GUIDANCE DOCUMENT:

DEMONSTRATION PROJECTS IN STATE HIGHWAY RIGHT OF WAY

Revised October 2022

Pictured: Local Motion-assisted demonstration bulb out and pedestrian island on locally managed road in Ludlow, 2021.

VERMONT

AGENCY OF TRANSPORTATION

ACKNOWLEDGMENTS

ABOUT THIS GUIDE

This guide builds off best practices in Vermont and nationwide to provide an approach to planning, design, permitting, implementation, and evaluation of demonstration projects on Vermont State Highway Right of Way. This guide is for anyone interested in demonstration projects, including VTrans staff, municipalities, engineers, planners, community leaders, and community groups.

This guide was initially developed and launched in 2020, piloted in 2021, and subsequently modified to provide additional clarification in 2022.

Note: The photos depicted in this guide include some installations on locally managed roads, which may have different requirements than outlined in this guidance.

WORKING GROUP

Development of this guide was directed by a working group of Vermont Agency of Transportation (VTrans) and Federal Highway Administration (FHWA) staff.

Project Management Team

Jon Kaplan, Bicycle and Pedestrian Program Manager
Jackie Cassino, Planning Coordinator
Jacqui DeMent, Planning Coordinator

Working Group
Shauna Clifford, District Project Manager
Ian Degutis, Traffic Mobility Engineer
Jesse Devlin, Roadway Program Manager
Kristin Driscoll, NE Regional Traffic Investigator
Theresa Gilman, Permitting Services Supervisor
Chris Jolly, Federal Highway Administration
Gordon Landrigan, Assistant Attorney General
Steffanie Lemieux, District Technician
Trey Polk, ROW Acquisitions and Utilities Manager
Jeff Ramsey, Environmental Specialist Supervisor
Joe Segale, Policy and Planning Bureau Director
Joshua Taylor, Civil Engineer
Andrea Wright, Right of Way and Environmental Program Manager

CONTENTS

1. Introduction 1
1.1 What is a demonstration project? 1
2. Roles & Responsibilities 2
2.1 VTrans 2
2.2 Project Applicant Responsibilities 2
3. Application Process 4
3.1 Phase 1: Concept Proposal & Consultation – *required for all projects* 4
3.2 Phase 2: Technical Proposal – *for complex projects only* 7
3.3 Phase 3: State Highway Access and Work Permit – *required for all projects* 8
4. Demonstration Project Criteria 10
4.1 Location Selection 10
4.2 Required Roadway Characteristics 10
4.3 Project Types 11
4.4 Identified Need and Support 13
4.5 Project Duration 13
5. Design Requirements 14
5.1 Design Standards 14
5.2 Roadway Width Requirements 15
6. Materials Requirements 16
6.1 Eligible Materials 16
6.2 Ineligible Materials 19
7. Project Installation, Maintenance, and Removal 19
7.1 Project Installation 19
7.2 Project Maintenance 20
7.3 Project Removal 21
8. Data Collection, Evaluation and Report 22
8.1 Evaluation Questions 22
8.2 Data Collection 22
8.3 Evaluating Results 23

8.4 Project Evaluation Report and State Highway Access and Work Permit Close-Out 23
9. Permanent Project Implementation 24
9.1 Class I Town Highways 25
Appendix 1: Phase 2 Technical Application Form 26
Appendix 2: Phase 3 Section 1111 Application Supplement 32
Appendix 3: Release of Liability 34
Appendix 4: Data Collection Guidance 35
Appendix 5: Non-transportation use demonstration projects 40
Appendix 6: Resources 43

1. INTRODUCTION

This document describes the permitting process for demonstration projects within Vermont Agency of Transportation (VTrans)-controlled highway rights-of-way (ROW), which are identified on the Vermont State and Town Highways Map[1]. Demonstration projects on town highways, including Class 1 Town Highways, require the approval of the related municipality and are therefore not covered by this guidance.

While this document provides guidance on the types of demonstration projects that are likely to be proposed along state highways and describes the types of materials that may be allowed, it is not meant to be a comprehensive "how-to" or design manual for these types of projects. There are numerous resources available, some of which are referenced throughout the document and in the Appendix.

1.1 What is a demonstration project?

Demonstration projects, often called pop-up or pilot projects, are temporary changes to the physical characteristics and design of a roadway for the purpose of evaluating the effectiveness of the change relative to its intended purpose (typically to improve walking, bicycling, transit access, public spaces and traffic flow), and the impact of the change on the functional use, safety, and maintenance of the current roadway. Projects may include, but are not limited to, bicycle lanes, crosswalk markings, curb extensions, median safety islands. Non-transportation uses such as parklets, pedestrian plazas, and outdoor dining may be proposed for roadways being considered for Class I Town Highway takeover, and may be a way for a Town to evaluate the benefits of Class I Town Takeover.[2] Demonstration projects may also include changing the configuration of an intersection to improve traffic flow and provide safe access for pedestrians and bicyclists.

Approved demonstration projects within the state highway ROW are allowed to be in place for a pre-specified timeframe between April 15 and December 1, which is the standard timeframe for all construction and permit activities within state highway ROW.

