounted presence detectors are used for stop line detection.

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**.

SPECIALTY WARNING SOLUTIONS
INTERSECTION CONFLICT WARNING SYSTEMS



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
 SINGLE	–	Radar and Presence Detector	Solar	600370
		Radar and Inductive Loop		600371
 SINGLE	30"	Radar and Presence Detector	Solar	600372
		Radar and Inductive Loop		600374
	36"	Radar and Presence Detector	Solar	600373
		Radar and Inductive Loop		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
 SINGLE	–	Solar	600376
 SINGLE	30"	Solar	600379
	36"	Solar	600380

Proposal Summary

5100 W Brown Deer Rd | Brown Deer, WI 53223
Phone: (800) 236-0112 | Fax: (800) 444-0331
tapconet.com

Quote Number: Q21012605

Quotes are valid for 30 days unless otherwise specified

TAPCO Contact:
Justin Jablonski
justin@tapconet.com
262-754-4351

Customer: Dubois and King, Inc.	Document Date:	8/4/2021
	Submittal Title (herein referred to as Project):	Solar BlinkerSigns with Radar
	Customer Contact:	Jenny Austin, P.E.
	Phone Number:	802-465-8396 Ext. 4813
Installation Address/Location: Bristol, VT 05443	Email:	jaustin@dubois-king.com
	Lead Time:	**See Note**
		Lead time valid for 30 days unless otherwise specified.

Project Summary:

TAPCO will provide all equipment for Solar BlinkerSigns Activated by Radar.

Each pole will contain a Top of Pole 20W Solar Panel/Control Cabinet one piece unit with a Universal Mounting Bracket. This unit will house a Flash Controller, Radio, plus 2-22Ah batteries.

A remote Radar Kit will be mounted to the pole, directly below the control cabinet and activate all BlinkerSigns every time a vehicle is detected.

Minor Road will have a 30" R1-1 BlinkerStop Sign mounted beneath the solar panel.

The two Major Road Warnings will have 30" W2-2 Intersection Warning Signs.

TAPCO will make every effort to ship all systems in our normal process, however, as a result of global supply chain constraints some components may be impacted by extended lead times.

- ☐ Scope of work will be required prior to accepting purchase order
- ☐ Credit approval will be required if terms are requested
- ☐ Bid as alternate
- ☐ System contains custom components and is not returnable

TAPCO
Safe travels.

Traffic and Parking Control Co., Inc.
5100 West Brown Deer Road
Brown Deer, Wisconsin 53223
Phone (800) 236-0112 • TAPCOnet.com • Fax (800) 444-0331

SALES QUOTE

Customer Copy

Number	Q21012605
Date	8/4/2021
Page	1

Sell To Cust. C74960	Ship To Cust.
Dubois & King, Inc. Jenny Austin 6 Green Tree Drive SOUTH BURLINGTON, VT 05403 USA	Dubois & King, Inc. Jenny Austin 6 Green Tree Drive SOUTH BURLINGTON, VT 05403 USA

Customer PO #	Expires	Slsp	Terms	Freight	Ship Via
BRISTOL, VT - SOLAR ICWS	11/4/2021	Justin Jablonski	Cash	PREPAY/ADD	BEST RATE

Item	Description	Quantity	UM	Price	Extension
	BUDGETARY QUOTE ONLY				
2180-SYSTEM	Solar Intersection Conflict Warning System (ICWS) ***To Include the Following***	1	EA		
500146	Controller, 12V, Sunsaver, 136921, Radio, 44 Ah, No Pushbutton	3	EA	2,100.00	$6,300.00
139411V	Remote Radar Kit, SS400, Universal RRFB Bracket, No Battery, 1/2" Conduit, add MPH in Variant	3	EA	1,795.00	$5,385.00
2180-00209DF	BlinkerSign, R1-1, 30",stop, DG3, Red, Direct Fire, 8 Red LEDs	1	EA	1,100.00	$1,100.00
300006	BlinkerSign, 30"x30"x.080, DMD, DG3, FY, DF, 8 Amber LEDs, SPM W2-2L	1	EA	1,200.00	$1,200.00
300006	BlinkerSign, 30"x30"x.080, DMD, DG3, FY, DF, 8 Amber LEDs, SPM W2-2R	1	EA	1,200.00	$1,200.00
139916	Sign Mounting Kit, Z-Bracket, 4.5", Anti-Vandal, Mounts One Blinker or Static Sign to 4.5" OD Pole	3	EA	45.00	$135.00
101919	Pole Package, 13', 4.5" OD, 42" J-Bolts Includes: Pole, Base,J-Bolts	3	EA	725.00	$2,175.00
373-13	Standard Aluminum Pole, 13' Schedule 40	3	Each		
203-00014	Base,Aluminum Square Pedestal, No Paint	3	Each		
3177-00042	J-Bolt,1"x 42"+4" ATSM F1554 GR-105 92k	12	Each		
030-00006	Washer Flat 1-1/16"ID x2.5OD"x.125" Galvanized	12	Each		

Shipment within _____
Acceptance By _____
Date _____
By _____

Merchandise	Freight	Tax	Total
$17,495.00	$0.00	$0.00	$17,495.00

All prices are listed in **US Dollars (USD)**
For terms and conditions, please visit: https://www.tapconet.com/terms-conditions

TAPCO
Safe travels.

Traffic and Parking Control Co., Inc.
5100 West Brown Deer Road
Brown Deer, Wisconsin 53223
Phone (800) 236-0112 • TAPCOnet.com • Fax (800) 444-0331

SALES QUOTE

Customer Copy

Number	**Q21012605**
Date	**8/4/2021**
Page	**2**

Sell To Cust. C74960	Ship To Cust.
Dubois & King, Inc. Jenny Austin 6 Green Tree Drive SOUTH BURLINGTON, VT 05403 USA	Dubois & King, Inc. Jenny Austin 6 Green Tree Drive SOUTH BURLINGTON, VT 05403 USA

Customer PO #	Expires	Slsp	Terms	Freight	Ship Via
BRISTOL, VT - SOLAR ICWS	11/4/2021	Justin Jablonski	Cash	PREPAY/ADD	BEST RATE

Item	Description	Quantity	UM	Price	Extension
	TAPCO will make every effort to ship all systems in normal process; however, as a result of global supply chain constraints some components might be impacted by extended lead times.				
	Solar powered equipment requires no shading or obstructions				
	Furnish only quote. Installation is not included.				
	Pricing does not include freight				
	Must have line of sight between radios				
	Radios to be within 900ft range				
	Thank you! - Justin Jablonski at Tapco Phone # (262) 754-4351 E-mail: justin@tapconet.com				

Shipment within _____
Acceptance By _____
Date _____
By _____

Merchandise	Freight	Tax	Total
$17,495.00	$0.00	$0.00	$17,495.00

All prices are listed in **US Dollars (USD)**
For terms and conditions, please visit: https://www.tapconet.com/terms-conditions

APPENDIX E

Signal Warrant Analyses

SIGNAL WARRANT ANALYSIS

Form 750-020-01
TRAFFIC ENGINEERING

Introduction

- The Signal Warrant Analysis Spreadsheets are a tool for assisting traffic engineers when evaluating the need for a traffic signal installation
- The filled spreadsheets can be used as part of the supporting documents for the signal warrant evaluation

Note: This templates are a useful resource, but it remains necessary to apply engineering judgment and to consider specific environmental, traffic, geometric, and operational conditions

Instructions

Fill in "Orange" areas only	
Automated cells based on in Input Data in "orange" cells	
General Information	Fill in below the general information including: District, County (drop-down menu) City, Engineer, Date Major and Minor Street with corresponding number of lanes and speed limits
Enter Eight Hour Volumes	Any 8 hours of an average day. Major-street and minor-street volumes shall be for the same 8 hours; however, the 8 hours satisfied in Condition A shall **not** be required to be the same 8 hours satisfied in Condition B **for 80% columns only.** On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.
Enter Four Hour Volumes	Any 4 hours of an average day. Vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only, not required to be on the same approach during each of the 4 hours)
Enter Pedestrian Volumes (4-hr)	Pedestrians per hour crossing the major street (total of all crossings)
Enter Peak Hour Volumes	Vehicular: Any four consecutive 15-minute periods of an average day Pedestrian: Any four consecutive 15-minute periods of an average day representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings)

Input Data

City: **ristol, VT116 & Lincoln Rd**
County:
District:
Engineer: **JDA**
Date: **August 27, 2021**

Major Street:	**VT116**	# Lanes:	**1**	Major Approach Speed:	**40**
Minor Street:	**Lincoln Rd**	# Lanes:	**1**	Minor Approach Speed:	**35**

Eight Hour Volumes (Condition A)

Hours	Major Street (total of both approaches)	Minor Street (one direction only)
7:00 am	331	183
17:00 pm	442	50
16:00 pm	424	53
8:00 am	322	147
15:00 pm	365	62
14:00 pm	309	62
13:00 pm	269	71
9:00 am	242	88

Eight Hour Volumes (Condition B)

Hours	Major Street (total of both approaches)	Minor Street (one direction only)
7:00 am	331	183
17:00 pm	442	50
16:00 pm	424	53
8:00 am	322	147
15:00 pm	365	62
14:00 pm	309	62
13:00 pm	269	71
9:00 am	242	88

Highest Four Hour Vehicular Volumes

Hours	Major Street (total of both approaches)	Minor Street (one direction only)
7:00 am	331	183
17:00 pm	442	50
16:00 pm	424	53
8:00 am	322	147

Highest Four Hour Pedestrian Volumes

Hours	Major Street (total of both approaches)	Pedestrian Crossings on Major Street
15:00 pm	365	2

Vehicular Peak Hour Volumes

Peak Hour	Major Street (total of both approaches)	Minor Street (one direction only)	Total Entering Volume
7:00 am	331	183	514

Pedestrian Peak Hour Volumes

Peak Hour	Major Street (total of both approaches)	Pedestrian Crossing Volumes on Major Street
15:00 pm	365	2

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	**Bristol, VT116 & Lincoln Rd**	Engineer:	**JDA**
County:		Date:	**August 27, 2021**
District:			

Major Street:	**VT116**	Lanes:	**1**	Major Approach Speed:	**40**
Minor Street:	**Lincoln Rd**	Lanes:	**1**	Minor Approach Speed:	**35**

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☐ Yes ☑ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☐ 70% ☑ 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied for eight hours. ☐ Yes ☑ No

Warrant 1 is also satisfied if both Condition A and Condition B are "80%" satisfied (should only be applied after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems). ☐ Yes ☑ No

Condition A - Minimum Vehicular Volume

Condition A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

100% Satisfied: ☐ Yes ☑ No
80% Satisfied: ☐ Yes ☑ No
70% Satisfied: ☐ Yes ☑ No

Number of Lanes for moving traffic on each approach		Vehicles per hour on major-street (total of both approaches)			Vehicles per hour on minor-street (one direction only)		
Major	**Minor**	**100%[a]**	**80%[b]**	**70%[c]**	**100%[a]**	**80%[b]**	**70%[c]**
1	1	500	400	350	150	120	105
2 or more	1	600	480	420	150	120	105
2 or more	2 or more	600	480	420	200	160	140
1	2 or more	500	400	350	200	160	140

[a] Basic Minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Record 8 highest hours and the corresponding major-street and minor-street volumes in the Instructions Sheet.

