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REPORT

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TOWNS OF
Rutland & West Rutland
VERMONT

Marbleway Path Scoping Study

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I - Table of Contents

II - Executive Summary

The Towns of West Rutland and Rutland have initiated a study to assess the feasibility of linking the two towns together through the development of a multi-use path along Business Route 4.

The study reviewed and evaluated a wide range of segments between Rutland Town and West Rutland to develop a direct connection, and makes recommendations for a preferred alternative and future action. The study identified 17 potential segments to connect West Rutland to Rutland Town, organizing the 17 segments into seven segments based on geographic location and their physical, connective and environmental constraints. While each segment was deemed feasible, 6 segments in particular were identified as a preferred recommended alignment, with the other 11 serving as potential spurs and connections.

1 - Introduction

1.1 Overview

In May of 2015, West Rutland and Rutland Town ("Towns") hired Weston & Sampson ("Consultant") to assess the feasibility of linking the two towns by exploring and evaluating several alternative alignments for a bicycle and pedestrian connection between the West Rutland Park & Ride facility on Thrall Avenue and the Rutland Town Park & Ride facility at the Rutland Town Office on Route 4. The scope of work included an assessment of the opportunities and constraints of each alternative, including (but not limited to) environmental impacts, directness/desirability of route, feasibility, and order-of-magnitude cost.

1.2 Purpose

The Town of West Rutland and Rutland Town, Vermont, are both culturally and economically strong and energetic centers for their respective communities. The US Business Route 4 corridor connecting the Towns supports a mix of land uses that complement the two town centers, while serving as interesting and inviting places on their own. Together, the Town areas provide stimulating places to live, work, and play.

The purpose of this project is to complete a scoping study for a multi-use path connection between the Park and Ride Lot on Thrall Avenue in West Rutland's designated village to Rutland Town's Park and Ride Lot at the Rutland Town office. The multi-use path is intended to be used for both commuting and recreational purposes and will address and incorporate safety concerns along the Route 4A corridor. The pathway will work to extend bicycle and pedestrian facilities for people of all ages and abilities, provide a convenient non-motorist link between the two Towns, and establish a link to other trail systems that serve the greater Rutland County area.

1.3 Need

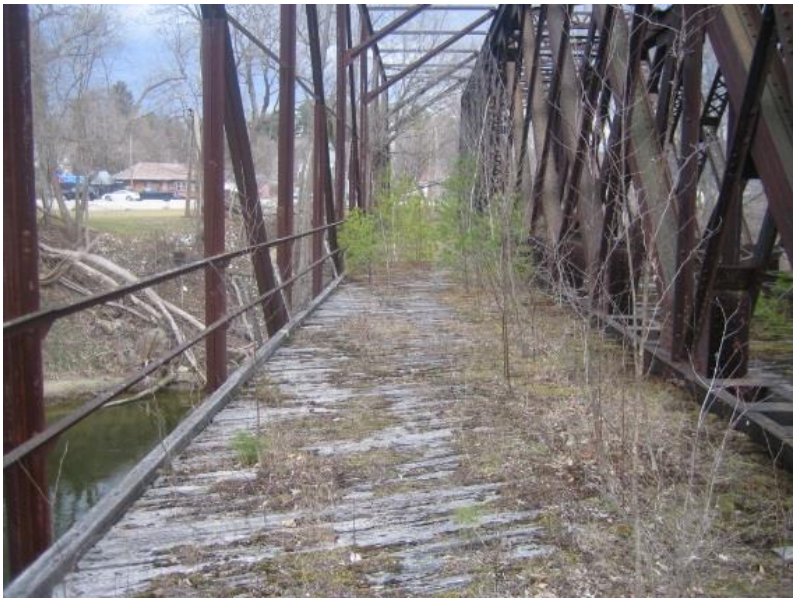
Establishing a strong connection between the Towns for pedestrians and bicyclists will work hand-in-hand with the recently completed Smart Growth Connection Plan, promoting increased non-motorized traffic along the Route 4A corridor between existing and future businesses. Additional benefits include:

- Healthier lifestyle for residents
- Increased sense of community
- Encourage foot traffic for economic growth
- Connect existing trail systems in Rutland County
- Alternative transportation use for commuters
- Increased recreational use
- Safer systems in place for pedestrians and bicyclists

2 – Project Area & Existing Conditions

2.1 – Background

West Rutland and Rutland Town are connected by Vermont Route 4A (a four-lane highway). Prior to the start of this study, the Towns embarked upon a smart growth connections study of the Route 4A corridor to develop a strategy to transfer Route 4A from an urbanized highway with commercial and industrial uses into a vibrant corridor and a gateway to each community. The segment of this corridor located between the Towns includes a railroad, topographical changes, and varying land uses. Consequently, an important element of the corridor's transformation are the efforts, some of which are already underway, to ensure that each Town can serve all users by making the Route 4A corridor a highly walkable and bicycle friendly connection.



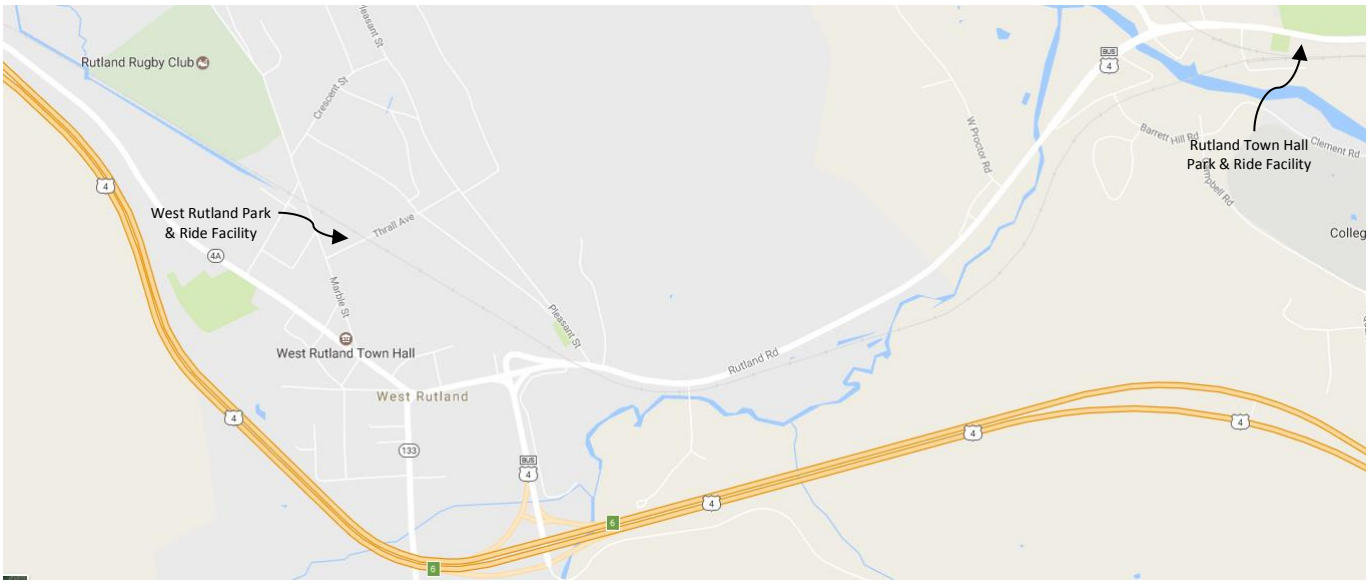


Figure 1: Overall Project Area (Credit: Google.)

2.2 – Project Area

The study area for the project encompasses Route 4A corridor between the Park & Ride facilities in each of the Towns, as well as north of the West Rutland Thrall Avenue Park & Ride facility north along Marble Street to the Carving Studio & Sculpture Center of West Rutland and east of Rutland Town Hall to the terminus of the Rutland Creek Path at the Ripley Road Bridge. This alignment is approximately 3.0 miles between the two park & ride facilities.