Demonstration projects are a planning tool meant to test potential permanent infrastructure changes. They can help build public support for a project and can offer an opportunity to refine

[1] Map of eligible demonstration project areas on VTrans rights-of way: vtrans.maps.arcgis.com/home/webmap/viewer.html?webmap=3bdf4f760af44779a40331133b3a2a31

[2] The considerations for Class I Town Highways are outlined in the VTrans White Paper on Class I Town Highways. vtrans.vermont.gov/sites/aot/files/planning/documents/planning/Class I Town Highways White Paper.pdf

a concept or design before investing permanently. A demonstration project is not intended to be a permanent solution to a concern, but an evaluation tool. Section 4.2 includes more details on types of demonstration projects.

2. ROLES & RESPONSIBILITIES

2.1 VTrans

As the responsible party for the roadway, VTrans has the ultimate authority per 19 V.S.A. § 1111 to approve or deny a demonstration project in state highway ROW. It is essential that VTrans is engaged early and often in the demonstration project process. Even though demonstration projects are temporary, they often involve innovative design concepts. Engineering judgment and discretion play a role in the decision to implement a demonstration project; VTrans needs to have a full understanding of the risks associated with the project. VTrans staff can help Applicants navigate State and Federal requirements.

All projects will be reviewed by a core demonstration project review team comprised of VTrans staff in Planning, Permitting, Operations and Safety, and the relevant Maintenance District Project Manager. Additional subject matter experts will be brought in as needed.

TECHNICAL ASSISTANCE

Regional Planning Commissions (RPCs) and Local Motion may be available to assist municipalities in planning and implementing demonstration projects, however it is incumbent upon the municipality to make the necessary arrangements with the RPC and/or Local Motion and the decision to assist would be based upon available RPC/Local Motion resources.

www.vapda.org/

www.localmotion.org/

2.2 Project Applicant Responsibilities

Who can apply?

Projects may be driven by or developed by a municipality, local groups, such as a business, school, or community group. Anyone can apply, provided they meet the project applicant responsibilities outlined below. Projects must demonstrate support from the municipality, as evidenced by a letter of support from the Selectboard, City Council, village trustees, or other appropriate governing body of the municipality.

The Applicant is responsible for all project planning, implementation, maintenance and monitoring, and removal, as outlined below:

- ☐ Identify project type and location based on local goals (i.e. planning document such as Town Plan, Better Connections Plan, etc.).
- ☐ Provide project design, ensuring the project is accessible to people of all abilities and meets ADA requirements. Complex projects may require professional engineering services for design and/or review and approval, which will be determined during the review process.
- ☐ Provide temporary Traffic Control Plan (TCP), which may require professional engineering services. The extent of the TCP will be determined during the review process.
- ☐ Provide all project supplies/materials, in accordance with VTrans materials requirements.
- ☐ Provide labor for installation and removal (volunteers, municipal staff or contractor).
- ☐ Provide liability insurance covering all labor and staff, including but not limited to volunteers, professionals, non-professionals, and third-party participants[3].
- ☐ Provide liability insurance covering all potential risk categories of a proposed project, including but not limited to injury to persons and property, construction installation and removal, engineering design, road and traffic hazards, theft, as well as alcohol, food, festival, and public events.
- ☐ Develop a public engagement plan that will inform the public about the project. Recommended public engagement strategies are described in the VTrans Public Engagement Guide[4].
- ☐ Designate an internal response person or team to monitor the project during implementation and address questions from users/the public throughout the project lifecycle.
- ☐ Conduct pre- and post- demonstration evaluation to determine project's success based on project goals as identified in the Phase 2 State Highway Access and Work Permit Application.

[3] The municipality's liability coverage should suffice, but a private entity would need additional insurance. Vermont League of Cities and Towns is available as a resource. www.vlct.org/rms/pacif/propertyautoliability-coverage. VTrans reserves the right to require additional coverage it deems necessary to adequately cover the nature and scope of the proposed project.

[4] VTrans' Public Involvement Guide is meant to provide outreach guidance for VTrans staff and those working on State projects.

3. APPLICATION PROCESS

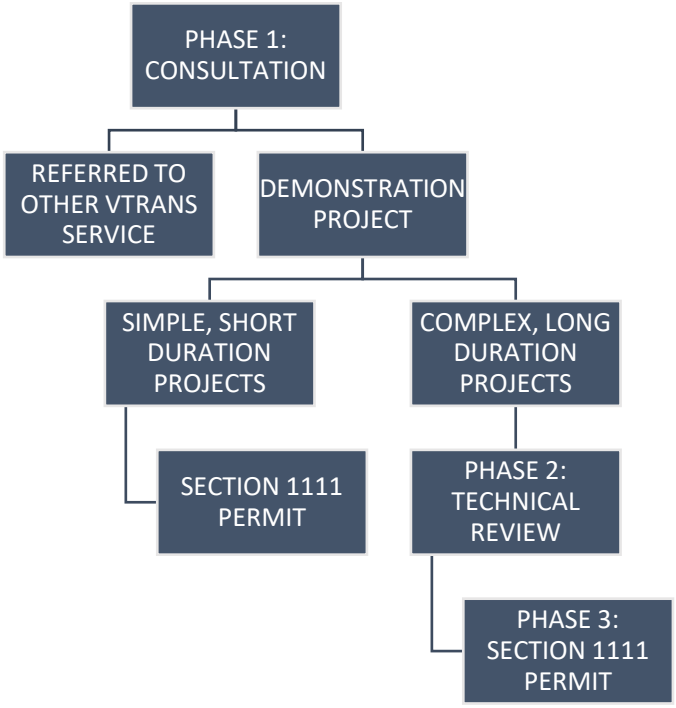
The timeframe to complete the process will vary based on the complexity of the proposed project. VTrans will strive to ensure a nimble review process that meets the scale and timeframe of the proposed project but encourages several months of lead time for planning and permitting.