Street	Eight Highest Hours							
	7:00 am	**17:00 pm**	**16:00 pm**	**8:00 am**	**15:00 pm**	**14:00 pm**	**13:00 pm**	**9:00 am**
Major	331	442	424	322	365	309	269	242
Minor	183	50	53	147	62	62	71	88

Existing Volumes

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

Condition B - Interruption of Continuous Traffic

Condition B is intended for application where Condition A is not satisfied and the traffic volume on a major street is so heavy that traffic on the minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

Applicable:	☑ Yes	☐ No
100% Satisfied:	☐ Yes	☑ No
80% Satisfied:	☐ Yes	☑ No
70% Satisfied:	☐ Yes	☑ No

Number of Lanes for moving traffic on each approach		Vehicles per hour on major-street (total of both approaches)			Vehicles per hour on minor-street (one direction only)		
Major	**Minor**	**100%[a]**	**80%[b]**	**70%[c]**	**100%[a]**	**80%[b]**	**70%[c]**
1	1	750	600	525	75	60	53
2 or more	1	900	720	630	75	60	53
2 or more	2 or more	900	720	630	100	80	70
1	2 or more	750	600	525	100	80	70

[a] Basic Minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Record 8 highest hours and the corresponding major-street and minor-street volumes in the Instructions Sheet.

Eight Highest Hours								
Street	**7:00 am**	**17:00 pm**	**16:00 pm**	**8:00 am**	**15:00 pm**	**14:00 pm**	**13:00 pm**	**9:00 am**
Major	331	442	424	322	365	309	269	242
Minor	183	50	53	147	62	62	71	88

Existing Volumes

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	**Bristol, VT116 & Lincoln Rd**	Engineer:	**JDA**
County:		Date:	**August 27, 2021**
District:			

Major Street:	**VT116**	Lanes:	**1**	Major Approach Speed:	**40**
Minor Street:	**Lincoln Rd**	Lanes:	**1**	Minor Approach Speed:	**35**

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☐ Yes ☑ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☐ Yes ☑ No

WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

If all four points lie above the appropriate line, then the warrant is satisfied.

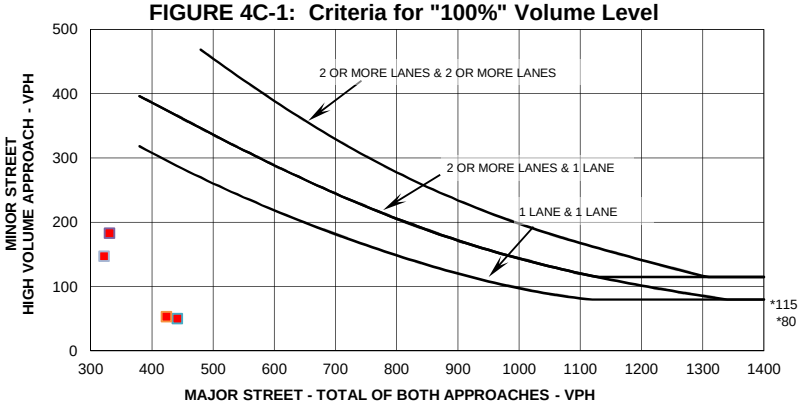
Applicable: ☑ Yes ☐ No
Satisfied: ☐ Yes ☑ No

Plot four volume combinations on the applicable figure below.

100% Volume Level

Four Highest Hours	Volumes	
	Major Street	Minor Street
7:00 am	331	183
17:00 pm	442	50
16:00 pm	424	53
8:00 am	322	147

FIGURE 4C-1: Criteria for "100%" Volume Level



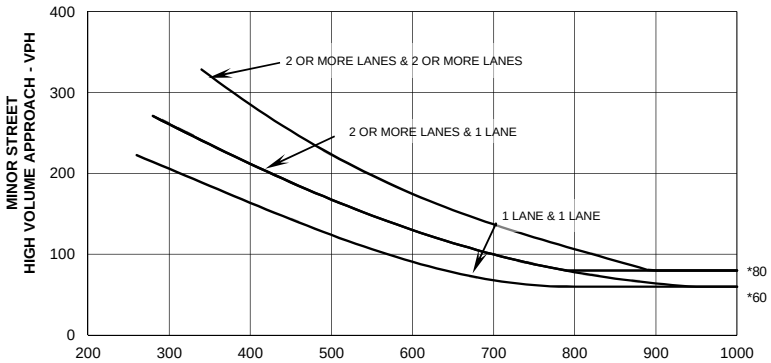
** Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

70% Volume Level

Four Highest Hours	Volumes	
	Major Street	Minor Street

FIGURE 4C-2: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	**Bristol, VT116 & Lincoln Rd**	Engineer:	**JDA**
County:		Date:	**August 27, 2021**
District:			

Major Street:	**VT116**	Lanes:	**1**	Major Approach Speed:	**40**
Minor Street:	**Lincoln Rd**	Lanes:	**1**	Minor Approach Speed:	**35**

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☐ Yes ☑ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☐ 70% ☑ 100%

WARRANT 3 - PEAK HOUR

*If all three criteria are fulfilled **or** the plotted point lies above the appropriate line, then the warrant is satisfied.*

Applicable: ☑ Yes ☐ No
Satisfied: ☐ Yes ☑ No

Unusual condition justifying use of warrant:

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour 100% Volume		
Time	Major Vol.	Minor Vol.
7:00 am	331	183

Peak Hour 70% Volume		
Time	Major Vol.	Minor Vol.

Criteria

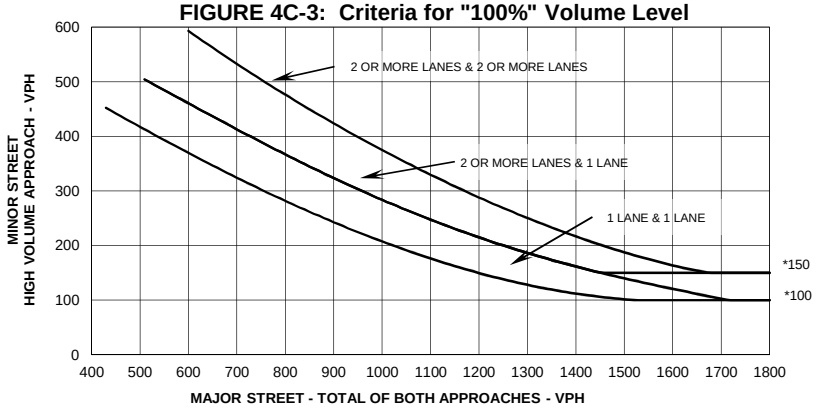
1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*		
Fulfilled?:	☐ Yes ☐ No	

2. Volume on Minor Approach One-Direction *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	100	150
Volume*	183	
Fulfilled?:	☑ Yes ☐ No	

3. Total Intersection Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*	514	
Fulfilled?:	☐ Yes ☑ No	

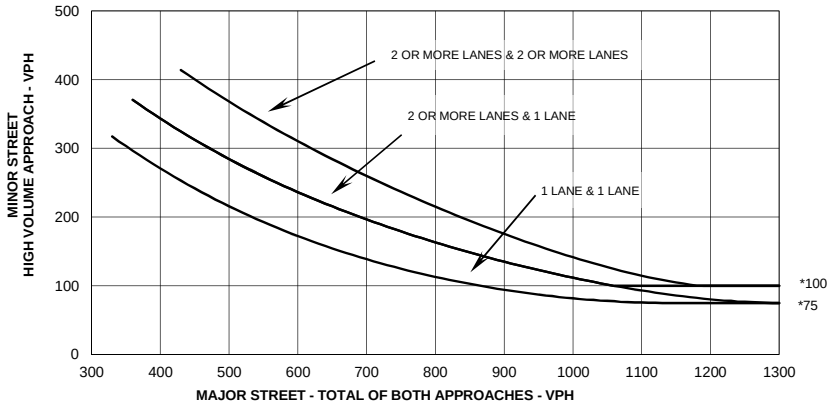
Plot volume combination on the applicable figure below.

FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level
(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	**Bristol, VT116 & Lincoln Rd**	Engineer:	**JDA**
County:		Date:	**August 27, 2021**
District:			

Major Street:	**VT116**	Lanes:	**1**	Major Approach Speed:	**40**
Minor Street:	**Lincoln Rd**	Lanes:	**1**	Minor Approach Speed:	**35**

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☐ Yes ☑ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☐ 70% ☑ 100%

WARRANT 4 - PEDESTRIAN VOLUME

For each of any 4 hours of an average day, the plotted points lie above the appropriate line, then the warrant is satisfied.

Applicable: ☑ Yes ☐ No
Satisfied: ☐ Yes ☑ No

100% Volume Level

Four Highest Hours	Volumes	
	Major Street	Pedestrian Total
15:00 pm	365	2

Plot four volume combinations on the applicable figure below.