Route 4A is considered a major roadway connection for motorists traveling in the east/ west direction between West Rutland and Rutland Town (along with other destinations located due east within the City of Rutland). The corridor is comprised of four travel lanes in the east and westbound directions between the intersections of Main Street, Ross Street and Clarendon Avenue in West Rutland and the terminus of East Proctor Road in Rutland Town, before narrowing to three travel lanes (east, west, and turning lanes) and continuing towards the City of Rutland. West of Route 4A within the Town of West Rutland, the number of travel lanes ranges from two to three with additional turn lanes at major intersections. The posted speed on Route 4A is currently 40 miles per hour between the Gilmore Street intersection and Gawet Marble and Granite, with a reduction down to 35 miles per hour extending either direction beyond those points. Based on 2015 Vermont Agency of Transportation (VTrans) data, Route 4A has an the average daily traffic per day (ADT) of 12,583 vehicles.

2.3 – Alternatives Considered

To determine how to best connect the Towns of West Rutland and Rutland, several alternative alignments were analyzed and developed. An overview of the alignments is included on the following page, and each of the analyzed segments are discussed below. Additional mapping of each alignment can be found in Appendix A: Project Alignment Maps & Concept Renderings. Natural and cultural resources are summarized in each alignment, and are described in greater detail in Section 3: Natural and Cultural Resources.

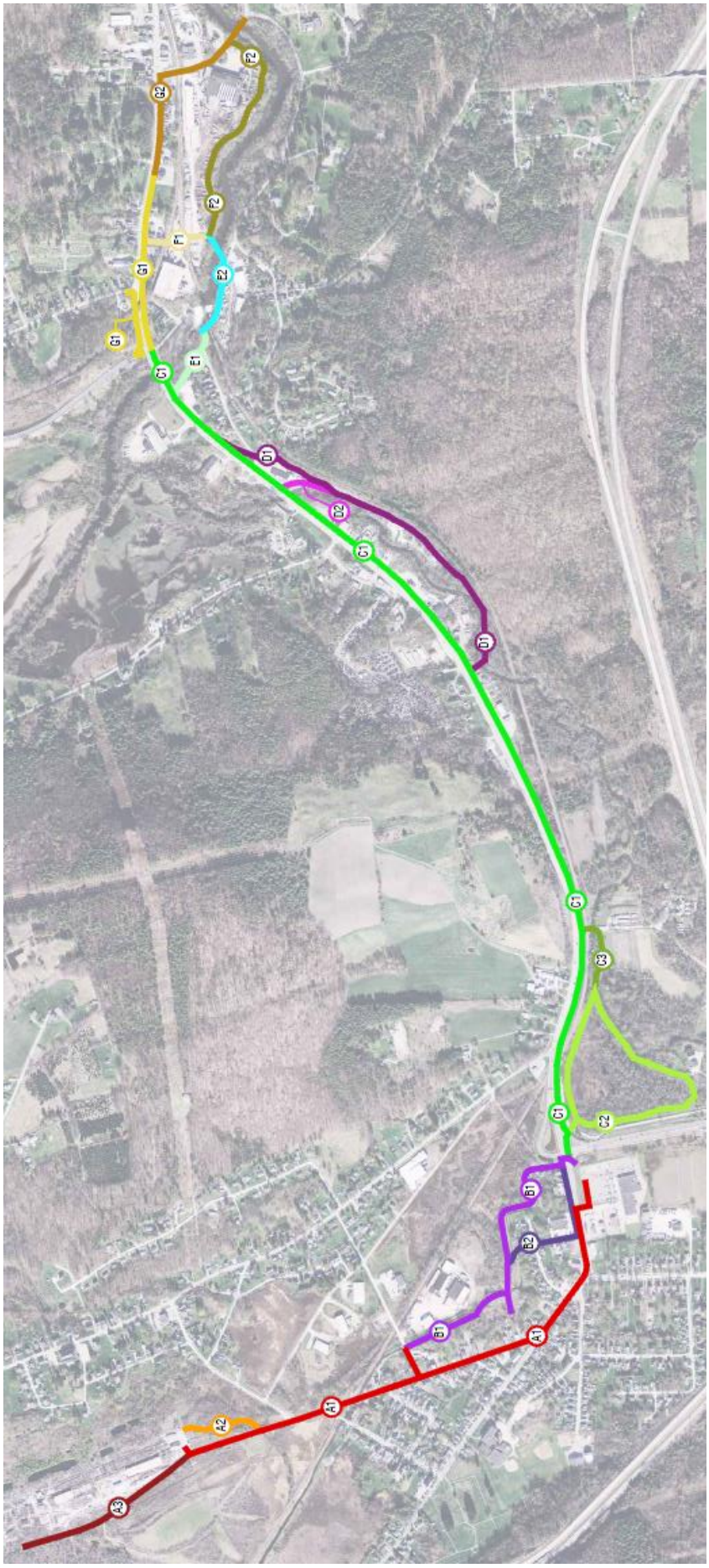
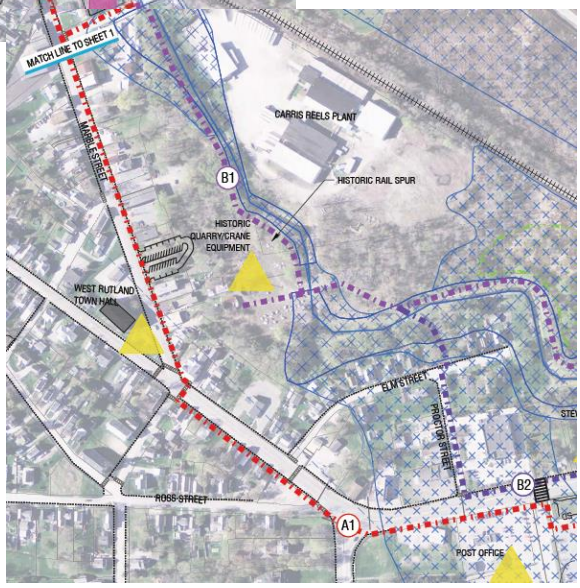


Figure 2: Proposed Overall Alignment

TRAIL SEGMENT A

Alignment A1 – From Thrall Avenue Park & Ride



Alignment A1 consists of on-road accommodations along Marble Street, beginning at the Carving & Sculpture Studio, and continuing on to Main Street/Route 4A before terminating at the Westway Mall. Trailheads are proposed to be located within the Westway Mall and at the Thrall Avenue Park & Ride. It is approximately 0.5 miles in length, and extends along wetlands to the east of Marble Street. There are no significant cultural resources near the trail. This alignment includes a crosswalk at the Crescent Street intersection.

Alignment A2 – Extension through Marble Yard

Alignment A2 involves a short 0.14 mi. trail spur that extends through the marble yard of the Carving & Sculpture Studio before re-connecting with Alignment A1 just north of Crescent Street. This alternative provides a more scenic option of connecting to the Studio by meandering through a field of both carved statuary and uncarved marble blocks. This trail is located between two wetlands and is situated entirely within the West Rutland historic district.

