

Rutland City  
Killington Avenue Sidewalk Extension  
Scoping Study

# Final Report



*Submitted by:*

**Broadreach Planning & Design**

*In conjunction with*

**Lamoureux & Dickinson Consulting Engineers**

**Heritage Landscapes LLC**

**University of Vermont Consulting Archaeology Program**

February 26, 2015



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## **I. INTRODUCTION**

### **A. OVERVIEW**

This study examined the best routing for additional sidewalks on at least one side of Killington Avenue between Butterfly Avenue and Stratton Road. **Figure 1** shows the location of the Study Area around Killington Avenue in Rutland City that is the focus of this study.

This report is the product of the Steering Committee and the BRPD Team's work. It presents the recommendations of the Steering Committee and describes the process used to develop them. After this introduction, the report continues with the recommendations. Following the recommendations, the report continues with an implementation section that includes phasing recommendations, initial estimates of potential construction costs and implementation suggestions.

The report is formatted for double-sided printing; blank pages are intentional.

At the start of the project, the City organized a Steering Committee of local elected officials, citizens, and City and regional planning commission staff to help direct the project. After circulating a Request for Proposals, the City selected a consulting team consisting of Broadreach Planning & Design, Lamoureux & Dickinson, Heritage Landscapes LLC and the University of Vermont Consulting Archeology Program (the BRPD Team) to assist the Steering Committee with the project.

### **B. PURPOSE AND NEED**

The purpose of the extension of sidewalks on Killington Avenue is to provide better pedestrian connections to the existing City sidewalk system for the residents of Killington Avenue and the rest of the City, in order to provide better mobility for walkers of all ages and abilities.

Needs for the improvements include:

- The lack of sidewalks for at least a third of Killington Avenue;
- The existing bus service on Killington Avenue that lack adequate walking facilities to all of the places where the bus can stop;
- The use of Killington Avenue as a major residential collector road for motor vehicle traffic;
- The presence of sidewalks at either end of the section of Killington Avenue without sidewalks;
- Frequent pedestrian activity as evidenced through dirt paths created along portions of Killington Avenue that do not have sidewalks;

- The designation of Killington Avenue as a bicycle route that increases the potential for bicycle/pedestrian conflicts because of the lack of complete sidewalks; and
- The high rate of obesity in Rutland, as recorded by the Vermont Department of Health that is attributed, in part, to the difficulty of incorporating regular physical activity into resident's daily lives because of the lack of supporting infrastructure.

### C. PROJECT DEVELOPMENT PROCESS

After an initial meeting with the Steering Committee, the BRPD Team began work on Task B of their scope of work - the analysis of existing conditions in the Study Area. At the end of the work on this Task, the BRPD Team produced an *Existing Conditions* summary describing in detail the existing conditions in the Study Area. **Appendix A** is a copy of the final *Existing Conditions* summary; the main body of this final report incorporates portions of the summary. Before moving to the next Task, the BRPD Team assisted with a public work session on June 2, 2014 at the Christ the King School gymnasium, two blocks from the Study Area to review the *Existing Conditions* summary and get further input on the issues and suggestions for possible solutions. It was well attended by local residents, who were very supportive of the project.

After the first public work session, the Steering Committee developed a set of alternative alignments for the sidewalk extension during a team work session with the BRPD Team. The Steering Committee decided that the sidewalk should be continuous along at least one side of the street from S. Main Street to Stratton Road, so that users would not need to cross the road to be able to use the sidewalk. As part of the subsequent analysis after the work session, the BRPD Team reviewed the potential impacts, benefits and cost ranges for the various alternative and eliminated many of them. They summarized the numerous alternatives that they considered and analyzed in the *Alternatives* summary. **Appendix B** is a copy of the Alternatives summary. After further reviewing and refining the alternatives with the Steering Committee, the BRPD Team assisted with an Alternatives public work session hosted by the Town on July 15, 2014 to review the alternatives and begin the selection of a preferred alignment.

At the public work session, the attendees came to agreement on a preferred alignment and the Steering Committee concurred. The BRPD then assembled a draft Final Report for final public review, scheduled for September 4, 2014. **Appendix C** includes notes from the three public work sessions.

### D. EXISTING CONDITIONS

The sidewalks on the north side of Killington Avenue in Rutland City extend east from S. Main Street to Butterfly Avenue, with a small, old section of sidewalk on the

east side of Butterfly Avenue. The north side sidewalk between East Street and Butterfly Avenue was recently replaced or newly installed. A sidewalk also extends east from S. Main Street on the south side of Killington Avenue to just west of Lafayette Street. The City recently removed an older, isolated section of sidewalk on the south side of Killington Avenue between Lafayette Street and Butterfly Avenue. There are no sidewalks east of Butterfly Avenue on either side of Killington Avenue, other than the short, old section. **Figure 2** shows the relevant aspects of the existing conditions along Killington Avenue.

Killington Avenue is a residential road approximately 22 feet wide, widening to 23 feet in several locations. The City recently installed curbs along most of the road between East Street and Stratton Road. They are completing the work with new curbs along the street just west of the Moon Brook crossing. The current information that the BRPD Team has shows the Killington Street right-of-way at three rods or approximately 49.5 feet wide.

Moon Brook flows from the north to the south under Killington Avenue just to the west of the intersection with Ronaldo Ct. It passes under Killington Avenue via a six-foot diameter concrete bridge. **Illustration 1** shows the north side of the bridge. The State of Vermont has identified Moon Brook as an impaired waterway. Therefore, the State requires a greater level of storm water runoff retention and treatment than would otherwise be required. Small fish currently live in Moon Brook.

**Illustration 1: Moon Brook flowing south under Killington Avenue**



There is a mapped 100-year flood plain along Moon Brook. The elevation of the floodplain is higher than Killington Avenue in the vicinity of the bridge. Based on storm events of recent history, including Tropical Storm Irene, the capacity of the bridge opening under Killington Avenue does not appear to be an issue. Local officials and residents believe that the floodplain, as recorded by the Federal

Emergency Management Agency, is too high, as expressed in the first two public work sessions for this project.

Utility poles line the north side of Killington Avenue east of Butterfly Avenue, mostly set about four feet back from the front of the curb.

Buried water lines lie on the north side of Killington Avenue. West of Ronaldo Court, the lines are buried approximately at the edge of the pavement. East of Ronaldo Court, the water lines are buried under the outer edges of the roadway itself. There are several water valves visible between the road and the edge of the right-of-way.

Several short storm drainage lines lie under Killington Avenue at various locations within the Study Area. **Figures A-5 and A-6 in Appendix A** show the location of the different storm drainage lines, as well as the separate sewer lines in the Killington ROW.

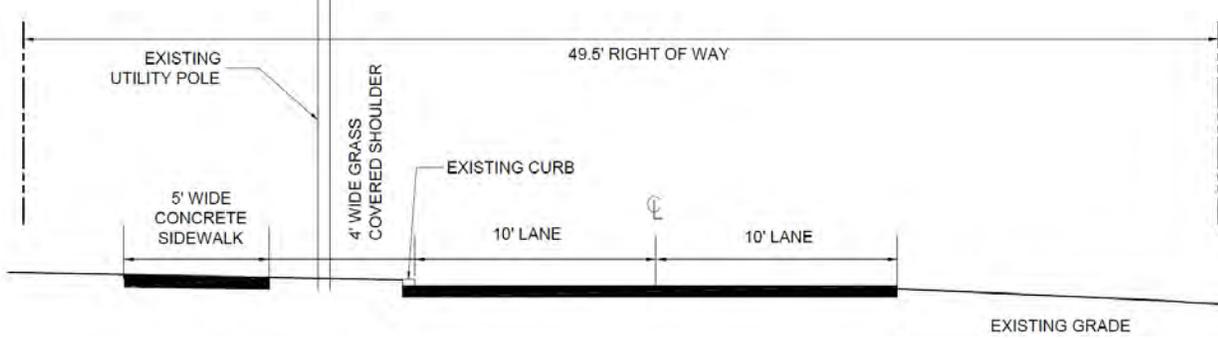
There are several historic homes along Killington Avenue located back from the edge of the pavement. There is also an old stone mounting stone on the north side of Killington Avenue just west of Brookview Lane; a small portion of an iron fence along the edge of the Killington Avenue right-of-way is just east of Brookview Lane. **Attachment A in Appendix A** includes more information on historic resources (**Attachment B in Appendix A** includes information on archeological resources in the Study Area).

## II. RECOMMENDATIONS

### A. RECOMMENDED ALIGNMENT

After the start of this Study, the City added a new sidewalk on the north side of Killington Avenue east of Lafayette Street, extending as far east as Butterfly Avenue. The preferred alignment would place a five-foot-wide sidewalk approximately four feet from the new street curb on the north side of the Killington Avenue right-of-way extending east from Butterfly Avenue to Stratton Road. The small section of existing sidewalk east of Butterfly Avenue would be replaced. **Figure 3** graphically shows the location of the preferred alignment. This alignment would leave the utility poles and mailboxes in their current location. **Illustration 2** shows a typical cross section for the preferred alignment. **Illustration 3** shows a simulation of what the sidewalk might look like at its western end. (Note, the photo in the simulation was taken before the recent installation of curbs along this portion of Killington Avenue.)

**Illustration 2: Typical Cross Section looking East**



**Illustration 3: Alternative 1 Photo Simulation Looking East**



The crossing of Moon Brook would be done via an at-grade boardwalk. The crossing would have a six-foot clearance between the railings. It would keep the sidewalk at the same elevation as the road. **Illustration 4** shows a cross section through the crossing, looking east. **Illustration 5** shows a visualization of how the crossing might look, looking west. It shows a wooden surface, but the surface could also be asphalt. **Illustration 6** shows a profile of the proposed crossing.

Illustration 4: Cross Section through Moon Brook Crossing Looking West

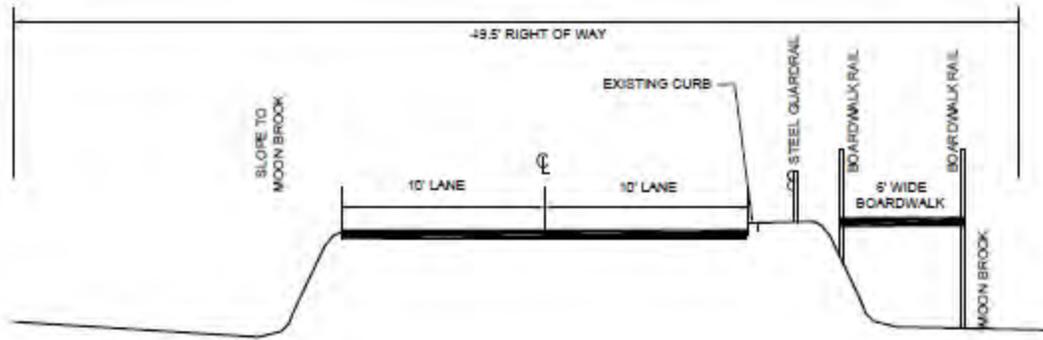
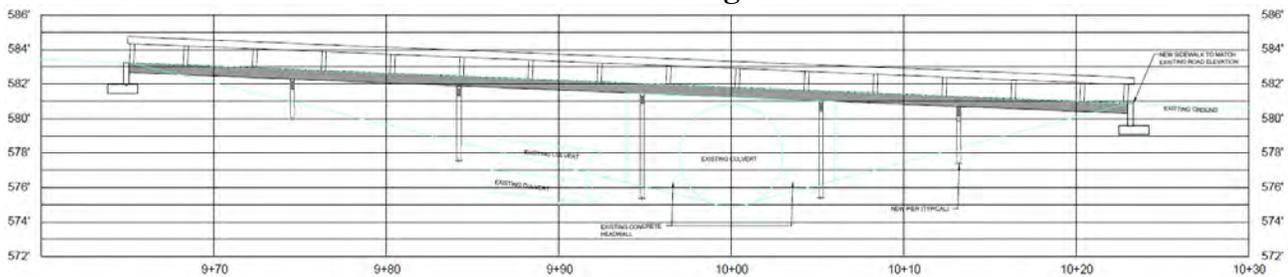


Illustration 5: Moon Brook Crossing Visualization Looking East



Illustration 6: Profile of Moon Brook Crossing



The project would also include crosswalk markings on Butterfly Avenue, Ronaldo Court, Brookview Lane and Meadowbrook Road to facilitate pedestrian crossings of these road. These crosswalks are considered appropriate because the Killington Avenue sidewalk provides a direct walking link to the Christ the King Elementary School at the west end of Killington Avenue. It would also include a new crosswalk on Killington Avenue as it meets Stratton Road, as part of the existing sidewalk along the west side of Stratton Road. There would also be truncated domes in the sidewalk at either end of the new sidewalks, including the one on Killington Road for the Stratton Road sidewalk.

## **B. ISSUES**

There are several areas where special conditions would need to be addressed. Starting at the west end and working east, the report briefly describes them in this portion of the report. **Figure 4** shows the location of these various issues; the numbers on the notes correspond to the numbers below.

1. The fire hydrant on the east side of Butterfly Avenue at the corner with Killington Avenue would be able to stay in its current location.
2. The garden and small brick edging on the west side of the first driveway east of Butterfly Avenue would need to be shortened by approximately three feet to make way for the sidewalk. The fence seen on the left in **Illustration 7**, which shows a view on the east side of the first driveway, is approximately six feet away from the utility pole, so there would be enough room for the sidewalk to go between the pole and the fence without the need to move either. The outer edges of the gardens on the outside of the fence would need to be removed to allow room for the sidewalk.
3. The drainage inlet approximately 175 feet west of Moon Brook might need to be revised as part of the preferred alignment. A new drain might be added as part of the installation of the last segment of new curbs on Killington Avenue. If it is added, it would then lie along the curb and no further work would be needed. If it is placed on the outside edge of the curb or is not replaced, the sidewalk could pass over the existing paved drainage way, keeping an inlet open on the north side of the sidewalk. The specific treatment of the inlet could be determined during initial design work on the sidewalk. The sidewalk construction would also need to take the location of the storm drains under the road into consideration to make sure they are protected and remain in operating condition.

**Illustration 7: Sidewalk Simulation**



4. The Boardwalk would not place additional fill in the floodplain.
5. The boardwalk would shift very slightly to the north to align with the short section of sidewalk at the eastern side, which would be north of the utility pole and fire hydrant on the western corner of Ronaldo Court. **Illustration 8** shows this area with an approximation of the sidewalk and boardwalk alignment. The sidewalk would meet the road pavement after the end of the curb. The street sign would need to be moved.

**Illustration 8: The Northwest Corner of Killington Avenue and Ronaldo Court Looking West**



6. The first utility pole east of Ronaldo Court is located about seven feet behind the new curbs on Killington Avenue, farther away from the curb than the rest of the utility poles along the street. Placing the sidewalk behind this pole would locate it at the outer edges of the right-of-way and require the removal of shrubs. Additionally, to avoid disturbing an existing stairway to the front of the first house east of Ronaldo Court, the sidewalk would need to have a significant curve in it. Consequently, the sidewalk would be routed south of this particular pole, placing the sidewalk about two feet away from the curb in this location.
7. The construction of the sidewalk and boardwalk west of Ronaldo Court would need to include protection for the buried water line and the potential for encountering water valves.
8. East of the utility pole, the sidewalk would shift away from the road to resume its typical location about five feet from the curb. The grade rises up from the new curb on Killington Avenue along the entire frontage of the second house east of Ronaldo Court, 133 Killington Avenue. The two driveways serving this house are cut into that rise so the grade also slopes up from the driveways. **Illustration 9 on Page 10** shows the existing conditions East of the second driveway. The sidewalk would need to cut sideways into the slopes up from the street as well as directly into the slopes up from the driveway to spread out the raise in grade. The goal is to keep the sidewalk close to a five percent grade. (Because the sidewalk is being built adjacent to an existing road with a slope greater than eight percent in this location, the sidewalk can exceed the five and even the eight percent typical maximum.) This would be accomplished on the western side of the first driveway and between the first and second driveway. On the eastern side of the second driveway, the grade away from the driveway rises at approximately 33 percent. To meet an eight percent slope, the sidewalk would need to have a rise spread out over about 50 feet, which would extend it far into the front yard of the next house. A greater slope would allow the cut in front of the adjacent house to be shorter. The exact length of the rise can be determined when there is more accurate grade information that should be gathered during the development of construction drawings.
9. Two recently planted crab apple trees on the third property east of Ronaldo Court would need to be relocated or replaced outside of the right-of-way to allow placement of the sidewalk back in its typical location. Also on this property is the mounting stone that appears to be historic. The sidewalk should be able to be installed to the north of the stone's existing location, putting it in the green space between the sidewalk and the curb.
10. On the east side of Brookview Lane, there is enough room between the utility pole and the sections of old iron fence located along the edge of the right-of-way to allow the placement of the sidewalk without disturbing the fence sections.

**Illustration 9: Side Slopes on Killington Avenue**



11. On the parcel west of Meadowbrook Road, the grade drops away from the new curb. In this location, the sidewalk would be placed slightly lower than the curb using a combination of cutting and filling to minimize the disturbances outside of the right-of-way on the adjacent property.
12. Most of the existing trees along the right-of-way between Meadowbrook Road and Stratton Road would need to be trimmed so that their branches don't hit walkers on the sidewalk. The trees themselves should not need to be moved. They are far enough away from the sidewalk that the installation of the sidewalk should not disturb them, but the construction drawings should note that the contractor should take special care to cleanly cut tree roots that are encountered during the installation of the sidewalk.
13. A storm drain inlet close to the corner of Killington Avenue and Stratton Road will need to be relocated, or the sidewalk slightly rerouted to avoid it. The inlet lies within the proposed alignment of the sidewalk. Because the will slightly increase the amount of impervious surface in the Study Area and watershed for Moon Brook, an impaired waterway, it might also provide an opportunity to increase the treatment of storm water prior to discharge.
14. During heavy rainstorms, storm water runoff from the road enters the driveways on the north side of Killington Avenue West of Moon Brook. This issue might be addressed by the recent installation of curbs and the repaving of Killington Avenue. If it is not, the sidewalk could be raised one to three inches higher than

the road as it crosses these driveways to keep the storm water runoff in the street running along the existing curb and out of the driveways.

### **C. OTHER IMPROVEMENTS**

As part of the sidewalk extension, the City should consider adding street trees. Street trees added within the green space would, as they grow, begin to enclose the road. This has been shown to help slow motorists and residents have noted that excessive speed of drivers is one of the reasons for needing the sidewalks along the road. The trees would help to address the larger perceived problem of speeding vehicles. **Figures 3 and 4** shows potential locations for additional street trees along Killington Avenue. Trees planted on the north side under the utility wires should mature at between 15 and 20 feet to avoid conflicts with the overhead wires.

### **D. RATIONALE**

The preferred alignment on the north side of Killington Avenue meets the purpose and need for this project.