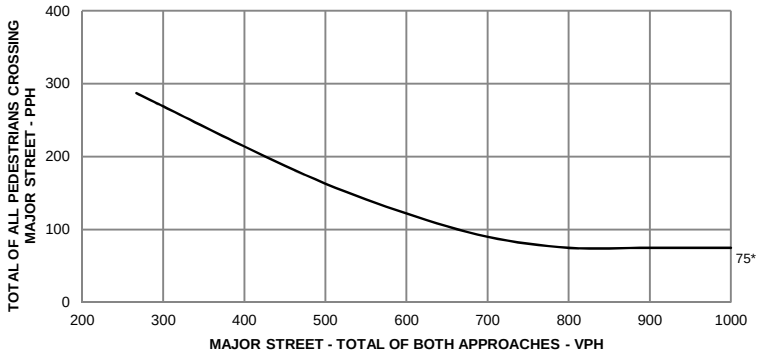
Figure 4C-5. Criteria for "100%" Volume Level

** Note: 107 pph applies as the lower threshold volume*

70% Volume Level

Four Highest Hours	Volumes	
	Major Street	Pedestrian Total

Figure 4C-6 Criteria for "70%" Volume Level



** Note: 75 pph applies as the lower threshold volume*

WARRANT 4 - PEDESTRIAN VOLUME

For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point falls above the appropriate line, then the warrant is satisfied.

Applicable: ☐ Yes ☑ No

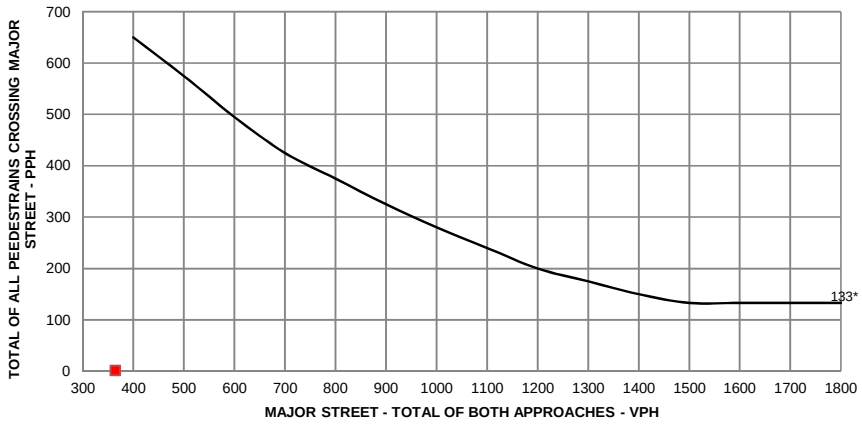
Satisfied: ☐ Yes ☐ No

Plot one volume combination on the applicable figure below.

100% Volume Level

Peak Hour	Volumes	
	Major Street	Pedestrian Total
15:00 pm	365	2

Figure 4C-7. Criteria for "100%" Volume Level - Peak Hour



** Note: 133 pph applies as the lower threshold volume*

70% Volume Level

Peak Hour	Volumes	
	Major Street	Pedestrian Total

Figure 4C-8 Criteria for "70%" Volume Level - Peak Hour

** Note: 93 pph applies as the lower threshold volume*

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	**Bristol, VT116 & Lincoln Rd**	Engineer:	**JDA**
County:		Date:	**August 27, 2021**
District:			

Major Street:	**VT116**	Lanes:	**1**	Major Approach Speed:	**40**
Minor Street:	**Lincoln Rd**	Lanes:	**1**	Minor Approach Speed:	**35**

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

WARRANT 7 - CRASH EXPERIENCE

Record hours where criteria are fulfilled, the corresponding volume, and other information in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Applicable: ☑ Yes ☐ No
Satisfied: ☐ Yes ☑ No

Criteria		Hour	Volume		Met?		Fulfilled?	
			Major	Minor	Yes	No	Yes	No
1. One of the warrants to the right is met.	Warrant 1, Condition A (80% satisfied)							
	Warrant 1, Condition B (80% satisfied)							
	Warrant 4, Pedestrian Volume at 80% of volume requirements: # ped/hr for four (4) hours or # ped/hr for one (1) hour.							
2. Adequate trial of other remedial measure has failed to reduce crash frequency.		Measure tried:						
3. Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12-month period.		Observed Crash Types:	Number of crashes per 12 months:					X

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	**Bristol, VT116 & Lincoln Rd**	Engineer:	**JDA**
County:		Date:	**August 27, 2021**
District:			

Major Street:	**VT116**	Lanes:	**1**	Major Approach Speed:	**40**
Minor Street:	**Lincoln Rd**	Lanes:	**1**	Minor Approach Speed:	**35**

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

CONCLUSIONS

Remarks: **No warrants are satisfied.**

WARRANTS SATISFIED:

☐	Warrant 1	☐	Not Applicable
☐	Warrant 2	☐	Not Applicable
☐	Warrant 3	☐	Not Applicable
☐	Warrant 4	☐	Not Applicable
☐	Warrant 5	☑	Not Applicable
☐	Warrant 6	☑	Not Applicable
☐	Warrant 7	☐	Not Applicable
☐	Warrant 8	☑	Not Applicable
☐	Warrant 9	☑	Not Applicable

Not Applicable warrants (not included in analyses) include:
Warrant 5: School Crossing
Warrant 6: Coordinated Signal System
Warrant 8: Roadway Network
Warrant 9: Intersection Near a Grade Crossing

Turning Movement Count Data from MS2 website (Int. ID 30103835)
VT 116 / Lincoln Road, Bristol, VT
Date(s): AM - Thurs., Aug. 28, 2014. PM - Thurs. Aug. 21, 2014

	NB (VT116)					EB -- N/A					SB (VT 116)					WB (Lincoln Rd)					Total	Total
Start Time	L	T	R	ped	Tot.	L	T	R	ped	Tot.	L	T	R	ped	Tot.	L	T	R	ped	Tot.	Veh.	Peds
6:00 am	0	14	2	0	16						2	14	0	0	16	8	0	12	0	20	52	0
6:15 am	0	20	2	0	22						0	21	0	0	21	9	0	12	0	21	64	0
6:30 am	0	17	5	0	22						0	21	0	0	21	12	0	6	0	18	61	0
6:45 am	0	25	3	0	28						1	24	0	0	25	24	0	3	0	27	80	0
7:00 am	0	31	6	0	37						0	30	0	0	30	26	0	8	0	34	101	0
7:15 am	0	38	11	0	49						0	38	0	0	38	29	0	11	0	40	127	0
7:30 am	0	27	10	0	37						1	44	0	0	45	40	0	14	0	54	136	0
7:45 am	0	23	15	0	38						4	41	0	0	45	39	0	9	0	48	131	0
8:00 am	0	30	11	0	41						3	51	0	0	54	52	0	8	0	60	155	0
8:15 am	0	28	16	0	44						3	33	0	0	36	25	0	8	0	33	113	0
8:30 am	0	19	10	0	29						7	25	0	0	32	26	0	7	0	33	94	0
8:45 am	0	21	16	0	37						3	34	0	0	37	12	0	4	0	16	90	0
9:00 am	0	31	12	0	43						3	31	0	0	34	20	0	5	0	25	102	0
9:15 am	0	17	17	0	34						3	30	0	0	33	23	0	2	0	25	92	0
9:30 am	0	11	9	0	20						3	22	0	0	25	14	0	5	0	19	64	0
9:45 am	0	16	7	0	23						2	19	0	0	21	10	0	6	0	16	60	0
10:00 am	0	17	9	0	26						2	25	0	0	27	10	0	5	0	15	68	0
10:15 am	0	18	13	0	31						3	30	0	0	33	11	0	4	0	15	79	0
10:30 am	0	18	9	0	27						3	18	0	0	21	13	0	3	0	16	64	0
10:45 am	0	27	8	0	35						3	34	0	0	37	20	0	4	0	24	96	0
11:00 am	0	34	10	0	44						9	19	0	0	28	15	0	2	0	17	89	0
11:15 am	0	22	15	0	37						4	19	0	0	23	15	0	0	0	15	75	0
11:30 am	0	17	16	0	33						2	12	0	0	14	9	0	1	0	10	57	0
11:45 am	0	25	17	0	42						2	27	0	0	29	12	0	5	0	17	88	0
12:00 pm	0	20	21	0	41						2	22	0	0	24	12	0	3	0	15	80	0
12:15 pm	0	25	7	0	32						2	18	0	0	20	7	0	2	0	9	61	0
12:30 pm	0	13	9	0	22						9	20	0	0	29	14	0	1	0	15	66	0
12:45 pm	0	25	11	0	36						1	31	0	0	32	18	0	2	0	20	88	0
13:00 pm	0	27	17	0	44						0	31	0	0	31	14	0	2	0	16	91	0
13:15 pm	0	19	17	0	36						3	21	0	0	24	9	0	3	0	12	72	0
13:30 pm	0	30	11	0	41						3	22	0	0	25	23	0	4	0	27	93	0
13:45 pm	0	25	18	0	43						4	11	0	0	15	12	0	1	0	13	71	0
14:00 pm	0	25	16	0	41						3	22	0	0	25	12	0	1	0	13	79	0
14:15 pm	0	20	15	0	35						3	26	0	0	29	15	0	5	0	20	84	0
14:30 pm	0	28	27	0	55						3	34	0	0	37	11	0	5	0	16	108	0
14:45 pm	0	27	22	0	49						1	26	0	0	27	10	0	1	0	11	87	0
15:00 pm	0	35	22	0	57						5	28	0	0	33	17	0	2	0	19	109	0
15:15 pm	0	25	22	1	47						4	23	0	0	27	13	0	4	0	17	91	1
15:30 pm	0	26	32	0	58						4	24	0	0	28	6	0	4	1	10	96	1
15:45 pm	0	31	35	0	66						6	30	0	0	36	7	0	7	0	14	116	0
16:00 pm	0	31	34	0	65						5	27	0	0	32	8	0	6	0	14	111	0
16:15 pm	0	32	38	0	70						6	28	0	0	34	7	0	5	0	12	116	0
16:30 pm	0	36	38	0	74						6	33	0	0	39	5	0	4	0	9	122	0
16:45 pm	0	28	34	0	62						8	24	0	0	32	8	0	8	0	16	110	0
17:00 pm	0	34	42	0	76						9	30	0	0	39	8	0	6	0	14	129	0
17:15 pm	0	34	40	0	74						8	32	0	0	40	7	0	8	0	15	129	0
17:30 pm	0	29	40	0	69						9	30	0	0	39	3	0	3	0	6	114	0
17:45 pm	0	24	32	0	56						5	28	0	0	33	7	0	6	0	13	102	0