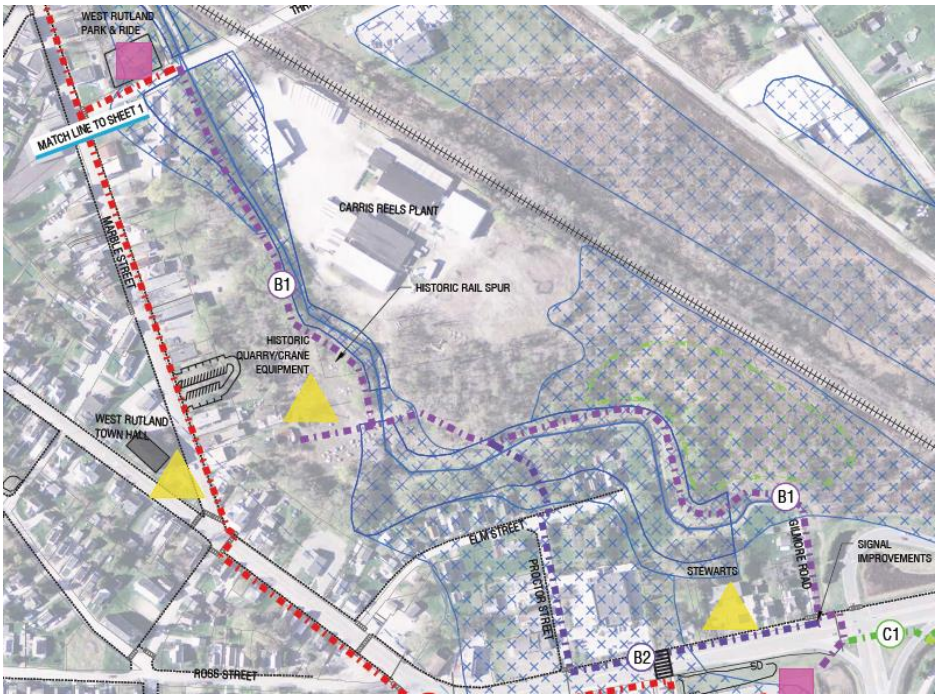
Alignment A3 – On-road Connection to the West Rutland Marsh

Alignment A3 (±0.3 miles) travels north along Marble Street from Crescent Street to connect to the West Rutland Marsh and Boardwalk, and is comprised primarily of on-road accommodations. This segment also includes a sidewalk extended from Crescent Street to the Carving Studio entrance and future garden pathway. The trail is adjacent to the wetlands along the east side of Marble Street. While not serving as a direct connector between West Rutland and Rutland Town, this alignment works to develop and strengthen connections to other nearby trail systems and points of interest.

TRAIL SEGMENT B

Alignment B1 – West Rutland Circuit from Thrall Avenue Park & Ride

Alignment B1 is a paved multi-use path that makes up a 0.6 mile circuit within the Town of West Rutland, serving as a local community loop tying into the main connector alignments (A1 and C1). Beginning at the Thrall Avenue Park & Ride, the alignment hugs an existing stream bank extending parallel to Marble Street, and borders a wetland south of the rail line. Historic relics of marble and quarry equipment (image below) are located along this route, providing opportunities for the creation of a pocket park (rendering below) directly across from Town Hall which would connect with the proposed town parking area east of Marble Street. This location would provide an opportunity for a trailhead, picnic areas, open space, and historic interpretation of the area. The park would serve to draw people to the area and highlight the interesting history of West Rutland. This alignment would terminate at the Westway Mall's proposed trailhead.



Alignment B2 – West Rutland Circuit from Elm Street

Alignment B2 is a relatively short spur (0.25 miles) that diverges from Alignment B1 near Elm Street. It would hold the same qualities as Alignment B1 (paved, multi-use path), and connect to Elm Street through an empty parcel. This trail alignment would cross the stream just west of the wetland area. A secondary trailhead kiosk would be located on Elm Street, and serve as a neighborhood connection to the trail. This improvement includes improving the pedestrian crossing.

TRAIL SEGMENT C

Alignment C1 – Business Route 4 & Route 4A

Alignment C1 is the most direct connection between West Rutland and Rutland Town. The alignment extends along Route 4A for 1.7 miles between the Westway Mall in West Rutland and Route 3 in Rutland Town. The alignment would consist of a paved multi-use path and is situated to the north of existing wetlands and extends along the Clarendon River just north of the Old Boardman Road. The path could be on one, either, or both sides of Route 4A depending on available funding. However, should it only be located on one side of the roadway, the south side would be preferable as it would allow for more direct connections to the businesses located along Route 4A. It should be noted that facilities located on both or either side of the roadway would require safe and efficient crossings accommodations of Route 4A at a frequency necessary to provide safe access to existing and future businesses and interests on either side of the roadway. Within the corridor, currently motorists are known to speed, due to several factors.

Alignment C2 – Wetland Circuit

Alignment C2 is a 0.75 mile circuit located within the wetlands area adjacent to Route 4A and the West Rutland wastewater treatment plant. The circuit would provide wetland overlooks, contain more natural surfacing materials (wood mulch or stone dust), and serve as an informal environmental education area, rather than a major connector segment. There is potential to add either a full trailhead or a secondary kiosk along Clearwater Boulevard to help bring people to the area.

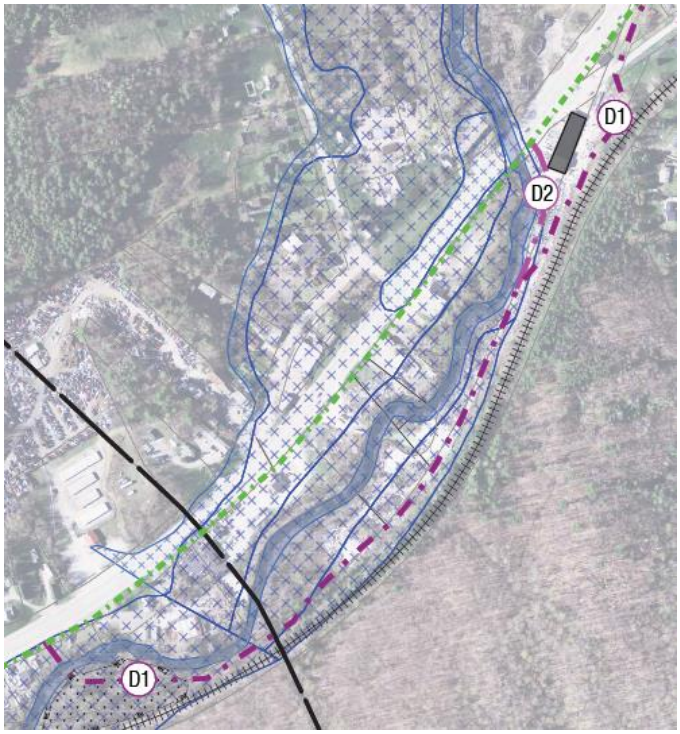
Alignment C3 – Connection to Route 4A

Alignment C3 (0.14 mi.) serves as a connection between Alignment C2 and Route 4A. This segment would require a bridge to span the Clarendon River, allowing for a connection to Old Boardman Hill Road. In addition this alignment would cross the existing rail line at Old Boardman Hill, and potentially require additional safety signalization and measures.

TRAIL SECTION D

Alignment D1 – Connection behind Business Corridor along Route 4A

Alignment D1 is a paved multi-use path (0.7 miles) that breaks off from Alignment C1 between the Ace Muffler Center and Wilk Paving. This alignment would require at least one bridge to cross the Clarendon River, and would travel parallel to the existing rail line before connecting back to Alignment C1 at Simons Avenue. It provides a more scenic route behind the business along Route 4A, and would pass through an existing marble yard, providing more opportunities to highlight the rich history of marble quarrying in the area.