Since the City has already upgraded much of the sidewalk on the north side of Killington Avenue, including a new portion of sidewalk between LaFayette Avenue to Butterfly Avenue, extending the sidewalk on the north side of Killington Avenue would include less new sidewalk than extending it on the south side. This makes the north side alignment less expensive than either of the south side alignments. The participants at the second public work session reviewing the alternatives cited this as a major consideration in their preference.

The north side alignment would also include less disturbance along the road, since there would be only two locations where any cutting and filling would be needed to create a level area for the sidewalk. The north side alignment would allow mailboxes on both sides of the street to remain in their current locations.

The at-grade crossing preference of Moon Brook would limit the slope in the sidewalk/boardwalk, which could be a problem in the winter if ice or snow accumulated on the sidewalk. The participants at the second public work session also thought the level crossing presented a cleaner image than the bridge at a lower elevation. The Moon Brook boardwalk crossing also eliminated the issue of filling in the floodplain associated with the culvert alternative.

The overall cost of the two different Moon Brook crossings, a boardwalk at \$65,000 and a bridge at \$70,000, were relatively close in their initial cost estimates. The City might opt to review this recommendation again, when more detailed grade and subsurface information is available. If the bridge, which is described in more detail in **Appendix B**, is subsequently determined to be a better option, it should be installed so that the overall look of the crossing is similar to that shown in **Illustration 5**, with the sidewalk level with the road.

### III. IMPLEMENTATION

#### A. PHASING

There are minimal possibilities for phasing the preferred sidewalk alignment along the north side of Killington Avenue. It may be possible to extend the existing sidewalk east from Butterfly Avenue to Ronaldo Court and include the installation of the Moon Brook Crossing as an initial phase. The second phase would extend the sidewalk further east to Stratton Road.

#### B. INITIAL ESTIMATE OF PROBABLE CONSTRUCTION COSTS

The BRPD Consulting Team has prepared an initial estimate of probable construction costs for the proposed sidewalk alignment and Moon Brook crossing. The overall cost of the entire project would be approximately \$245,000. **Table 1** provides basic cost information.

The BRPD Team based the initial estimate on the Illustrations and Figures contained in this report. The numbers should be considered as guides in how much funding might be needed to construct the preferred alignment. They are in 2014 dollars. The initial costs estimates are based on having the project completed by an independent contractor. The City might be able to realize savings by constructing the portions of the sidewalk or shared use path with its own road crews.

**Table 1: Initial Opinion of Probable Construction Costs**

Item	Quantity	Unit	Unit Cost	Total
Five-Foot Wide Concrete Sidewalk	1,250	LF	\$80	\$100,000
New Six-Foot Wide Boardwalk	350	SF	\$100	\$35,000
Cast-in-Place Concrete Abutment	2	EA	\$15,000	\$30,000
Rehab Catch Basin	2	EA	\$1,500.00	\$3,000
Street Trees	12	EA	\$300	\$3,600
New Painted Crosswalk	24	LF	\$7	\$168
			Sub Total	\$171,768
Engineering (12%)				\$20,612
Inspection ( 10%)				\$17,177
MPM (5%)				\$8,588
Contingency (15%)				\$25,765
			Total	\$243,911

### **C. PERMITS**

The project would require a floodway permit, digging in the right-of-way permit and a general right-of-way permit from the City. The project should not need a stream disturbance permit or a storm water permit due to the lack of disturbance to Moon Brook and the small scale of the overall project. However, due to the impaired nature of Moon Brook, special provisions for the slight increase in storm water might be needed. (If the box culvert is eventually substituted as the preferred Moon Brook crossing, it would require a stream disturbance permit from the State.)

### **D. TIMELINE**

The timeline for the construction of the Killington Avenue sidewalk extension should not be significantly different than that the Town just experienced with the replacement of the existing sidewalk and its extension from LaFayette Street to Butterfly Avenue. Once funding is secured, the design of the sidewalk could take from one to three months; obtaining necessary permits might add several more months to the process. Bidding would require at least another month but the actual construction work on the new sidewalk could be accomplished within one to two weeks.

### **E. FUNDING**

Funding for the preferred alignment, including the Moon Brook crossing might be able to be secured from a variety of sources. Below is a list of various funding sources that could be used to help with the implementation of the recommendations, including:

- Transportation Alternatives Program (TA Funds): TA funds can be used to increase bicycle and pedestrian mobility. These funds will cover a maximum of 80 percent of the project with the remaining portions most likely coming from the project sponsoring organization. TA funds are distributed in Vermont through a competitive grant program.
- Bicycle and Pedestrian Program: These State funds cover specific bicycle and pedestrian improvement projects and are provided via a competitive grant program.
- Bonds: The City could opt to use bonds to generate funds to undertake one or all of the phases at once.
- City Sidewalk Fund: The City of Rutland includes a sidewalk fund in its yearly budget of approximately \$70,000 that is to be used to install or improve sidewalks in the City.

A new online tool developed by a partnership between the Alliance for Biking and Walking and the League of American Bicyclists helps find potential federal funding sources for alternative transportation projects. The site can be reached at <http://bit.ly/11xhEtr>.

Other funding sources may be available for the construction of the path, including:

- Potential health grants promoting healthy living;
- The Robert Wood Johnson Foundation (see [http://www.rwjf.org/content/rwjf/en/grants/search.html?k=walking&d=&l=](http://www.rwjf.org/content/rwjf/en/grants/search.html?k=walking&d=&l=;));
- MCI/Worldcom Royalty Donation Program (For this and several subsequent ideas, see: <http://www.americantrails.org/resources/funding/TipsFund.html>); and
- Moon Brook crossing sponsorships (and possibly naming rights);

Even other potential sources exist. Some additional resources that may provide insight into additional funds include:

<http://www.americantrails.org/resources/funding/Funding.html>,  
<http://rlch.org/>, and  
<http://atfiles.org/files/pdf/bicentennialsourcebook.pdf>.

## **F. PROCEDURES**

As a first step towards implementing the recommendations of this study, the Board of Aldermen should accept and endorse the report. It will be difficult to proceed with securing other State or Federal grants without this endorsement. Once the report is endorsed by the City, the Department of Public Works could undertake these steps:

- Consider applying for funding opportunities through grants, bonding or other sources the Town considers appropriate.
- Keep the City residents, especially those along Killington Avenue, informed on the process of implementing the recommendations.
- Hire a consultant if needed to assist with the design of the sidewalk, looking in particular at the relocation of drain inlets and the types of foundations or abutments needed for the Moon Brook crossing.
- Move forward as possible with construction.

## **G. MAINTENANCE**

The City will need to add the new length of sidewalk to the existing sidewalks that it already maintains, including snow plowing in the winter. Assuming that the new sidewalk will be concrete, it will require little maintenance for the next 25 years or so.

The only exception might be if the base material fails and one section of sidewalk rises or sinks, creating a difference in elevation greater than one quarter of an inch.

A wise general rule is to budget approximately five percent of the total construction cost as a yearly maintenance cost.

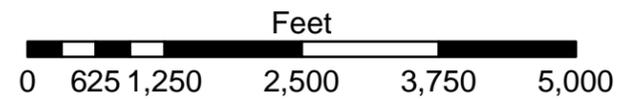
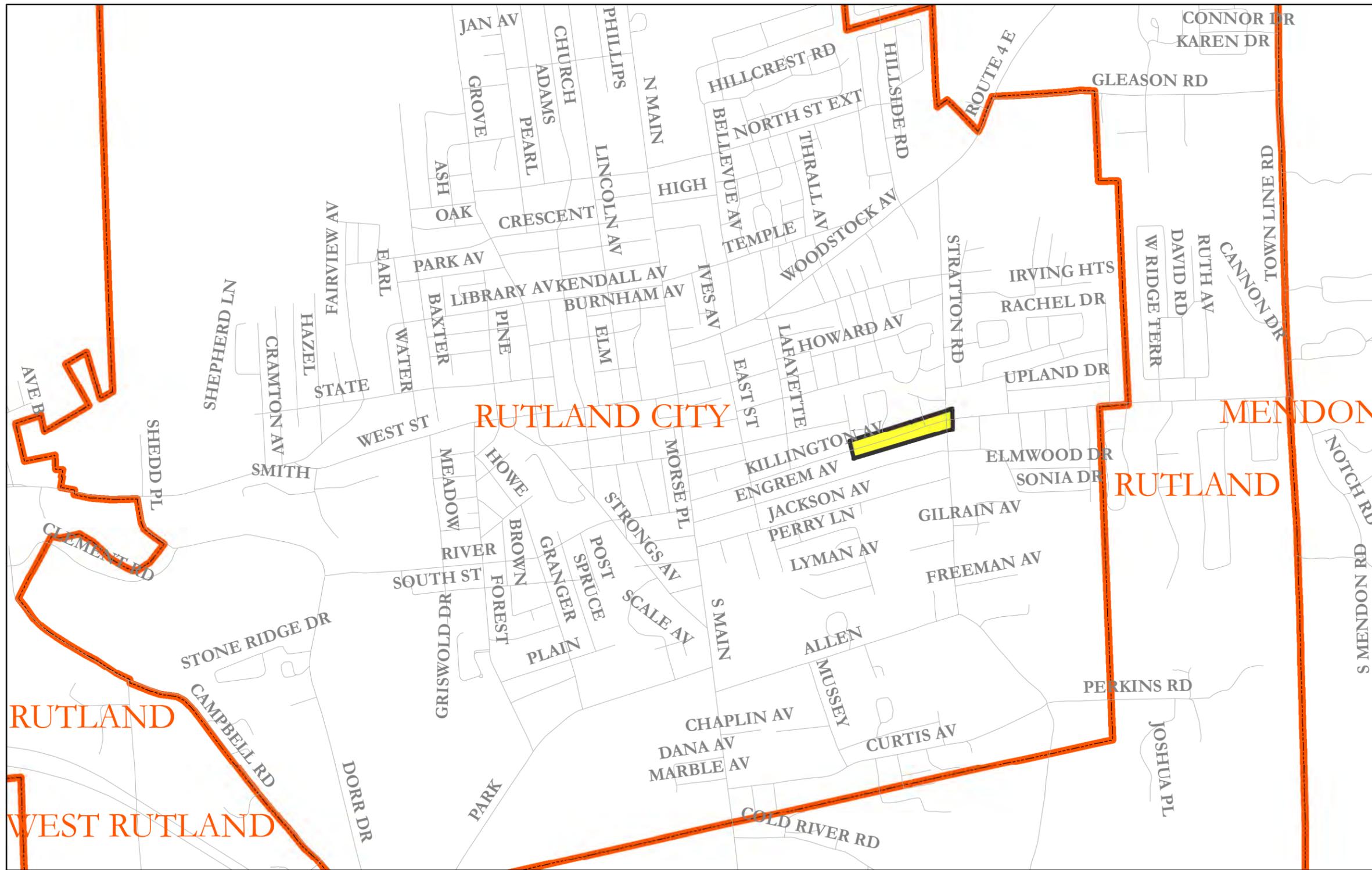


# Killington Avenue Sidewalk Extension Scoping Study

## Rutland City, Vermont

**Legend**

 Study Area



**BROADREACH**  
Planning & Design

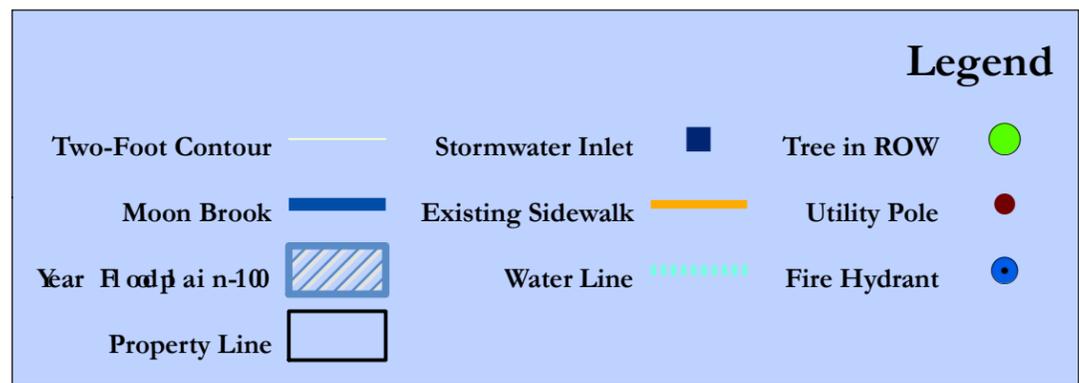



**Heritage Landscapes**  
Preservation Landscape Architects & Planners

**Study Area**

August 8, 2014

Figure 1



# Killington Avenue Sidewalk Extension

**BROADREACH**  
Planning & Design



**Heritage Landscapes**  
Preservation Landscape Architects & Planners

## Scoping Study

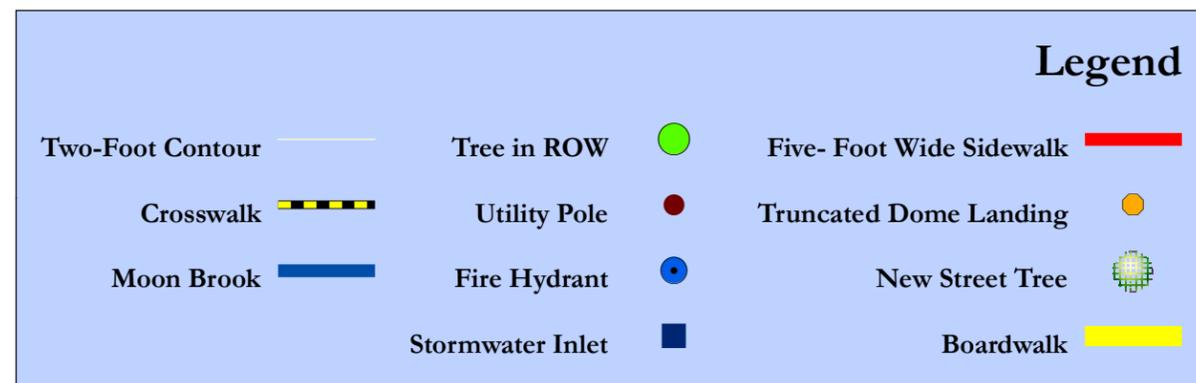
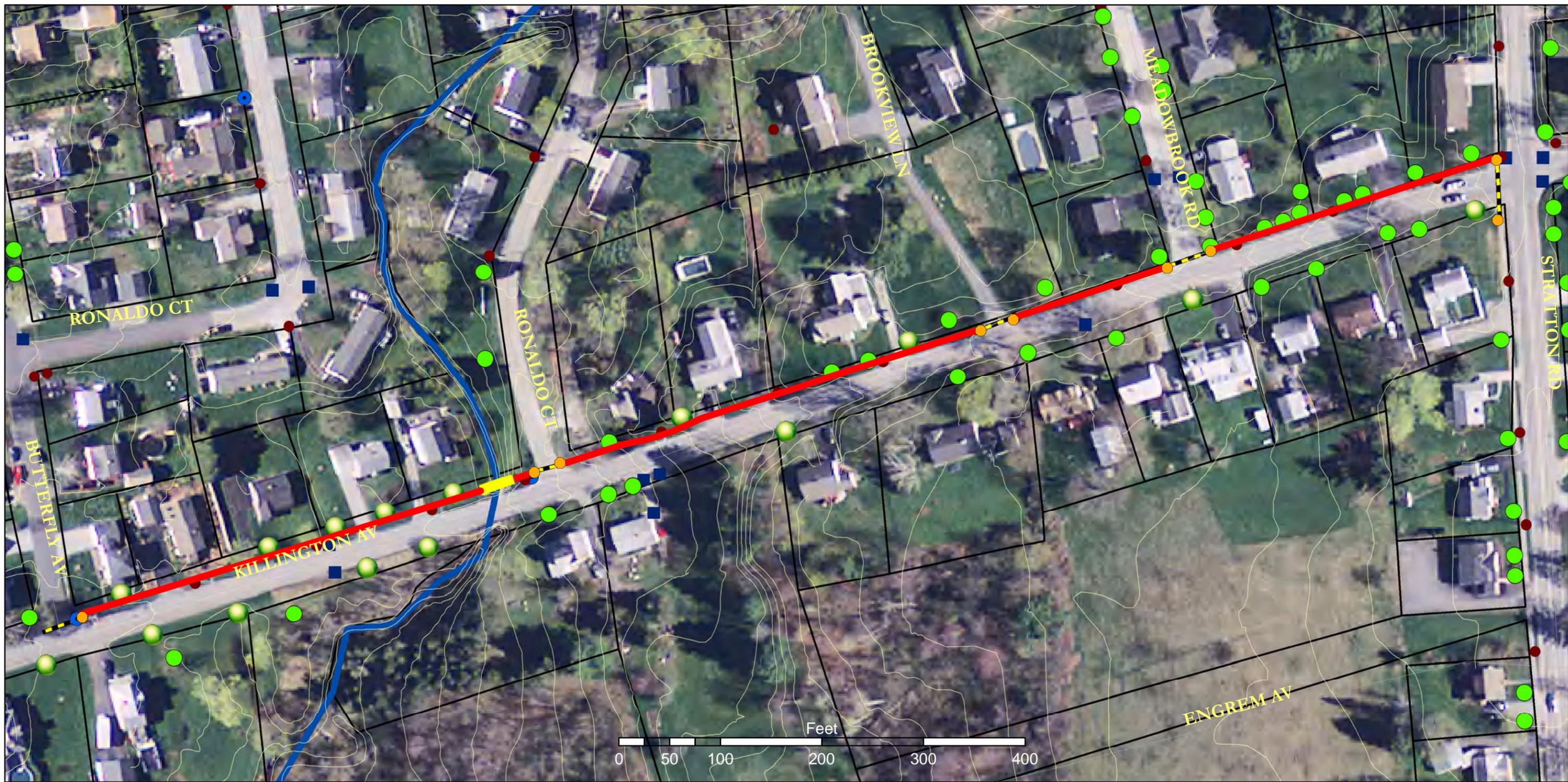
Rutland City, Vermont

