



OTTER CREEK
ENGINEERING

TOWN OF BERLIN

BERLIN TAP TA 21(9)

**NEW TOWN CENTER MULTI-USE PATH
SCOPING STUDY**

BERLIN, VERMONT

FALL, 2023

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Prepared by:

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1.0 SUMMARY

- a. **Project Goals and Funding** - The Town of Berlin, retained Otter Creek Engineering to assist with preparation of a scoping study for the investigations of a multi-use shared path facility at the Berlin Town Center which encompasses Berlin Mall, Kohl's, and Chestnut Place off VT-62 on Berlin Mall Road. The project is funded in part by the Federal Highway Administration and the Town of Berlin, through the Vermont Agency of Transportation (VTrans) Municipal Assistance Section (MAS). The goal of this study is to identify alternatives within the Town of Berlin's New Town Center that will extend and connect the Town's Multi-Use Path Network by providing safe, pedestrian related recreational opportunities that incorporate principles outlined in VTrans' Complete Streets Guidance (March, 2012).

The study area investigated initial planning alignments that circumnavigate the Town Center while considering the overall Berlin Multi-Use Path Network and opportunities for connecting to existing and planned segments. Within the Town Center, concept alignments sought to limit road crossings and pedestrian/vehicle interactions. While there are existing sidewalks within the study area, no dedicated bicycle or pedestrian facilities were identified. The existing concrete sidewalk within the study area mostly connect existing buildings and are aligned with existing roads.

Alternatives highlighted more detail below, considered in this study include 'No Build', and three possible alignments. Possible alignments were derived out of planning conversations with the Town and information from prior studies. Alternative 2 investigated routing that skirted the eastern edge of the existing developed spaces. Alternative 3, closely mimics the routing of Alternative 2 with the exception of minor modifications to minimize wetland impacts and a road crossing. Alternative 4, presented an option that could allow for a complete loop around the Center when coupled with Alternatives 2 or 3, or as a stand-alone project along the west side of the study area.

- b. **Historic and Natural Resources** - Characteristics of the project area were reviewed including right-of-way, roadway features, traffic data, historic/archeological features, natural resources and other environmental characteristics. The most significant identified environmental constraint is the wetlands that lie between the Berlin Town Center (including the Berlin Mall) parking lot and VT-62. The Town should continue to engage and discuss with the State Wetlands office and U.S. Army Corp of Engineers strategies and project approach for the development of the Town Center and the proposed pathway. It is crucial that the Town maintain documentation of minimization efforts to help support future permitting and design efforts.

The archeological and historic reviews performed by Crown Consulting Archaeology, LLC identified two sites in the study area as archeologically sensitive. One has been cleared; the other will require a Phase I Site Identification Survey if it cannot be avoided. Proposed work that differs significantly from the alignments considered may require additional investigations for archeological impacts. There were no existing structures along the alignments being considered that have historic significance. Study information provided by Crown is shown in Appendix B.

- c. **VTrans Process** - This project follows the process and steps for Scoping as outlined by Vermont Agency of Transportation Municipal Assistance Section (MAS). Meetings with stakeholders and the public occurred and input and comments gathered were considered in the development of this report. At the onset, an initial Kick-Off meeting was held internally with the Town of Berlin to review scope, history, and goals for the project. This was followed by a Local Concerns meeting which was held on May 5, 2022, resulting in the development and acceptance of the following Purpose and Need Statement:

Purpose: To construct a multi-use path within the Town of Berlin's New Town Center that conforms with Complete Streets Guidance and that will provide safe, pedestrian related recreational opportunities while also serving to extend and connect with the Town's multi-use path network.

Need: The New Town Center project area is comprised of expansive parking and vehicular travel ways with limited, safe options for bike, pedestrian, and other users. Connectivity both internally and to adjacent pathways and uses is non-existent, forcing these stakeholders to travel through parking lot traffic, or on the edge of roadways.

- d. **Alternatives Analysis and Final Report** - Utilizing comments received following the Local Concerns Meeting, alternatives were developed. The alternatives focused on minimizing wetland and wetland buffer impacts and limiting pedestrian and vehicle interactions (road crossings). The alternatives were compared based on cost, impacts to environmental and cultural resources, permitting requirements and locally identified critical elements.

In consultation with the Town, the following alternatives were developed and presented with their respective opportunities/limitations at a public meeting held on September 27, 2022. Proposed development at the site subsequently shifted alignment from what was presented. This shift was in keeping with project goals of minimization of wetland impacts while maintaining the overall alignment presented.

- **Alternative 1: No Build** - A baseline for comparison purposes, the option to do nothing.
- **Alternative 2: Concept Design A (Phase I)** - A 4,813-foot, 8-foot-wide bituminous asphalt shared use path with an alignment on the east side of the new Berlin Town Center with access to existing commercial and residential properties.
- **Alternative 3: Concept Design B (Phase I)** - A 4,923-foot, 8-foot-wide bituminous asphalt shared use path that follows a different route than Alternative 2, bringing the route around the northern side of the Fox Run building.
- **Alternative 4: Complete Loop (Phase II)** - An additional 2,850-feet of 8-foot-wide bituminous asphalt pathway that could serve as a stand-alone alignment west of existing developed areas. If constructed would complement Phase I Alternatives and provide a loop pathway.

At this stage in the process, Otter Creek Engineering recommends that the Town consider progressing both Alternative 3: Concept Design B (Phase I) and Alternative 4: Complete Loop (Phase II). These two alternatives together will create 7,773 feet of new multi-use pathway. Alternative 3 features an alignment that follows to the east of the proposed Town Center and runs closest to future buildings. Alternative 4 is identified as a stand-alone path segment. However, when coupled with Alternative 3 it provides a loop that would encompass the New