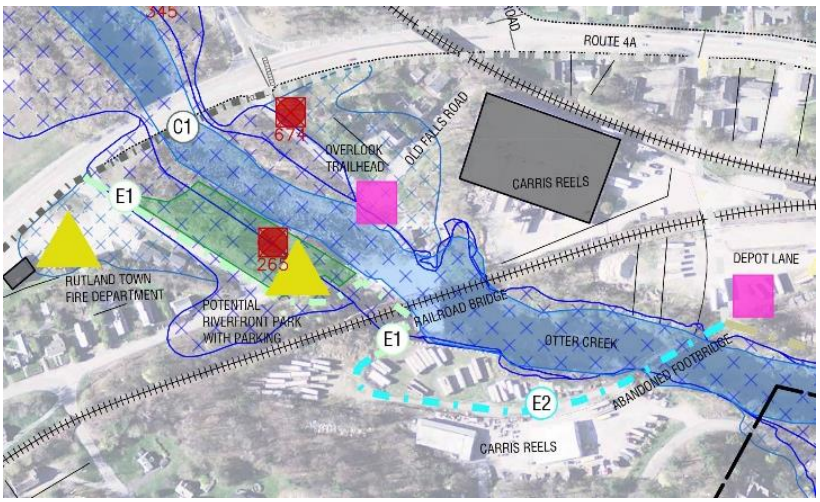
Alignment D2 – Alternative to alignment behind Gawet Marble

Alignment D2 is a short 535 foot segment that allows Alignment D1 to connect back to Route 4A at an earlier point, just before Gawet Marble and Granite. It is provided as an alternative should Gawet Marble not desire a path to be placed directly behind their property.

TRAIL SECTION E

Alignment E1 – Lower Waterfall Park & Overlook

Alignment E1 (0.13 mi.) is a paved multi-use path that extends along Simons Avenue to a proposed park space in Rutland Town at the base of the waterfall. The trail is located to the south of the Clement Mill Ruins, a site which includes mid-19th and 20th century marble mill foundations and features. Due to



the drastic topographical differences (±30') at the river edge, a ramp system or various overlook areas would need to be designed to accommodate an accessible route into this area from Simons Avenue. The proposed park would serve as a draw to recreational users, and formalize activities that already take place in the area, such as picnicking and fishing, while providing scenic views of the Otter Creek waterfall.

Alignment E2 – Upper Waterfall Overlook & Bridge Crossing

Alignment E2 (0.19 mi.) is a continuation of Alignment E1, extending along the edge of Otter Creek adjacent to the Carris Reels property. The path connects across an abandoned railroad/ pedestrian bridge which spans Otter Creek. This bridge provides unique views over the creek and waterfall area. This segment serves yet again to highlight the rich history of the area. Based on the preliminary assessment of the bridge, the overall structure could be remain intact, including the metal trusses which display the year the bridge was constructed (1907). New decking and railing would be necessary. This alignment would require an easement or acquisition of property from private landowner.

At the northern end of the bridge a pocket park is proposed to create an outdoor space overlooking Otter Creek. This space could also serve as a location for the relocated Train Museum in an effort to draw recreational users to the area.

TRAIL SECTION F

Alignment F1 – Connect Overlooks to G1

Alignment F1 extends along Depot Lane for 0.12 mi., providing a walking zone with on-road accommodations from the abandoned bridge to Route 4A. Within this alignment, due to limited right-of-way, proper signage and markings would be recommended to provide safe facilities for walking and bicycling. Improvements within this alignment may include safe pedestrian crossing accommodates of the active railroad line at Depot Lane.

Alignment F2 – Extension parallel to Otter Creek

Alignment F2 is a 0.4 mile creek-side, paved, multi-use path that extends parallel to Otter Creek to the Ripley Road Bridge. This alignment extends parallel to Otter Creek and may span several wet areas susceptible to flooding and containing potential wetland and other natural resource areas. This alignment would strengthen the path connection to Segment 5 of the Rutland Creek Path, which is currently in the design phase.

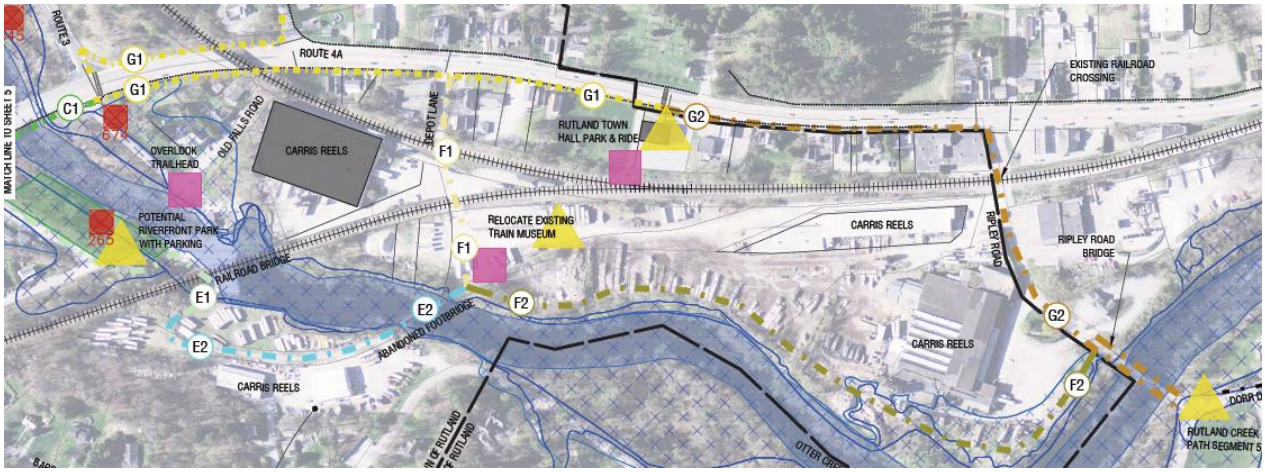
TRAIL SECTION G

Alignment G1 – Existing Infrastructure (Sidewalks)

Alignment G1 (0.4 miles) is a continuation of Alignment C1 along Route 4A. This alignment consists of the existing sidewalk system in Rutland Town and the addition of on-road bicycle accommodations in both directions. A few segments of sidewalks are proposed on either side of the road to close the gaps in the existing sidewalk system. This segment begins at Old Falls Road, and terminates at the Park & Ride located at Rutland Town Hall. Finally, within this alignment pedestrian crossing accommodations are recommended across Route 4A.

Alignment G2 – Connection from Route 4A to the Ripley Road Bridge

Alignment G2 extends from the terminus of Alignment G1 and continues along Route 4A to the terminus of the Ripley Road Bridge which spans Otter Creek. It continues north along Ripley Road before turning west down Route 4A to approach Rutland Town Hall from the opposite direction as Alignment G1. In addition to providing a strong connection to the Park & Ride,



this 0.4 mile long segment would connect to the proposed Rutland Creek Path at the Ripley Road Bridge, providing a strong connection the another major trail system in the Rutland area and drawing in additional users from distant parts of Rutland Town, the City of Rutland, and the College of St. Joseph. Similar to Alignment G1, this section would utilize the existing sidewalk system, while closing gaps with additional sidewalk and providing on-road accommodations. This alignment includes providing safe crossing of the active railroad at Ripley Road.

2.4 – No Build Alternative

The No-Build Alternative must be considered for all projects funded by the Federal Highway Administrative Act to comply with the National Environmental Policy Act (NEPA).

The no-build alternative would not satisfy the Project Purpose & Need Statement, and the need for a safe walking and bicycling route between West Rutland and the Town of Rutland would remain.

2.5 – Not Preferred Alternatives

Outlined below are the alignment options that are not preferred for development, along with explanations of how these were chosen (property ownership issues, increased construction cost, etc.).

Alignments C2 & C3 – Wetland Circuit and Connection to Route 4A

Alignment C2 is not preferred because of the potential wetland impacts adjacent to the alignment area. The alignment is also not as cost effective as other preferred alignments. Consequently Alignment C3 primarily connects to A2 and Business Route 4. However, Alignment C2 may be considered in the future as an environmentally sensitive trail spur through the wetland/ stream edge and when additional funding may be available.