3.1 Phase 1: Concept Proposal & Consultation – *required for all projects*

Phase 1 is intended to provide an opportunity for the Applicant to review a concept proposal with VTrans staff to refine project goals and scope and to identify the appropriate path forward to achieve those goals, and for VTrans to provide technical review.

Phase 1 begins with the submittal of a concept proposal to the VTrans Planning Section, after which a consultation meeting is scheduled between the Applicant and a core demonstration project review team comprised of VTrans staff in Planning, Permitting, Operations and Safety, and the relevant Maintenance District Project Manager.

Figure 1. Flow chart showing possible outcomes of consultation



Concept proposal requirements:

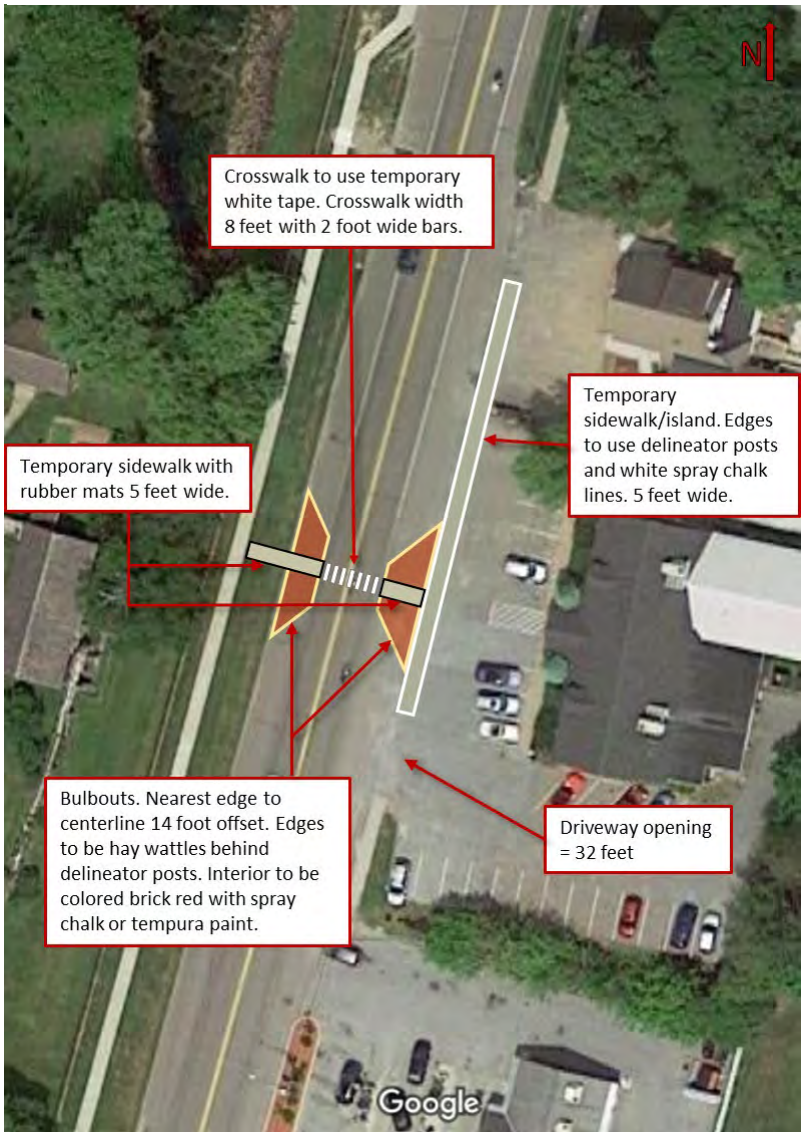
- a narrative describing the proposed project, including location and proposed duration
- the goal/intent of the project
- 3-5 relevant photos illustrating the area of concern
- a sketch plan illustrating the intended demonstration project (See Figures 2 and 3 for examples)[5]

[5] There are many free or widely available graphics programs that may be used to develop a sketch plan, including: PowerPoint, streetmix.net, designer.io, canva.com

Through the consultation, it may be determined that project goals can be achieved through other VTrans services, instead of through the full demonstration project review process[6]. If the VTrans demonstration project core team determines that the proposed project and associated goals are a good candidate for a demonstration project, the level of complexity and the duration of the proposed project will be considered by VTrans staff in determining if the proposed demonstration is "simple" or "complex".

Simple, short duration projects (typically less than 3 weeks) may be able to progress to Phase 3, which is the standard Section 1111 permit and review process[7]. Complex, longer duration projects (such as changes to an intersection configuration or projects intended to be implemented for a month or more) will be required to complete the Phase 2 Technical Review process before applying for a Phase 3 Section 1111 Permit.