Existing

Conditions

August 18, 2014

Figure 2



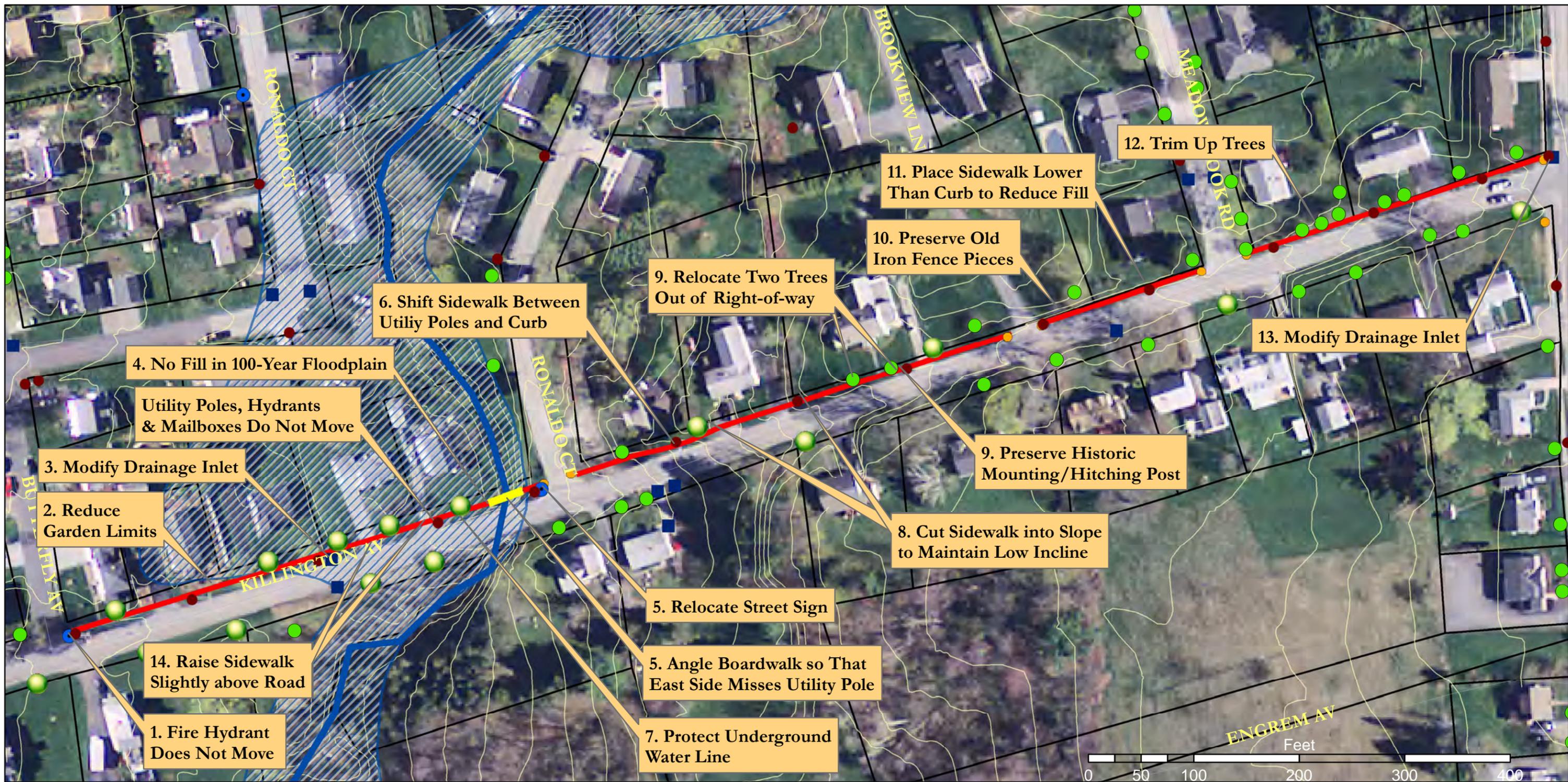
**Killington Avenue Sidewalk Extension**  
**Scoping Study**  
 Rutland City, Vermont  
**Preferred Alignment**  
 August 18, 2014

**BROADREACH**  
 Planning & Design

**LD**

**Heritage Landscapes**  
 Preservation Landscape Architects & Planners

Figure 3



Numbers on notes relate to corresponding numbers in section II.B of the text.

Moon Brook		Tree in ROW		Five-Foot Wide Concrete Sidewalk	
Year Floodplain-100		Fire Hydrant		Truncated Dome Landing	
Two-Foot Contour		Utility Pole		Boardwalk	
Property Line		Stormwater Inlet		New Street Tree	

## Killington Avenue Sidewalk Extension Scoping Study

Rutland City, Vermont  
**Issues**

Heritage Landscapes  
Preservation Landscape Architects & Planners

December 28, 2014

Figure 4

**Appendix A**  
**EXISTING CONDITIONS REPORT**



**Rutland City**  
**Killington Avenue Sidewalk Extension**  
**Scoping Study**  
**Existing Conditions**



*Submitted by:*

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**December 28, 2014**



## A. INTRODUCTION

### 1. OVERVIEW

This study is examining the most appropriate ways to create a complete sidewalk on at least one side of Killington Avenue between S. Main Street and Stratton Road. **Figure A-1** shows the location of Killington Avenue in the Rutland City and the Study Area that is the focus of this study.

The current sidewalks on Killington Avenue in Rutland City extend east from S. Main Street to just west of Lafayette Street. It resumes one lot east of Lafayette Street on the north side of Killington Avenue and stops just west of Butterfly Avenue. There is also a shorter, isolated section of sidewalk on the south side of Killington Avenue between Lafayette Street and Butterfly Avenue. There are no sidewalks east of Butterfly Avenue on either side of Killington Avenue.

The City organized a Steering Committee of local elected officials, citizens, and City and regional planning commission staff. After circulating a Request for Proposals, the City selected a consulting team consisting of Broadreach Planning & Design, Lamoureux & Dickinson, Heritage Landscapes LLC and the University of Vermont Consulting Archeology Program (the BRPD Team) to assist them with the project.

This summary report is the first product of the work of the Steering Committee and the BRPD Team. The summary describes the existing conditions in the Study Area. The BRPD Team formatted the report for double-sided printing; blank pages are intentional.

### 2. PURPOSE AND NEED

The purpose of the extension of sidewalks on Killington Avenue is to provide better pedestrian connections to the existing City sidewalk system for the residents of Killington Avenue.

Needs for the improvements include:

- The lack of sidewalks for at least a third of Killington Avenue;
- The presence of sidewalk to the east and west of those portions of Killington Avenue without sidewalks;
- Frequent pedestrian activity as evidenced through dirt paths created along portions of Killington Avenue that do not have sidewalks; and
- The high rate of childhood obesity in Rutland caused, in part, by the difficulty of incorporating regular physical activity into daily lives due to the lack of supporting facilities.

### 3. PROJECTED USERS

The City would like to improve walking conditions on Killington Avenue for people of all ages and abilities. People vary significantly in their walking skills, experience, and willingness to walk different distances. Strong determining factors for walkers are the time and mobility required to reach their destinations. Time and mobility constraints also dictate their usable geographic space; few walkers will venture more than one mile from point to point; most will only undertake trips shorter than one half mile, unless the trip is recreational or there is some visible destination or landmark.

There are three basic types of walkers:

- Active walkers,
- Basic walkers, and
- Restricted walkers.

*Active walkers* use the road system regularly for transportation, as well as for fitness. They know and generally follow the rules of the road. *Basic walkers* include the majority of older children and healthy adult walkers. *Restricted walkers* are those whose speed and mobility are extremely limited. In all cases, when walking on roads, people should walk FACING traffic on the left side of the road in the direction of travel for safety and visibility reasons, in addition to the fact that it is Vermont State Law.

### 4. ORIGINS, DESTINATIONS & TRAVEL PATTERNS

The numerous residences along Killington Avenue in the Study Area are considered the primary origins and destinations for walking trips along Killington Avenue. Additionally, the business, churches, schools, services and other residences on S. Main Street and further west as well as schools, businesses and other residences on Stratton Road.

The existing sidewalks on Stratton Road to the east and other streets to the north, west and south are the routes that walkers would typically use to reach the other destinations around the Study Area.

### B. LAND USE

With the exception of the Church on the south side of Killington Avenue just west of the Butterfly Avenue intersection, the land use along Killington Avenue in the Study Area is residential. There is a deli, a church and a school further west on Killington Avenue outside of the Study Area.

The land use surrounding the Study Area is also primarily residential with a few businesses, as well as two schools located on Stratton Road to the east. The Rutland Regional Medical Center with its associated medical offices nearby is located several blocks further south on Stratton Road

### **C. TRANSPORTATION FACILITIES**

Killington Avenue has recently installed curbs along the eastern portion of the road. (More to come early next week.)

### **D. NATURAL RESOURCES**

#### **2. WATERCOURSES**

Moon Brook flows from the north to the south under Killington Avenue just to the west of the intersection with Ronaldo Ct. **Figures A-2** and **A-4** show the route of Moon Brooke. It passes under Killington Avenue via a small concrete arch bridge. **Illustration 1** shows the north side of the bridge and **Illustration 2** shows the south side.

**Illustration 1: Moon Brook flowing south under Killington Avenue as seen from the north**



**Illustration 2: Moon Brook flowing south under Killington Avenue as seen from the south with storm drain outfalls on the right**



There are no other watercourses in the Study Area.

## 2. WETLANDS

There are no noticeable wetlands in the Study Area.

## 3. WATERBODIES

There is one small pond north of the Study Area further north on Moon Brook. It is located north of Piedmont Pond Road west of Stratton Road.

## 4. TOPOGRAPHY

The topography in the Study Area generally rises from the west to the east with a dip near Moon Brook. **Figures A-2, A-3** and **A-4** show the topography in the Study Area as shown by 2-foot contours. There land rises approximately six to ten feet on several lots on the south side of the road east of Ronaldo Court. **Illustration 3** shows the largest rise on the third lot east of Moon Brook.

**Illustration 3: the largest Land Rise on the South Side of Killington Avenue east of Moon Brook**



5. FLOODPLAINS

There is a mapped 100-year flood plain along Moon Brook. The elevation of the floodplain appears to be higher than Killington Avenue in the vicinity of the culvert under the road. **Figures A-2** and **A-4** show the limits of the Moon Brook 100-year flood plain.

6. FLORA & FAUNA

The State of Vermont has not identified natural areas of special importance within the Study Area. There are also no deer wintering areas or other important flora or fauna habitats within the Study Area, including rare, threatened or endangered species.

A small forested area lies south of Killington Avenue east of Moon Brook. It appears to be loosely connected to other small, forested areas up and down Moon Brook. The combination of trees and brook imply that there could be a small wildlife corridor along Moon Brook, although there is no documentation show the presence of a wildlife corridor. **Figures A-2** and **A-4** show the wooded areas along Moon Brook.

There are a number of trees within or close to the ROW that are large enough that construction near them would need to be done very carefully. **Figures A-2, A-3** and

A-4 show the location of most of the trees within or near the ROW. **Illustration 4** shows one such large tree located just outside of the ROW.

**Illustration 4: Large Silver Maple tree just outside of the Killington Avenue ROW on the left**



## E. UTILITIES

**Figures A-2, A-3 and A-4** shows the general location of the utilities in the Study Area.

Utility poles owned by Green Mountain Power run along the north side of most of Killington Avenue in the Study Area east of the intersection with Lafayette Street.

Water and sewer lines are located under the roadway for most of the Study Area. The sewer lines generally run in the center or along the southern side of the road. A larger sewer main runs north south approximately along the Moon Brook alignment. The water lines run along the north side of the road east of Butterfly Avenue and on the west side of the road west of Butterfly Avenue. Five fire hydrants linked to the water line are located along the side of the road within the Study Area.

There are storm drains along most of Killington Avenue in the Study Area. Storm inlets are located at the edge of the pavement. Some are located back from the pavement by several feet. These inlets either have a special drainway leading to them

or are disconnected from the roadway drainage. **Illustration 4** shows one of the special drainways along the road.

**Illustration 4: Paved drainage channel leading from Killington Avenue to a nearby storm inlet.**



## F. OTHER STRUCTURES

### 1. FENCES

There are several fences along the outer edges of the Killington Avenue ROW. All but one appear to be far enough away from the edge of the pavement to create no alignment issues for a potential sidewalk. The one fence that might force a sidewalk to be located close to the pavement or to be less than five feet wide, the typical width of new residential sidewalks. **Illustration 5** shows the potentially problematic fence. Another fence located at or close to the ROW can also be seen on the other side of the street.

**Illustration 5: Fence on the north side of Killington Avenue east of Lafayette Street**



## **G. CULTURAL RESOURCES**

### **1. HISTORIC RESOURCES**

The historic resources review noted two resources listed on the Vermont Register of Historic places - the Colonial Revival house at 1939 Killington Avenue and the Concrete Arch Bridge over Moon Brook. The listing for the house also notes a metal fence enclosing the property. Most of the fence is now gone, with just a remnant remaining along the edge of the Killington Avenue ROW north of Brookview Lane. There is also a stone in the front of the property within the ROW that appears to be an historic mounting stone. **Attachment A** includes more information on the Historic Resources within the Study Area.

### **2. ARCHEOLOGICAL RESOURCES**

The Archeological Resources Assessment showed that only some of the sloped areas along Moon Brook are sensitive for archeological resources in the Study Area. **Attachment B** includes as copy of the Archeological Resources Assessment Report.

### **3. OPEN SPACE AND PUBLIC LANDS**

There are no public open spaces located within the Study Area.

## H. PLANNING DOCUMENTS

### 1. MUNICIPAL PLANS

The Transportation chapter of the City of Rutland 2014 Master Plan supports the increase use of bicycling and walking as a means of transportation. A portion of the Master Plan states that, "An important advantage of locating in an urban area is the ability to move around on foot. The city strives to provide safe, attractive pedestrian access within and between neighborhoods."

### 2. STATE PLANS

The 2008 VTrans Pedestrian and Bicycle Policy Plan includes goals and objectives that directly support the extension of the Rutland Creek Path in increase non-motorized travel, including:

#### Goals

- Cultural Environment: Enhance the human scale and livability of Vermont's communities by improving opportunities for pedestrian and bicycle mobility and access in and between towns, downtowns, villages and rural landscapes.
- Health: Improve the health of Vermonters and reduce health care costs by making it easier, safer and more convenient for citizens to be more physically active by walking and bicycling on a regular basis.
- Transportation Choice: Enhance pedestrian and bicycle transportation options in Vermont so that citizens, regardless of location, socioeconomic status or health can choose a seamless, convenient and comfortable mode that meets their needs. Promote a transportation network, including roadways, shared use paths, rail trails, rails with trails, and accessible walker facilities, which allow pedestrians and bicyclists to reach their destinations throughout the State or to connect to other modes of travel.

#### Objectives

- Objective 8: Work with citizens, municipalities, regional planning organizations, and other State agencies to develop, plan, and implement pedestrian and bicycle plans, projects, and programs.
- Objective 12: Provide a seamless transportation network for pedestrians and bicyclists by improving linkages between walking, bicycling and other modes of transportation.

## H. ZONING

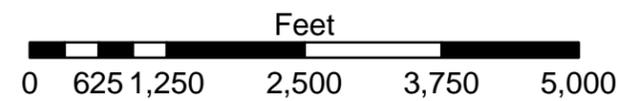
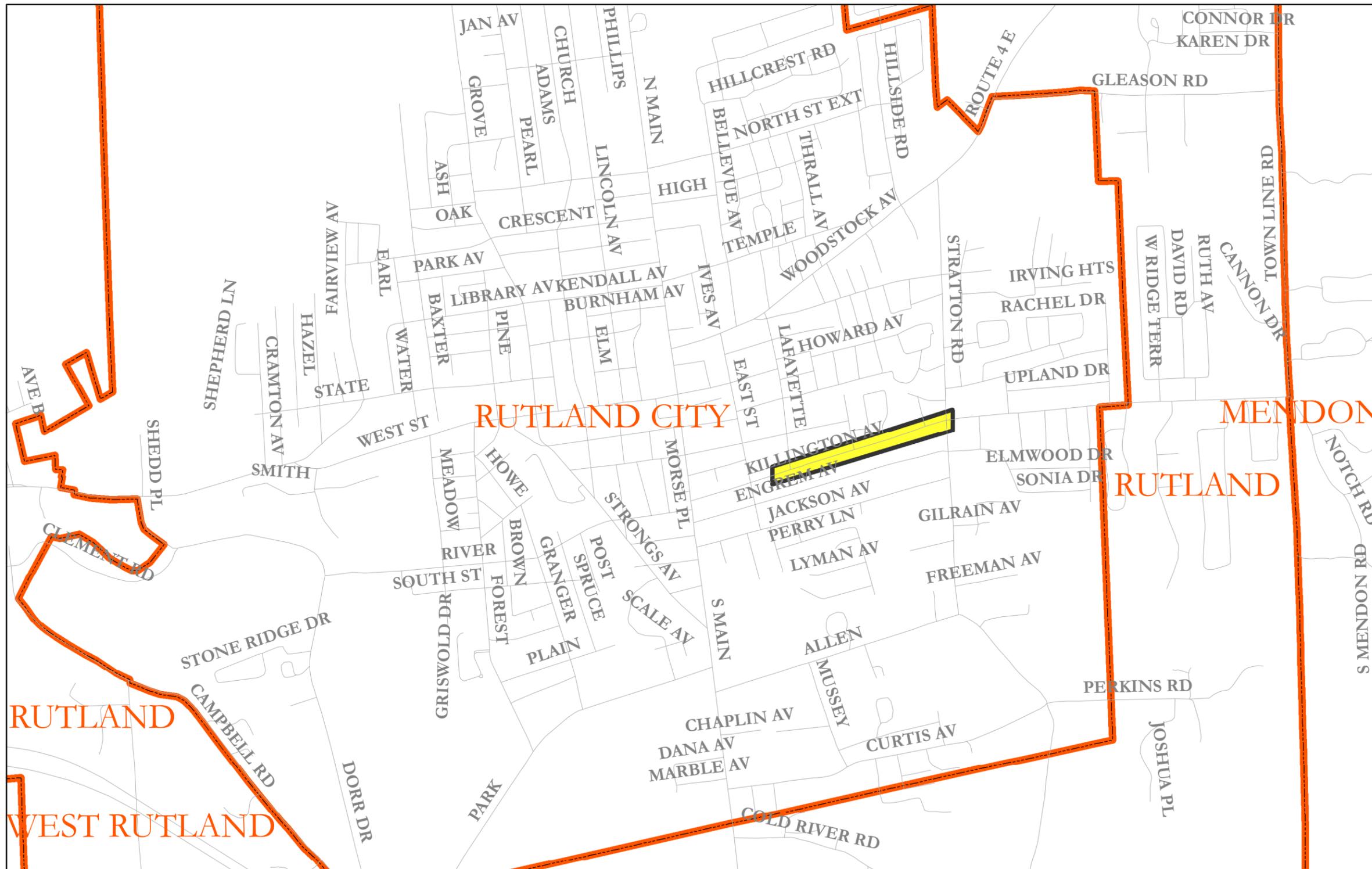
The Study area lies completely within Single Family Residential Zoning District.