Alignments D1 & D2 – Connection behind Business Corridor along Route 4A and behind Gawet Marble

Alignment D1 is a path spur off of Alignment C1 which would require a bridge to cross the Clarendon River. This alignment is not preferred because of potential complications caused by the necessary stream and active rail road crossings. Also within this alignment, the potential environmental constraints within the stream valley, including the presence of wetlands, floodplain and stream corridor make this not preferred alternative. Consequently, Alignment D2 is not preferred because it serves as a connector between D1 and there is no need for the connection to Business Route 4 from Alignment D1.

Alignment E1 connection to E2 – Extension beneath RailRoad Bridge Overpass

Due to the anticipated complexity and costs of the pathway connection between Alignments E1 and E2 are not preferred at this time. However, this connector may be considered at a later date once the primary connections on either side are completed.

Alignment F2 – Extension parallel to Otter Creek

Alignment F2, which extends parallel to Otter Creek and connects to the Ripley Road Bridge, is not preferred. This alignment is not preferred because of anticipated costs, environmental constraints and land ownership complications, this alignment may be considered in the future as connections to the Rutland Creek Path are constructed.

2.6 – Compatibility with Planning Efforts

Town, regional and state planning documents all support the creation of better bicycling and walking conditions and facilities. Although not specifically mentioned in either of the Town plans, both West Rutland and Rutland Town both are supportive of improving walking and bicycling connectivity within and between the towns. In addition, the creation of the Smart Growth Connection Plan has shown greater involvement and investment in transforming Route 4A corridor from a highway thoroughfare to a mixed use/ vibrant urban corridor, with safe facilities for users of all modes and abilities.

2.7 – Preferred Alternatives

The primary recommended route connecting the Towns of West Rutland and Rutland provides a safe multi-use connection for walkers and bicyclists. The secondary connections create a cohesive multimodal connection to points of interest, neighborhoods, and community destinations. Within each town a multiuse pathway connection with a community pocket park area is created. These pocket parks include the West Rutland park area with historic interpretation and quarry equipment, and the railroad bridge crossing and otter creek overlook park areas in the Town of Rutland. Both towns are encouraged to create community destinations and additional interests with easy walking and biking access.

A combination of alignments is recommended to make a comfortable and convenient connection between West Rutland and Rutland Town. Within each alignment, recommendations that are similar to the Smart Growth Connections Study, dated January 20, 2016 are noted. Outlined below is a summary of the recommended route alternatives.

The primary recommended route extends from the West Rutland Park & Ride facility at Thrall Avenue to the Park & Ride facility at the Rutland Town Hall. This route consists of the following alignments:

- A1 - Thrall Avenue Park & Ride
- B1 - West Rutland Circuit from Thrall Avenue Park & Ride
- C1- Business Route 4 and Route 4A
- G1- Existing Infrastructure (Sidewalks)

Recommended secondary connections and spurs consist of the following alignments:

- A2 - Extension through Marble Yard
- A3 - On-road connection to the West Rutland Marsh
- B2 - West Rutland Circuit from Elm Street
- E1 - Lower Waterfall Park & Overlook
- E2 - Upper Waterfall Overlook & Bridge Crossing
- F1 - Connect Overlooks to Existing Infrastructure (G1)
- G2 - Connection from Route 4A to the Ripley Road Bridge

Alignment A1 – From Thrall Avenue Park & Ride

The preferred alignment for Alignment A1 is to create a walking/biking path from the Thrall Avenue Park and Ride to the Carving Studio to provide a destination within the West Rutland town core. The Smart Growth Connection Plan (recommendations WR 10 & WR13) proposes upgrades to bicycle facilities on Marble Street. Plans include the installation of sharrows with 11' travel lanes on both sides.

Alignments B1 & B2 – West Rutland Circuit – Historical Components, Park Space, Picnic Area

Alignment B1 is a preferred alignment that would begin at the Thrall Avenue Park and Ride. The alignment would continue as an asphalt multi-use path that follows an existing stream bank and connects to historic relics of marble quarry equipment that have potential to provide unique opportunities for educating citizens about the town's history. Park space and picnic areas are also proposed near the equipment that would act as a destination for the alignment and the overall system. The Smart Growth Connection Plan (WR13) proposes upgrades to bicycle facilities along major roadways. Lane reductions to 11' allows for the installation of protected bicycle lanes on both sides of the roadway.

Alignment B2 is proposed as a preferred connector from Alignment B1 to Elm Street through an empty lot. A secondary trailhead kiosk on Elm Street is proposed to serve as a local connection to the trail. The Smart Growth Connection Plan proposes the development of a linear channel park to provide recreational opportunities to trail users (WR14).

Alignment C1 –Business Route 4 and Route 4A

Alignment C1 is a preferred alignment because it is the most direct connection between West Rutland and Rutland Town. This study recommends a wide shared-use path adjacent to Route 4A to accommodate users of all ages and abilities. This alignment recommends the reduction of the number of lanes, and narrowing the travel lanes on Business Route 4 in order to obtain sufficient space for a multi-use pathway. The Smart Growth Connection Plan (CR4) proposes adding protected bike lanes in both directions along Business Route 4 by narrowing existing vehicular travel lanes (WR3, WR4). Although protected bicycle lanes would enable users to efficiently travel through the corridor, these facilities do not provide a comfortable bicycle facility for users of all ages and abilities, particularly inexperienced or younger riders. Consequently, a multi-use path on the south side of the corridor would encourage users of all ages and abilities to safely travel through the corridor, as well as visit businesses or community interests throughout the corridor. Finally, a multi-use path could also be utilized by pedestrians, which bicycle lanes would not provide a safe facility for these potential users. If Business Route 4 is reduced to three travel lines, then sufficient space will be reclaimed and available to create a shared use path with minimize potential environmental impacts to adjacent resources.

Alignment E1 – Lower Waterfall Park & Overlook

The preferred Alignment E1 is a paved multi-use path that extends along Simons Avenue to a proposed park space in Rutland Town at the base of the waterfall. The proposed park would serve as a draw to recreational users, and formalize activities that already take place in the area, while providing scenic views of the Otter Creek waterfall. As noted previously, due to the elevation difference between the Simons Ave and the upper overlook (E2) a walking & bicycle connection is not recommended at this point in time due to the anticipated costs and constructability. The Smart Growth Connection Plan (CR2) proposes the creation of a public park on both sides off Simmons Ave and Old Falls Road.

Alignment E2 – Upper Waterfall Overlook & Bridge Crossing

Alignment E2 is recommended as a trailhead at the Upper Waterfall overlook, which would provide views of the Otter Creek Falls. This alignment would extend along the edge of Otter Creek and along the Carris Reels property limit. Ultimately the path would connect to an abandoned pedestrian/ railroad bridge which crosses Otter Creek. The Smart Growth Connection Plan (CR9) proposes the relocation and expansion of the railroad museum to a more central and visible location on Business Route 4.

Alignment F1 – Connect Overlooks to Existing Infrastructure (G1)

Alignment F1 would extend shared lane markings and a marked pedestrian walkway along Depot Lane. Further discussions with Carris Reels should be considered to minimize vehicular and truck traffic through this constrained roadway. This alignment provides a walking and biking connection from the abandoned bridge up to Business Route 4.

Alignment G1 – Existing Infrastructure (Sidewalks)

Alignment G1 is a continuation of Alignment C1 along Route 4A from Old Falls Road to the Rutland Town Hall. This alignment extends the existing sidewalk network in Rutland Town, as well as improving and filling missing sidewalk gaps. In addition to the sidewalks, pedestrian crossing accommodations and on-road facilities would be provided for bicyclists. Crossing accommodations are specifically recommended at Town Office and at the East Proctor Road intersection. The Smart Growth Connection Plan (BR7, BR4), recommends Business Route 4 and VT Route 4A to be converted to 3 lane road way with protected bicycle lanes on the south side of the roadway, as well as the addition of crosswalks and a complete sidewalk system (CR5).