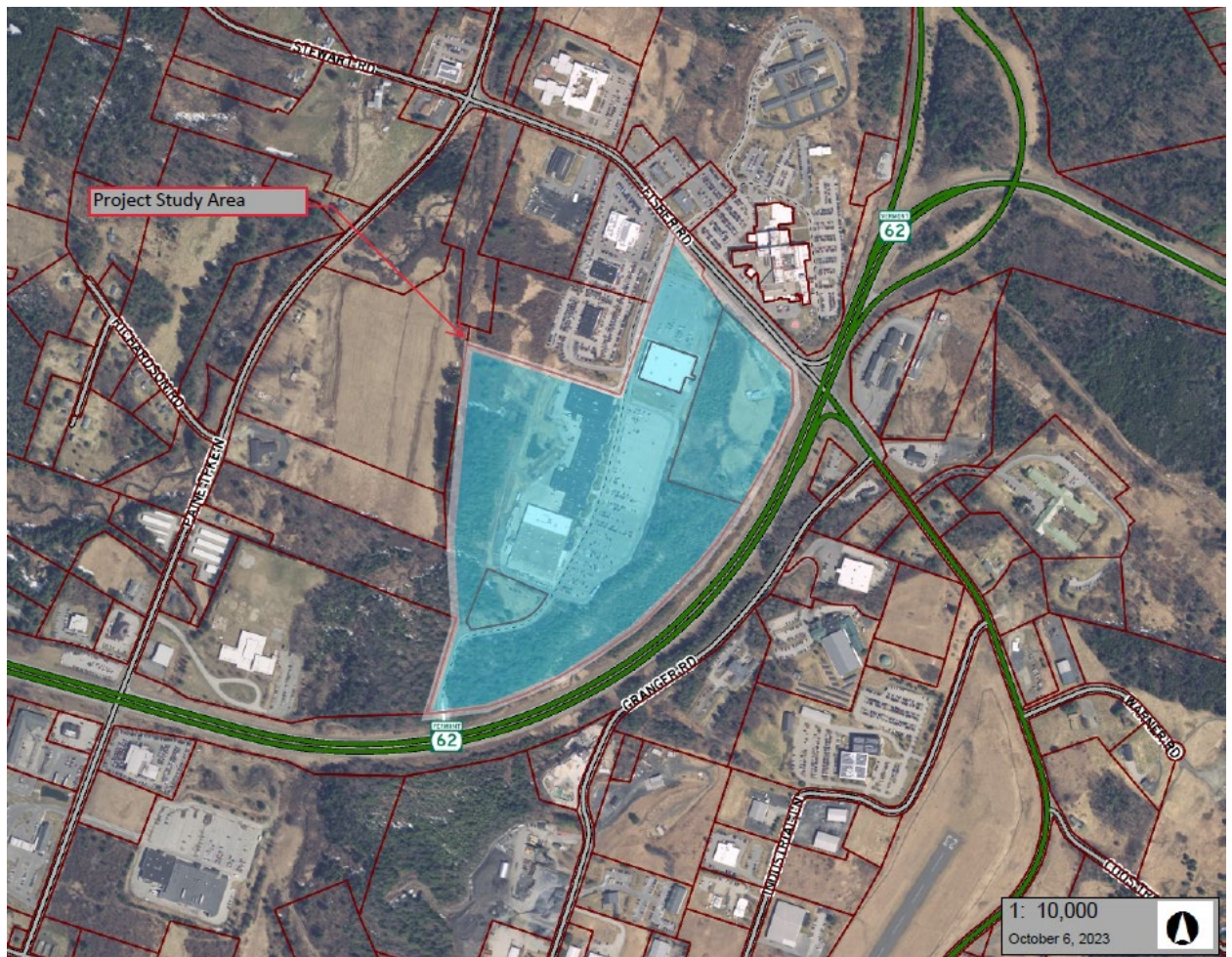
Town Center. Sequencing or breaking up the recommended alternatives into smaller segments may afford the Town added opportunities for funding, allow for teaming with landowners, and could also serve to accommodate changes in the overall development program as properties are developed.

In November 2022, a draft of this scoping study report was provided to the Town. Pertinent comments were incorporated into this Final Report. Otter Creek Engineering recommends that the Town apply to the VTrans Bicycle and Pedestrian Program for design and construction funds to implement Alternative 3 of the project after local endorsement of this study.

2.0 EXISTING CONDITIONS

- a. **Project Study Area** - The study area for the project was defined by the Town as the area shown in Figure 1. The study area includes part of the Berlin Elementary School property, the existing Mall property (New Town Center), part of the Central Vermont Medical Center property, and a commercial parcel. The study area encompasses approximately 65 acres.

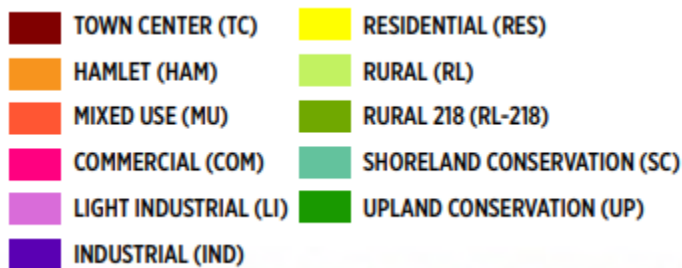
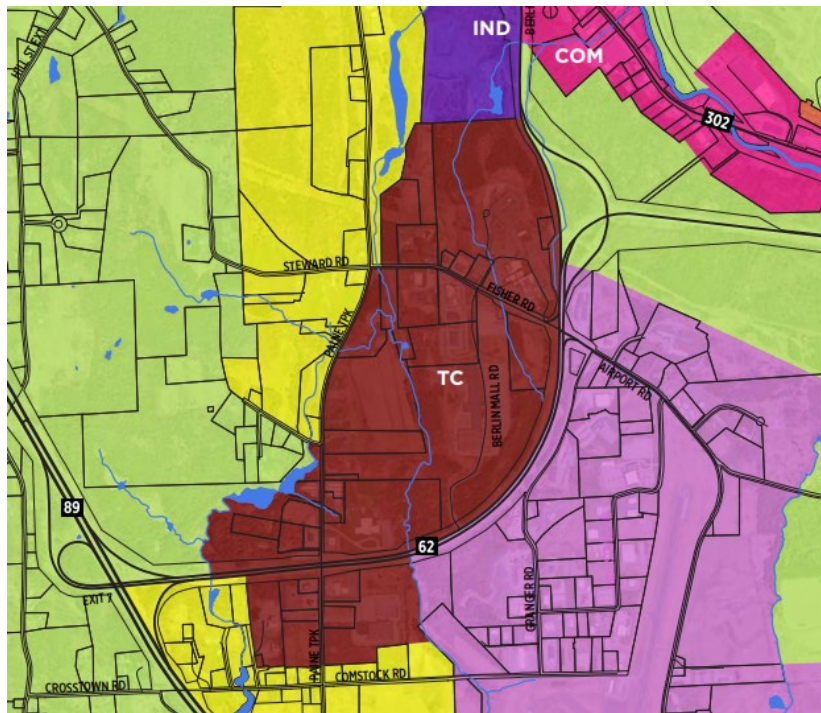
Figure 1: Project Study Area



- b. **Land Uses** - According to the Berlin Town Plan, adopted August 14, 2018, and revised June 6, 2022, the study area is entirely within the “Town Center” zoning district, and abuts “Industrial,” “Light Industrial,” “Rural,” and “Residential” zones as shown in Figure 2. The Town Plan characterizes the Town Center zoning district as follows:
 1. Town Center: The intent of the Town Center District is to recognize and reinforce this area as a regional service center by:
 - a. Establishing a well-defined, mixed-use, compact, and walkable center.

- b. Transforming Fisher Road and Berlin Mall Road into pedestrian-friendly streets defined by sidewalks, street trees and landscaping, and buildings located close to the road.
- c. Encouraging infill with small buildings along Fisher and Berlin Mall Roads, and within underutilized parcels and parking lots.
- d. Attracting regional-scale retail and service uses that will reuse and/or redevelop sites and buildings over time in response to evolving lifestyle preferences and market needs.
- e. Promoting site designs that feature landscaping, green infrastructure, and reconfigured parking footprints.
- f. Encouraging quality and efficient construction with durable, low-maintenance materials and distinctive architectural designs.
- g. Allowing for higher density multi-generational housing which is attractive and accessible in areas that can be served by public infrastructure and transit could be a significant draw.

Figure 2: Land Use Map



- c. **Existing Transportation Facilities** - The study area is focused around the existing Berlin Mall area and along Route 62 and Fisher Road. Berlin Mall Road is privately controlled while Fisher Road is a Class 1 local roadway and VT-62 is a VT State Highway. VT-62 and Fisher Road are each four lanes wide with two lanes in each direction. Berlin Mall Road is a 2-lane roadway with one lane of opposing traffic. The speed limit on Route 62 within the study area is 50 mph, on Fisher Road the limit is 35 mph, and on Berlin Mall Road the speed limit is unmarked. The intersection of Berlin Mall Road and Fisher is controlled by a traffic signal and is currently undergoing a road diet scoping report. There is one pedestrian signal for the crossing at Fisher Road. The intersection of Berlin mall Road and Route 62 is controlled by a traffic signal with no pedestrian crossing for either roadway.
- d. **Traffic Data** - The Annual Average Daily Traffic (AADT) counts, as published by the Vermont Agency of Transportation (VTrans), are shown in Table 1 below. Data was obtained from VTrans for the 2018-2021 period. There were 40 crashes recorded in the study area, with eight reporting injuries. The accidents included rear end collisions, side swipes, and turning collisions. None of the accidents involved bicycles or pedestrians.