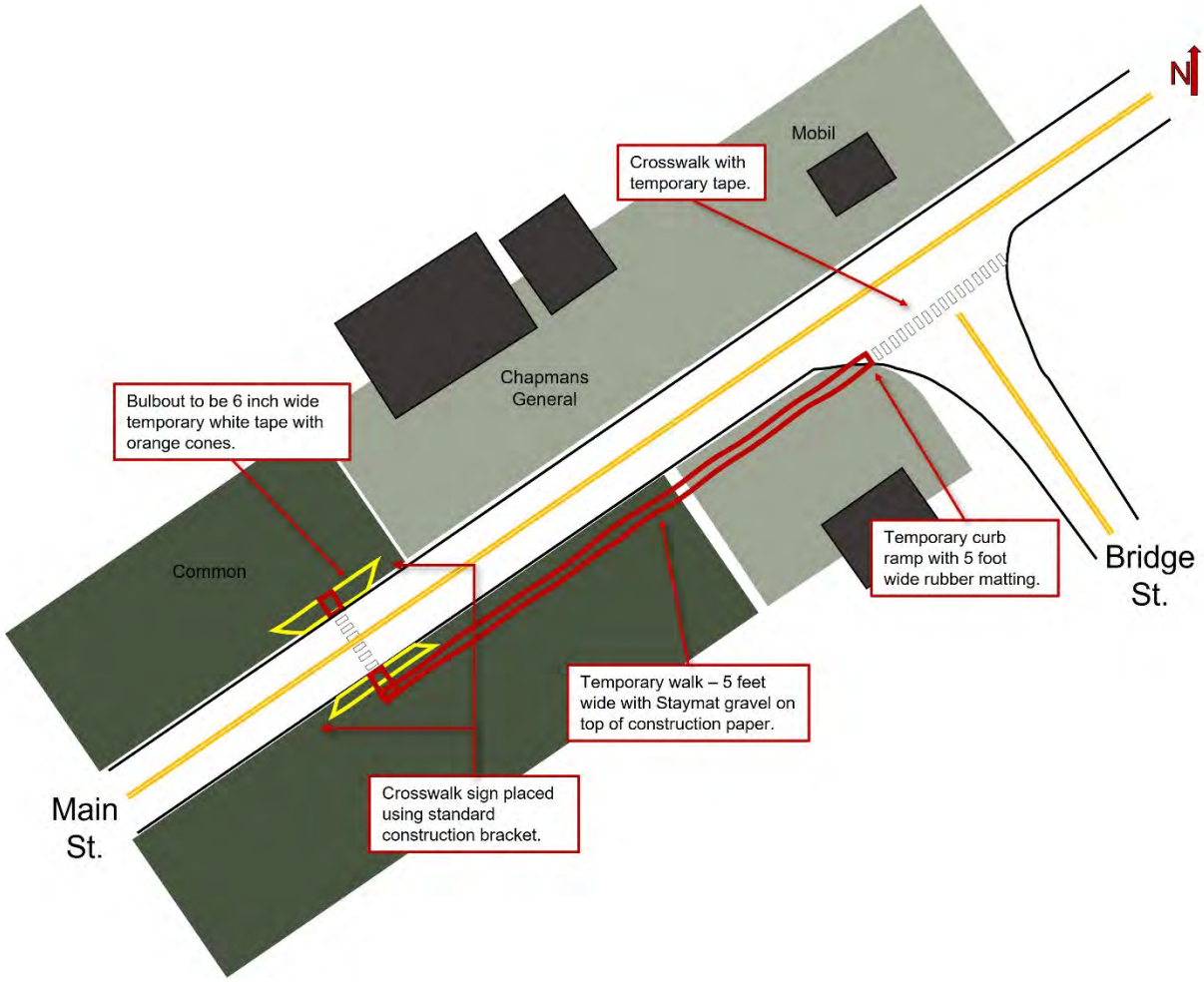
Figure 2. Sample sketch plan of demonstration crosswalk



[6] VTrans Traffic Operations FAQ website has information on common requests that may be relevant to those considering a demonstration project, such as how to request a crosswalk or signage. More information can be found at vtrans.vermont.gov/operations/technical-services/tsmo/traffic-operations/faqs

[7] The State Highway Access and Work Permit is often referred to as a "Section 1111 Permit" in reference to its authorizing state statute 19 VSA Section 1111. More information can be found at vtrans.vermont.gov/planning/permitting.

Figure 3. Sample sketch plan of demonstration crosswalk



3.2 Phase 2: Technical Proposal – *for complex projects only*

Projects that are determined by VTrans to be "complex", such as changes to an intersection configuration or testing a one-way street, or projects intended to be implemented for a month or more, are required to complete a Phase 2 Technical Proposal, which can be found in Appendix 2.

The Phase 2 Technical Proposal can be submitted at any time to the VTrans Planning Section. VTrans will strive to ensure a review process and timeline that is scaled appropriately to the complexity of the project, but Phase 2 is expected to take several months of coordination

The Phase 2 Technical Proposal will be reviewed by VTrans' Demonstration Project Review Committee to ensure that appropriate subject matter experts are engaged in the decision-making process. The Committee includes representatives from the following areas:

- Planning Coordinator (Committee Facilitator)
- Permitting Services
- Bicycle and Pedestrian Coordinator
- Operations and Safety Bureau/Traffic Engineering group
- Project Delivery- Environmental + ROW
- Project Delivery- Highway Safety & Design
- District
- Legal
- Asset Management Bureau

The Phase 2 Technical Proposal considers the following questions:

- Is normal operation for delivery trucks, public transit routes/stops, or trash/recycling pickup maintained, or has alternate access been provided or negotiated?
- Does the project preserve:
    - existing drainage patterns and facilities?
    - access to public utilities, utility covers, valves, building standpipes, etc.?
    - access within 25 feet of any fire hydrants?
    - normal access to driveways and alleyways?
    - normal street/sidewalk access for individuals with disabilities?
    - full access for emergency vehicles?
- Is there an appropriate installation, maintenance, and removal plan?
- Is there an appropriate Traffic Control Plan?
- Is mobility for all users of the roadway enhanced?
- How does the project support economic vitality in the downtown or village center?
- What are the public notice & engagement strategies?
- What is the intended time span and hours of the day that the project will be implemented?
- What are the criteria for evaluating success of the project?