Alignment G2 – Connection from Route 4A to Ripley Road Bridge

The preferred Alignment G2 would run north along Ripley Road from the existing bridge before turning west down Route 4A to approach Rutland Town Hall from the opposite direction as Alignment G1. This segment would connect to the proposed Rutland Creek Path, providing a strong connection to another major trail system in the region. The preferred alignment would utilize existing sidewalk systems while proposing to close current gaps.

Genera Recommendations -

Additional Recommendations from The Smart Growth Connection Plan:

- CR4: Traffic Calming
- CR7: Designated Bus Stops
- CR8: Reduce Cuts
- WR3: Street Trees/Traffic Calming
- WR4: Complete Sidewalk System (High School)
- WR5: Route 4 Connector Intersection
- WR6: Roundabout at Clarendon Avenue
- WR7: Realignment of Ross Street
- BR5: Street Trees
- BR6: Reduce Curb Cuts
- BR9: Bus shelters & Bus Stops
- BR10: Marble as a Unifying Theme

3 – Natural, Cultural, and Physical Resources

The purpose of this section is to identify existing environmental and cultural resources which may influence the development of walking and bicycling facilities within the project area.

Weston & Sampson conducted a desktop review, as well as a field reconnaissance on site to confirm information from existing resources and expand the understanding of the environmental factors present within and near the project corridor. Resource areas reviewed included: streams/rivers, floodplains, wetlands, topography, historic architecture and archeological resources, property ownership, and utilities.

Ultimately, development of the project corridor into a multi-use trail will require measures to avoid, minimize and mitigate impacts of these resources will be needed to enable a trail to coexist with the resources.

3.1 – Surface Waters

The study area is located within the Otter Creek watershed. Otter Creek flows in the North direction, and encompasses several branches and tributaries. One such tributary is the Clarendon River, which flows in the eastern direction roughly parallel with Route 4A.

3.2 – Wetlands/ Soils

The study area consists of potential Federal and State wetlands. Primarily, these wetlands are located in areas within and surrounding Otter Creek and the Clarendon River, as well as around smaller man-made drainage basins within West Rutland. While not every wetland area is mapped, at least four large Class 2 Wetlands as identified by the State of Vermont are known to be located within and adjacent to the study area; one surrounding potential alignment segments B1 and B2, one surrounding the Waste Water Treatment Plant in the vicinity of alignments C2 and C3, one to the north of alignment C1 as it enters into Rutland Town, and one to the south of alignment D1. Although wetlands exist within the project area and proper permitting through the Army Corps of Engineers and Agency of Natural Resources is required, they do not appear to prohibit the further development of the trail alignment. As a part of the desktop study, existing soils were reviewed to determine if survey areas contain unique or challenging soil conditions. Copies of these maps are included in Appendix C.

3.3 – Streams, Rivers and Floodplains

With the exception of Alignments A1, A2 and A3, all other segments of the path are located partially, if not entirely, outside the flood zones subject to the 100-year flood (Zones A and AE). One hundred year flood zones are defined as areas with a 1 percent annual probability of flooding and where predicted flood water elevations, above mean sea level, have been established. The remaining segments are located with Zone X, which is defined as an area with a 0.2 percent annual probability of flooding, classified as 500-year flood plains.

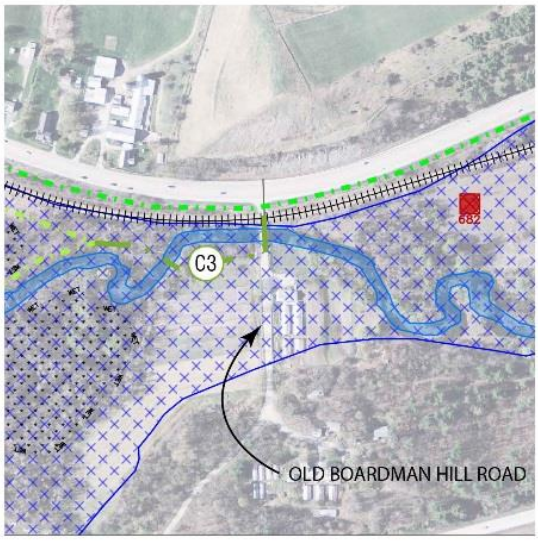
Traveling from east to west along the proposed alignments, Alignment B1 and B2 are located within Flood Zones A, AE and X. Alignment C1 runs in and out of Flood Zone A and X, with C2 and C3 being located entirely within Flood Zone A. Alignments D1 and D2 are located within Flood Zone AE, while Alignments E1, E2, and E3 are within Zones X and A. Alignments F1, F2. G1, and G2 have segments located with Zones A, AE, and X.

3.4 – Topography

A majority of the study area is comprised of relatively level or gradually sloping topography suitable for the development of a walking and bicycling path. Exceptions include the topography near the connector between Alignments E1/ E2, which would connect the area along Simon's Avenue to the area above the waterfall adjacent to the Railroad Museum. The grade change here is approximately 30' along a sheer cliff face, and would require extensive construction and switch-back system in order to allow an accessible connection between the two areas.

3.5 – Historic Architecture & Archaeological Resources

As a part of this study, a Phase 1A Archeological Resource and Historic Preservation Assessment was completed. The report explores the preferred trail alignment to determine if any particular areas could be subject to additional research, and bring these areas to light should the project be progressed. In summary, the report found that the project alignment is heavily disturbed throughout its entire length, however there were two areas of concern that may be intersected by the project that would need to be considered in future design phases.



The first area is located within the floodplain east of Old Boardman Hill Road. This area is in the vicinity of two pre-contact archaeological sites. Recommendations include restricting grading for the pathway out of the floodplain and adjacent to the Route 4A embankment.

The second area is the Clement Marble Mill site. Foundation remains and site mechanical equipment are located along Alignment E2, which should be avoided or incorporated into the project design. It is suggested that interpretive signage could be used as a component of mitigation for the features. Similarly, along Alignment B1, there are large marble blocks and railroad remnants that could be incorporated into the project with interpretive signage.

Additional areas within the project area worth considering for protection from impact during construction include two retaining walls, a watering trough, and staircase. One retaining wall is constructed of finely-cut ashlar blocks, and the other is informally laid, consisting of rough blocks. Impacts to these walls should be avoided and proposed retaining walls should resemble the existing walls in color, scale, and construction techniques. A granite watering trough within text memorializing the Military Road is engraved on the street face was found along the south side of Business Route 4. A marble staircase at 370 Business Route 4 connects the entry walk to the street.

A complete copy of the Archaeological Report has been included in Appendix F of this document.

3.6 – Property Ownership

Within the study area, land ownership is distributed between private residential properties, VTrans right-of-way, utility easements, Town-owned property, and commercial properties. Further investigation of exact property limits is recommended as a part of further design phases to properly identify potential property impacts, if any.

3.7 – Bicycle and Pedestrian Facilities

Within the study area there are existing sidewalks located intermittently along Route 4A in the Towns, and along Marble Street in West Rutland. Other segments of Route 4A contain no bicycle facilities, resulting in safety concerns for those who travel along the corridor. No other on or off road bicycle facilities currently exist in either town for bicyclists.

3.8 – Utility Easements

Throughout the project area, utilities are typically located within right-of-ways or easements, including sanitary sewer, storm sewer, water, gas, electric and communications. During the site analysis phase, no utilities were identified as significant considerations to the project. Two utility corridors worth noting within the project area are as follows.

First is the sanitary sewer easement adjacent to the stream in the Town of West Rutland. Also within this area is a path used for stream dredging, which is frequently maintained. The second corridor is a 100-foot wide power easement, extending north-south approximately 1,500 feet west of the West Rutland/ Rutland Town boundary. The easement traverses the corridor; however, it would likely not intersect or prohibit the development of a trail within the Route 4A corridor.