Table 1: Annual Average Daily Traffic

Street Name	Beginning Reference	Ending Reference	2019 AADT	2020 AADT	2021 AADT
Fisher Rd	Paine Turnpike N	Berlin Mall Rd	11,816	9,725	10,902
Berlin Mall to Fisher Rd	Berlin Mall Rd	Fisher Rd	10,569	8,698	9,750

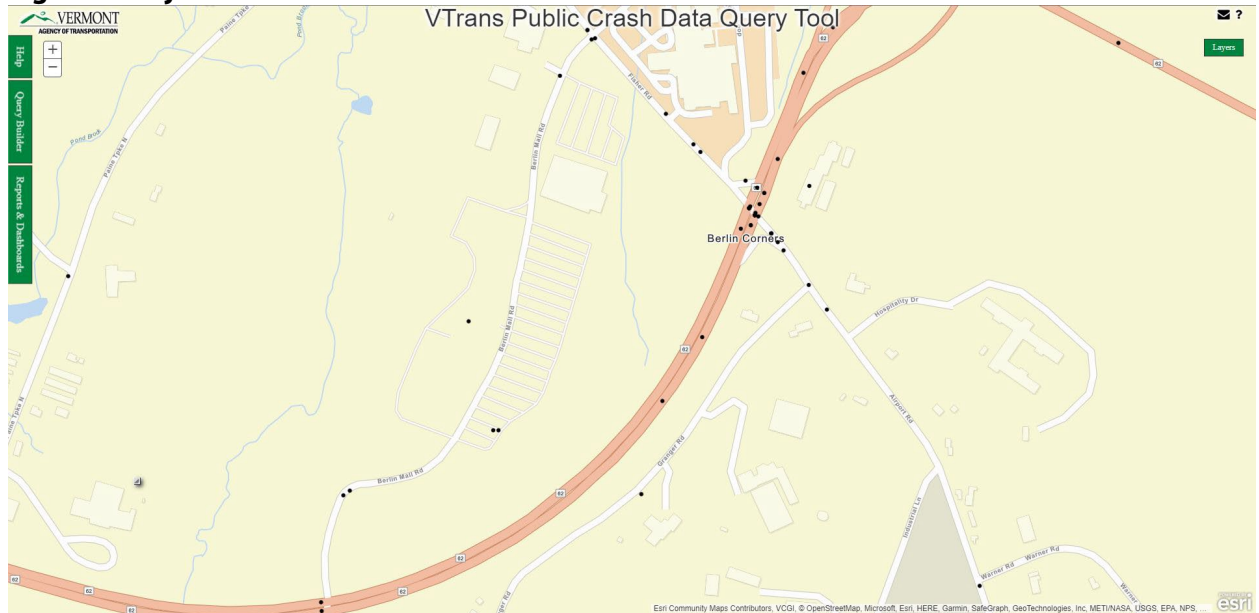
The table below is an overview of the number of crashes and whether they were at an intersection. Of the 40 crashes noted at the periphery of the study area, eight were non-intersection related. Crash data is identified below.

Table 2: Vehicle Crashes

Street	2019	2020	2021	Non Intersection	Intersection
Fisher Rd	3	2	1	2	4
VT-62	13	4	5	4	18
Berlin Mall Rd	2	1	0	2	1
Airport Rd	6	2	1	0	9

These crashes are shown visually in **Figure 3** below.

Figure 3 Project Location Crashes 2019-2021



e. **Natural and Cultural Resources** - The Vermont Natural Resource Atlas was used to identify natural resources within and adjacent to the study area. These natural resources are presented in **Appendix A**. The Atlas does not provide specific locations for all natural resources; however, it does serve as a planning tool to identify resources that require further review and investigation. A summary of the natural resources present within the study area is provided below.

i. **Wetlands:** No mapped wetlands appear on the Resource Atlas though the wetland advisory layer and presence of past wetland permits warrant further investigations. A visit to the study area and search of past permits indicate that wetlands have been delineated to define boundaries. Wetlands mostly occur at the periphery of the study area (developed site) and appear to coincide with historic fill and work associated with the original mall construction. A majority of the wetlands occur within the forested area between the mall parking lot and VT-62. It is our understanding that the Town has had considerable correspondence and discussions with both ANR and Army Corps regarding wetlands and minimization strategies. Moving forward, the most challenging component of the project's success will be to obtain approval from State and Federal regulators for wetland and buffer impacts. We recommend the town document efforts made to date to minimize and limit wetland impacts. In addition, the Town should continue its efforts to maintain an open dialog with regulators and keep them informed as a means of verifying approach to the overall New Town Center project and this proposed pathway.

Recent progression of plans for development of a site internal to the Town Center considered the goal of minimization and initial planning efforts that drove design to consider and allow for a shift in alignment. This resulted in a further reduction in wetland and wetland buffer impacts.

- ii. **Surface Waters:** The ANR Atlas shows two unnamed tributaries within the project area. One is a smaller drainage crossing the Central Vermont Medical Center Property at the east portion of the site. The drainage area is less than one square mile and is not considered jurisdictional. Crossing of this drainage is not anticipated to require a Stream Alteration Permit for a crossing structure.

The second unnamed tributary lies to the west and north of the Town Center. There are no proposed crossings of this unnamed tributary which appears to follow along the identified wetland area in this portion of the study area.

- iii. **Floodplains:** There are no mapped floodplains within the area of the project.
- iv. **River Corridors:** The project does not fall within or adjacent to a river corridor.
- v. **Stormwater:** Mapping does not indicate the presence of impaired rivers, streams, lakes, or ponds within the study area. Stormwater permits issued within the study area are summarized as follows:
- Permit #3761-9015.1 Berlin Mall, LLC and Berlin Place for 99 unit senior living facility with paved parking, 3 paved access drives, patio areas and associated sidewalks.
 - Permit #3761-9050, applicant Berlin Mall, LLC covering existing shopping mall, detached department store and associated parking, drives and roadway.

As part of Permit #3761-9050 noted above. The Berlin Town Center has been identified by the State as a '3-acre' project site and an approach to treatment of the untreated existing impervious surfaces will be necessary. The first step in permitting of the existing site is the filing of an Initial Notice of Intent (INOI) which has been completed. Next steps in the permitting would be to investigate available treatment limitations/opportunities. We recommend the Town inform the consultant performing the '3-acre' permitting to consider opportunities for accommodating additional impervious surface beyond the regulatory requirements as a possible means of accommodating and offsetting new path impervious that may be otherwise unfeasible to treat.

Based on the anticipated scope of multi-use path improvements, State permits for stormwater treatment (#3-9050) and erosion prevention and sediment control (#3-9020) will be necessary.

Stormwater permit requirements are discussed further in Section 4.