# Killington Avenue Sidewalk Extension Scoping Study

Rutland City, Vermont

**Legend**

 Study Area



**BROADREACH**  
Planning & Design




**Heritage Landscapes**  
Preservation Landscape Architects & Planners



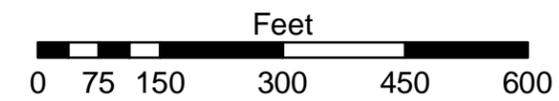
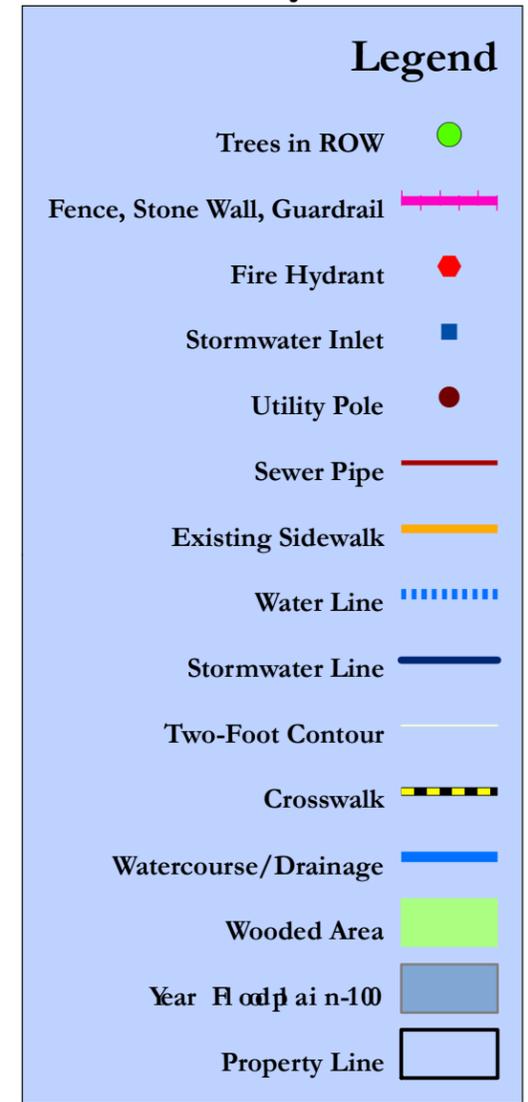
**Study  
Area**

May 16, 2014

Figure A-1

# Killington Avenue Sidewalk Extension Scoping Study

Rutland City, Vermont



**BROADREACH**  
Planning & Design



Heritage Landscapes  
Preservation Landscape Architects & Planners

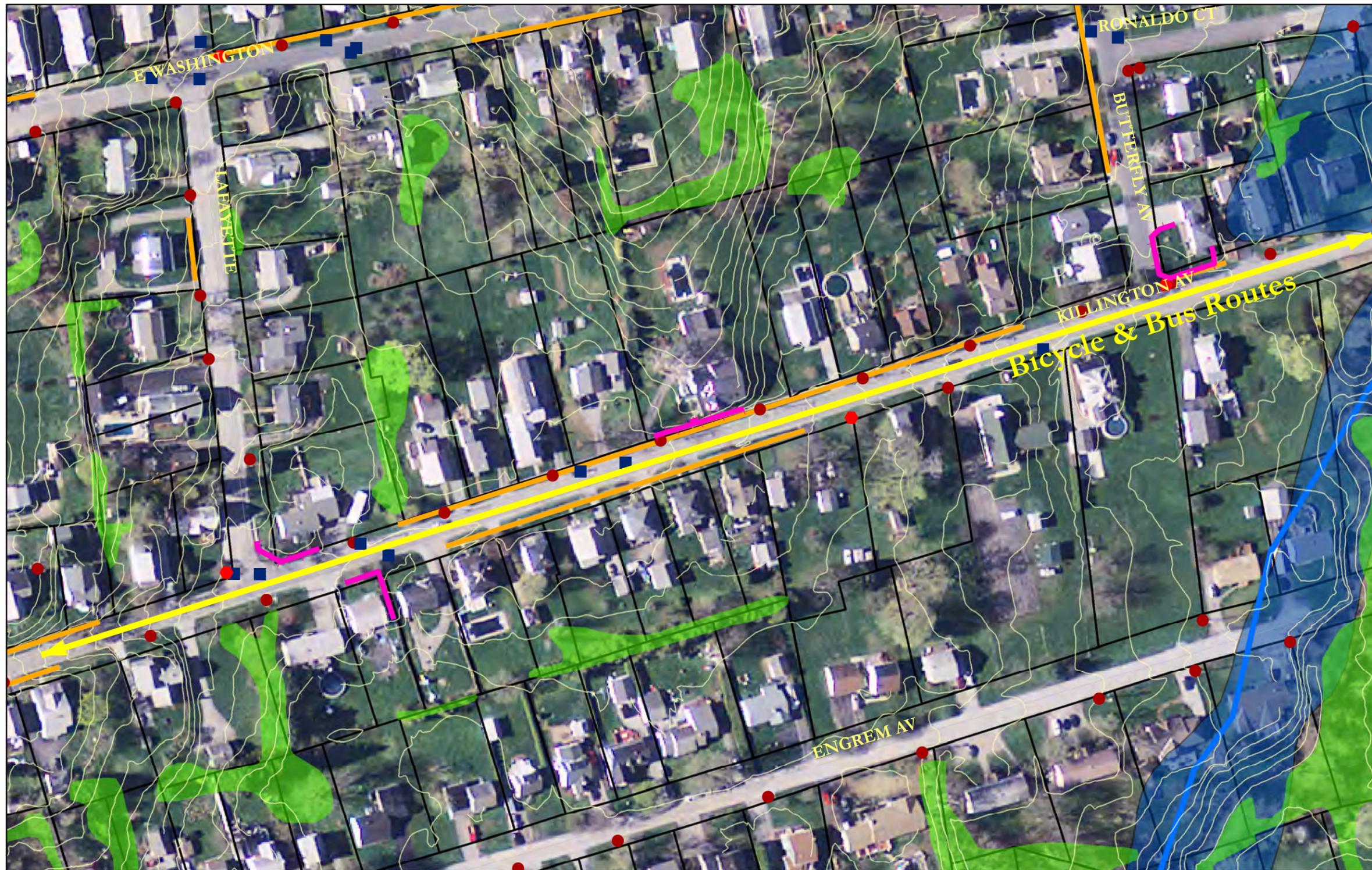
Existing  
Conditions

May 16, 2014

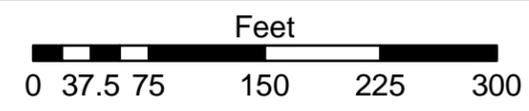
Figure A-2

# Killington Avenue Sidewalk Extension Scoping Study

Rutland City, Vermont



Legend	
Fence, Stone Wall, Guardrail	
Fire Hydrant	
Stormwater Inlet	
Utility Pole	
Existing Sidewalk	
Two-Foot Contour	
Crosswalk	
Watercourse/Drainage	
Wooded Area	
Year Floodplain-100	
Property Line	



**BROADREACH**  
Planning & Design

**Heritage Landscapes**  
Preservation Landscape Architects & Planners

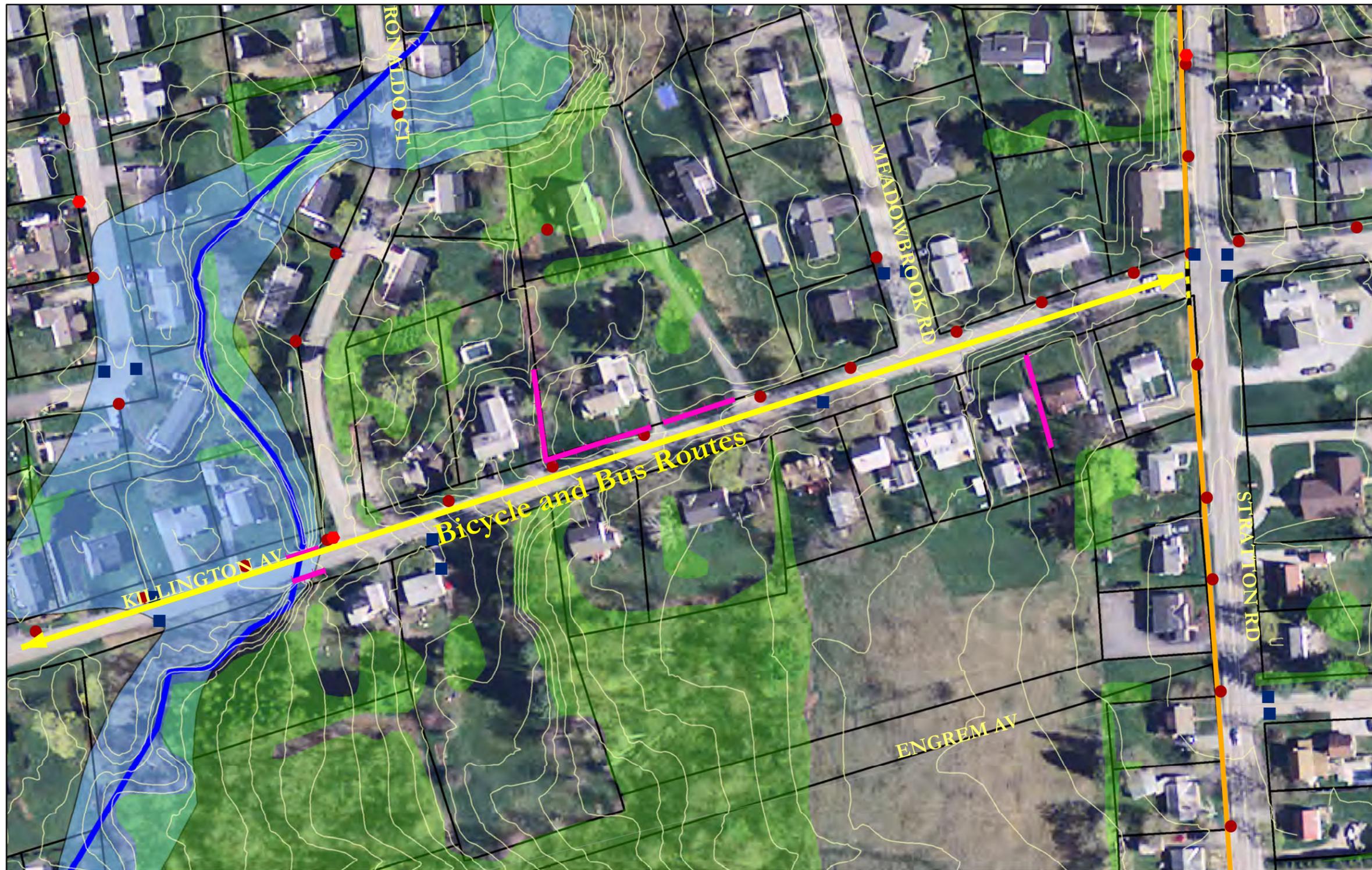
**Existing  
Surface  
Conditions  
West**

May 16, 2014

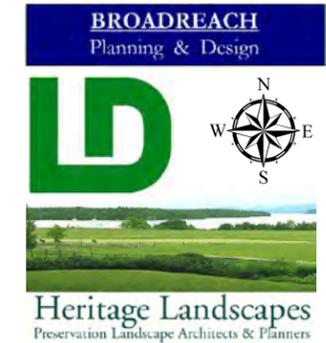
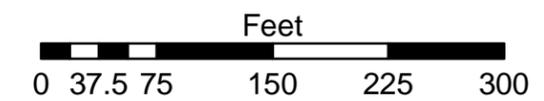
Figure A-3

# Killington Avenue Sidewalk Extension Scoping Study

Rutland City, Vermont



Legend	
Fence, Stone Wall, Guardrail	
Fire Hydrant	
Stormwater Inlet	
Utility Pole	
Existing Sidewalk	
Two-Foot Contour	
Crosswalk	
Watercourse/Drainage	
Wooded Area	
Year Floodplain-100	
Property Line	



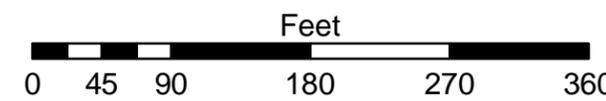
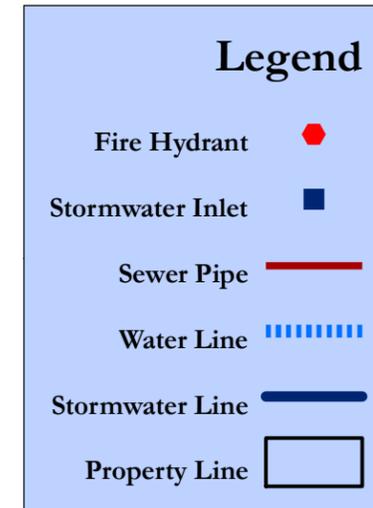
Existing  
Surface  
Conditions  
East

May 16, 2014

Figure A-4

# Killington Avenue Sidewalk Extension Scoping Study

Rutland City, Vermont



**BROADREACH**  
Planning & Design

**Heritage Landscapes**  
Preservation Landscape Architects & Planners

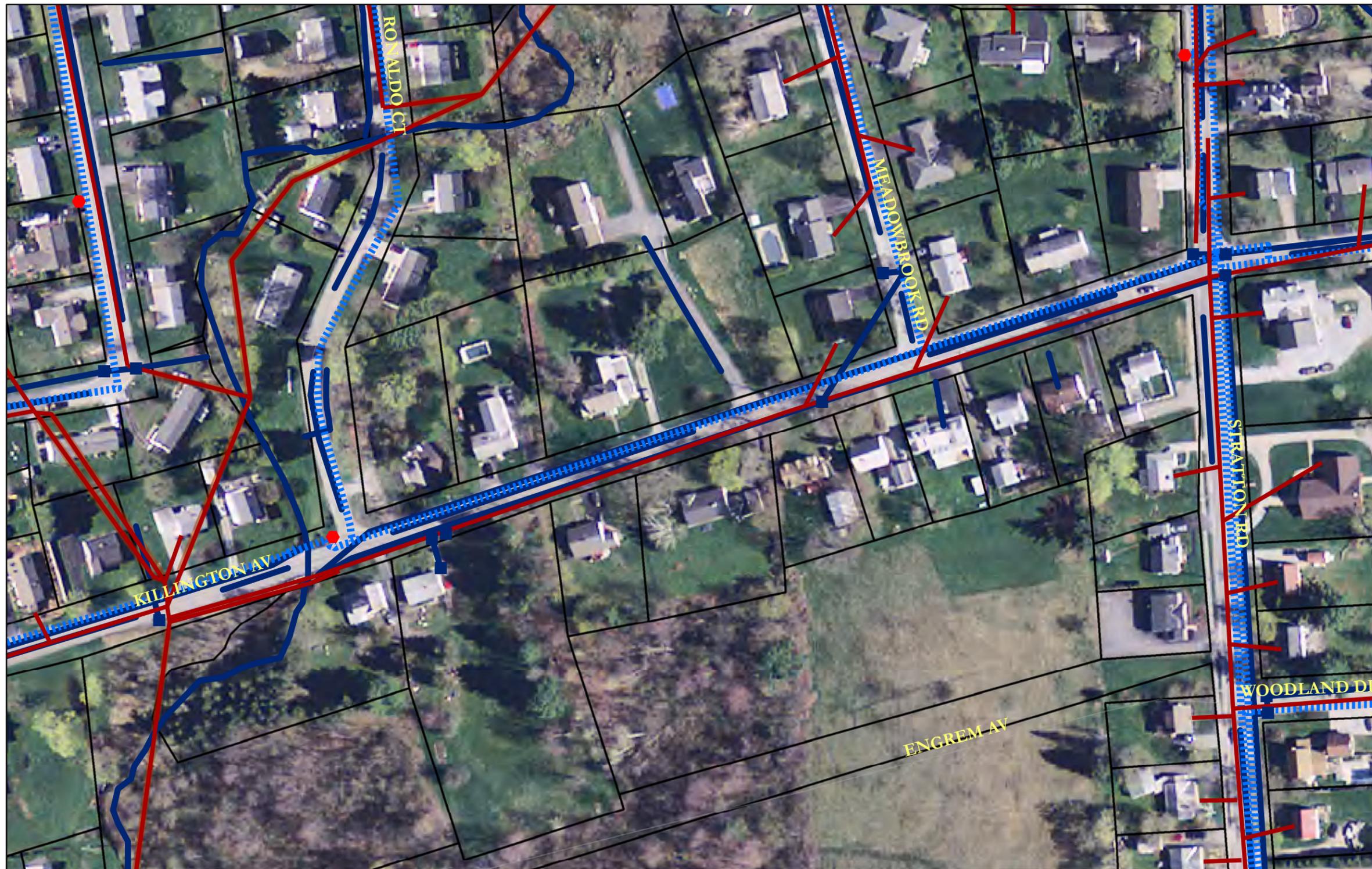
**Existing  
Sub-Surface  
Conditions  
West**

May 16, 2014

Figure A-5

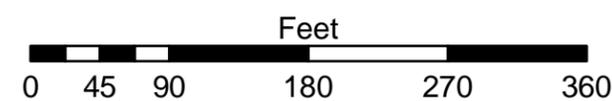
# Killington Avenue Sidewalk Extension Scoping Study

Rutland City, Vermont



**Legend**

- Fire Hydrant ●
- Stormwater Inlet ■
- Sewer Pipe —
- Water Line ▤▤▤▤
- Stormwater Line ▬
- Property Line



**BROADREACH**  
Planning & Design

Heritage Landscapes  
Preservation Landscape Architects & Planners

**Existing  
Sub-Surface  
Conditions  
East**

May 16, 2014

Figure A-6

Attachment A  
**HISTORIC RESOURCES REVIEW**  
Heritage Landscapes LLC  
Charlotte, Vermont





**Draft Preliminary Historic Aboveground Resources Assessment  
Killington Avenue Sidewalk Extension Scoping Study, Rutland City, Vermont**

16 October 2014

**Submitted to:**

Jim Donovan  
Broadreach Planning & Design  
Charlotte, VT 05445

**Prepared by:**

Rebecca Reese, MSHP, Project Staff  
Patricia M. O'Donnell, FASLA, AICP, Principal  
Heritage Landscapes, LLC

**REVIEW INTRODUCTION**

The goal of this assessment is to identify existing aboveground historic resources within the project area that are listed or eligible for listing on the National Register of Historic Places and the potential effects from the proposed sidewalk extension along the north edge of Killington Avenue in Rutland. Review of the possible historic resources and effects is necessary for compliance under Section 106 of the National Historic Preservation Act and Section 4(f) of the US Department of Transportation. The reconnaissance-level survey of aboveground resources does not create an inventory of National Register properties, as further study would be needed to determine eligibility.

Heritage Landscapes conducted research in local repositories and examined notes and images from previous field studies to evaluate the project area and possible historic resources. If the proposed sidewalk improvements should change, additional properties and impacts must be assessed again. The following documentary sources were studied to gain understanding of the project route area:

- *Sanborn Fire Insurance Maps of Rutland City, Rutland County, Vermont, (1910-1925).*
- *Manning's Rutland City and Township West Rutland and Proctor Directory, H.A. Manning, (1913-1930).*
- *The Historic Architecture of Rutland County, Vermont State Register of Historic Places, (1987).*

**FINDINGS**

Review of historic documents and field surveys determined the presence of historic resources along the proposed sidewalk extension route. Two resources are listed on the Vermont State Register of Historic Places, while others have the potential to be listed. The proposed sidewalk extension will likely not adversely affect the aboveground historic resources discussed below.