3.9 – Hazardous Materials

A hazardous materials database search and field reconnaissance review of the project corridor was completed using the Vermont Agency of Natural Resources “Natural Resource Atlas”. This preliminary review was performed to identify properties in close proximity to the corridor that may have impacts related to hazardous waste or contaminated materials.

It should be noted, that although there may be potential contamination near the project corridor, contamination does not usually prevent the development of pathways as long as the necessary steps are taken to ensure safety to pathway users. In addition, there are generally two categories of contamination: residual contamination that may be found along any stretch of the corridor, and contamination associated with former industrial uses. During the field reconnaissance, there was no visual evidence of contamination or hazardous materials on-site.

Examples of hazardous sites along the corridor include:

- Hazardous Waste Generators
  - Auto repair shops
  - Gas stations
- Brownfields
  - Flory Plaza
- Hazardous Sites
  - Carris Reels
  - Flory Plaza
  - Rosen & Berger Salvage

A hazardous material reconnaissance review should be performed as a part of the next phase of design. Any existing hazardous materials should be capped, removed or transported in accordance with local, regional, state, or federal requirements.

For additional information pertaining to hazardous materials and the sites refer to the Appendix B, and the Vermont Natural Resource Atlas at http://anrmaps.vermont.gov/websites/anra/.

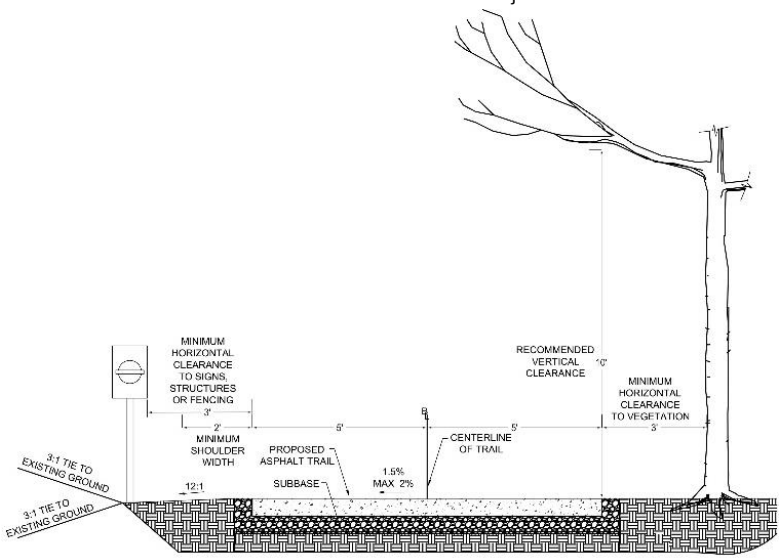
4 – Design Construction & Maintenance

Once the funding is secured, the process of designing and constructing the trail can proceed.

Design plans, and specifications can be prepared that show the length, width, and elevations of the trail and the specific locations, sizes, and types of materials needed for construction. Design documents will need to be prepared in accordance with set standards and submitted to the appropriate agencies for review and approval at the required design stages.

4.1 – Design Characteristics

The typical trail cross section recommended along a majority of the project corridor consists of a 10 foot wide hot mix asphalt surface with minimum 2 foot shoulders of various materials adjacent to both sides of the trail.



Trail Width- Overall, the minimum paved width for a multi-use trail is 10 feet, however widths can range from 10 to 14 feet. Wider values are applicable to areas with high-use and or wider variety of user groups or at trailheads or wayside locations.

Cross Slope- Trails should have a 1.5 percent cross slope in one direction to aid in drainage, and the cross slope can vary along the corridor depending on the topography and adjacent land use. A 1.5 percent cross slope is recommended (2 percent max.), which is the same as a typical sidewalk, and meets ADA accessibility guidelines.

Shoulders- A minimum 2 foot (3 feet preferred) graded area should be maintained from the edge of the trail to any obstructions. This area should have a recommended cross slope of 12:1 and maximum cross slope of 6:1 to provide proper drainage to prevent erosion, as well as provide a recovery zone for trail users. This shoulder is not considered part of the travel way and is commonly constructed using soft surface materials such as grass, gravel borrow, stone dust, or other stabilized materials. Low-lying vegetation within 6 feet of the edge of the trail may threaten the long-term integrity of the paved surface and as a result, high-density polyethylene root barrier is recommended for installation in these areas. Due to its price, root barrier should only be installed in areas where root damage can be anticipated.

Surface Materials- Trail surface materials should be provided to enable year-round use of the trail corridor and minimize maintenance needs. A hard, all weather, smooth asphalt pavement surface is recommended. At trailheads, waysides, and other amenity areas, alternative paving materials, such as brick/concrete pavers, colored concrete, stamped concrete, unit pavers, pervious concrete or permeable pavers are sensitive coordinated throughout the trail corridor to provide a cohesive network of amenity areas.

4.2 – Trail Features and Amenities

Trail features and amenities encourage trail use by providing an experience that is safe, comfortable, and convenient. Amenities should be accessible to all users and located in visible and convenient locations, as well as be vandal resistant. When determining the appropriate products, materials and designs, it is important to balance the up-front costs of trail amenities with long-term maintenance needs. Finally, trail amenities should also have a consistent design throughout the corridor. All signs, lighting, benches, and other site furniture should all have similar styles and colors. The Smart Growth Connection Plan (BR10) recommends the use of marble as a unifying material theme throughout the trail system. Additionally, a unified wayfinding system that is visible to motorists and pedestrian would be established at key locations along the corridor (BR11). As a result, a consistent wayfinding sign program with marble characteristics would unify the overall pathway.

Trailheads- Trailheads are locations where users can enter or exit the trail corridor from nearby neighborhoods, parks and streets. These locations are clearly marked with signage and other visual cues, such as information kiosks, interpretation, parking, bicycle parking, and other trail amenities. In addition, these locations provide an access point for emergency and maintenance personnel. The West Rutland Park area and Rutland Town Railroad Bridge are two potential trailhead locations for trail users.

Secondary Trailheads- Secondary Trailheads are locations where users can enter or exit the trail corridor from nearby neighborhoods, parks and streets. Secondary trailheads are less prominent than standard trailheads, serving as more informal connectors to the trail system. Typically located in neighborhoods, they may consist of a small plaza area with a wayfinding sign rather than a full plaza with benches and kiosks. The West Rutland Park & Ride and Rutland Town Hall, the Price Chopper Plaza, and Otter Creek Overlook Park could all serve as secondary trailheads.

Trail Waysides- Trail waysides are similar to trailheads except they are amenity areas along the trail corridor, rather than a starting or ending point along the trail. These areas can be locations where scenic views, environmental features or historical artifacts are highlighted or interpreted as well. At these locations, trail amenities including seating, interpretation, information, and bicycle parking are provided.

Trail Amenities- Trail amenities include items such as benches, trash receptacles, tables, drinking fountains, and dog waste stations which encourage trail use. Amenities should be accessible to all users and places away from the trail edge at least 3 feet to allow adequate clear space along the trail. The design and location of any amenities should complement the project setting, while maintaining the safety and mobility of users.

Trail Signage- Trail signage should be provided throughout the trail corridor, including regulatory, wayfinding, informational and interpretative signage. All signs should have a consistent design theme and comply with relevant standards.

Once the construction documents are approved and permits have been secured, the actual trail construction can begin. Tasks include clearing of trees, brush, and rocks, establishing the trail foundation and basic trail treadway, and installing and culverts and/or surface water control structures.

4.3 – Maintenance

Trail maintenance and management involves a variety of activities, including coordination with various stakeholders to provide maintenance and surveillance support. Maintaining a trail is a year around effort and should include a combined effort between permanent maintenance staff support and volunteer/stewardship program efforts. Trail maintenance includes on-going regular tasks up to reconstruction/resurfacing of trail segments as needed.