- vi. **Rare, Threatened, and Endangered Species:** No noted rare, threatened, or endangered species were identified within the project area.
- vii. **Hazardous Material Sites:** Hazardous material sites were not identified in any of the proposed pathway alignment areas. Mapping did show a single identified hazardous waste generator in the overall study area.

viii. **Agricultural Land:** Soils within the project area were noted as primarily Cabot silt and Buckland loam. These are classified as statewide soil types but not as prime agricultural soils. Given prior impacts to the soils, the presence of wetlands, and limited potential impacts, we don't anticipate the project will be limited due to potential primary agricultural soils review under Act250 land use permitting.

ix. **Historic, Archeological, and Architectural Resources:** Otter Creek Engineering contracted with Crown Consulting Archeology, LLC to perform an Archeological Resources Assessment (ARA) of Phase I Alternative alignments. The Crown study included a background search and field inspection. Conclusions note that two areas were identified as archaeologically sensitive but one location was previously considered and needs no further investigation. The other location, just north of the intersection of VT-62 and the Berlin Mall Road may require additional review. However, if the alignment were to shift, an additional study may not be needed.

Timing of investigations and identification of alignments did not permit the archeological assessment of Phase II, Alternative 4 alignment. Further investigation of this alignment is recommended.

f. **Right-of-Way** - Alternatives for the path alignment, for the most part, occur entirely within lands of the New Town Center owned by NYNEX New England Inc. Where the proposed pathway follows along VT-62 and Fisher Road, the routing is intended to fall on lands owned by the Central Vermont Medical Center (CVMC). Coordination and confirmation with CVMC on approval of the path crossing their property and granting of an easement will be necessary. Alternatively, there is an opportunity with future design development to shift the pathway alignment off CVMC property such that it follows within the VT-62 and Fisher Road rights-of-ways to minimize the need for easements, should such a project be permitted within those ROWs. This is not being considered in this report and will need more analysis should this be a desire of the town.

Figure 4: Tax Map and Parcel Information



Future subdivision, transfer of lands, and site development within the Town Center should consider the pathway alignment and take steps to incorporate easements and property reserved for the pathway. Land use planning and development review by the Town should take note of the proposed path routing to help inform development in the area.

- g. **Utilities** - There are multiple utilities within the study area including overhead and underground electric, phone lines, underground water, sewer, and storm drains. Typically, the underground utilities will not be impacted by the proposed improvements. Water service curb stop boxes may require height adjustment if they are located within the proposed multi-use path. Drainage structures may require minor rehabilitation and in some areas additional structures may be required to collect or divert runoff. Drainage impacts will be further discussed in Section 4.

3.0 PUBLIC INVOLVEMENT

- a. **Project Kick-off Meeting** - A project kickoff meeting was held to define the project development process, discuss the desired goals, deliverables and schedule for the project. VTrans project supervisor, Christopher Hunt attended the meeting and project stakeholders were invited to participate. Notes were taken to document the discussions (about what) and the decision (to what). We took the opportunity to collect information relevant to the project (from who), including underground utility information, tax maps of the project area, etc. Copies of the meeting minutes were distributed to the project team.
- b. **Local Concerns Meeting** - Otter Creek Engineering organized and moderated a local concerns meeting, with the Town, VTrans and project Stakeholders on May 5, 2022. The purpose of the public meeting was to develop a clear understanding of project goals, objectives, and concerns. Based on feedback received from the project kick-off and local concerns meetings, OCE prepared a Purpose and Need Statement for the proposed Improvements.

Purpose: To construct a multi-use path within the Town of Berlin's New Town Center that conforms with Complete Streets Guidance and that will provide safe, pedestrian related recreational opportunities while also serving to extend and connect with the Town's multi-use path network.

Need: The New Town Center project area is comprised of expansive parking and vehicular travel ways with limited, safe options for bike, pedestrian, and other users. Connectivity both internally and to adjacent pathways and uses is non-existent, forcing these stakeholders to travel through parking lot traffic, or on the edge of roadways.
- c. **Purpose and Need Statement** - After the Local Concerns Meeting, the following Purpose and Need Statement was developed:

Purpose: To construct a multi-use path within the Town of Berlin's New Town Center that conforms with Complete Streets Guidance and that will provide safe, pedestrian related recreational opportunities while also serving to extend and connect with the Town's multi-use path network.

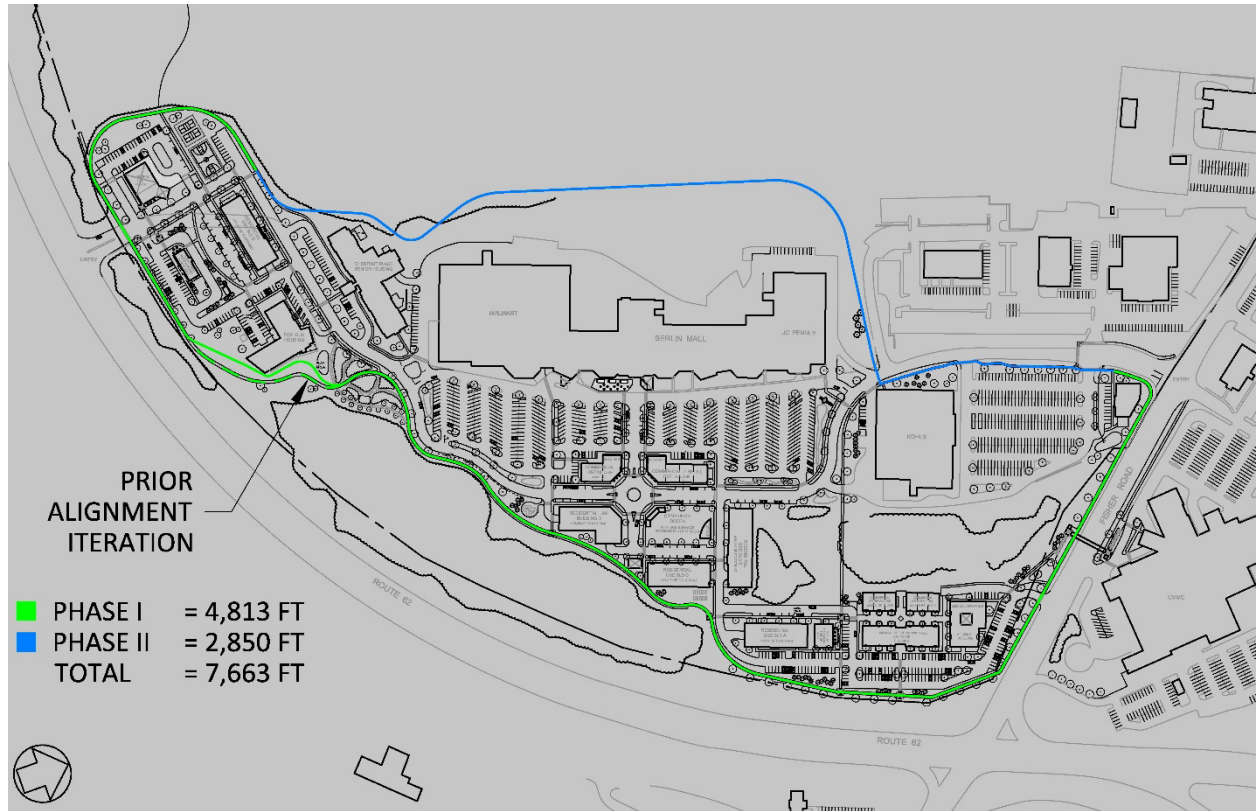
Need: The New Town Center project area is comprised of expansive parking and vehicular travel ways with limited, safe options for bike, pedestrian, and other users. Connectivity both internally and to adjacent pathways and uses is non-existent, forcing these stakeholders to travel through parking lot traffic, or on the edge of roadways.
- d. **Public Survey** - An eight-question survey was developed and was available at the time of the Local Concerns Meeting and shared through Front Porch Forum. OCE Collected thirty-eight (38) responses to questions which are available in full in Appendix C. At the surface level, there was a strong desire for a multi-use path, with an emphasis on its walkability.
- e. **Alternative Presentation** - Possible pathway alternatives and options were reviewed with the Town and formalized in an Alternatives Presentation to the public on September 27, 2022. Four alternatives were presented, each was followed by discussions related to standard criteria (i.e. archaeological, wetland impacts, permitting needs, and cost). Based on this feedback an alternative was proposed. A copy of the presentation and meeting minutes is included as **Appendix C**.
- f. **Relationship to Local and Regional Plans** - The alternative alignments consider the "Proposed Concept Berlin Multi-Use Path Network" and the VTrans "Proposed Berlin Multi-Use Path Network at Berlin Town Center," studies/documents which are both included in Appendix D.