Killington Avenue Sidewalk Extension Scoping Study  
Historic Aboveground Resources Assessment, Page 2

A colonial revival house stands at 1939 Killington Avenue. A state historic survey dates the house to c1930, but city directories record a residence at the address as early as 1913. Although the current home may have replaced an earlier structure, the home still stands as an historic resource. Listed in 1913, a farmer, Charles Beebleson, lived at the address for many years possibly explaining the hitching stone that lies in the front lawn. The state survey also references a fence that enclosed the property. Today, only a remnant remains to the east of the house and will not be altered in anyway. Overall, the sidewalk extension project will not adversely affect this historic property. A large setback removes the home from the street edge offering plenty of space for sidewalk construction without disturbing the house. The sidewalk will run to the north of the hitching stone separating it from the larger front lawn, but it will not be moved or significantly altered. Based on the existing setting and relationship between the home and hitching stone, the separation of the stone and lawn will not adversely affect property.

The same state historic survey lists a 1922 concrete arch bridge over Moon Brook on Killington Avenue. The bridge is significant as one of the first two structures built under the city construction program and will remain in place during the sidewalk extension project. The addition of a foot bridge to the north side of the bridge will not alter the structure making an adverse effect unlikely.

National Register of Historic Places eligibility is probable for additional dwellings along Killington Avenue. Constructed during the mid-twentieth century, several houses appear on 1960s fire maps. Although this study does not determine National Register listing, the age and integrity of structures allows for the consideration of eligibility. The large setbacks of the properties will permit the sidewalk to extend along the property edge without adversely affecting the properties.

## **CONCLUSION**

The proposed sidewalk extension along Killington Avenue increases safety and encourages walking within the neighborhood. Current setbacks allow plenty of space for sidewalk construction without adversely affecting historic resources. This extension contributes to the pedestrian character of the area and continues the tradition of sidewalks located throughout the neighborhood.

Attachment B  
**ARCHEOLOGICAL RESOURCES ANALYSIS**  
Consulting Archaeological Program  
University of Vermont





The University of Vermont

May 19, 2014

Jim Donovan, FASLA  
Landscape Architect  
Broadreach Planning & Design  
PO Box 321  
Charlotte, Vermont 05445

**RE: Archaeological Resources Assessment for the proposed Rutland Killington Avenue Extension Project, Rutland, Rutland County, Vermont**

Dear Jim,

Attached, please find an Archaeological Resources Assessment for the proposed Rutland Killington Avenue Extension Project, Rutland, Rutland County, Vermont.

A field inspection and background research determined that the proposed project alignment will not disturb any areas of archaeological sensitivity. As a result, no additional archaeological work is recommended for the proposed project.

Please feel free to contact me if you have any questions.

Sincerely,

Charles Knight, Ph.D.  
Assistant Director



**Archaeological Resources Assessment for the proposed Killington Avenue Extension  
Project, Rutland, Rutland County, Vermont**

**Submitted to:**

**Jim Donovan, FASLA  
Landscape Architect  
Broadreach Planning & Design  
PO Box 321  
Charlotte, Vermont 05445**

**Submitted by:**

**Charles Knight, Ph.D.  
University of Vermont  
Consulting Archaeology Program  
111 Delehanty Hall  
180 Colchester Ave.  
Burlington, VT 05405**

**Report No. 797**

**May 19, 2014**

## **Archaeological Resources Assessment for the proposed Killington Avenue Extension Project, Rutland, Rutland County, Vermont**

### **Project Description**

The City of Rutland, with assistance from Broadreach Planning and Design, proposes the Killington Avenue Extension 5 Project, Rutland, Rutland County, Vermont (Figure 1). The proposed project will to construct a sidewalk on Killington Avenue from its terminus 125 feet west of Butterfly Avenue to the existing sidewalk at the intersection of Stratton Road in the southeast sector of the City of Rutland (Figure 2). Sidewalks exist at the western end of the street, and on intersecting streets, but are lacking on this vital link. Moon Brook crosses underneath the street and the scoping study will examine alternative crossings for pedestrians.

The University of Vermont Consulting Archaeology Program (UVM CAP) conducted an Archaeological Resources Assessment (ARA) of the APE for the proposed Killington Avenue Extension as part of the Section 106 permitting process and no areas along the proposed alignment were identified as archaeologically sensitive.

### **Study Goal**

The goal of an ARA (or “review”) is to identify portions of a specific project’s APE that have the potential for containing precontact and/or historic sites. An ARA is to be accomplished through a “background search” and a “field inspection” of the project area. For this study, reference materials were reviewed following established guidelines. Resources examined included the National Register of Historic Places (NRHP) files; the Historic Sites and Structures Survey; and the USGS master archaeological maps that accompany the Vermont Archaeological Inventory (VAI). Relevant town histories and nineteenth-century maps also were consulted. Based on the background research, general contexts were derived for precontact and historic resources in the study area.

### **Archaeological Site Potential**

No known precontact Native American or historic period Euroamerican sites exist along, or adjacent to the proposed sidewalk extension alignment. The closest precontact Native American site is VT-RU-159, located 2.2 km to the northeast of the project alignment. This site is located adjacent to the banks of Tenny Brook and was identified from the recovery of chert, quartzite and quartz flakes that result in the production of chipped-stone tools during systematic test pit excavation. In regard to historic period sites, the closest known is VT-RU-34 located 1.4 km to the southwest of the project alignment. This site is the Rutland Fairgrounds, which are still in use. The proposed project will no impact either of these two known archaeological sites.

In regard to historic period resources, both the historic 1858 Wallings map (Figure 3) and the 1869 Beers map (Figures 4 & 5) depict several structures along the north side of Killington Avenue within the limits of the proposed alignment. These historic period structures likely correspond to house that still exist along the north side of the avenue. Either way, they will not be

disturbed by the proposed sidewalk, which is well away from the front of the structures and any associated structures that may be buried. As a result, the proposed path will not impact historic period sites.

### **Desk Review**

As part of the desk review, the UVM CAP utilized the Vermont Division of Historic Preservation's (VDHP) predictive model for identifying precontact Native American archaeological sites. The Rutland Killington Avenue Extension Project scores 18 on the Predictive Model, due to its location within 90 m of Moon Brook (12), and within 180 m of Piedmont Pond (6). In addition to the paper-based predictive model, the desk review uses a Geographical Information System (GIS) developed jointly by the UVM CAP, and its consultant Earth Analytic, Inc., which operationalizes the paper-based model. It does this by applying the VDHP's sensitivity criteria to all lands within the State of Vermont. In these maps, archaeological sensitivity is depicted by the presence of one or more overlapping factors, or types of archaeological sensitivity (i.e. proximity to water, etc.). The Rutland Killington Avenue Extension Project crosses areas that exhibit 4 overlapping sensitivity factors, which are Drainage, Waterbody, Wetland, and Level Terrain (see Figure 1).

### **Field Inspection**

A field inspection of the project area was carried out on May 9, 2014 by Charles Knight, Assistant Director of the UVM CAP. Knight walked the entire project alignment and identified no areas along Killington Ave as archaeologically sensitive. The eastern half of the proposed project alignment, from the crossing of Moon Brook to Victor Place is on a slight western trending slope (Figure 6). The north side of Killington Avenue immediately west of the Moon Brook crossing is on a slight slope and has been disturbed by electric line power poles (Figure 7). In general the north side of the brook crossing is not archaeologically sensitive. The south side of Killington Avenue at the brook crossing is sensitive, but the south side will not be disturbed by the proposed alignment. Finally the area west of the Moon Brook crossing is not archaeologically sensitive due to the slight slope along the alignment and distance from any water (Figure 8).

### **Conclusions**

The City of Rutland proposes the Rutland Killington Avenue Extension Project, Rutland, Rutland County, Vermont. The UVM CAP conducted an Archaeological Resources Assessment of the proposed path and determined that no part of the proposed project alignment is sensitive for precontact Native American or historic period Euroamerican archaeological sites. Much of the proposed alignment is located on slope. The crossing of Moon Brook is archaeologically sensitive on the south side of Killington Avenue, but not on the north, where it is sloped and disturbed by electric power poles. West of the Moon Brook crossing, the alignment follows a slight slope and is at such a distance away from water that it is not considered archaeologically sensitive. As a result, the proposed project will not impact any archaeologically sensitive areas and no additional archaeological work is recommended.

Thank you for working with us on this project. Please let me know if you have any questions or comments.

Charles Knight, Ph.D.  
Assistant Director

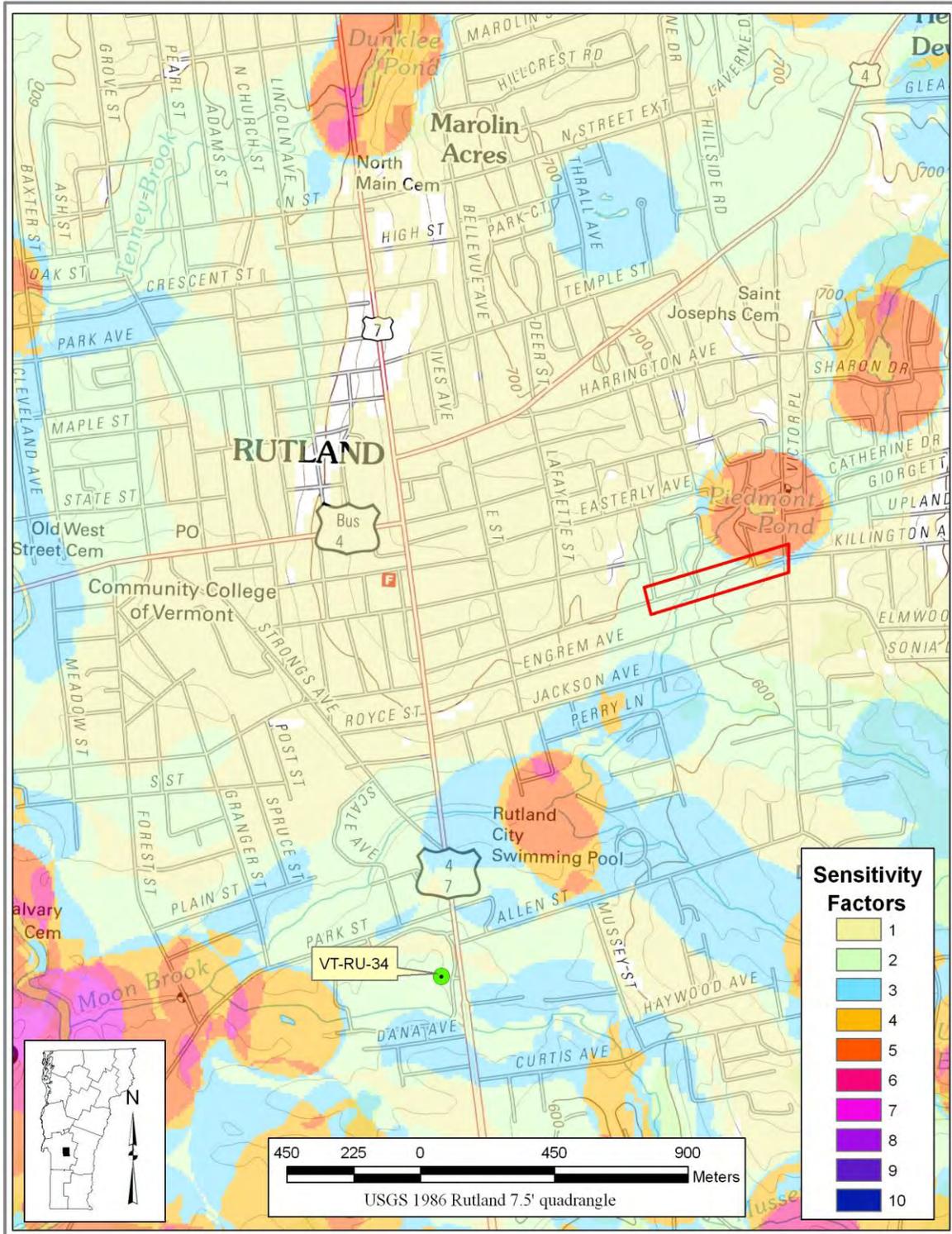


Figure 1. Map showing the location of the proposed Killington Avenue Extension Project, in relation to archaeological sensitivity factors, Rutland, Rutland County, Vermont.



Figure 2. Map showing the project elements involved in the proposed Killington Avenue Extension Project, Rutland, Rutland County, Vermont.



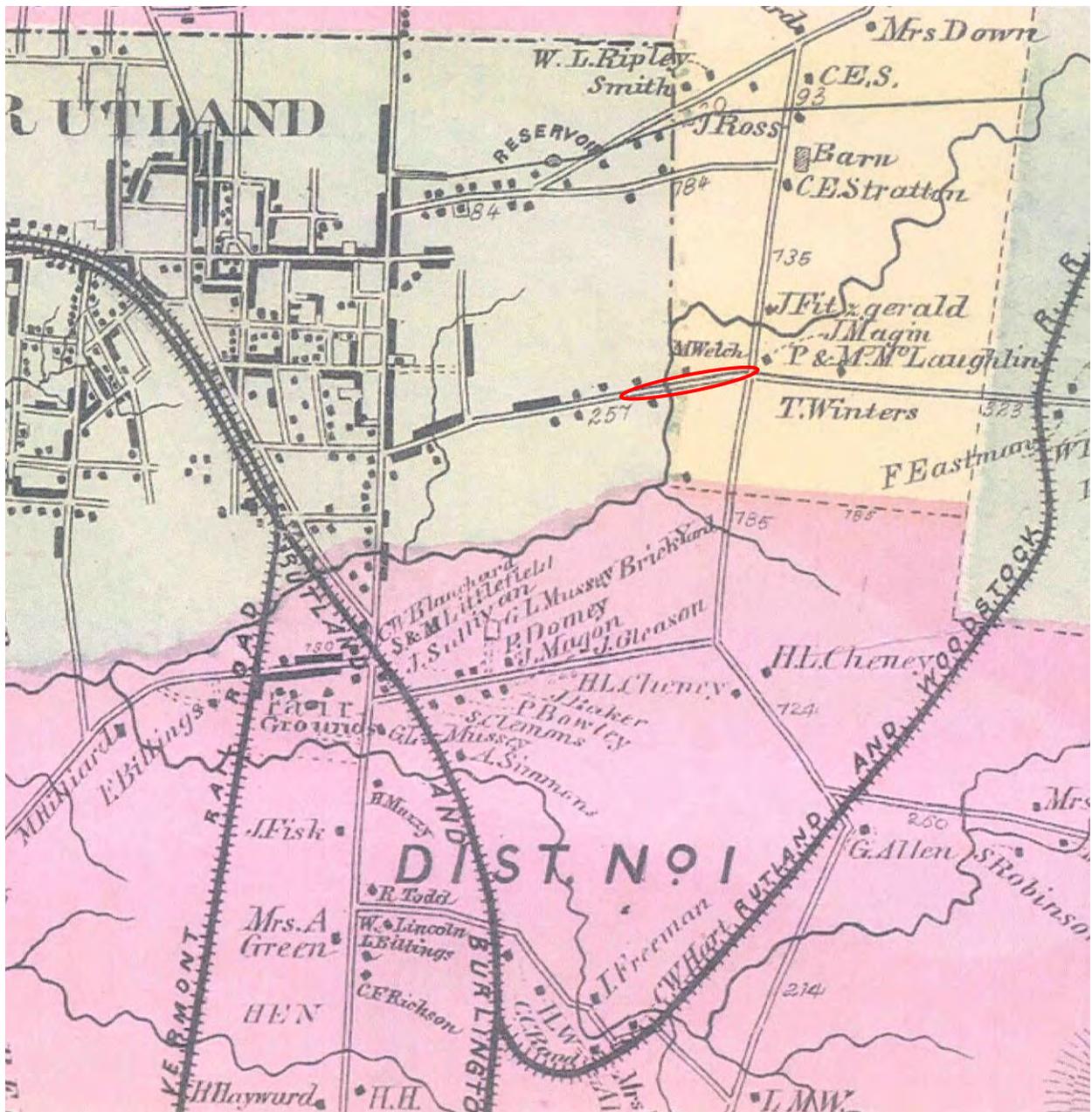


Figure 4. Historic 1869 Beers Map showing the approximate location of the proposed Killington Avenue Extension Project, Rutland, Rutland County, Vermont

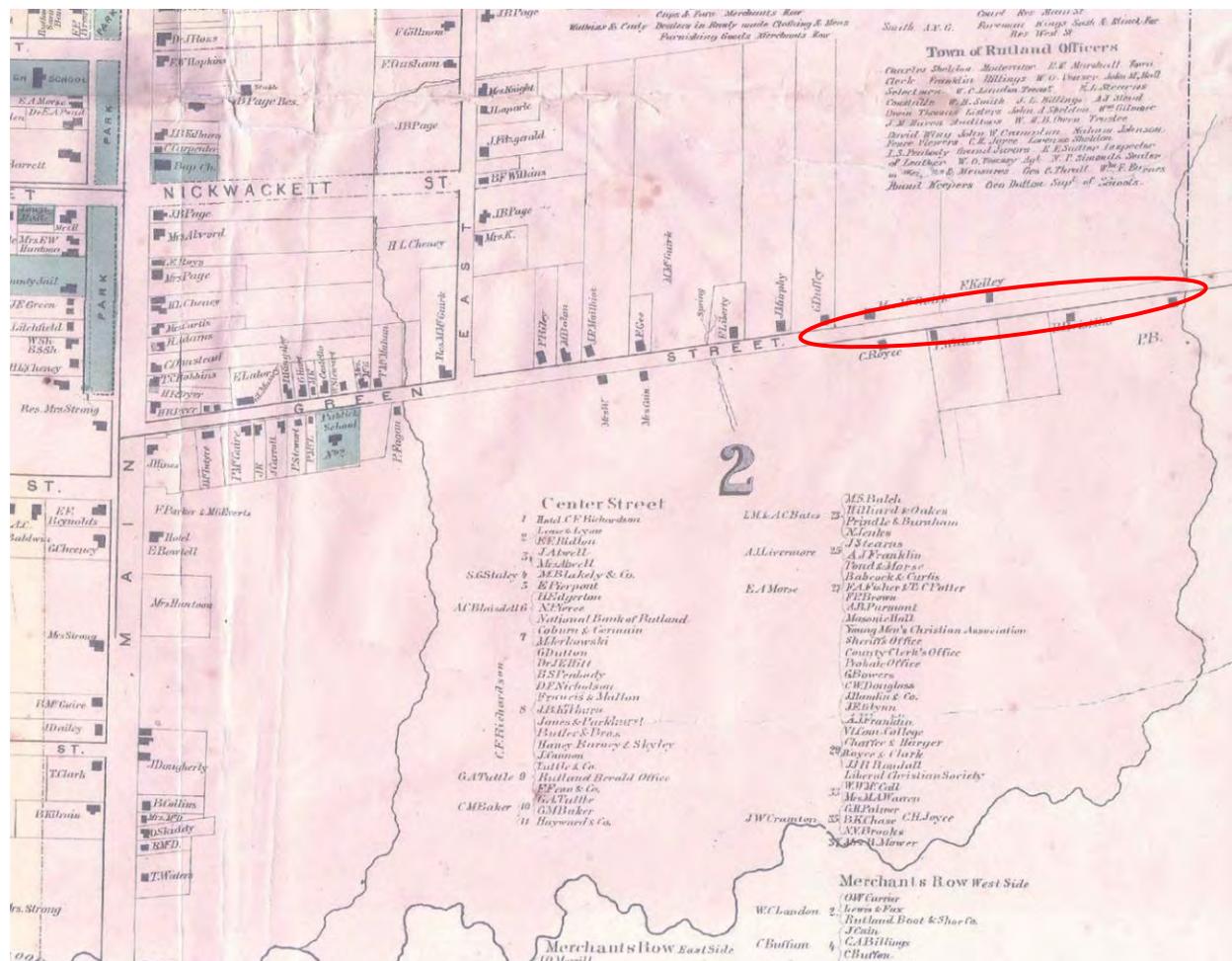


Figure 5. Close-up of the historic 1869 Beers Map showing the section of the proposed project area west of the Moon Brook crossing for the Killington Avenue Extension Project, Rutland, Rutland County, Vermont



a



b

Figure 6. Photographs looking west (a) and east (b) along the north side of Killington Avenue in the location of the proposed Killington Avenue Extension Project, Rutland, Rutland County, Vermont.



a



b

Figure 7. Photographs looking east along the north side of Killington Avenue at the Moon Brook crossing (a) and from a perspective further west (b) along the alignment of proposed Killington Avenue Extension Project, Rutland, Rutland County, Vermont.



a



b

Figure 8. Photographs looking west (a) and east (b) along the north side of Killington Avenue at the western end of the proposed Killington Avenue Extension Project, Rutland, Rutland County, Vermont

## **Appendix B**

# **ALTERNATIVES REPORT**



**Rutland City**  
**Killington Avenue Sidewalk Extension**  
**Scoping Study**  
**Alternatives**



*Submitted by:*

**Broadreach Planning & Design**

*In conjunction with*

**Lamoureux & Dickinson Consulting Engineers**

**Heritage Landscapes LLC**

**University of Vermont Consulting Archaeology Program**

**November 1, 2014**



## INTRODUCTION

### 1. OVERVIEW

This study is examining the most appropriate ways to create a complete sidewalk on at least one side of Killington Avenue between S. Main Street and Stratton Road. **Figure B-1** shows the location of the Study Area around Killington Avenue in Rutland City that is the focus of this study.