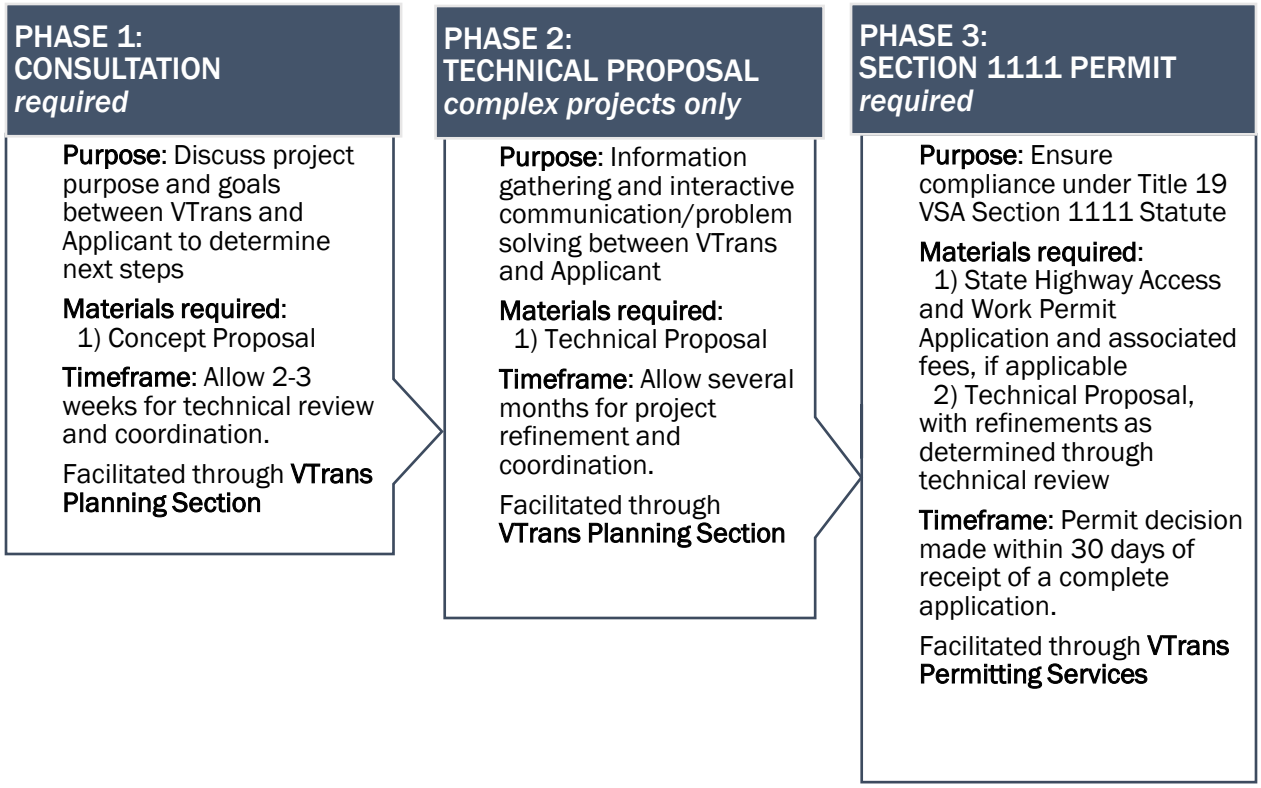
3.3 Phase 3: State Highway Access and Work Permit – *required for all projects*

Phase 3 is meant to ensure compliance under Title 19 VSA Section 1111 Statute. The Applicant should submit a completed State Highway Access and Work Permit (Section 1111 permit) application, and any applicable permit fees to VTrans Permitting Services. Fees are generally required for commercial purposes only.[8] Projects determined to be "complex" will also be required to submit a supplemental Phase 3: 1111 Permit Application for Demonstration Projects form.

Applications will be accepted at any time. Once all materials have been submitted and acknowledged as complete by VTrans Permitting Services, the Applicant will receive a permit or denial within 30 days. Projects with approved permits are to be completed within the same calendar year (April 15-December 1). Approval of a demonstration project in no way commits the Agency to funding or building the potential final capital infrastructure.

[8] Additional information on fees can be found on the VTrans Permitting Services Website. vtrans.vermont.gov/sites/aot/files/planning/documents/permittingservices/FeeScheduleAndPermitApp.pdf

Figure 4. Demonstration project application process



4. DEMONSTRATION PROJECT CRITERIA

4.1 Location Selection

Some roads are better suited for demonstration projects than others. In general, demonstration projects are likely to include changes that will slow motor vehicle traffic, provide better access and safety for pedestrians and/or bicyclists, transit users or combinations of these; the proposed changes will inform the location of the project. Project locations should be carefully selected to have surrounding characteristics that are generally consistent with what is being proposed. For example, a rural stretch of roadway with very little development would not be a good location to demonstrate a new crosswalk because it lacks the type of land use expected to generate pedestrian traffic.