4.0 INTRODUCTION TO ALTERNATIVES

- a. **Alternatives Development** - The first step in the evaluation process was to identify alternative routes for the multi-use path. Alignments were then reviewed with the Town and three alternatives were chosen for further consideration. Alternatives 2 and 3 are considered Phase I because they generally follow the same route; Alternative 4 is considered Phase II because it could be completed alongside the Phase I alternatives to make a complete pathway loop. The alternatives are generally described as follows:
- Alternative 1: No Build
 - Alternative 2: Concept Design A (Phase I)
 - Alternative 3: Concept Design B (Phase I)
 - Alternative 4: Complete Loop (Phase II)
- i. **Alternative 1: “No Build”** - 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 considers no improvements and maintaining the ‘status quo’ which allows for a baseline for comparison purposes. There would be no construction, no signage, and no pavement markings installed. The “no build” alternative would not increase safety for pedestrians and cyclists as there would be no improvement to the existing condition. As the “no build” alternative does not satisfy the Purpose and Need Statement, this alternative is not recommended.

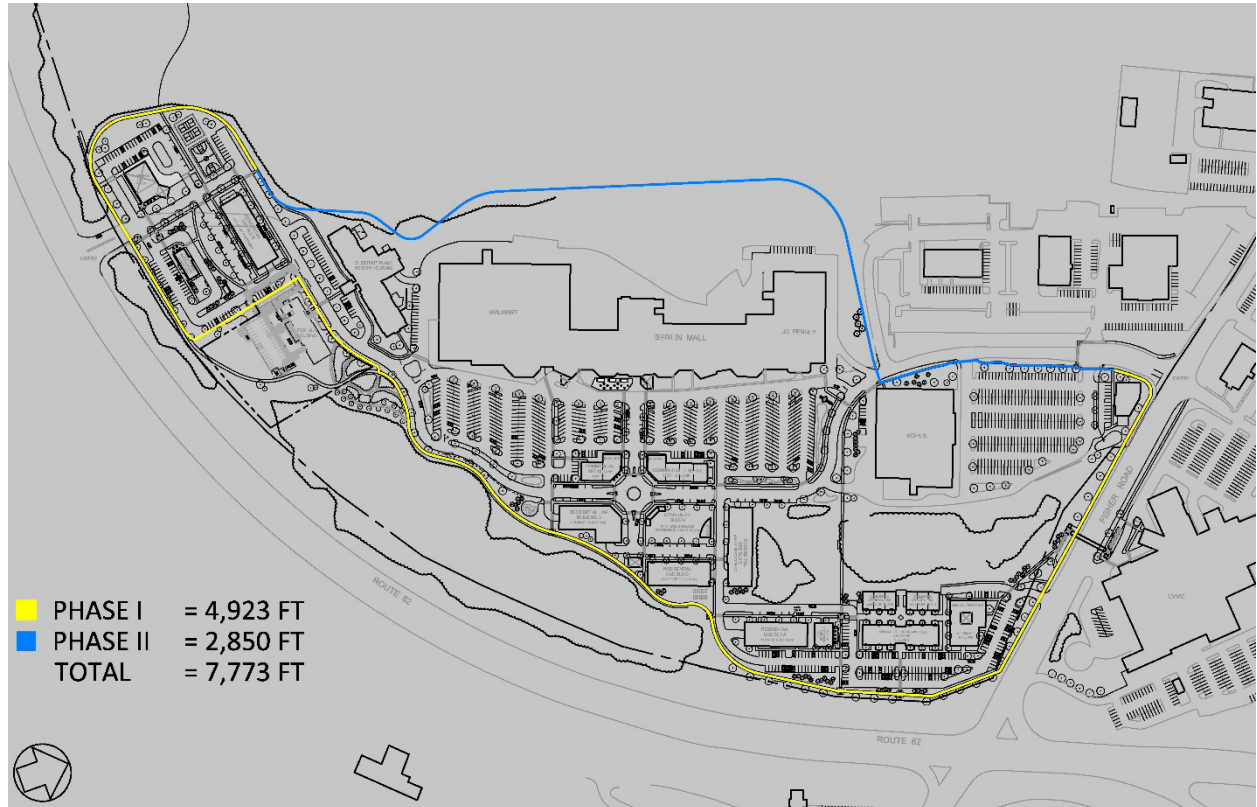
- ii. **Alternative 2: Concept Design A (Phase I)** - Multi-Use path approximately 4,813-feet in length that provides a protected and convenient route that allows access to residential buildings, a possible future extension to the Berlin Elementary School, an opportunity for a possible pedestrian sky bridge over Fisher Road to connect with the Central Vermont Medical Center, and potentially to the greater Berlin trail network.

FIGURE 5: ALTERNATIVE 2 DESIGN A



- iii. **Alternative 3: Concept Design B (Phase I)** - Multi-Use path approximately 4,923-feet in length providing the similar access as Design A, but with an alternate building and path layout that marginally minimizes wetland buffer impacts.

FIGURE 6: ALTERNATIVE 3 DESIGN B



- iv. **Alternative 4: Complete Loop (Phase II)** – Additional 2,794-feet of pathway to provide a complete loop to either Alternatives 2 or 3. This segment depicted in blue in Figures 5 & 6. This alternative could also be constructed independently of other alternatives and serve as a stand-alone option.

Sections 6 through 8 analyze these alternatives in greater detail.

b. General Design Considerations - Regardless of the alternative chosen, further development of the pathway alignment should consider the following:

- i. **Natural Resources:** Wetland and wetland buffer impacts have been identified as the primary impact to natural resources. Wetland and wetland buffers along the eastern portion of the study area have been delineated and are identified as Class 2.

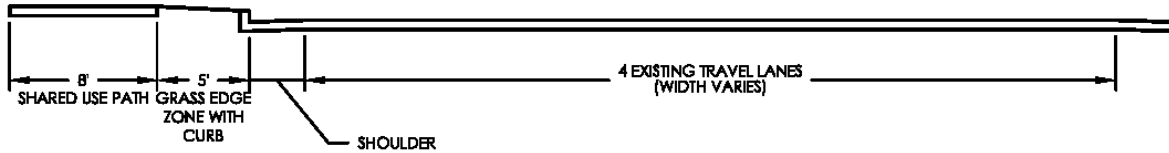
Wetland area at the west side of the study area will require additional delineation as the alignment is developed to quantify possible impacts.