With the trail corridor specific maintenance activities may be warranted, such as developing an invasive removal strategy for invasive plant species. Below is an outline of typical maintenance activities and frequency of maintenance.

Maintenance Activity	Description	Frequency
Trash Removal	Removal of trash from trail corridor and priority areas, including removing ground debris, and emptying trash receptacles.	Daily/Weekly
Vegetation Pruning & Leaf Removal	Pruning of vegetation to maintain adequate sight distances and clearances. Removal of dead trees and leaves along trail corridor to maintain trail tread way.	Light pruning in Summer. Major pruning of trail corridor annually (Oct. to Dec.) Leaf removal monthly (Oct. to Dec./As needed.
Trail Sweeping/Plowing	Sweeping of debris and sediment, plowing/sweeping snow from trail to maintain tread way.	Weekly/ As Needed
Mowing/Edging	Mowing and edging grass buffers to prevent encroachment of plant materials onto trail surface.	Weekly during growing season (Spring-Fall) Annually
Resurfacing, Resealing & Restriping	Resurface, reseal and restripe asphalt trail to maintain trail tread way.	Resurface – 15 – 20 yrs Reseal – 5 – 10 yrs Restripe- As needed Pothole Repair – As needed
Vandalism & Graffiti Removal	Make repairs due to damage or theft, remove graffiti.	Immediately

4.4 – Management

Trail patrol/security is an important component of ensuring that the trail is safe and secure for trail users. Utilizing a combination of municipal, community, neighborhood council, and volunteer groups are the heart of almost every trail patrolling effort. On-going patrolling and managing o the trail operations is important to address any user conflicts that may arise.

The key to effective trail policing is coordination; amount government police forces, as well as private security operations and civic groups. Volunteer groups such as “friends of the trail” and “neighborhood watch” groups or other citizen groups increase voluntary participation, interest, and investment. Organizing regular trail cleanup days or events and developing promotional incentives ultimately help increase interest and awareness of the trail.

5 – Public Participation

Throughout the project development process, strategic public participation is critical to the long-term success and support of the trail project. Public input has been an on-going process since the concept of the trail was developed. As plans become further developed and the trail gets closer to construction, it's most critical to engage stakeholders and members of the community. As the project continues, public participation should consist of a series of trail committee meetings, a public workshop, emails, and other methods.

Ultimately if there is state or federal funding, there will need to be several public meetings to identify and address public issues and concerns in each town, a Local Issues Meeting, and a Preliminary Design Public Hearing. At these meetings, abutters can request specific measures. These measures will be added to the design plans and included as part of the construction cost estimate.

As a part of this scoping study, the project team met with members of the West Rutland Town and Rutland Town Select Board, West Rutland Town Mayor, Rutland Town Road Commission, members of the Rutland Regional Planning Commission and members of the Smart Growth Connections Plan Project.

Multiple planning and coordination meetings were held throughout the duration of the project. As a result, additional public meetings are encouraged to promote public involvement and support for the project.

6 – Preliminary Project Cost

6.1 – Estimated Probable Cost

The purpose of this section is to provide a budgetary estimate of anticipated construction and project development costs for the primary 3.2 mile multi-use path alignment, and 1.5 mile secondary spur alignments.

These numbers should be considered conceptual and can be used to develop budgetary estimates for project phasing, potential Requests for Qualifications/ Proposals for future design, and project funding. It should be noted that these costs are subject to change and are based only on the conceptual plans included in this study.

As the project moves into and through the next phases of design, the proposed impacts, easement, or acquisitions will be further defined and detailed. It is imperative to continue the dialogue with any potentially impacted private property owner initiated during the public involvement process of this study throughout the next project phases. It is the hope that this dialogue can go a long ways in avoiding a difficult and lengthy easement or acquisition agreement process.

Overall, the preliminary construction cost estimate is based on similar work completed by the project team, unit costs from VTrans and product manufacturer's/ suppliers.

A 15-percent construction contingency cost has been included to account for specific items of work that will be determined during the preliminary design phase and for annual escalation of costs.

A project approvals & permitting contingency (5 to 10-percent) and a 10-percent design & planning contingency was added to the costs, assuming a VTrans design process is followed. The preliminary design phase, includes a complete topographic survey including delineation of environmental resource areas, and preparation of preliminary alignment plans, profiles and typical cross sections for the pathway. Based on this information, it is possible to determine the extent of actual impacts, if any, that a pathway would have upon adjacent resource areas and private properties. During the preliminary design phase, the designer will determine which permits and approvals will be required for the project and will initiate early coordination with those local and state agencies.

After the preliminary design phase is complete, and approved by VTrans, a Design Public Hearing is held in the community. The project can then advance to the final design phases (Final Plans, Specifications & Estimates). All necessary permits are secured before the project is put out to bid for construction.

The total estimated probable cost for the preferred 3.2 mile alignment is approximately $1.2 million dollars.

Preliminary Opinion of Probable Cost Summary

Segments	Cost
Alignment A1 - From Thrall Avenue Park & Ride	$ 42,788.00
Alignment B1 - West Rutland Circuit From Thrall Street Park & Ride	$ 112,484.00
Alignment C1 - Business Route 4 and Route 4A	$ 314,431.00
Alignment G1 - Existing Infrastructure (Sidewalks)	$ 38,686.00
Supplemental Costs	$ 284,603.00
Construction Subtotal	$ 792,992.00
Construction Contingency (15%)	$ 118,949.00
Engineering/Design/Construction Administration (25%)	$ 198,248.00
Overall Construction Costs	$ 79,299.00
Total	$ 1,189,488.00

For additional information and cost estimates for secondary connections and alignments A2, A3, B2, E1, E2, F1, F2 and G2 refer to Appendix G.

6.2 – Implementation and Phasing

A multi-use path requires many different levels of phasing's throughout the project development and construction. Several factors influence project phases, including but not limited to overall length of the project/ segment, property acquisitions, level of regulatory permitting required, difficulty of construction, and most importantly the amount of available funding.

If feasible, for cost and time savings, it is recommended that the project be implemented in one phase. However, in most cases, a single phase is not possible due to funding constraints or the approval processes required for various sections of the project. As a result, a framework of three phases of implementation is recommended. If it is determined that some of these phases can be combined, it would result in more cost and time effective implementation.

The phasing recommendations are primarily organized by connecting usable segments of the walking/ bicycling network in order to create a safe facility and to gain users and momentum to continue future project phases, anticipate approvals, and to identify potential funding. Each phase is intended to attract users from each town and create interest areas. Finally, where possible, phases should be combined with other improvements to leverage and enable efficiency of implementation.

6.3 – Next Steps

As first step towards implementing the recommendations of this study, the relevant Town officials should accept and approve the report. Once the report is approved by each Select Board, each Town, with the assistance of the Vermont Agency of Transportation, Town residents and businesses, can undertake the following steps, but not necessarily in the order listed here:

- Begin looking and applying for funding opportunities through grants, bonding or other sources considered appropriate.
- Contact landowners from whom easements might be needed to understand their willingness to consider granting easement, making sure to stay within guidelines for securing easements and right-of-ways.
- Finalize additional sources of donated funding to support the matching funds that might be needed for grants that require them.
- Hire a consultant to assist with the design of the first phase to be implemented when funding is secured through either fundraising or grants.
- Work to secure required permits and appeals.

6.4 – Funding and Development

Funding for the Trail 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 Programs (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.
- Public-Private Fundraising: The Towns could work with non-public entities or the general public to raise funds through private fundraising or grant sources available only to the non-public entities to match public funds for the trail. It could be possible to provide some memorial that acknowledges the contribution.

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:

1. Potential health grants promoting healthy living:
2. The Robert Wood Johnson Foundation [http://www.rwjf.org/content/rwjf/en/grants/search.html?k=walking&d=&l=]