VTrans will not support demonstration projects on limited access highways. Vermont State and Town Highways, including limited access highways are identified in this online map. Limited access highways have higher speed, free-flowing traffic and often include limitations on non-motorized uses such as bicycling and walking.

4.2 Required Roadway Characteristics

Demonstration projects will be considered on roadways with the following characteristics:

- Posted speed of 40 MPH or less for all transportation projects (bike lanes, bulb-outs, narrowings/lane reductions, crosswalks, and pedestrian refuge islands) and 30 MPH or less for non-transportation uses (i.e. parklets, outdoor dining, and plazas).
- Other factors to consider are:
  - Adequate sight lines.
  - If features of the project have the potential to be used at night, it will be important that the area have adequate lighting, which will be determined during the application process.
  - Impact to pedestrian movement, public transit routes and vehicles, delivery vehicles, sanitation vehicles, and emergency vehicle access; public utilities; signs; existing drainage and related infrastructure; and street trees.
  - Planned construction projects. Demonstration projects should not be planned when an active construction project is anticipated for the same area. Applicants should confirm this by reviewing VTransparency[9].

There are many potential constraints external to the engineering design that may need resolution before an application can be approved. In addition, if the demonstration project impacts the ability of drivers to navigate the roadway at the normal posted speed, the project

[9] vtrans.vermont.gov/vtransparency

may be required to include advisory speed signs to provide notification of the reduced travel speed.

4.3 Project Types

Transportation-focused demonstration projects
Demonstration projects that are likely to be requested on the state system include: bike lanes, buffered bike lanes, separated bike lanes (one-way or two-way), bulb-outs, narrowings/lane reductions, crosswalks, and pedestrian refuge islands.

Note: The following photos include some installations on locally managed roads, which may have different requirements than outlined in this guidance.

Figure 5. Local Motion-assisted demonstration bulb out and pedestrian island on locally managed road in Ludlow, 2021.

Figure 6. Demonstration shared use path and parklet along a Class 1 section of VT Route 12 in downtown Bethel, part of the Bethel Better Block initiative. To meet national standards this project would have needed to use a green paint, instead of blue, with no intermittent artwork, and added vertical delineation along the edge, in addition to the hay.

Figure 7. Demonstration bike lane in Montpelier on Class 1 Town Highway. Note that planter boxes are NOT allowed in Vermont State Highway Right of Way.

Figure 8. Buffered bike lane in Berlin.

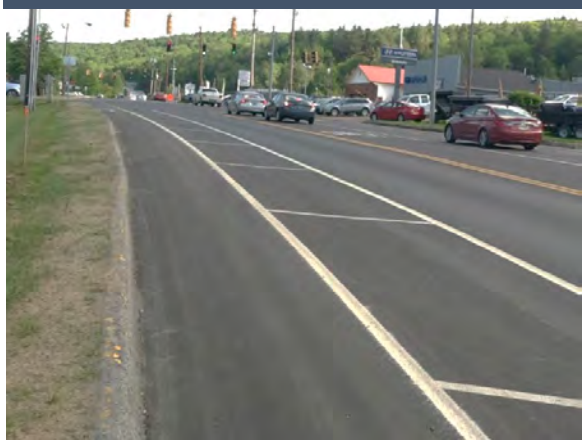


Figure 9. Buffered bike lane in Burlington.

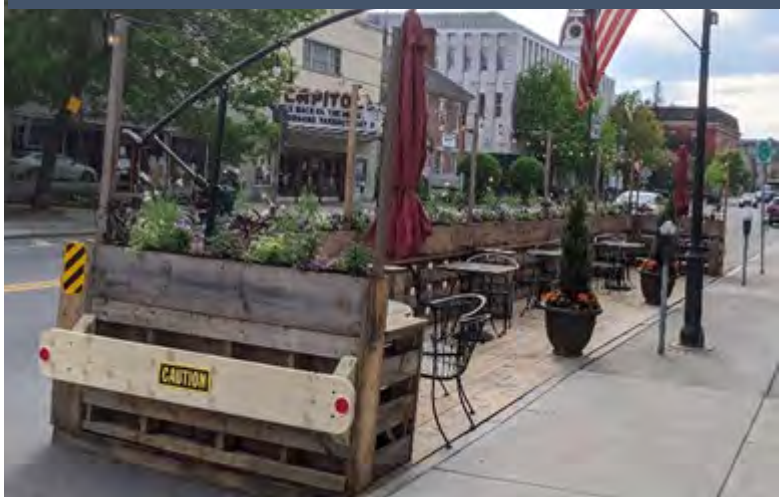
Figure 10. Bike lane installation in Burlington.

Figure 11. Bulb-outs in Island Pond.

Non-transportation use demonstration projects

Parklets, pedestrian plazas and road closures are options that utilize public sidewalks and highways for temporary public gathering spaces, providing public space to support economic vitality, and social interaction. Such projects are considered non-transportation uses and have special considerations outlined in Appendix 6.

Figure 12. Non-transportation use parklet in Montpelier.



4.4 Identified Need and Support

A demonstration project should address a problem or opportunity that has been previously identified in some level of planning document, such as a documented safety issue or desire to enhance street vitality. Examples include: Better Connections plan, Bike or pedestrian facility scoping study, Safe Routes to School plan, a Downtown master plan, or a Town Plan with sufficient detail.