Hour Count Totals - 2014

Start	NB	SB	WB	Total	Rank
6:00 am	88	83	86	257	12
7:00 am	161	158	176	495	1
8:00 am	151	159	142	452	4
9:00 am	120	113	85	318	8
10:00 am	119	118	70	307	10
11:00 am	156	94	59	309	9
12:00 pm	131	105	59	295	11
13:00 pm	164	95	68	327	7
14:00 pm	180	118	60	358	6
15:00 pm	228	124	60	412	5
16:00 pm	271	137	51	459	3
17:00 pm	275	151	48	474	2
AM Peak:	119	118	70	495	
PM Peak:	271	137	51	474	
Max Peak:	119	118	51	495	

% of Peak Hours - 2014

Start Time	NB	SB	WB	Total
6:00 am	74%	70%	123%	52%
7:00 am	135%	134%	251%	100%
8:00 am	127%	135%	203%	91%
9:00 am	101%	96%	121%	64%
10:00 am	100%	100%	100%	62%
11:00 am	131%	80%	84%	62%
12:00 pm	48%	77%	116%	62%
13:00 pm	61%	69%	133%	69%
14:00 pm	66%	86%	118%	76%
15:00 pm	84%	91%	118%	87%
16:00 pm	100%	100%	100%	97%
17:00 pm	101%	110%	94%	100%

Signal Warrant Analysis:
Turning Movement Count Data

12-Hour Traffic Volumes
VT 116 / Lincoln Road, Bristol, VT

Sorted By Ranking Hour Count Totals - 2014							2014 Existing Volumes		2014 projected to 2021	
Start	NB	EB	SB	WB	Total	Rank	Major (2)	Minor (1)	Major (2)	Minor (1)
7:00 am	161		158	176	495	1	319	176	331	183
17:00 pm	275		151	48	474	2	426	48	442	50
16:00 pm	271		137	51	459	3	408	51	424	53
8:00 am	151		159	142	452	4	310	142	322	147
15:00 pm	228		124	60	412	5	352	60	365	62
14:00 pm	180		118	60	358	6	298	60	309	62
13:00 pm	164		95	68	327	7	259	68	269	71
9:00 am	120		113	85	318	8	233	85	242	88
11:00 am	156		94	59	309	9	250	59	260	61
10:00 am	119		118	70	307	10	237	70	246	73
12:00 pm	131		105	59	295	11	236	59	245	61
6:00 am	88		83	86	257	12	171	86	177	89

The Monthly DOW Factor for 2020, August, Thursday,
Rural Non-Interstate = 0.816
Signal warrant analysis, per the MUTCD, are assuming "12 hours of an average day".
The above traffic volumes are higher than an average day because the monthly DOW Factor is <1.0. No monthly DOW factor applied for signal warrant analysis to be conservative.

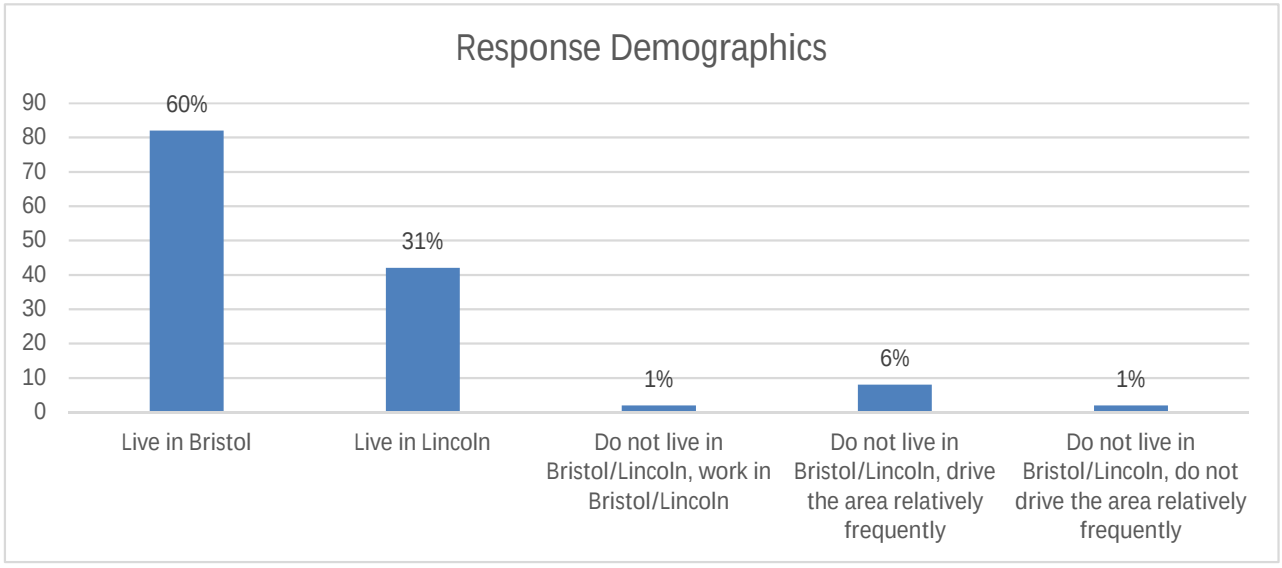
projected using VTrans Red Book growth factors

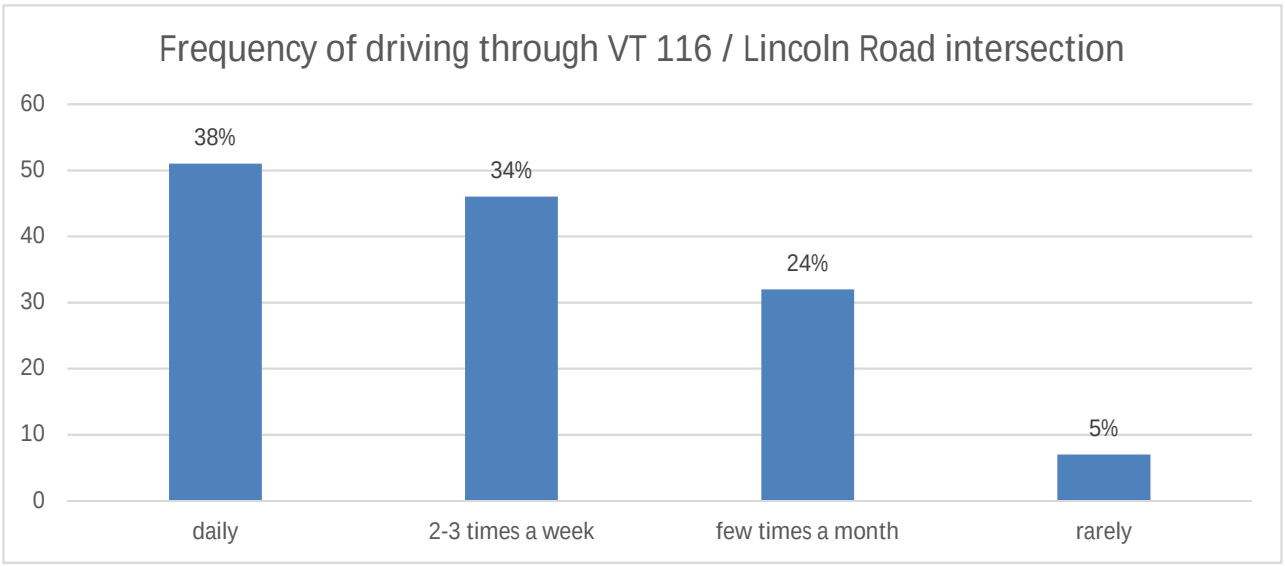
2014 -> 2015 (assumed):	1.005
2015 -> 2019 (rural) =	1.016
2015 -> 2020 (rural) =	0.861
2020 -> 2021 (rural) =	1.181
2014 -> 2021:	1.038

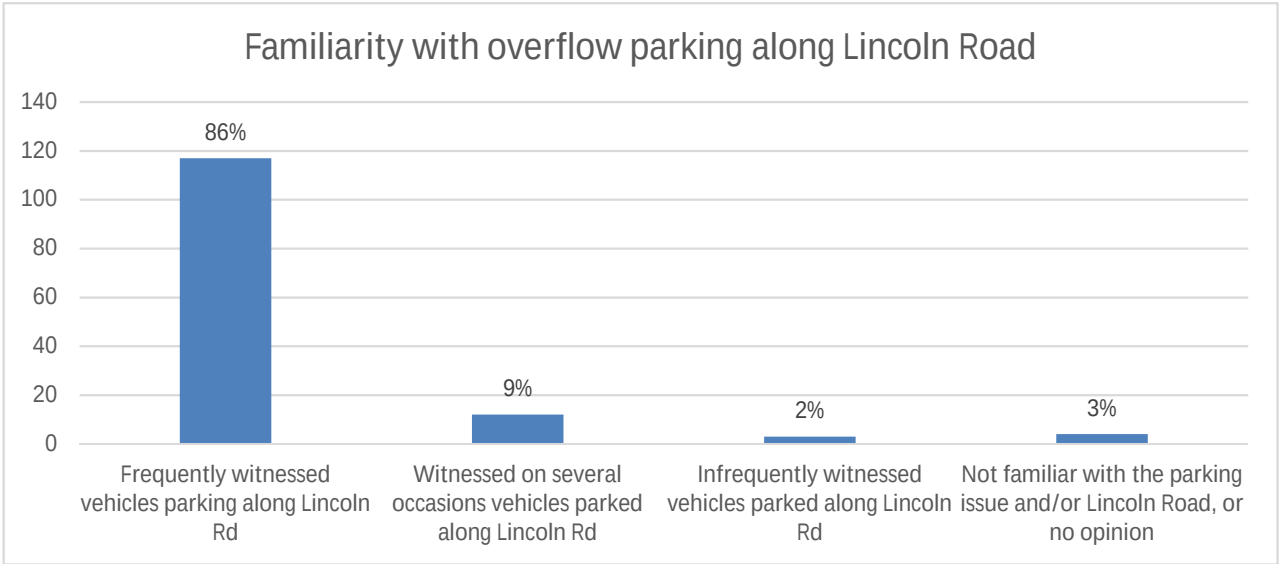
Signal Warrant Analysis:
Calculation of 12-Hour Volumes