- ii. **Hazardous Site Remediation:** Although Walmart in the mall complex is identified as a hazardous waste generator, there are no hazardous sites within the project area and encountering hazardous materials during construction is not anticipated.
- iii. **Utilities:** A majority of the path construction is not anticipated to involve significant excavation and removal of earth that would impact existing buried infrastructure. Refer to Section 2.g. for an overview of utilities in the general area of the project.
- iv. **Archaeological Impacts:** In general, most of the project alignment follows areas of previous disturbance and thus areas of little to no archaeological impacts. There was an Archaeological Resources Assessment Report completed by Crown Consulting Archaeology, which identified two areas of sensitivity. One of these areas was previously cleared, but the other area will need a Phase I Site Identification Survey as it falls within the project alignment.
- v. **Right-of-Way Impacts:** The Town intends to align the proposed path within existing right-of-way where possible. We anticipate that the Berlin Mall parcel will be divided up into separate parcels as sites get developed/redeveloped. Coordination will be needed as independent portions of the site are developed. Easements will need to be procured and obtained from landowners and project partners.

Temporary easements for construction access will be necessary where the path crosses private property. Easements will be necessary and further defined during design development process.

- vi. **Shared Use Path Width and Surface Material:** The width of the path for each option presented is 8-feet. The pathway surface that allows for the widest range of path users is proposed to be bituminous asphalt on a gravel subbase.
- vii. **Permitting:** In order to move forward with path construction it is anticipated that the following permits or environmental review will be needed at this point in the design of the project:
 - a. National Environmental Policy Act (NEPA) review,
 - b. Vermont - Act 250 Land Use Permit
 - c. Town of Berlin - Local Zoning
 - d. US. Army Corps. of Engineers - 404 COE Permit
 - e. Vermont - State Wetland Permit
 - f. Vermont - Storm Water Discharge (#3-9050)
 - g. Vermont - Construction General Permit (#3-9020)

- viii. **Typical Cross Sections** - The preferred alternative includes the addition of a new 8-foot-wide shared use path along the outskirts of the new town center. The proposed typical cross section is shown below.



There is an option to reduce the grass edge zone, if needed to further minimize impacts to the wetland and wetland buffer. If the grass edge zone is reduced, a barrier such as a guardrail would be recommended between the vehicle travel lanes and the shared use path. In this case, a curb may not be needed.

The grass edge zone offers an opportunity to install street trees or other landscaping options. Street trees and landscaping can have several benefits including improving traffic and pedestrian safety, providing shade for pedestrians, and improving aesthetics. The type of landscaping will need to consider maintenance requirements and visibility for signage and turning movements. Plant varieties need to be carefully selected so that they can survive the adjacent road conditions, including salt use, and not grow too large as to become a hazard. Any landscaping should be coordinated with the VTrans Landscape Architect and be coordinated with VTrans through the permitting process.

- ix **Path Profile** – The intent of the shared use path is that it is accommodating for all users. The topography of the study area is relatively flat with slopes generally not exceeding 10%. Design should consider keeping slopes along the pathway at 5% or less to comply with Americans with Disabilities Act (ADA) requirements. Review of existing topography within the study area and along pathway alignments does not reveal significant slope limitations/constraints that may preclude an accessible path. As this scoping report was prepared without a formal survey of the pathway alignments this aspect should be revisited and a survey of the corridors should be provided as part of the formal design process with each selected alignment/alternative.

- c. **Pavement Markings and Signage** - Signing and marking, such as centerline stripe of keep right signs, as described in the Manual on Uniform Traffic Control Devices and Vermont Agency of Transportation standards. In General, uniform application of traffic control devices, as described in the MUTCD, provides minimum traffic control measures that should be applied. Warning signs, directional signs, and other devices along the path should also meet the MUTCD guidelines.

The VTrans Bicycle and Pedestrian Work Zone Control Guide will be used to incorporate the applicable bicycle and pedestrian traffic control measures into their site specific traffic control plan for all stages of construction.

Implementation of the WZ Safety & Mobility Policy (02/04/2021) is required for all federal aid highway projects and expected for all other construction and maintenance activities on Vermont highways. At a

minimum, a TMP checklist will be required for all contracts after October 1, 2021, for informational purposes.

SECTION 5.0 – ALTERNATIVE 1: NO BUILD

- a. **Description** - Under this alternative, the Town of Berlin would do nothing. The result would be a multi-use path would not be part of the New Town Center.
- b. **Components** - This alternative does not involve new components.
- c. **Archeological Impacts** - None.
- d. **Land Requirements** - There will not be any land acquisition.
- e. **Environmental Impacts** - This will not involve environmental impacts.
- f. **Project Schedule and Timeline** - This does not involve any time requirements.
- g. **Construction Considerations** - There are no construction considerations.
- h. **Construction Cost Estimate** - There is no construction cost.
- i. **Total Project Cost** - There will not be additional project costs.
- j. **Other Considerations** - None.
- k. **Advantages** - Money will not be spent.
- l. **Disadvantages** - Residents will not have a multi-use path to enjoy.

SECTION 6.0 – ALTERNATIVE 2: CONCEPT DESIGN A (PHASE I)

- a. **Description** - Multi-Use path approximately 4,813-feet in length that provides a protected and convenient route that allows access to residential buildings, a possible future extension to the Berlin Elementary School, a proposed pedestrian sky bridge over Fisher Road to connect with the Central Vermont Medical Center, and potentially to the greater Berlin trail network. Refer back to Figure 5 for a visual representation of this.
- b. **Components** - This alternative envisions a multi-use path that is a protected route through the New Town Center with limited pedestrian/vehicle interactions. With any new path, we recommend including path signage, pedestrian signals at crossings and amenities such as benches and trash/recycling receptacles including dog waste stations.
- c. **Archeological Impacts** - Additional archeological investigation is required within the project area.
- d. **Land Requirements** - There will be a need for easements as the path is likely to cross multiple properties. A large majority of this alternative would be built on the mall property. An easement for the segment of path crossing CVMC property would also be necessary. As this project and the build-out of the New Town Center progresses, we recommend provisions for land to be set aside by developers as part of the development process to incorporate the pathway.
- e. **Environmental Impacts** - This alternative would include 13,714 square feet of wetland buffer impacts and 978 square feet of direct wetland impacts. Tree cutting should consider US Army Corp restrictions/limitations and possible presence of endangered bat habitat.

Progression of plans for development of a site internal to the Town Center considered minimization and initial planning efforts that drove design to consider and allow for a shift in alignment. This resulted in a reduction in wetland and wetland buffer impacts.

- f. **Project Schedule and Timeline** - Full project development and design is anticipated to take 24 to 36 months and ensuing construction of this alternative is anticipated to take a full construction season. Right of way acquisition is dependent on project phasing and the number of properties crossed. A minimum six month right-of-way process has been anticipated and included with this schedule for planning purposes.
- g. **Construction Considerations** - It is not anticipated that the path construction will require any specialized equipment or contractor to perform the work. There are no unique construction considerations.
- h. **Construction Cost Estimate** - Our estimate for construction costs in 2024 is \$759,000, which includes a 25% contingency.