During the application process, the applicant will be asked to provide evidence that the demonstration project has some level of local support and a likelihood that the project can be made permanent. Because most applicants are expected to be municipalities, there should have been opportunities to gain public support for the project. Demonstrated support could be shown through minutes of public body minutes, public surveys, petitions, or other means.

4.5 Project Duration

The minimum amount of time necessary for data collection to assess the project purpose should be considered when planning a project. Projects with shorter time frames, over a weekend or a few weekdays, may be more about community engagement and exploring new ideas. Longer duration projects may be more focused on evaluating pedestrian and driver behavior and the impact of the project on transportation measures such as pedestrian usage, bicycle use, vehicle speeds, traffic congestion or yielding rates.

5. DESIGN REQUIREMENTS

VTrans has the responsibility to enforce the consistent application of design standards to ensure safety for the traveling public and for those who construct, operate, and maintain State Highways. The Agency reserves the right to deny any application that does not meet current design standards. However, temporary demonstration projects provide the opportunity to test flexible design elements in a structured environment. Proposed design exceptions should be identified early in the planning process and will be considered on a limited case by case basis.

5.1 Design Standards

Manual on Uniform Traffic Control Devices (MUTCD) Requirements

The design of all signs, pavement markings and other traffic control devices must comply with the MUTCD[10], which is the adopted standard for Vermont state and local highways per 23 V.S.A. § 1025. Any temporary pavement markings must comply with standard color classifications. Any traffic control devices that would be considered experimental (i.e. not currently approved in the MUTCD) must have been approved by FHWA through the process outlined in the MUTCD in Section 1A.10. Applicants should initiate this process through VTrans.

State and Federal Design Guidelines

There are many State and Federal design guidelines for specific types of installations that all projects in State Highway Right of Way must comply with. VTrans staff can assist municipalities in navigating the appropriate guidance, which is listed below.

- American Association of State Highway Transportation Officials (AASHTO) Green Book[11]
- AASHTO Bike Guide[12]
- AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities [13]
- U.S. Access Board draft Public Rights of Way Accessibility Guidelines (PROWAG) for accessibility standards[14]

---

[10] MUTCD for Streets and Highways. mutcd.fhwa.dot.gov/

[11] American Association of State Highway Transportation Officials (AASHTO) Green Book. aashtojournal.org/2018/09/28/aashto-releases-7th-edition-of-its-highway-street-design-green-book/

[12] AASHTO Bike Guide. store.transportation.org/item/collectiondetail/116

[13] AASHTO Pedestrian Guide. transops.s3.amazonaws.com/uploaded_files/Update%20of%20the%20AASHTO%20Guide%20for%20the%20Planning%2C%20Design%2C%20and%20Operation%20of%20Pedestrian%20Facilities.pdf

[14] U.S. Access Board draft Public Rights of Way Accessibility Guidelines (PROWAG) for accessibility standards. www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way

- National Association of City Transportation Officials (NACTO) Deign Guides (various)[15]
- FHWA design references
- VT State Design Standards[16]
- VT Agency of Transportation Access Management Program Guidelines[17]
- VTrans Guidelines for Pedestrian Crossing Treatments
- Street Tree Policy

5.2 Roadway Width Requirements

If the demonstration project will impact lane and shoulder widths and/or introduce any width constraints that represent curbing or other restrictions, the following dimensions must be maintained:

Through lane widths – A minimum of 11 feet (measured from yellow centerline striping to white edge line, excluding shoulders)

Turn lanes –A minimum of 10 feet must be maintained

Width from centerline to any obstruction (i.e. curbing, edge of on-street parking, or curb to curb width such as from the side of the road to a pedestrian refuge island) – to be addressed during application process on a case by case basis, but generally not less than 14 feet for projects that are intended to eventually be made permanent, unless the municipality is considering taking ownership of a state highway as a Class I Town Highway. The width of the travel corridor is important to accommodate large vehicles and snow plowing.

[15] National Association of City Transportation Officials (NACTO). https://nacto.org/
[16] Vermont State Design Standards. vtrans.vermont.gov/sites/aot/files/highway/documents/publications/VermontStateDesignStandards.pdf
[17] VT Agency of Transportation Access Management Program Guidelines vtrans.vermont.gov/sites/aot/files/planning/vam/AccManProgGuidelinesRev072205.pdf

6. MATERIALS REQUIREMENTS

A general requirement for all materials to be used on the demonstration project is that they must be easily removed at the conclusion of the project, without leaving any element that may be confusing or misleading to roadway users.

6.1 Eligible Materials

Pavement Markings

Any pavement markings for a demonstration project, including those used to mask existing markings, shall be a temporary pavement marking tape. Reference VTrans' list of approved products used on Agency projects[18]. Using temporary tape will ensure that the marking has adequate retro reflectivity.

Non-reflective materials may be used for edge lines if they are supplemented with other devices, like vertical delineators, that include adequate reflective elements. Any temporary marking material used must be able to be removed without damage to the underlying pavement. Note that crosswalks may only be installed with temporary pavement marking tape.

Regular waterborne pavement marking paint may not be used for demonstration projects.

Figure 13. Sampling of demonstration project materials available through Local Motion

[18] vtrans.vermont.gov/highway/construct-material/test-cert/certification/approved-products-and-advanced-certifications

Crosswalks

Crosswalks that are part of a demonstration project must utilize the standard VTrans block pattern. Communities often desire to include artwork in crosswalks. Artwork is not allowed, as FHWA has ruled that a purely aesthetic treatment is not a traffic control device[19]. Another important consideration for crosswalks is that they are accessible for people of all abilities. If there is a raised sidewalk that is on one or both ends of the crosswalk, the demonstration project must have temporary ramps that meet PROWAG[20] standards to access the crosswalk. If there is not a raised sidewalk, there must still be an accessible feature on either side of the crosswalk.