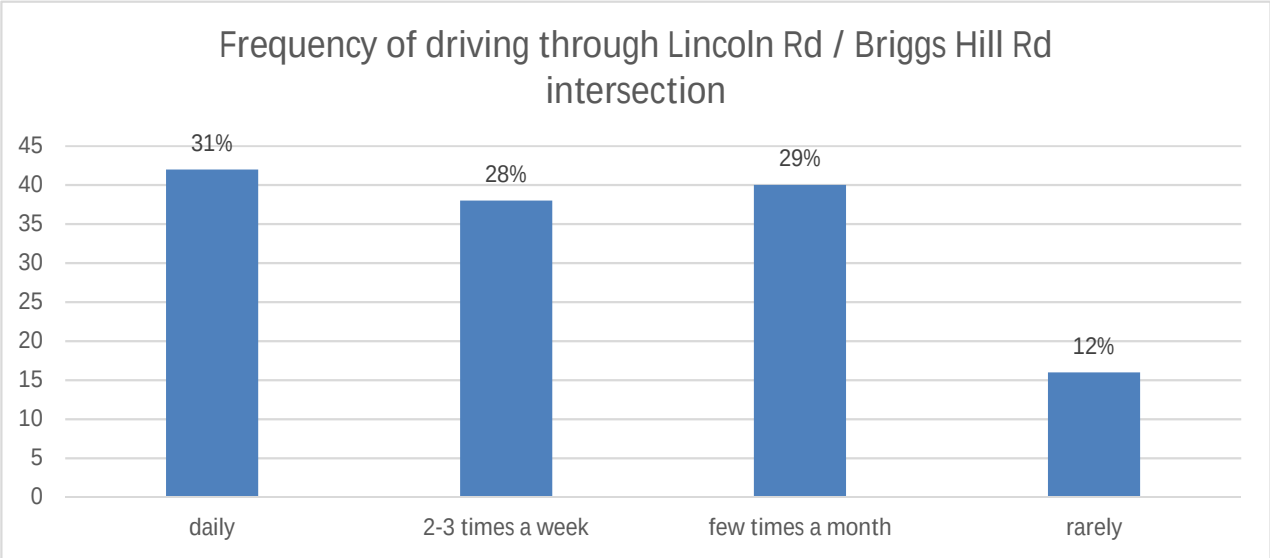
APPENDIX F

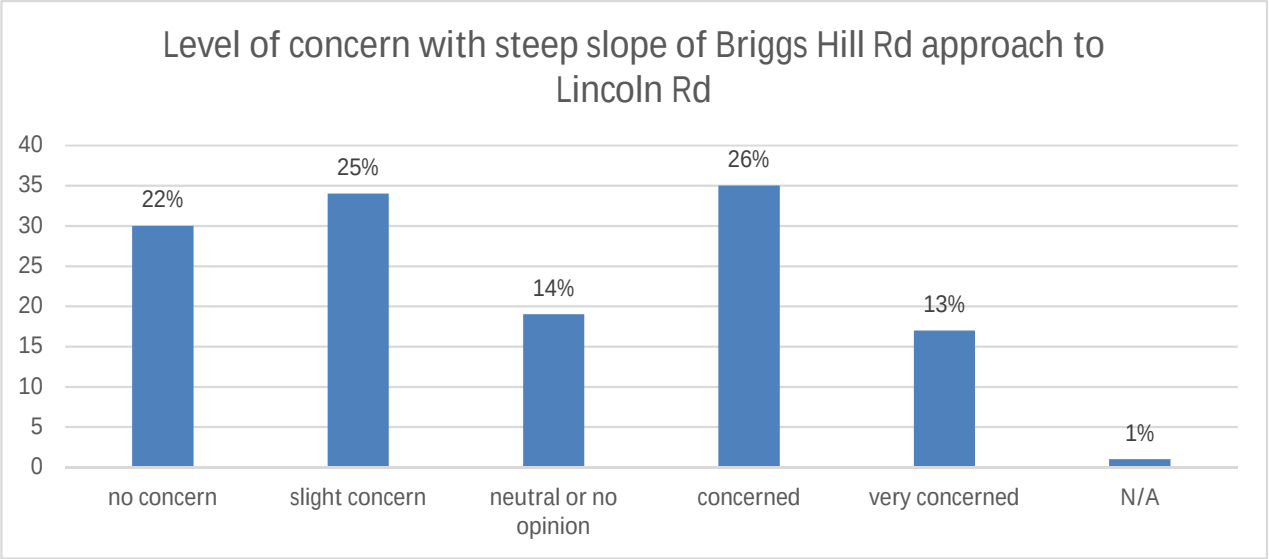
Survey Results


Response Demographics
90
80
70
60
50
40
30
20
10
0
60%
31%
1%
6%
1%
Live in Bristol
Live in Lincoln
Do not live in Bristol/Lincoln, work in Bristol/Lincoln
Do not live in Bristol/Lincoln, drive the area relatively frequently
Do not live in Bristol/Lincoln, do not drive the area relatively frequently

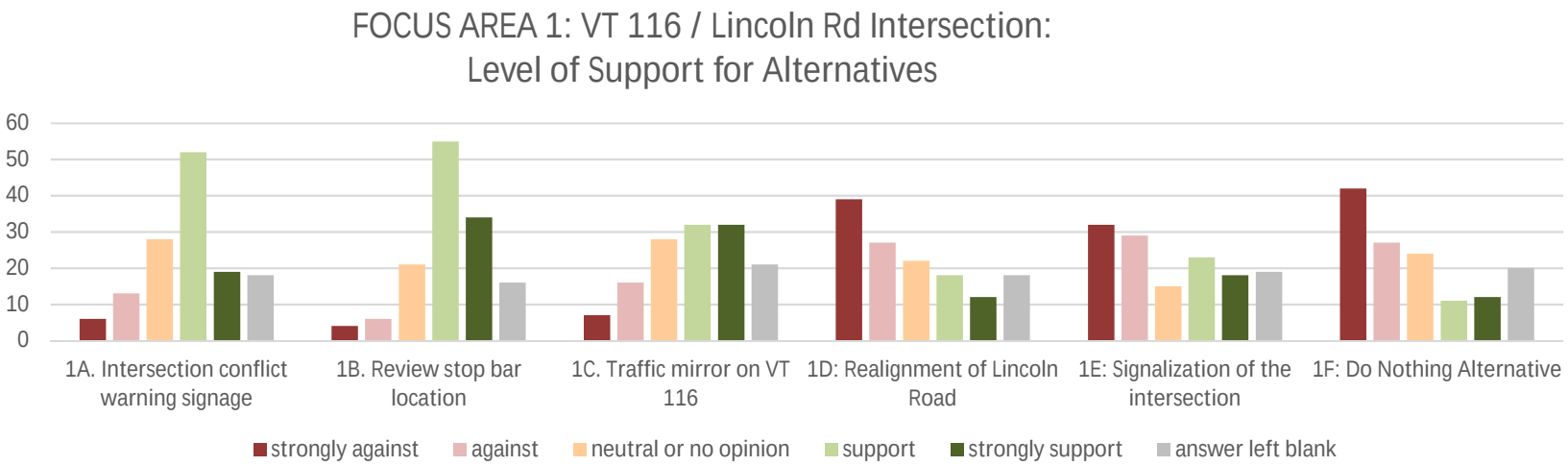

Frequency of driving through VT 116 / Lincoln Road intersection
60
50
40
30
20
10
0
38%
34%
24%
5%
daily
2-3 times a week
few times a month
rarely

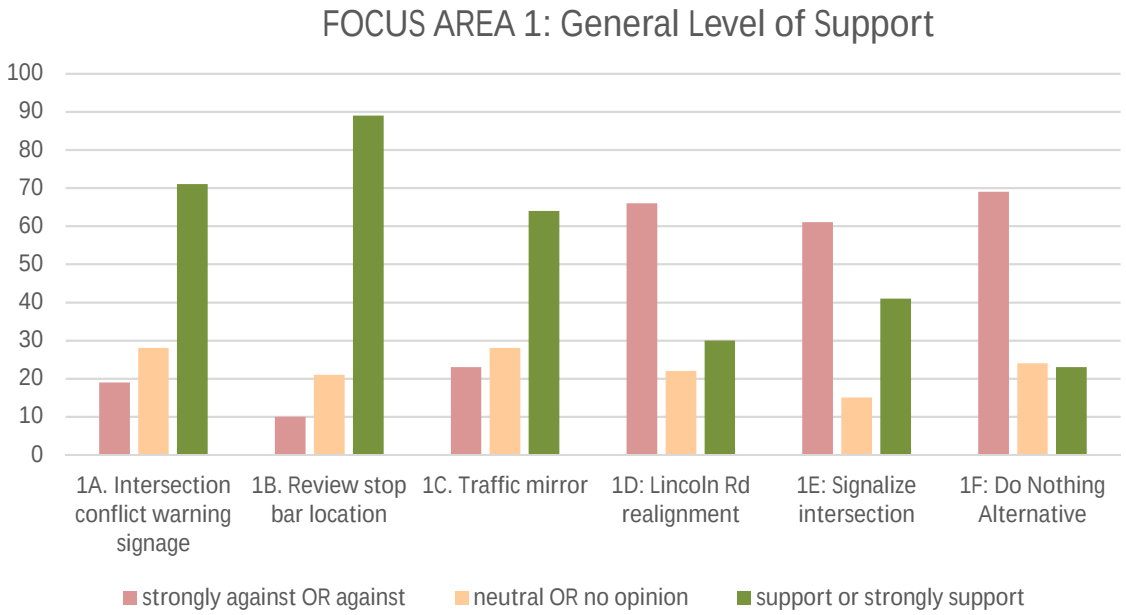

Familiarity with overflow parking along Lincoln Road
140
120
100
80
60
40
20
0
86%
9%
2%
3%
Frequently witnessed vehicles parking along Lincoln Rd
Witnessed on several occasions vehicles parked along Lincoln Rd
Infrequently witnessed vehicles parked along Lincoln Rd
Not familiar with the parking issue and/or Lincoln Road, or no opinion