The new sidewalks on the north side of Killington Avenue in Rutland City extend east from S. Main Street to Butterfly Avenue, with a small, old section of sidewalk on the east side of Butterfly Avenue. The sidewalk extends east from S. Main Street on the south side of Killington Avenue to just west of Lafayette Street. There is also a shorter, isolated section of sidewalk on the south side of Killington Avenue between Lafayette Street and Butterfly Avenue. There are no sidewalks east of Butterfly Avenue on either side of Killington Avenue, other than the short, old section.

The City organized a Steering Committee of local elected officials, citizens, and City and regional planning commission staff. After circulating a Request for Proposals, the City selected a consulting team consisting of Broadreach Planning & Design, Lamoureux & Dickinson, Heritage Landscapes LLC and the University of Vermont Consulting Archeology Program (the BRPD Team) to assist them with the project.

This summary report is the second product of the work of the Steering Committee and the BRPD Team. The summary describes the various alternatives that were initially considered or are still under consideration. The BRPD Team formatted the report for double-sided printing; blank pages are intentional.

### 2. PURPOSE AND NEED

The purpose of the extension of sidewalks on Killington Avenue is to provide better pedestrian connections to the existing City sidewalk system for the residents of Killington Avenue and the rest of the City in order to provide better mobility for walkers of all ages and abilities.

Needs for the improvements include:

- The lack of sidewalks for at least a third of Killington Avenue;
- There is existing bus service on Killington Avenue without adequate walking facilities to all of the places where the bus can stop;
- The use of Killington Avenue as a major residential collector road for motor vehicle traffic;
- The presence of sidewalks on either side of the portions of Killington Avenue without sidewalks;

- Frequent pedestrian activity as evidenced through dirt paths created along portions of Killington Avenue that do not have sidewalks;
- The designation of Killington Avenue as a bicycle route without sidewalks for portions of the road increases the potential for bicycle/pedestrian conflicts; and
- The high rate of obesity in Rutland caused, in part, by the difficulty of incorporating regular physical activity into daily lives due to the lack of supporting facilities.

### 3. ALTERNATIVES DEVELOPMENT PROCESS

Once the BRPD Team, with assistance from the Steering Committee, examined the existing conditions, they held an initial public work session on June 2, 2014. After consideration of the comments received at that meeting, the BRPD Team led a work session with the Steering Committee to identify as many alternatives as possible for adding sidewalks along Killington Avenue. The group worked together to do an initial analysis of the alternatives to refine or eliminate those that did not meet the purpose and need or were otherwise unsuitable. Subsequently, the BRPD Team conducted a more detailed analysis of the remaining alternatives and developed a concise, viable set for public discussion.

**Figure B.1** shows the location of the alternatives initially developed by the SC and BRPD Team; **Figures B.2.a, B.3.a, and B.4.a** show the alternatives that remained viable after the initial analysis. **Figures B.2.b, B.3.b and B.4.b** provide more information on the issues or impacts associated with the remaining alternatives.

## ALTERNATIVES

### 1. OVERVIEW

Each of the alternatives presented below would meet the purpose and need for this project, providing a complete sidewalk along at least one side of Killington Avenue.

The Steering Committee considered sidewalks alternatives on both sides of Killington Avenue, to be sure that they were being as thorough as possible. When considering alternatives, they decided that no alternative would include the need to cross Killington Avenue in order to continue to walk east from the existing sidewalks. This meant that the alternatives for sidewalks on the south side of the street started at the end of the existing sidewalk west of Lafayette Street and continued all the way to Stratton Road. The sidewalk alternatives for the north side of Killington Avenue started at near Butterfly Avenue at the eastern end of the new sidewalks recently installed. They did not consider any alternatives that added a crosswalk on Killington Avenue at Butterfly Avenue and continuing a sidewalk east just on the south side of the street from the end of the crosswalk.

Initially, the Steering Committee considered five-foot wide sidewalks on both sides of Killington Avenue generally in three locations - directly adjacent to the curb, approximately four feet away from the curb and at the outside edge of the right-of-way, about six feet away from the edge of the curb. The first analysis eliminated most of these alternatives.

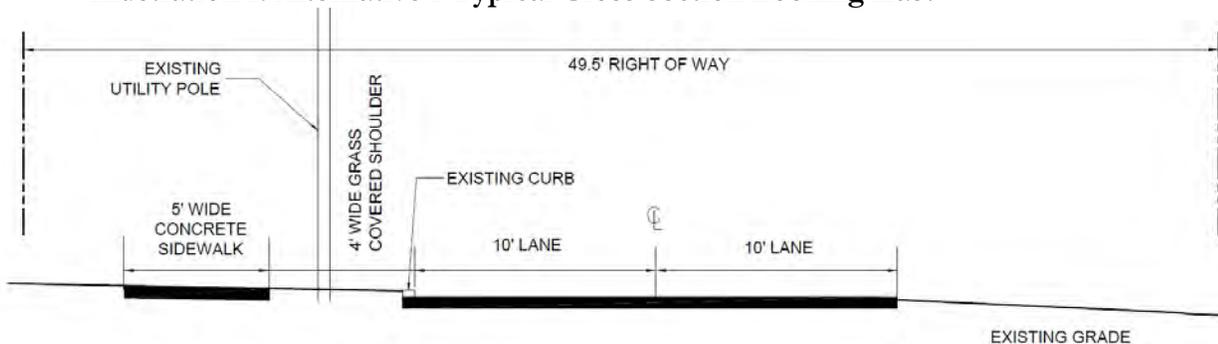
The remaining alternatives described below are each for a five foot-wide sidewalk. The surface could be either asphalt or concrete.

The alternatives are organized as sidewalks on the north side of Killington Avenue, sidewalks on the south side of Killington Avenue and crossing alternatives for Moon Brook. Each of the crossing alternatives could be used on either the north or south side of the street.

## 2. NORTH SIDE SIDEWALK

Alternative 1 - This alternative would place the sidewalk approximately four feet from the new curb on the north side of the Killington Avenue right-of-way. This alignment would leave most of the utility poles in their current location. The sidewalk would be approximately six feet in from the outer edge of the right-of-way. **Illustration 1** shows a typical cross section for Alternative A. **Illustration 2** shows a simulation of what the sidewalk might look like at its western end.

**Illustration 1: Alternative 1 Typical Cross Section Looking East**

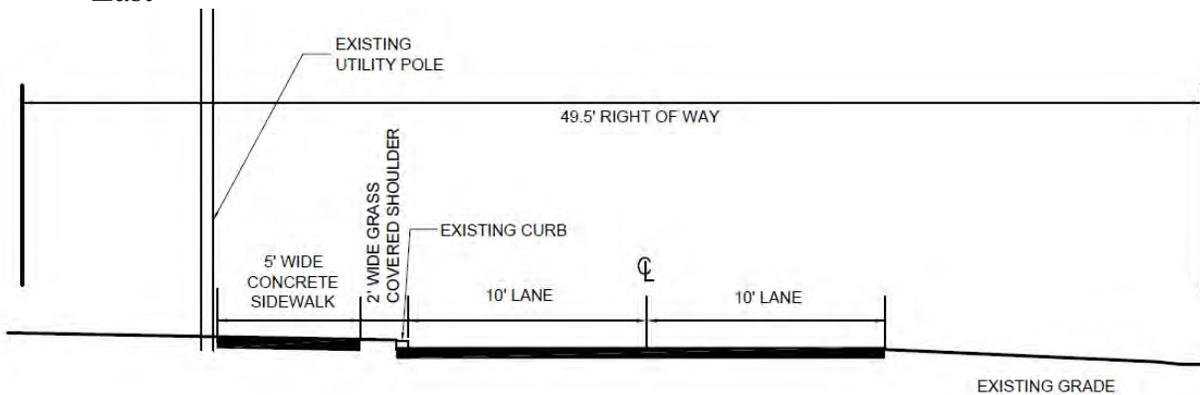


**Illustration 2: Alternative 1 Photo Simulation Looking East Towards Moon Brook**



The fire hydrants and mailbox would also remain in their current locations. The first and second utility poles east of Ronaldo Court are located about six and five feet respectively behind the new curbs on Killington Avenue. Placing the sidewalk behind these poles would push the sidewalk to the outer edges of the right-of-way. To avoid disturbing an existing stairway up to the front of a house, the sidewalk would need to have a significant curve in it. To avoid this situation, the sidewalk would be routed in front of these two particular poles, placing the sidewalk about two feet away from the curb in this location. **Illustration 3** shows a cross section for this location; **Illustration 4** shows a detail of the alignment in this location.

**Illustration 3: Alternative 1 Special Cross Section East of Ronaldo Ct. Looking East**



One drainage inlet needs to be addressed as part of this alternative. The inlet could be relocated to the south to lie in the green space between the sidewalk and the curb. **Figure B.2.b** shows the location of this inlet.

Two recently planted crab apple trees on the third property east of Ronaldo Court would need to be relocated outside of the right-of-way and the proposed sidewalk alignment. **Figure B.2.b** shows the location of the two trees that need to be relocated outside of the right-of-way.

**Illustration 4: Alternative 1 Photo Simulation East of Ronaldo Ct. Looking East**

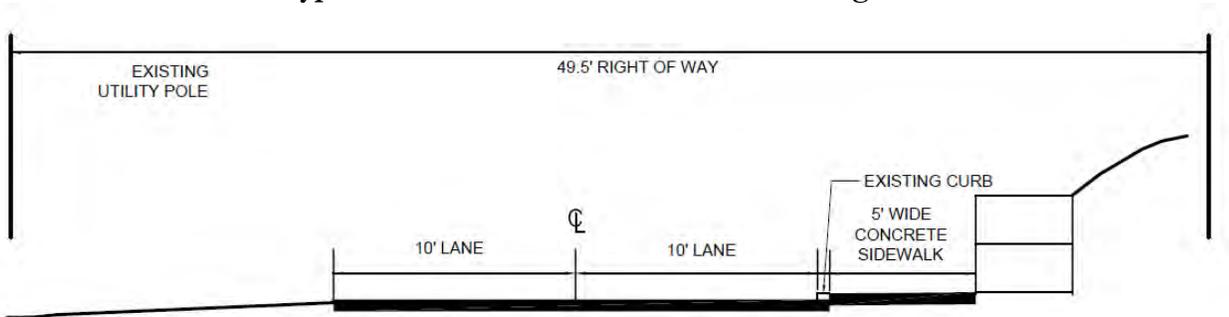


- 3. SOUTH SIDE SIDEWALK
  - a. Alternative 2 - Sidewalk Next to Curb

Alternative 2 would place a sidewalk on the south side of Killington Avenue directly behind the new curb. In those locations where there is no curb, the sidewalk would be constructed with an adjacent new curb. This alternative would require cutting into the rise in land away from Killington Avenue that is in the right-of-way in front of several properties. The cuts would range from approximately one-foot into the slope on the property next to Stratton Road up to five feet on the third property east of Moon Brook. The cuts that would be over two feet would most likely require a short retaining wall to minimize impact to the adjacent property and the large shade trees. **Figure B.2.b** points out the location of the different areas that would need cuts into the bank and the depth of the cut. **Illustration 5** shows a typical cross

section for Alternative B east of Moon Brook. **Illustration 6** shows a visualization of what the sidewalk might look like.

**Illustration 5: Typical Alternative 2 Cross Section Looking East.**



**Illustration 6: Alternative 2 near Stratton Road Looking West**



The alignment next to the south side curb would need to include special provisions for several storm drains inlets that are located about two feet behind the existing curb. The inlets could be relocated to be within the roadway or a special vertical curb inlet could be used to allow access to the existing storm drain. A metal plate or other structurally sound material that pedestrians could walk on would cover the top of the inlet at the same grade as the sidewalk. **Figure B.2.b** shows the location of the drainage inlets that need to be modified with Alternative 2.

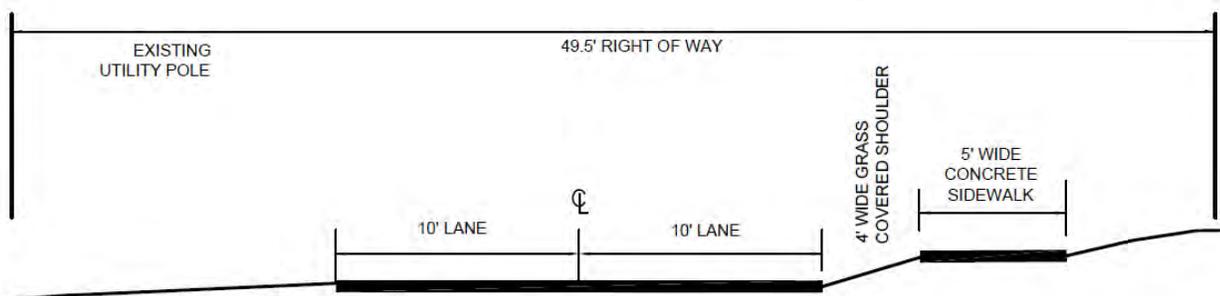
Alternative 2 would also require the relocation of nine mailboxes to the other side of the road, to a location behind the sidewalk, onto a side street. **Figure B.2.b** shows the location of the mailboxes that need to be relocated.

On the west side of Moon Brook, Alternative 2 would require three larger trees within the right-of-way to be removed and one utility pole to be relocated. **Figure B.3.b** shows the location of the trees and utility pole. It also points out a drain inlet that would need to be modified to work with the sidewalk.

b. Alternative 3 - Sidewalk Four Feet Away from Curb

Alternative 3 would place a sidewalk on the south side of Killington Avenue four feet behind the new curb. Due to the grade of some of the side slopes, it is not practical on several of the parcels on the east side of Moon Brook. **Figure B.2.b** shows where in the right-of-way the slope is too large to accommodate this alternative. **Illustration 7** shows a typical cross section for Alternative 3.

**Illustration 7: Typical Alternative 3 Cross Section Looking East**



Several trees within the right-of-way just east of Moon Brook would need to be relocated or removed. The particular trees that need to be relocated are included on **Figure B.2.b**

There would be no other significant impacts associated with Alternative 3.

4. BRIDGE ALTERNATIVES

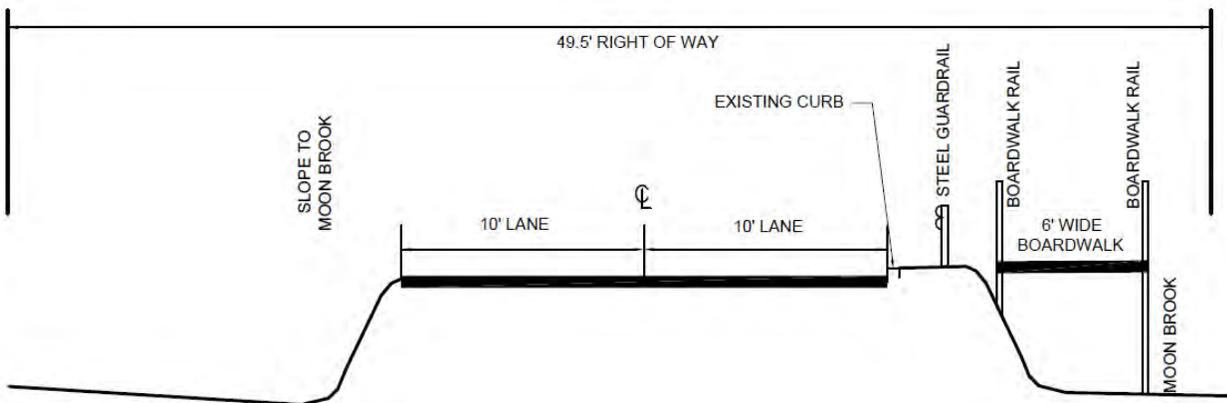
a. Boardwalk with Piles under Sidewalk

This alternative would lift the sidewalk as it approached Moon Brook so that the sidewalk remained approximately level with Killington Avenue even as the ground dropped down to the level of the normal flow level of the Brook. It could be used on either the north or the south side of the road. **Illustration 8** shows a visual simulation of what the boardwalk might look like. **Illustration 9** shows a cross section of the boardwalk.