- i. **Total Project Cost** - We have budgeted an additional \$250,000 for engineering and project management and construction services.
- j. **Other Considerations** - None.
- k. **Advantages** - This alternative would allow travel from one end of the New Town Center to the other, and it also provides a more continuous and fluid path than design option B.
- l. **Disadvantages** - This alternative is slightly more costly and likely requires additional archeological investigation.

SECTION 7.0 – ALTERNATIVE 3: CONCEPT DESIGN B (PHASE I)

- a. **Description** - Multi-Use path approximately 4,923-feet in length providing the same access as Design A. Refer back to Figure 6 for a visual representation of this option.
- b. **Components** - This alternative envisions a multi-use path that is a protected route through the New Town Center with limited pedestrian/vehicle interactions. With any new path, we recommend including path signage, pedestrian signals at crossings and amenities such as benches and trash/recycling receptacles including dog waste stations.
- c. **Archeological Impacts** - Additional archeological investigation is required within the project area.
- d. **Land Requirements** - There will be a need for easements as the path is likely to cross multiple properties. A large majority of this alternative would be built on mall property. An easement for the segment of path crossing CVMC property would also be necessary. As this project and the build-out of the New Town Center progresses, we recommend provisions for land to be set aside by developers as part of the development process to incorporate the pathway.
- e. **Environmental Impacts** - This alternative would include 13,714 square feet of wetland buffer impacts and 978 square feet of direct impacts.

Progression of plans for development of a site internal to the Town Center considered minimization and initial planning efforts that drove design to consider and allow for a shift in alignment. This resulted in a further reduction in wetland and wetland buffer impacts.

- f. **Project Schedule and Timeline** - Full project development and design is anticipated to take 24 to 36 months and ensuing construction of this alternative is anticipated to take a full construction season. Right of way acquisition is dependent on project phasing and the number of properties crossed. A minimum six month right-of-way process has been anticipated and included with this schedule for planning purposes.
- g. **Construction Considerations** - It is not anticipated that the path construction will require any specialized equipment or contractor to perform the work. There are no construction considerations.
- h. **Construction Cost Estimate** - Our estimate for construction costs in 2024 is \$757,000, which includes a 25% contingency.
- i. **Total Project Cost** - We have budgeted an additional \$250,000 for engineering, project and construction management services,
- j. **Other Considerations** - None.

- k. **Advantages** - This alternative is slightly less costly and includes less wetland disturbance in comparison to Alternative 2. This alternative is also nearly twice as long as alternative 4 and by itself would allow travel from one end of the New Town Center parcel to the other.
- l. **Disadvantages** - This alternative likely requires archeological investigations.

SECTION 8.0 – ALTERNATIVE 4: COMPLETE LOOP (PHASE II)

- a. **Description** - This alternative was initially conceived to provide a complete loop when coupled with either alternative 2 or 3. It could also serve as a stand-alone segment. As a 2,850-foot pathway that would follow a different route along the west of the study area. It would begin near the entrance by the Medical Center, following along the current mall access road, then divert to the west and rear of the mall building where the path would follow edge of wetland buffer ultimately connecting back to the east entrance to the study area site.
- b. **Components** - Like alternatives 2 and 3, this envisions a multi-use path that is a protected route through the New Town Center. With any alternative, we recommend including path signage, pedestrian signals at crossings and amenities such as benches and trash/recycling receptacles including dog waste stations.
- c. **Archeological Impacts** – No identified areas. Majority of path would follow in areas previously disturbed as part of the original mall construction.
- d. **Land Requirements** - There will be limited need for easement with this alignment as majority of this alternative would be built on the New Town Center property. Added easements may be necessary dependent on future development of Town Center property. As this project and the build-out of the New Town Center progresses, we recommend provisions for land to be set aside by developers as part of the development process to incorporate the pathway.
- e. **Environmental Impacts** - This alternative anticipates only 21 square feet of wetland buffer will be impacted.
- f. **Project Schedule and Timeline** – As a separate stand-alone project, it is anticipated that project development and design is anticipated to take 24 to 36 months and ensuing construction of this alternative is anticipated to take a full construction season. Right of way acquisition is dependent on project phasing and the number of properties crossed. A minimum six month right-of-way process has been anticipated and included with this schedule for planning purposes.
- g. **Construction Considerations** - It is not anticipated that the path construction will require any specialized equipment or contractor to perform the work. There are no specialty construction considerations.
- h. **Construction Cost Estimate** - Our estimate for construction costs in 2024 is \$463,000, which includes a 25% contingency.
- i. **Total Project Cost** - We have budgeted an additional \$270,000 for engineering, project and construction management services,
- j. **Other Considerations** - None.

- k. **Advantages** - If constructed with either Alternative 2 or 3, this alternative would allow for the pathway to become a completed loop and provide pedestrians and cyclists interested in longer-distance activities with an easily repeatable course. This pathway includes minimal wetland impacts and would take less time and money to construct if coupled with another alternative.

- l. **Disadvantages** If constructed as a standalone project, this alternative would provide a considerably shorter multi-use path that is less in line with the master plan.

9.0 EVALUATION OF ALTERNATIVES

- a. Evaluation Matrix** - An evaluation matrix was prepared to compare alternatives and is presented in Table 3. The evaluation matrix includes factors such as impacts, local and regional issues, permitting and cost.

Table 3 Evaluation Matrix

Category		No Build	Build			
			Phase I		Phase II	
			Option A	Option B		
Local & Regional Issues	Concerns	N/A	Yes	Yes	Yes	
	Aesthetics	N/A	Positive Change	Positive Change	Positive Change	
	Community Character	N/A	Positive Change	Positive Change	Positive Change	
	Economic Impacts	N/A	Positive Change	Positive Change	Positive Change	
	Conformance to Reg. Transportation Plan	N/A	N/A	N/A	N/A	
	Satisfies Purpose & Need	N/A	Yes	Yes	Yes	
Impacts	Ag. Lands	N/A	None	None	None	
	Archeological	N/A	Pending Phase 1 Site Identification Survey	Pending Phase 1 Site Identification Survey	None	
	Historic	N/A	None	None	None	
	Hazardous Materials	N/A	None	None	None	
	Floodplains	N/A	None	None	None	
	Fish & Wildlife	N/A	None	None	None	
	Rare, Threatened & Endangered Species	N/A	None	None	None	
	Public Lands - Sect. 4(f)	N/A	None	None	None	
	LWCP - Sect. 6(f)	N/A	None	None	None	
	Noise	N/A	None	None	None	
	Right of Way	N/A	Yes	Yes	Yes	
	Wetlands	N/A	Yes	Yes	Yes	
	Permits	Act 250	N/A	Yes	Yes	Yes
		Local Zoning	N/A	Yes	Yes	Yes
404 COE Permit		N/A	Yes	Yes	Yes	
Stream Alteration		N/A	No	No	No	
State Wetland Permit		N/A	Yes	Yes	Yes	
Storm Water Discharge		N/A	Yes	Yes	Yes	
Lakes & Ponds		N/A	No	No	No	
T & E Species		N/A	No	No	No	
SHPO		N/A	No	No	No	
Construction General Permit		N/A	Yes	Yes	Yes	
Engineering	Material	N/A	Asphalt	Asphalt	Asphalt	
	Construction	N/A	Moderate construction time	Moderate construction time	Moderate construction time	
	Bicycle Access	N/A	Yes	Yes	Yes	
	Hydraulic Performance	N/A	N/A	N/A	N/A	
	Permitting	N/A	Permits prior to construction	Permits prior to construction	Permits prior to construction	
	Utilities	N/A	Yes	Yes	Yes	
Cost	Clearing and Grubbing	\$0	\$8,000	\$8,000	\$5,000	
	Common Excavation	\$0	\$43,000	\$43,000	\$25,000	
	8 ft wide bituminous path	\$0	\$387,000	\$386,000	\$224,000	
	Pedestrian Signal	\$0	\$15,000	\$15,000	\$15,000	
	Traffic Control	\$0	\$14,000	\$14,000	\$9,000	
	Restoration	\$0	\$41,000	\$41,000	\$24,000	
	Pedestrian Signal	\$0	\$15,000	\$15,000	\$15,000	
	Amenities (signage, benches, etc.)	\$0	\$28,000	\$28,000	\$18,000	
	Mobilization/Demobilization @10%	\$0	\$56,000	\$55,000	\$35,000	
	Contingency (25%)	\$0	\$152,000	\$151,000	\$93,000	
	Services (Design, Permitting, Bid, and Construction)					
	Engineering	\$0	\$80,000	\$80,000	\$45,000	
	MPM	\$0	\$85,000	\$85,000	\$52,500	
	Construction Management	\$0	\$85,000	\$85,000	\$52,500	
	Total	\$0	\$1,009,000	\$1,006,000	\$613,000	