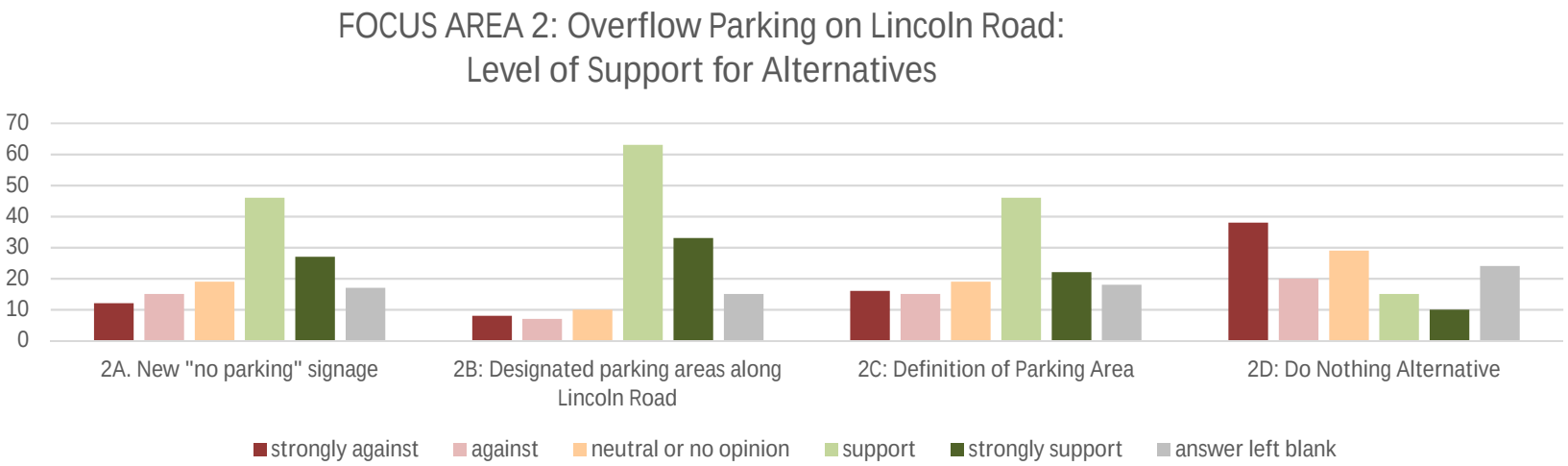


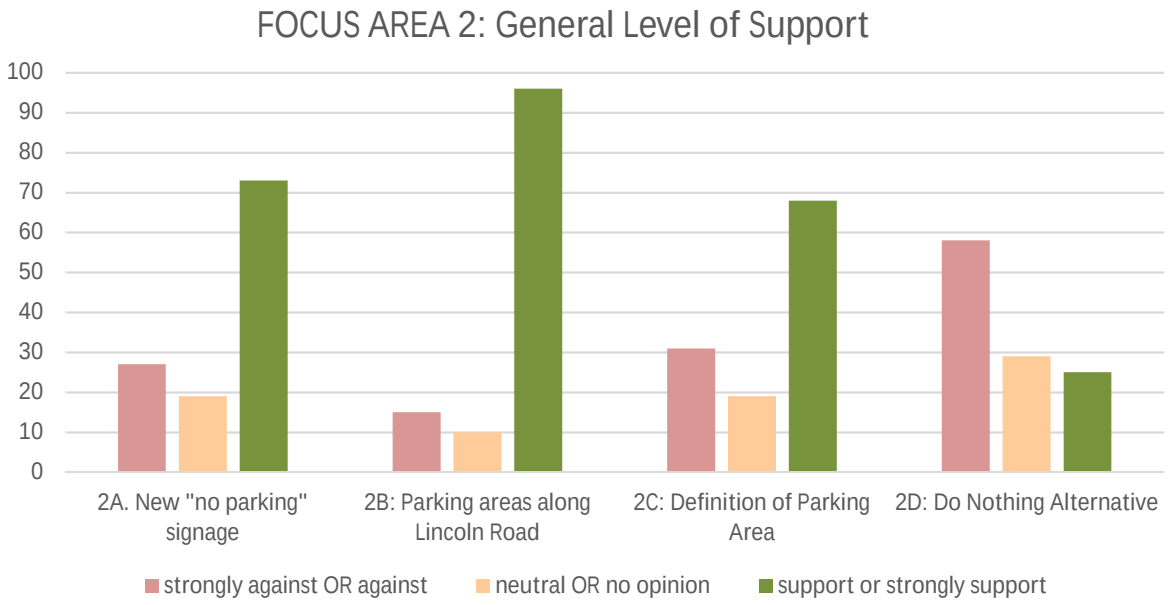
For graphic above: 47% with no concern or slight concern, 14% with neutral or no opinion, 38% with concerned or very concerned, and 1% with N/A as answer.



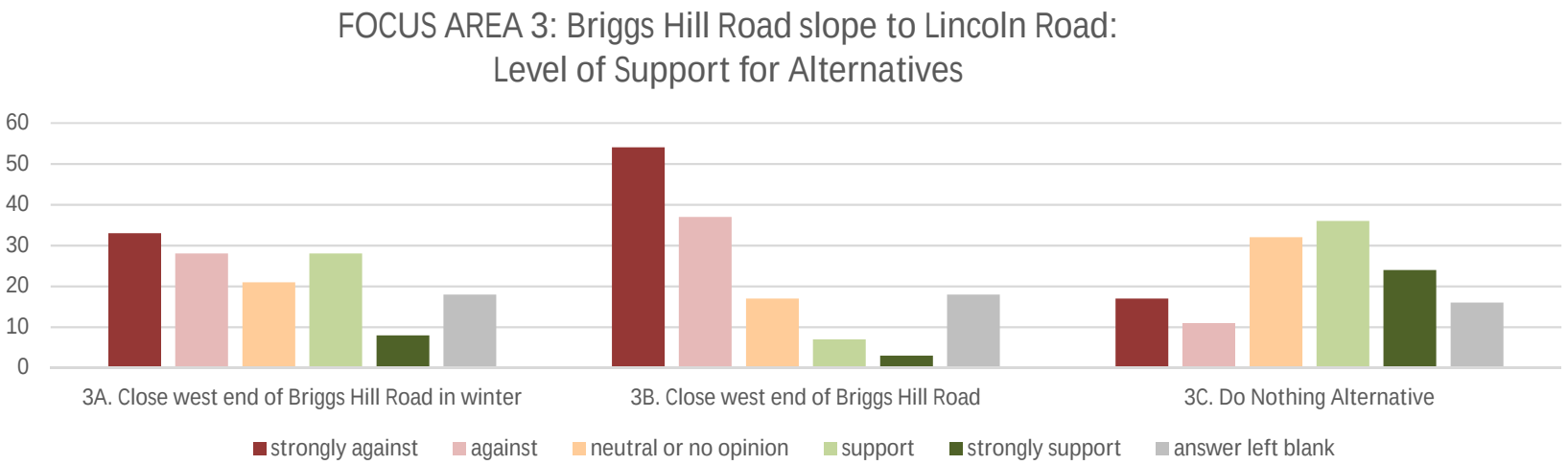


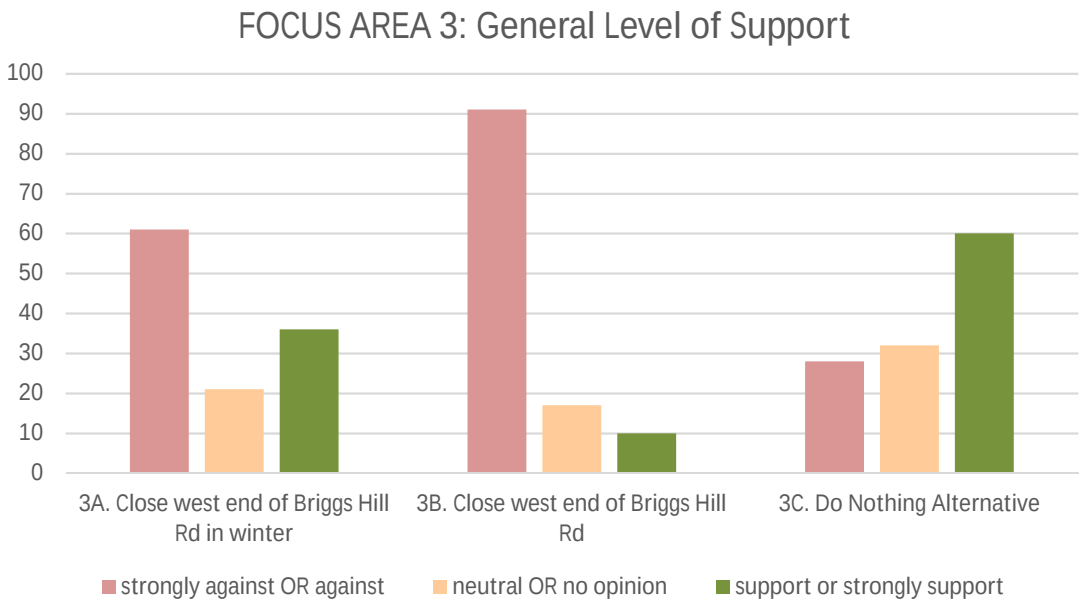
Alt.	Strongly Against or Against	Neutral or No Opinion	Support or Strongly Support	Answer Left Blank
1A	14%	21%	52%	13%
1B	7%	15%	65%	12%
1C	17%	21%	47%	15%
1D	49%	16%	22%	13%
1E	45%	11%	30%	14%
1F	51%	18%	17%	15%