**Illustration 8: Boardwalk Visualization Looking East**



**Illustration 9: Boardwalk Cross Section Looking West**



This alternative would minimize the amount of fill placed in the Moon Brook flood plain but would not elevate the sidewalk above the floodplain. In this location, the regulated floodplain is above the elevation of Killington Avenue so the boardwalk would be underwater along with the rest of Killington Avenue if the 100-year flood predicted by the FEMA maps ever occurs.

b. Prefabricated Bridge

This alternative would add a prefabricated bridge to either the north or south side of Killington Avenue to match the location of the new sidewalk. The longer the bridge, the higher up on the slope on either side of the Brook it could be placed. The footing would be placed at grade so that the sidewalks leading to it would also be at grade, eliminating the need to place any fill within the 100-year flood plain. **Illustration 10** shows a visual simulation of what the boardwalk. **Illustration 11** shows a typical cross section of the bridge.

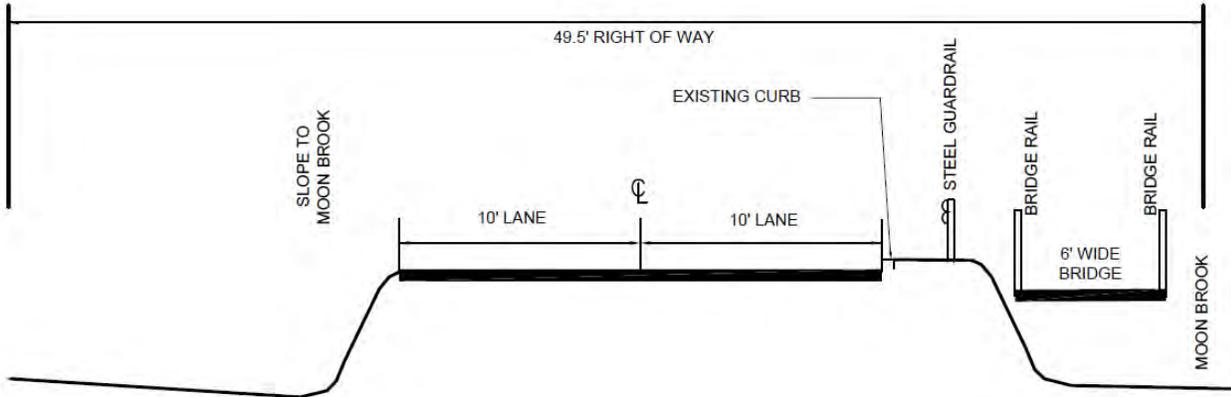
The opening under the new prefabricated bridge would be larger than the diameter of the existing culvert under Killington Avenue, which would remain undisturbed.

The bridge would be located at least three feet away from the face of the culvert if aligned with the sidewalk alternative located behind the utility poles on the north side of the road. It would be need to be aligned with the alternative located four feet away from the back of the curb if placed on the south side of Killington Avenue.

**Illustration 10: Prefabricated Bridge Visualization Looking East**



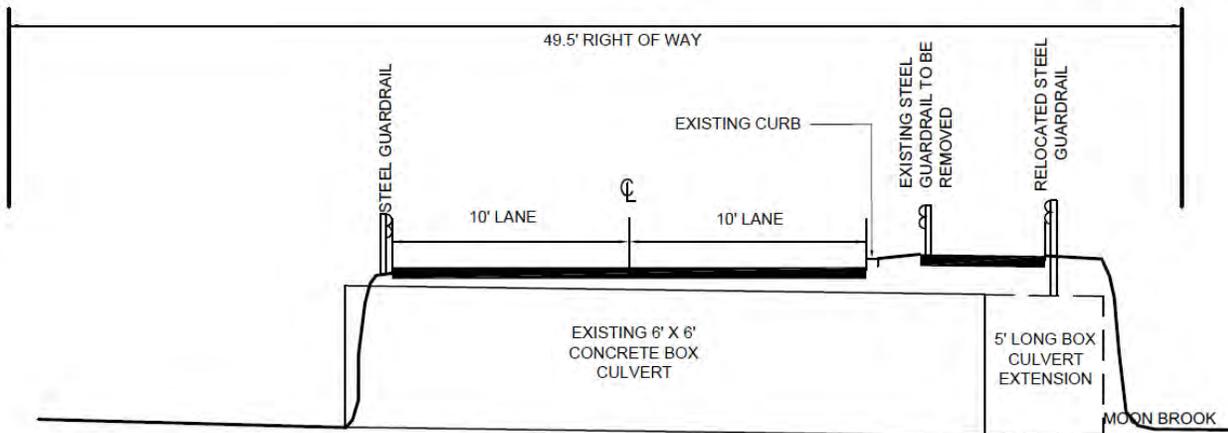
**Illustration 11: Bridge Cross Section Looking West.**



c. Extended Box Culvert

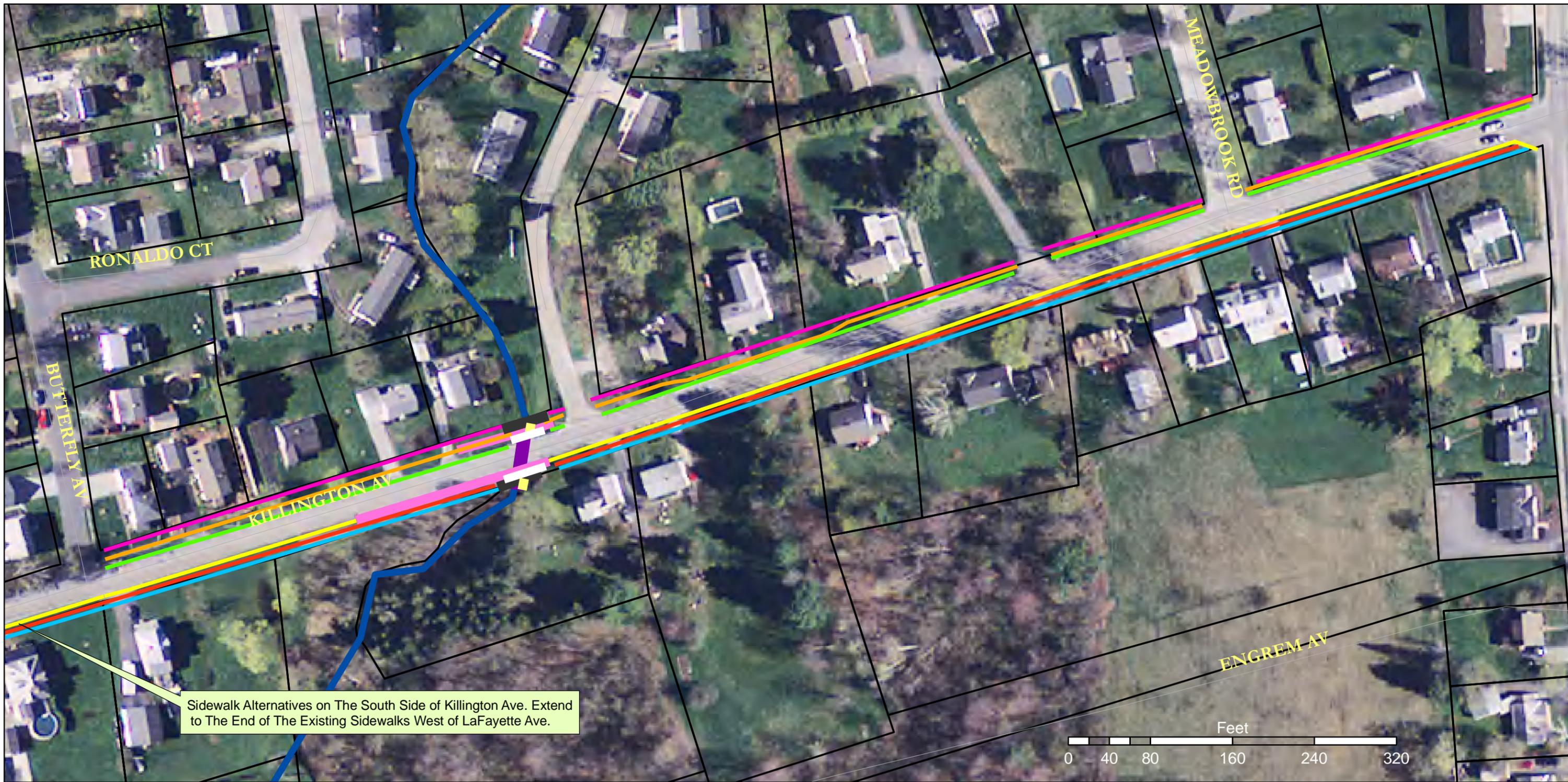
This alternative would replace the existing bridge with a new larger box culvert that would extend at least five feet beyond the edge of the existing culvert on either the north or south side of the road based on which side of the road the sidewalk would be located. Depending on the floodplain regulations, it might be placed on the box culvert and the sidewalk continued directly across it. The existing guardrail on the side of the Killington Avenue with the new sidewalk would be relocated to be on the outside edge of the sidewalk. **Illustration 12** shows a typical cross section of the culvert extension alternative.

**Illustration 12: Culvert Extension Cross Section Looking West**



4. NO ACTION

It will always be possible for the City to do nothing to get closer to meeting the purpose and need of this project - the No Action Alternative. This alternative would leave conditions as they are now with just partial, disconnected sidewalks on Killington Avenue.



Sidewalk Alternatives on The South Side of Killington Ave. Extend to The End of The Existing Sidewalks West of LaFayette Ave.



Legend					
Free Standing Bridge		South Side 4 Ft Behind Curb		North Side at Curb	
Piles with Concrete or Boarwalk		South Side Edge of ROW		North Side Behind Poles	
Box Culvert		Existing Bridge Expanded		North Side Edge of ROW	
Moon Brook		Existing Culvert Extension		South Side at Curb	

**Killington Avenue Sidewalk Extension**  
**Scoping Study**  
 Rutland City, Vermont  
**Initial**  
**Alternatives**

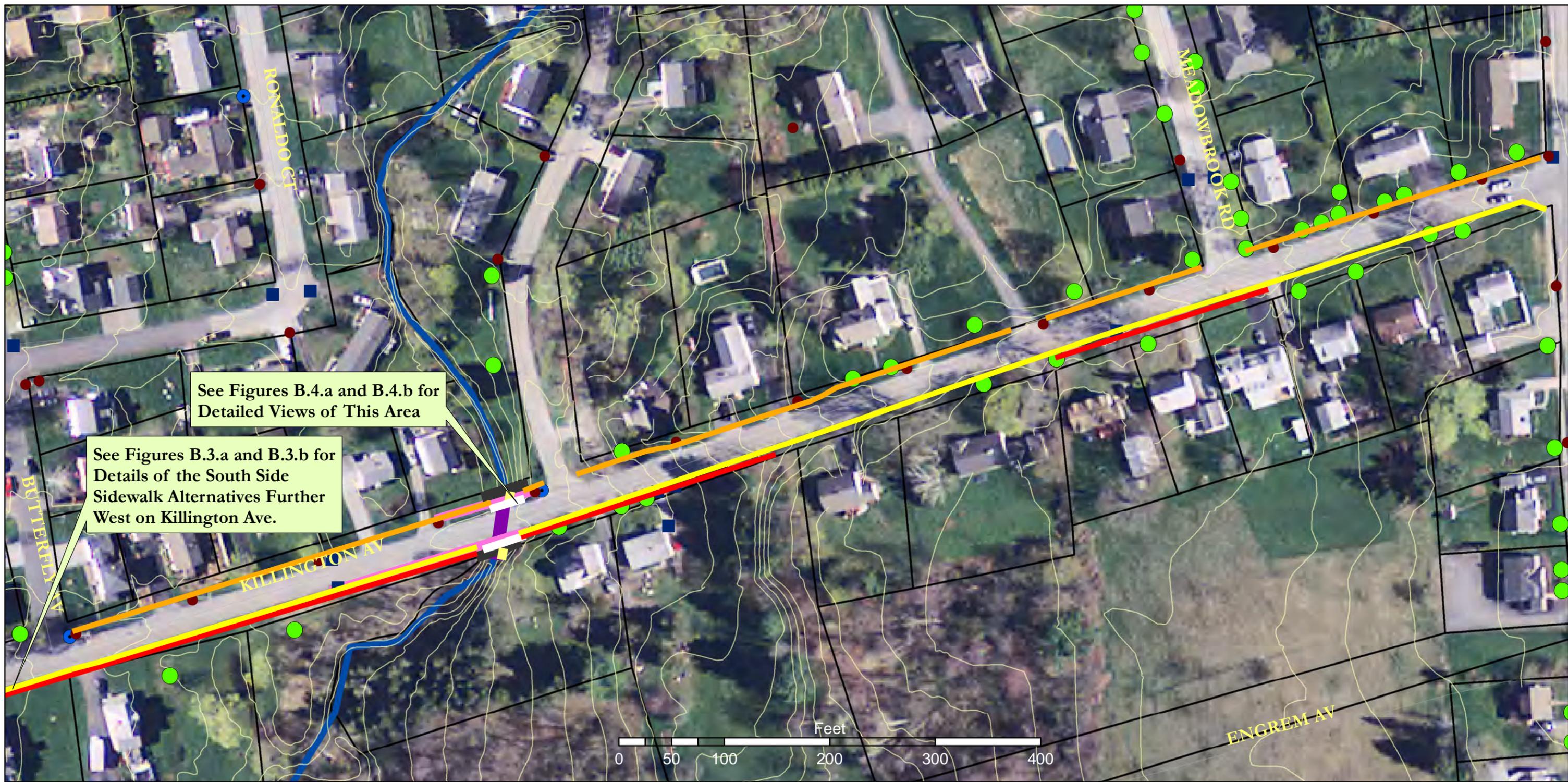
**BROADREACH**  
 Planning & Design

**LD**

**Heritage Landscapes**  
 Preservation Landscape Architects & Planners

July 9, 2014

Figure B.1



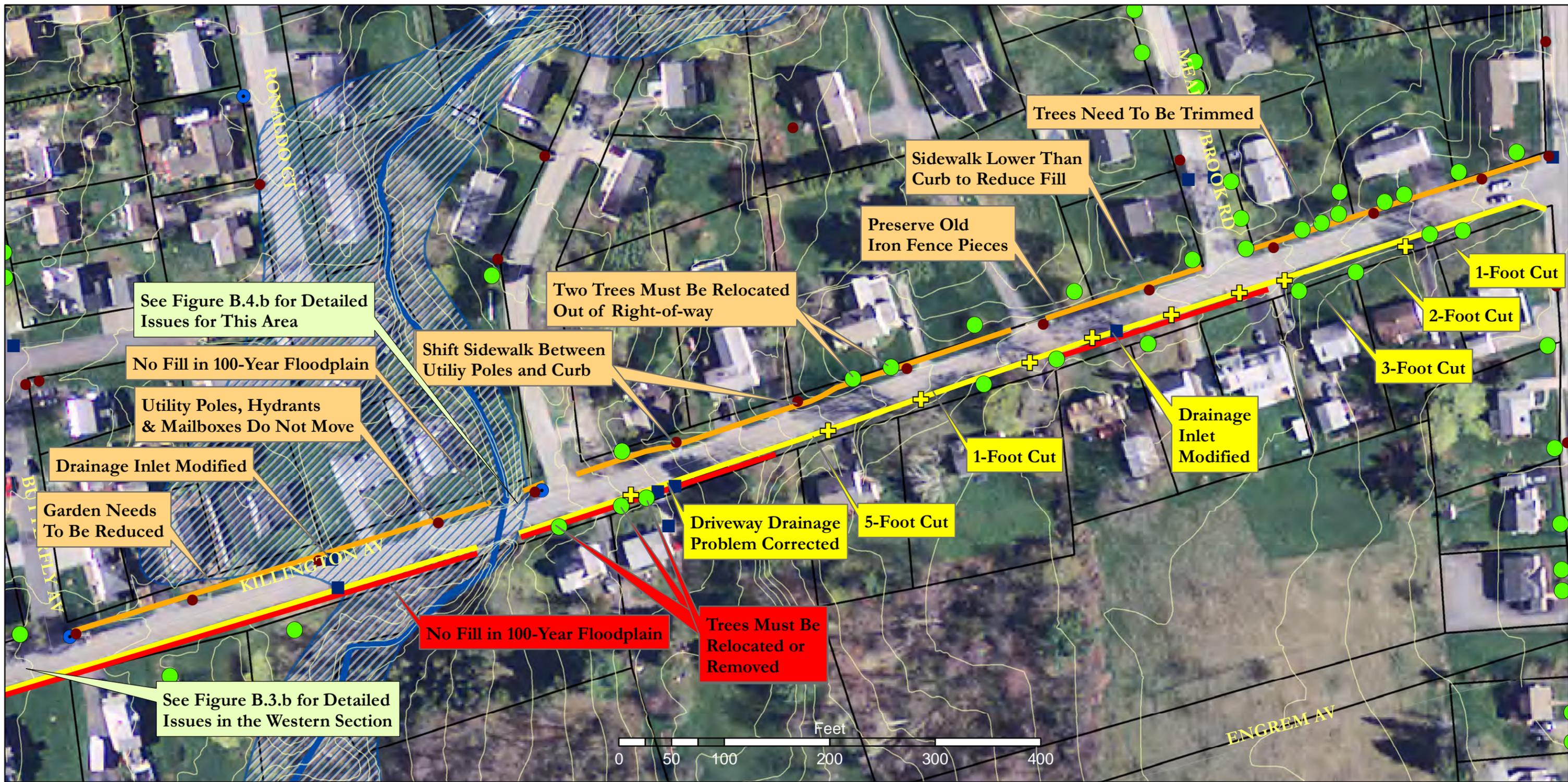
Legend					
Two-Foot Contour	—	Tree in ROW	●	Piles with Concrete or Boarwalk	—
Moon Brook	—	Utility Pole	●	Box Culvert	—
Property Line	□	Fire Hydrant	●	Existing Bridge Expanded	—
		Stormwater Inlet	■	Existing Culvert Extension	—
				Alt 1: North Side Behind Poles	—
				Alt 2: South Side at Curb	—
				Alt 3: South Side 4 FT Behind Curb	—
				Free Standing Bridge	—

**Killington Avenue Sidewalk Extension**  
**Scoping Study**  
 Rutland City, Vermont  
**Alternatives:**  
**Eastern Section**  
 July 9, 2014      Figure B.2.a

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 Preservation Landscape Architects & Planners



Note: Background color of notes are color coded to the three alternatives.