- b. Preferred Alternatives** – Based on Selectboard support and reduced wetland impacts, Otter Creek Engineering recommends further development of Alternative 3: Concept Design B (Phase I) and Alternative 4: Complete Loop (Phase II). These two alternatives together would create 7,610 feet of new multi-use path, pavement markings, and signage. The first phase features an alignment on the east side of the town center that runs closest to existing and proposed future buildings. Phase II is intended to provide a loop that would encompass the New Town Center. Path alternatives are separated into two phases, the Town may wish to

separate the alternatives even further, to allow for New Town Center site development flexibility/modifications and also allow the Town more opportunities to apply for funding.

- c. **Total Project Cost Estimate** – The conceptual cost estimates presented in Table 4 have been prepared for the alternatives as described previously in this section. For the purpose of this cost estimate, we have focused on Alternative 3: Concept Design B (Phase I) as the first to be constructed. As shown, the conceptual construction cost estimate for this alternative is \$794,000 based on construction in 2024. This estimate includes a 25% contingency. Landscaping and pathway amenities are not included in the pay items below; however, the contingency provides accommodation for minor landscaping.

Table 4 Estimated Project Costs

Multi-Use Path (8-foot wide)	No Build	Build		
		Phase I		Phase II
		Option A	Option B	
Clearing and Grubbing	-	\$8,000	\$8,000	\$5,000
Common Excavation	-	\$43,000	\$43,000	\$25,000
8 ft wide bituminous path	-	\$387,000	\$386,000	\$224,000
Pedestrian Signal	-	\$15,000	\$15,000	\$15,000
Traffic Control	-	\$14,000	\$14,000	\$9,000
Restoration	-	\$41,000	\$41,000	\$24,000
Pedestrian Signal	-	\$15,000	\$15,000	\$15,000
Amenities (signage, benches, etc.)	-	\$28,000	\$28,000	\$18,000
Mobilization/Demobilization @10%	-	\$56,000	\$55,000	\$35,000
SUB TOTAL CONSTRUCTION	\$0	\$607,000	\$605,000	\$370,000
CONTINGENCY @ 25%	-	\$152,000	\$152,000	\$93,000
TOTAL ESTIMATED CONSTR. COST	\$0	\$759,000	\$757,000	\$463,000
Services - Design, Permitting, Bid and Construction*				
Engineering	-	\$80,000	\$80,000	\$45,000
MPM	-	\$85,000	\$85,000	\$52,500
Construction Management	-	\$85,000	\$85,000	\$52,500
TOTAL SERVICE FEES	\$0	\$250,000	\$250,000	\$150,000
TOTAL COST	\$0	1,009,000	1,007,000	613,000

NOTES:

1. Construction costs are preliminary and are not based on detailed plans and specifications. Actual costs may vary substantially from these estimates. Contingency is based on 25% of the subtotal construction cost at the preliminary planning stage.
2. Costs have been rounded up to the nearest \$1,000
3. Shared use paths use 6" fine gravel and 12" of sub-base material and 2" of bituminous surface. Reference cost value from Table 2 of the Vtrans Report on Shared-Use Path and Sidewalk Costs, January 2020.
4. Estimate considered Vtrans 2-Year Averaged Price List for the period of August 2018 - June 2020 with a 10% adjustment to account for pricing increases.

Table 5 presents the total future project costs for Alternative 3. The construction cost is estimated at \$794,000 based on construction in 2024. However, construction may not occur until 2027. As such, the construction cost estimate has been inflated at 5% per year. The average inflation over the past five years is approximately 3.6%; however, based on inflation in 2022, this is likely to increase. Therefore, for planning purposes, the total future project cost is estimated at \$1,100,000 based on a construction cost estimate of \$919,000 for construction in 2027.

Table 5 Potential Future Project Cost – Alternative 3

Description	Total Cost
Construction Cost (2022) with 25% Contingency	\$759,000
Construction Cost (2026) with 25% Contingency	\$920,000
Engineering	
Design Phase	\$60,000
Construction Phase	\$60,000
Total Project Cost (2026)	\$1,040,000

10.0 FISCAL IMPLEMENTATION

- a. **Funding Alternatives** – The Town of Berlin does not have sufficient funds to finance the design, permitting and implementation of any one of the alternatives as a single project. Options for funding include grants, long-term debt or phasing. The VTrans Bicycle and Pedestrian Program, administered by the VTrans Municipal Assistance Section, is the most likely funding source for design and construction if the Town chooses to pursue grant funding.

The proposed project is an eligible project under the Bicycle and Pedestrian Program. The funding shares are 80% Federal/State and 20% local. However, if a project funded under this program does not proceed to construction, any funds provided for the preliminary and design phases are subject to being paid back by the municipality. Grant applications are accepted annually and are generally due in June.

The Transportation Alternatives Program, also administered by the Municipal Assistance Section, is an option for funding design. As the maximum Federal award under the Transportation Alternatives Program is limited to \$300,000, this is not an option for covering the full construction for the alternatives noted. The Transportation Alternatives Program has an award range of \$20,000 to \$300,000 and the local match is 20%. A minimum of 50% of the local match must be a cash expenditure, with the remainder of the local match as “in-kind” services; however, an in-kind match is not required, and the entire local match may be a cash expenditure. The use of “in-kind” services requires approval from VTrans and is not guaranteed. Grant applications are accepted annually and are generally due in November.

- b. **Phasing Plan** - The implementation plan is anticipated to be a phased approach with the project divided into multiple segments and prioritized based on need.
- c. **Project Schedule** – The project schedule anticipates the sole development of Alternative 3. This schedule anticipates that the project is funded through the VTrans Bicycle and Pedestrian Program as shown in Table 6. A similar timeline and duration of project tasks is anticipated if other options are chosen to be progressed.

Table 6: Proposed Project Schedule

Project Step	Date
Approval of Scoping Study	December 2023
Town approval of Grant Application	Early Spring 2024
Submit Grant Application	June 2024
Receive Notice of Grant Award	August 2024
Grant Agreement Executed	December 2024
Procurement for Design Services	January 2025
Design, Permitting and Right-of-Way	2025 - 2027
Bidding	Winter 2027/2028
Construction	Summer 2028