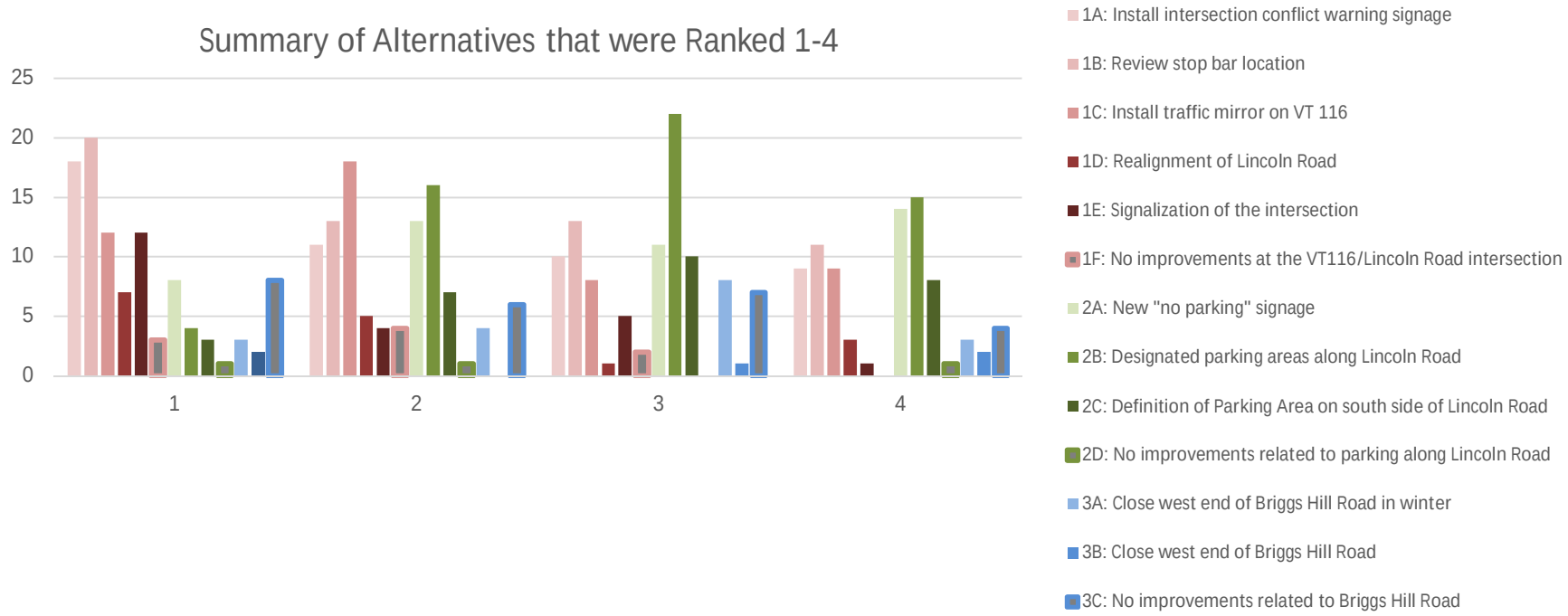


Alt.	Strongly Against or Against	Neutral or No Opinion	Support or Strongly Support	Answer Left Blank
1A	20%	14%	54%	13%
1B	11%	7%	71%	11%
1C	23%	14%	50%	13%
1D	43%	21%	18%	18%





Alt.	Strongly Against or Against	Neutral or No Opinion	Support or Strongly Support	Answer Left Blank
3A	45%	15%	26%	13%
3B	67%	13%	7%	13%
3C	21%	24%	44%	12%



# for each ranking of ...	1	2	3	4	5	6	7	8	9
1A: Install intersection conflict warning signage	18	11	10	9	6	1	2	0	0
1B: Review stop bar location	20	13	13	11	6	5	2	0	0
1C: Install traffic mirror on VT 116	12	18	8	9	7	1	2	1	0
1D: Realignment of Lincoln Road	7	5	1	3	2	4	1	1	0
1E: Signalization of the intersection	12	4	5	1	1	1	0	0	0
1F: No improvements at the VT116/Lincoln Road intersection	3	4	2	0	0	2	0	0	0
2A: New "no parking" signage	8	13	11	14	5	6	2	0	0
2B: Designated parking areas along Lincoln Road	4	16	22	15	9	7	4	0	0
2C: Definition of Parking Area on south side of Lincoln Road	3	7	10	8	12	10	3	1	0
2D: No improvements related to parking along Lincoln Road	1	1	0	1	3	1	4	1	0
3A: Close west end of Briggs Hill Road in winter	3	4	8	3	9	5	4	1	1
3B: Close west end of Briggs Hill Road	2	0	1	2	1	0	0	2	0
3C: No improvements related to Briggs Hill Road	8	6	7	4	8	4	3	2	0

Additional comments regarding the project in general and/or the alternatives
The steep grade of Briggs Hill has certainly made me nervous and times in the winter, and even so I am STRONGLY opposed to the idea of closing it. Using extra caution is far preferred to not having the option at all; it would drastically alter travel time for those of us who use Briggs Hill on a daily basis. Closing a main thruway because there are a handful of days in winter when it is treacherous would be very unfortunate. Thanks for your consideration.
Drivers coming from Lincoln toward 116 need to know that there are two stop signs between Bartlett's and the intersection. Many drivers miss the Briggs hill stop sign because they are focused on the 116 stop sign. Placing a sign that states " drive cautiously: there are two separate stops ahead" or something else to warn drivers like flashing red stop lights at both stop signs, could be helpful. A guardrail on the entire length of Briggs could be helpful, but I drive it most everyday in the winter and don't see a problem. If it looks icy or unplowed It's easy enough to take Atkins rd to get where I need to be.
I also support continuing to very aggressively ticket illegal parking on the Lincoln road, and I hope that will eventually trickle down to all the tourist websites where I assume people are learning about Bartlett's. I wouldn't be against closing Briggs hill in winter, since I don't use it much and it seems like it would be safer for motorists and for the road maintence/plow truck operators, but I guess I think the people who live on that section should have a say in the matter.
I drive up and down Briggs Hill daily. Most of the problems I witness are drivers coming down the Lincoln road not stopping at the first of two stop signs to allow drivers to turn on or off of briggs hill. VERY dangerous! Maybe install speed humps coming down the Lincoln road approaching the intersection with Briggs Hill and increase signage indicating double stop. With more intense weather events, it is likely that the Lincoln road will be washed out again in the future like it was during hurricane Irene. Closing Briggs hill road would ultimately close Lincoln off completely with access only from Quaker st, Downingsville road, or the Upper Notch/Ripton road. The road crew does a great job of keeping the west end of Briggs Hill clear of snow and ice in the winter. Steepness has only been an occasional issue in intense snow during the storm event. Paved parking will increase runoff into the river. Too many people parking and swimming along the Lincoln road leaving trash, etc. I support ticketing cars that are illegally parked in the roadway, or having permitted parking for residents of Bristol and Lincoln. If parking becomes paved, there should be some sort of paid metered parking to generate revenue for the town to cover maintenance.
Changing the road would improve all three issues so I see the benefit of that. I don't see this being worth the million(s) of dollars it would take. Use our money to fight climate change or help solve our school funding crisis.
Lower speed limit on Rockydale Road (Prayer Rock to intersection of Lincoln Rd) to 30-35mph.
I live on Colby Hill and don't want to be closed off from access from my home.
please do not close Briggs Hill Road, I drive on it several times a day. I have never had a problem. I do think we need mirrors on 116 to see cars going over bridge.

Additional comments regarding the project in general and/or the alternatives
I think the biggest issue by far is the poor sight line when turning left at the foot of the Lincoln Road onto Route 116 West. The new(ish) bridges are lovely but the railing on the bridge adjacent to the Lincoln turnoff was not properly designed--it's impossible to see the full roadway to driver's left without pulling into the eastbound travel lane a little. I've nearly pulled out right in front motorcycles that ride in the right part of the eastbound travel lane (presumably to enjoy the view of the river from the bridge). I use Briggs Hill daily in all weather. Only 3 or 4 times in the past 25 years I've lived here have I had problems with losing traction on the hill and sliding. (Granted I have an all-wheel-drive vehicle and always have snow tires on in winter.) If weather/road conditions are bad I either stay home or use Atkins Road as an alternative (but let me add I've also lost traction on Atkins Road in slippery conditions). There's no route down the hill that isn't steep and twisty, no matter how you go. As for Bartlett's Falls overflow parking, a paved parking area adjacent to the river strikes me as a bad idea on the face of it, given concerns about runoff. But additional gravel pull-off areas make a lot of sense to me. Thanks for taking the time to listen.
I am strongly against closing Briggs Hill as I use the route daily to get to and from work.
Please do not close Briggs Hill !!! I have been driving it for 35 years with no issues. Bristol does a great job maintaining it. Closure would be a real hardship.
On Lincoln Road, headed towards 116, first stop sign is a big problem because cars on a regular basis go right through that stop sign. There should be painting on the road prior to that first stop sign to warn people and maybe even a speed bar.
Briggs Hill is an alternative route into and out of Lincoln in case of emergency, accident, fire, tree down, road construction, road wash-out, etc. I feel it is important to keep this road open year round for ambulance and emergency services to use if needed. Bristol does a good job of maintaining the road with sand/salt.
None
Remove some of the east side banisters at the intersection would greatly improve visibility for sedans from Lincoln. Banisters close alignment create a visual wall. Banisters are unnecessary. Cost minimal
Install guard rails along the swimming area with walk path behind the guard rail separating the crowd from the traffic.
I am more concerned about the parking issue than the intersection issues because I have observed more near-accidents in regard to the parking along the road in the summer. Having said that, I have also had 1 or 2 close calls at the intersection. I would go with what the data says is the bigger issue in terms of safety. I love the idea of a light at the corner, but would that address the Briggs Hikl issue? That’s where I’ve seen more problems than at the corner.
This intersection is one of the worst in Addison County. Almost as bad as the intersection of Exchange St. and Rt. 7 in Middlebury. May I suggest: Lower speed limit, 30 mph, at least 1/2 mile in either direction near the intersection, on route 116. Second: Stp signs in both directions on Rt. 116 at the intersection. These are basic, the other suggestions are not bad, but at least try these. thank you.
When I come to the intersection of 116 and Lincoln Rd I find that pulling farther to the RIGHT allows me to see much farther on to the bridge then if I pull to the LEFT (which I see most drivers do when coming to that intersection). Also when I drive through Rt 100 past Warren Falls, the signage is clear. I used to use this location prior to the parking lot there, it was similar to the Bartlett Falls location, except that there was one spot for swimming, unlike Bartlett - where you can swim at the various locations up the river. Thank you for all your work on this project!