Two-Foot Contour	—	Tree in ROW	●	Alt 1: North Side Behind Poles	—
Moon Brook	—	Utility Pole	●	Alt 2: South Side at Curb	—
Year Floodplain-100	▨	Fire Hydrant	●	Alt 3: South Side 4 FT Behind Curb	—
Property Line	□	Stormwater Inlet	■	Mailbox to be Move by At 2	+

## Killington Avenue Sidewalk Extension Scoping Study

Rutland City, Vermont  
**Issues:**  
**Eastern Section**

July 9, 2014      Figure B.2.b






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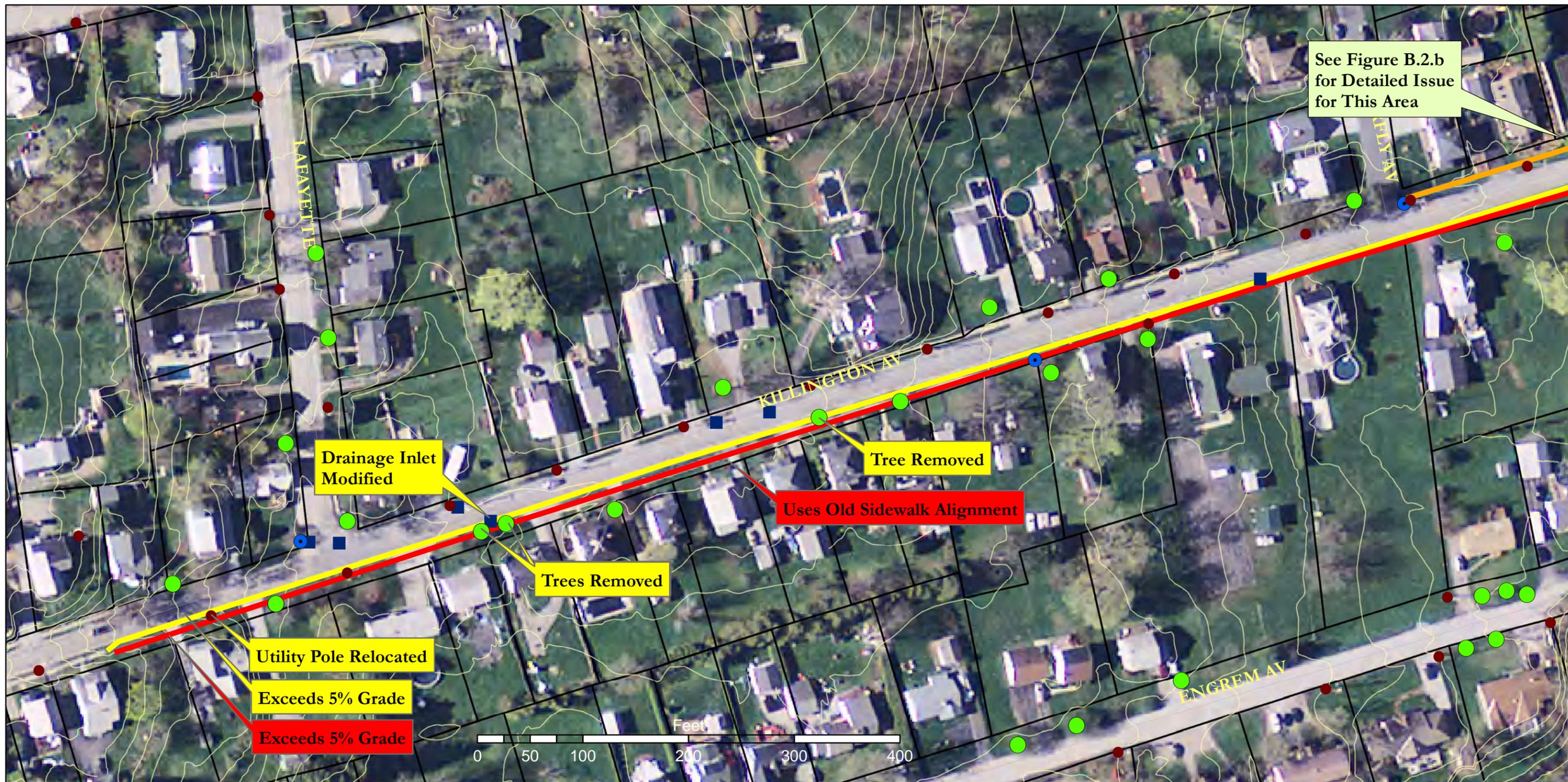
See Figure B.2.a and B.2.b for Views of Eastern Section

Two-Foot Contour 		Tree in ROW 	Alt 1: North Side Behind Poles 
Property Line 		Utility Pole 	Alt 2: South Side at Curb 
	Fire Hydrant 	Alt 3: South Side 4 FT Behind Curb 	
	Stormwater Inlet 		

**Killington Avenue Sidewalk Extension**  
**Scoping Study**  
 Rutland City, Vermont  
**Alternatives:**  
**West Section**  
 July 9, 2014 Figure B.3.a



Note: Background color of notes are color coded to the three alternatives.

Two-Foot Contour		Tree in ROW		Alt 1: North Side Behind Poles	
Property Line		Utility Pole		Alt 2: South Side at Curb	
		Fire Hydrant		Alt 3: South Side 4 FT Behind Curb	
		Stormwater Inlet			

## Killington Avenue Sidewalk Extension

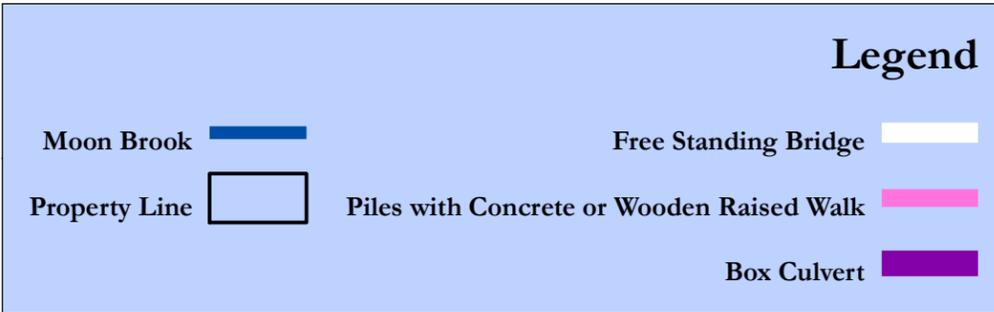
### Scoping Study

Rutland City, Vermont

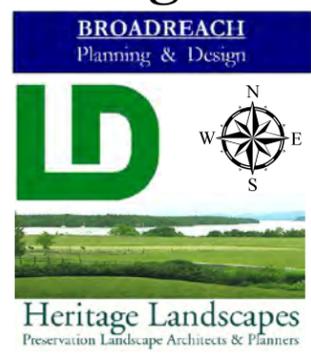
# Issues:

## Western Section

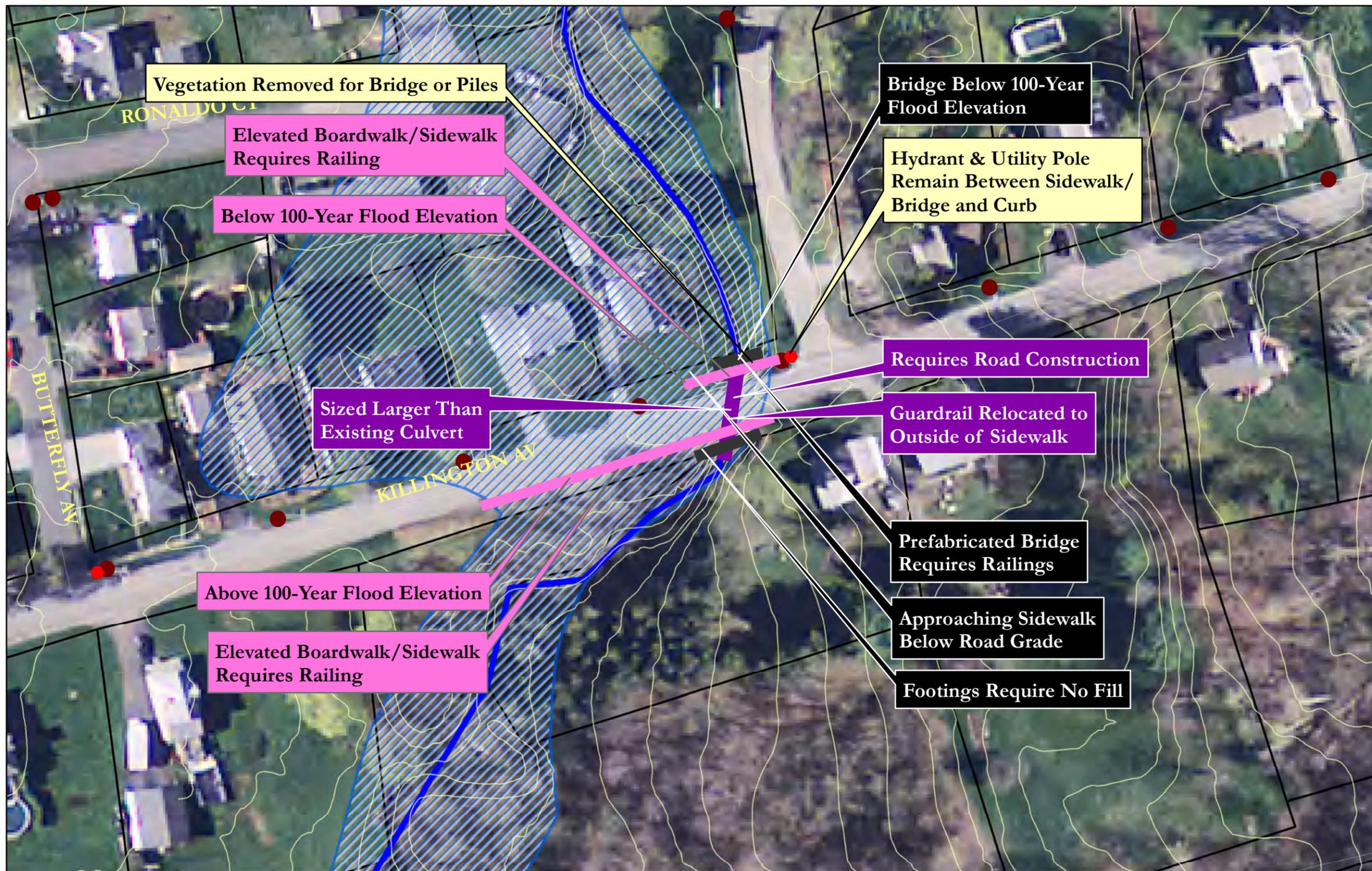
July 9, 2014 Figure B.3.b



**Killington Avenue Sidewalk Extension**  
**Scoping Study**  
 Rutland City, Vermont  
**Alternatives:**  
**Moon Brook Crossing**  
 July 9, 2014 Figure B.4.a



# Killington Avenue Sidewalk Extension Scoping Study Rutland City, Vermont

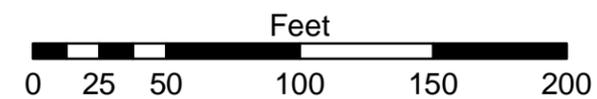


## Legend

-  Free Standing Bridge
-  Piles with Concrete or Boarwalk
-  Box Culvert
-  Fire Hydrant
-  Utility Pole
-  Two-Foot Contour
-  Watercourse/Drainage
-  100-Year Floodplain
-  Property Line

NOTE: Prefabricated Bridge and Piles would be located in the same location on the north or south side to align with preferred sidewalk location.

NOTE: Background color of the notes are color coded to the alternatives



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July 9, 2014

**Issues:  
Moon Brook  
Crossing**

Figure B.4.b



## **Appendix C**

# **PUBLIC WORK SESSION NOTES**



City of Rutland  
Killington Avenue Sidewalk Extension  
Scoping Study

**BROADREACH**  
Planning & Design

PO Box 321  
Charlotte, Vermont 05445  
802-425-5061

*Public Work Session #1*  
June 2, 2014

Notes

Jim presented an overview of the project, the purpose of the first work session and the existing conditions to an audience of about 30 people, mostly residents of Killington Avenue. Comments and questions from the participants included:

- The Alpine Pipeline should be added to the existing condition information.
- The Moon Brook culvert under Killington Avenue is probably OK in size. Moon Brook has never reached the limits of the floodplain on record and shown on the plan. It has not topped the road in anyone's memory, even during Tropical Storm Irene.
- What happens if the new sidewalk creates problems for the residents, such as the house being lower than the sidewalk? (Jim said that the potential impacts on adjacent properties would be described for each of the alternatives under consideration, as well as the mitigation that might be done. The residents can comment on them both at the next meeting and make suggestions on what is and is not acceptable.)
- There appears to be enough support on the south side of the existing roadway bridge to add a sidewalk bridge; was this in the original bridge plans? (Jim said he did not know but that as part of looking at different alternatives, they would certainly look at the option of adding a sidewalk onto either side of the existing bridge.)
- What about utility poles? (Jim said that the alternatives would examine what options existing for leaving the poles as they are, as well as moving the poles if needed for other alternatives. The various options would be described in the alternative report that will be the subject of the second work session.)
- Make sure you consider existing mailboxes when planning where the sidewalk goes.
- The sidewalk between the end of the current sidewalk west of Lafayette and Butterfly Street is being constructed now.
- If the sidewalk on the south side of Killington east of Lafayette are abandoned, will the marker of where the edge of the right of way is be lost? (Jeff said the City has records and will have the information available if it is ever needed.)
- What is the schedule for restoration of the land disturbed by all the recent construction? (Nate said soon!)
- The construction of the next section of curbing will be starting on Tuesday, June 3, 2014 and should be done within four days, by Friday of this week.
- If the existing sidewalk is being removed on the south side, then keep the entire sidewalk on the north side, so no one has to cross the street to use the sidewalk.
- It is cost prohibitive to put the sidewalk on the south side.
- Kids won't cross the road if you switch the sidewalk from one side to the other.
- If Harrington Street is opened again, it would decrease traffic on Killington Avenue.
- Is adding a sidewalk on Killington Ave a done deal? (Jim explained that this project will determine what the best place to put a sidewalk would be IF the City decides to add a

sidewalk. The decision to actually add the sidewalk is a separate action by the City. The residents could help make it a reality by showing up in support of the final recommendations when they are presented to the Board of Alderman on September 15.)

- Try to provide notice to more people than just those that live on Killington Avenue. (Jim said that he wasn't sure if the City could do that, but that he could send out email notifications of the next meeting to anyone who cared to leave an email address - Seven people left their email address at the end of the meeting.)
- The neighbors really want a complete sidewalk. No one was against the project.
- The crossing of Moon Brook is the biggest issue for this project.
- Snow plowing on private drives often blocks the sidewalk. (Jeff - The City is getting a new sidewalk plow, which should help them keep up with the plowing needs next winter.)
- Almost everyone at the meeting heard about it through the letter sent to them by the City.
- Residents added a few additional items to add the Need for the project:
  - Children walk to school bus stops every day along the edge of the road;
  - Children walk to Christ the King School along the edge of the road until the sidewalks start; and
  - There are numerous mothers that push strollers along the edge of the road every day;

Jim gave the dates of the two additional work sessions, July 15 and September 4 as well as the presentation to the Board of Alderman, September 15.

City of Rutland  
Killington Avenue Sidewalk Extension  
Scoping Study

**BROADREACH**  
Planning & Design

PO Box 321  
Charlotte, Vermont 05445  
802-425-5061

*Public Work Session #2*  
July 15, 2014

Notes

Jim Donovan of Broadreach Planning & Design presented the various alternatives using plans and photo simulations. He passed prints of the various alternatives so the audience could take a closer look at them. The participants were unanimous relatively quickly on selecting the north side sidewalk separated from the roadway by a greens space (Alternative 1) as the preferred sidewalk alignment. They also were unanimous on their selection of the bridge as the preferred method of crossing Moon Brook. After further discussion on this issue, they agreed that the City could use the most cost effective of the three alternatives for crossing Moon Brook, as long as it looked similar to the photo simulation of the bridge crossing (Illustration 8 in the *Alternatives* report).

Jim recorded the following comments or questions during the discussion.

- The City will begin reconstructing the sidewalks west of Butterfly Avenue in the next few weeks.
- The north side alternative works best for students walking to school.
- The City and the neighbors can work out the details around the two utility poles east of Ronaldo Court.
- The cuts into the side slopes required for the south side sidewalk would be too big.
- The sidewalk placed right next to the curb on the south side would not be as safe or desirable as the one separated by a green space on the north side.
- It looks like there would be a more dramatic grade change with the sidewalk on the south side than the one on the north side if the south side sidewalk were placed away from the curb.
- The existing sidewalks on the south side east of Lafayette Street should be abandoned.
- "No Action" is not acceptable!
- How much garden will need to be removed on the second property east of Butterfly Avenue with the north side sidewalk? (Jim responded that the garden on the west side of the driveway would need to be shortened by about three feet and the garden on the east side of the driveway would need to be narrowed by about one foot as shown in Illustration 2 in the *Alternatives* report. The property owner was OK with that level of reduction.)
- The bridge alternative blends into the neighborhood best.
- The slopes down to the lower boardwalk brook crossing could become slippery or icy in the winter (as seen in Illustration 10 in the *Alternatives* report).
- How wide would the bridge be? (Jim responded that it would approximately six feet wide; the final width would be determined during the design process so that the City's sidewalk plow could easily cross the bridge to make sure that it stayed plowed along with the sidewalks leading up to it.)

City of Rutland  
Killington Avenue Sidewalk Extension  
Scoping Study

**BROADREACH**  
Planning & Design

PO Box 321  
Charlotte, Vermont 05445  
802-425-5061

*Public Work Session #3*  
September 4, 2014

Notes

Jim Donovan of Broadreach Planning & Design presented the draft final recommendations to a group of about 10 neighbors. He was supported by Nate Stansbury, Associate Engineer for the City. The residents fully supported the recommended alignment. They did have a few questions on details and procedure.

- How would the sidewalk affect existing mailboxes? (Jim said that they would stay in their current locations.)
- How soon will the sidewalk be constructed? (Jim and Nate said that it would take a while. The soonest might be late next summer, if everything went really well. The City needs to find funds for preparing the detailed design of the sidewalk and then additional funds to actually construct the sidewalk. If the City Council endorses the report and then allocated funds as a match to State of Federal grants, AND the City is able to secure a grant in the next round of Transportation Alternatives or Bicycle and Pedestrian grants, THEN it might be able to be installed near the end of next summer. If all of these don't happen, then it would most likely be constructed at least two years from now.)
- How can we make sure it happens next summer?! (Jim suggested that they attend the City Council Meeting on September 15, when Broadreach Planning & Design would present the final report, to show their support for the recommendations in the report.)
- Has the City determined what the best way to cross Moon Brook would be? (Jim responded that they had not yet looked in detail at the issue.)
- What is happening now near Moon Brook and how might it affect the proposed sidewalk alignment? (Nate explained that the culvert from the adjacent catch basin west of Moon Brook was being relocated due to the new curb that was being installed along the north side of Killington Avenue. Jim said that he would make sure the change was noted in the final report and would examine potential impacts the relocation might have on the construction details for the sidewalk. He did not think that it would affect the surface alignment or appearance of either the sidewalk or the bridge.)



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