Additional comments regarding the project in general and/or the alternatives
While that whole area is clearly unsafe, I guess I'm curious how "dangerous" it actually it is. The summer parking at Bartlett's is a nuisance for sure, but do police and ambulance often get called there? The Briggs Hill intersection is tricky, but are there truly accidents? more in winter? Similarly for people pulling onto 116 - are there actual accidents, or just a lot of close calls? I do think steps should be taken, but am not sure millions of dollars are warranted.
It's too late now but if the state hadn't wasted money on making the bridge curved visibility would be better. The state should have to fix this mess.
The realignment of Lincoln Road would be my favorite option if it weren't for the expense, especially if that would also solve the Briggs Hill problem. If there is public transportation money available for that from State or Federal funds, I would like to see that happen. Moving the stop bar should happen immediately. I like the idea of lights flashing to alert that oncoming traffic is present, so long as they only flash when there are actually cars coming. I like creating designated parking for the river, with no parking signs. I think it would make the place a lot safer. PLUS adding a designated walkway along the shoulder of the road for pedestrians to get up to Bartlett Falls. Once cars stop parking on that shoulder, it should be safer for pedestrians. Right now the cars are on the shoulder so pedestrians walk in the road. Scary. Thanks for the survey!
Rerouting Lincoln Rd over & down the ridge spur onto Vt 116 seems drastic & expensive. Why no alternative to move the exit of Lincoln Rd onto 116 slightly to the east where there is a flat open space on the 116 curve & better view of the bridge traffic?
I daily observe cars on Lincoln Road blowing through the stop sign at intersection with Briggs Hill.
spite of the risks (I do almost daily) -- the bridges are designed to make a bike or pedestrian all but invisible and safer roadsides for walking could alleviate the parking issue by allowing folks to park further from congested areas.
This site is perfectly fine,,, the problem is that people have to slow down and pay attention. For Briggs Hill,,, It has been that way for 100+ years. If you aren't smart enough to go around in the winter when it is apparently slippery,,, bad decision on your part.
The bridge has a curve in it, making it difficult to pull off or pull into Lincoln rd from 116. Why was a bridge designed with a curve? Can the Lincoln road coming onto Rte 116 be rerouted?
Traffic signal should warn drivers at the stop sign about the 116 traffic so they can make decisions when to pull out.
If the end rails on the bridge was straight you see though them and cut the road side would help can not see out my driveway on west side grass and weeds are so high need to get cut ND cleaned up so they can see I little commen sense goes a long ways .if the car slowed down would be the biggest help at all I have seen them go thought there in morning a night 50 to 60 miles ahour
Along with the parking issue on the side of the road is people walking in the road giving no care at all to traffic. It is very scary to drive through there on hot days - they don't seem to care or even think about the fact that people live on this road.
More ticketing/towing of illegal parking. Study permit parking Vermont resident only.
I live on W River Rd and went through a time of being furious about the behavior of drivers/parkers/swimmers but I have calmed down. When I come up or down the road I drive VERY SLOWLY and watch VERY CAREFULLY and hope that people are having some joy in their lives. It's us drivers that need to calm down and just be careful. It's worth it.
I have never had a problem with sight distance at the intersection of Lincoln Road and 116, can't understand why some people have trouble. Maybe they need driving lessons?

Additional comments regarding the project in general and/or the alternatives
Part of the issue on the 116 intersection is that people do not take the time to stop and really look. If they stop at the current line and really look, you can see the traffic. The bridge design by an outside firm looks beautiful but was not designed well for that spot. However, after two decades, the traffic going through there versus the accidents is not excessive. Perhaps a lower speed limit coming through "the bridges" area that was enforced would be a simple solution that was not mentioned. Those of us who go through regularly have become better drivers. I so appreciate the tickets that the BPD give out on busy days at Bartlett Falls. Regulation and on-going monitoring are the only thing that will adjust that area. More parking only means official acceptance of the area as a rec place. I am happy bathers can enjoy the place but uncaring ones walk on the street, make u-turns right in the road and stop without signaling - these same offenders will continue to do what they do no matter what. I have been scared more times than not driving up that road on a hot day. Spending more money for a few days a year seems silly. Especially when you consider other large groups like the kayak racers manage to follow the rules and self-police.
The problem is NOT Briggs Hill Rd. .... the problem is vehicles coming out of Lincoln and not even slowing down, say nothing about stopping for the 2 stop signs!! We who live on Briggs Hill Rd. are the ones who stop!!!!!!!!
My husband was in an accident at that intersection, as was a friend. Neither were hurt, but each one's car was totaled. In the case of my husband's accident, the person on Rt. 116 who hit him was speeding. He hit my husband's car so hard that he sent him backwards , back into Lincoln Road. I'm in favor, and strongly so, of a light at the intersection of the Lincoln Road and 116. I don't know what to do about Briggs Hill. I always look to see if anyone is coming, and whether I was at the Stop first or they were, until they are stopped, I stay put.
Please coordinate with residents of Lincoln too--I have not heard of these proposals before and this intersection is one I travel daily and changes would directly impact me and my family. Thanks.
In addition to parking areas, need a sidewalk (and perhaps a bike lane) along south side of Lincoln Rd to reduce erosion and illegal parking
Hate to say this but the State created the problem, they should fix the intersection problems. Continue to enforce "no parking" restriction on pavement.
Nice job! Terrible intersection!
Please consider that people who ride bicycles through these areas should have a say. Safety concerns for cyclists and other vulnerable users need to be addressed.
I live on Briggs Hill Rd. Closing the west end for the entire year would have a significant impact on daily life.
At very least, more signs regarding “no parking on traveled roadway, cars will be ticketed” along lincoln road/Bartlett
I think it would be great if there was a way to slow traffic down in this area of study, and through all of the 116 to downtown bristol for that matter. The greatest source of conflict in these areas is the speed of the vehicles traveling the corridor. If the cars can be slowed down many of the conflicts would be reduced. Regarding the parking along Lincoln Rd is that by making 'improvements' to the existing parking is that it will simply attract more people to the destination. If the parking is a bit rough it might help to keep the overall usage down...or at least not increase the appeal.
designed that bridge have nothing to do with this current design project... unless they’re paying to fix their egregious design flaw. Please, no stop-light. A roundabout maybe, but please no traffic light. There is room to make a roundabout and alleviate some of the briggs hill sight-line issues while controlling the flow of traffic on 116.
Lived here my lifetime. It’s not a problem. No change to ANYTHING.
It appears that traffic in this area is not high; expensive solutions would be disproportionate. Under no circumstances should any "no parking" signs be placed in this popular attraction: they would have no effect other than to give Bristol's cops another excuse to write tickets.

Additional comments regarding the project in general and/or the alternatives
If you move the Lincoln road it would open up area for parking It is expensive but at least it would take care of all the issues.
Re: Parking on Lincoln Rd enforcement increased and signage to warn pedestrians to stay out of the road way are imperative to the ongoing danger posed by overzealous bathers.
Added parking spaces bring more people to Bartletts than what it can handle plus safety issues with people walking up the road to go swimming.
People need to know how to drive and be fully aware of their surroundings. As well as obey all safe driving rules.
To waste your money and time on parking for out of staters and to realign a road because people don't know how to drive is ridiculous!
There is a stop sign on Lincoln Rd at Briggs hill. Line off hash marks on Lincoln Rd so cars don't block intersection. Enforce violations. The local cops are suppose to do traffic enforcement that the sheriffs use to do years ago. If they can't or don't maybe it's time to go back to the sheriffs. Use salt in the winter in the hill. Like Basin St. which is actually a lot more of a danger issue. Isn't 116 a state road. Shouldn't the state pick up cost of fix intersection. They are the ones that put up the bridge and the railing that is causing the problem of sign distance. De we really need a paved parking lot for the falls. Really. Just make a better gravel parking lot. Use the grader that doesn't get used as much as it should. Put up guard rails along the falls to prevent parking just off the road on Lincoln Rd. Again parking enforcement. Let not just start throwing money at it. Enforcement doesn't mean tickets. It can be education of drivers.
Additional signage seems to do little to curtail traffic problems in this area so signage just becomes visual clutter. The best option seems to be a non-option i.e. fixing the railings on the bridge...this should be done at NO charge since VTrans are the ones that messed it up in the first place. This is survey needs to be given to the people of Lincoln as well. The impact on the residents of Lincoln is greater than on the majority of Bristol folks. Please don't close Briggs hill - it becomes a sensible detour for the River Road as it was during Irene. Thanks!
Waste of time and money. This is rural Vt not NY City. Drivers need to slow down pay attention and mot be morons! Many other things to spend money on then this area.
Forget the alignment of the road. It was the new bridge that made a blind spot. If they replace the end curve with a more appropriate curve that allows a better view, it would be considerably less dangerous. I am grateful but surprised no fatal accidents have occurred. Thank you for taking this concern up! As far as parking,there needs to be a definitive rule that is understandable to out of town visitors. It is danger and unfair to Lincoln
There used to be a mirror on 116 so one could actually see the traffic approaching from Bristol. Now you can't and it's dangerous to make a Lufthansa turn coming from Lincoln.
tell the whiners in Lincoln to stay home or find another way out.
I grew up in Lincoln and my parents still live there. While the pre-1999 bridge was narrow and far from perfect, the replacement gave zero consideration to the Lincoln Road. Now that we are "stuck" with the current bridge, the only real solution is a realignment of Lincoln Road and/or a traffic light. Everything else is just a band-aid. As for parking along Lincoln Road, the advertisement of Bartlett's Falls on social media, etc has caused a HUGE influx of out of town folks to park along the roadway. Even when they are off the pavement, the dangers posed by car doors, small children, etc are significant. A designated parking area should be established and all other parking banned. And don't forget circle current and the other pull offs further along the road. Many of these are also problematic.
Ask the morons who designed a curved bridge at an intersection for a discount on the work needed to implement signaling.
If state / federal grants reduced the cost of the more expensive projects (signalization and realignment), it would increase my support for them.