Figure 14. A standard block pattern crosswalk and bike lane pavement markings are shown as part of the Barre-Montpelier Road Diet project in Berlin.

Bike Lanes

Demonstration bike lanes must include the standard bike lane pavement marking (see Figure 13) at a minimum. If the applicant wants to try colored bike lanes, they must use a green color that closely matches the green specified in the FHWA interim approval for green markings[21]. Note that VTrans sought and was given approval to use green markings statewide, which includes all road jurisdictions in the state. No other color may be used in bike lanes and green shall not be used for any other purpose. Bike lane symbol markings must be retroreflective and must be installed with temporary pavement marking tape.

[19] FHWA. Interpretation Letter 3(09)-24(I) – Application of Colored Pavement. mutcd.fhwa.dot.gov/resources/interpretations/3_09_24.htm

[20] Public Right-of Way Accessibility Guidelines

[21] FHWA Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes (IA-14) https://mutcd.fhwa.dot.gov/resources/interim_approval/ia14/

Curbing

Demonstration projects often include elements that represent where curbing would be installed, if the installation were permanent. Even for short term applications it is important to ensure that safety standards are met for any elements exposed to traffic. There are several acceptable options to simulate curbing:

- **Flexible Delineator Posts** - These vertical posts are adhered to the roadway and include reflective striping to make them visible.
- **Tubular Markers** - These are typically used in work zones and include reflective striping and minimum height requirements
- **Cones** - These would be appropriate for short term demonstration projects but may not be stable enough to use on longer-term installations. Cones are more easily moved and a plan must be in place to reset them if they are moved out of place.
- **Hay Wattles** - These could be used in addition to the items mentioned above but must be located behind the required element (i.e. away from traffic).
- **Rubber Curbing Sections** - Another option for simulating curbing are manufactured rubber curbing sections.
- **Paint and/or Tape** - Temporary pavement marking by itself to simulate curbing would generally not be acceptable, except in a low speed (30 MPH or less) and low volume (AADT of 5000 or less) location. Curbing depicted with temporary pavement marking alone will not impede traffic movements the same way as vertical elements.

Physical Separation

Some common demonstration projects are separated bike lanes, extensions of sidewalks and parklets. These facilities generally require physical separation from adjacent travel or parking lanes. Some of the options noted above to simulate curbing may be appropriate. The type of barrier needed will depend on the proximity to the travel lane, the posted speed limit, volume of traffic, amount of trucks and the requirements contained in the AASHTO Roadside Design Guide. The type of physical separation required for each project will be determined during the application and review process in Phase 1.

Signs

Any sign installed as part of a demonstration project must be in a location that complies with the Vermont State Sign Law, VTrans Standard Drawings and the MUTCD and does not obstruct existing signs. This includes the offset to the roadway, the sign height, and the placement in advance of a condition if the sign is an advance warning. Signs with square tube posts that

include proper anchors are preferred (see VTrans Standard drawing)[22]. For shorter term demonstration projects, signs may be installed with crashworthy weighted bases, as they would be in work zones.

6.2 Ineligible Materials

Demonstration projects may not include items like planting pots, wooden boxes and other materials or objects deemed to be a hazard to the traveling public within the normal roadway area, unless placed behind an approved protective barrier or outside the clear zone. VTrans Hazardous Materials Unit will review applications if questionable or unfamiliar materials are proposed, such as: toxic metals (such as lead, chromium, mercury); radioactive materials, neurotoxins, such as pesticides; organic solvents; flammable liquids or solids; and products described as "fluid film".

7. PROJECT INSTALLATION, MAINTENANCE, AND REMOVAL

Applicants are required to develop and submit a Project Installation, Maintenance, and Removal Plan as a part of the Phase 2: Technical Review. If necessary, the plan will be revised following the consultation and will be attached to the Phase 3: State Highway Access and Work Permit Application. Although planning, coordination, and installation will be unique to each demonstration project, there are basic procedures that all Applicants will need to follow from project installation to removal. These are outlined below.

7.1 Project Installation

Traffic Control for Project Implementation

Applicants must ensure that personnel installing demonstration project features are safe while they do this work. Application materials must include a narrative about planned traffic control. Applicants may reference MUTCD Typical Applications from Part 6 of the MUTCD. All personnel installing and dismantling the project are required to have proper Personal Protective Equipment (PPE) and define what that will be in the application. It may be determined during the application process that a site-specific traffic control plan (TCP) is required, which must be completed by a Vermont-licensed Engineer.

[22] VTrans Standard Drawing E-121 - outside.vermont.gov/agency/vtrans/external/CADD/WebFiles/Downloads/Standards/English/PDF/stde121.pdf

Applicants are required to submit a detailed breakdown of timeline, tasks, roles, and responsibilities related to installation. The items identified below will assist the applicant in determining how many people may be needed for the installation, whether a Temporary Traffic Control Plan (TTCP) is needed, and other materials/tools that may be needed.

- What type of project is being installed?
- What are the materials that will be used for the project?
- Are there special traffic conditions that need to be managed during the installation?
- How will the general public and impacted property and business owners be notified prior to installation?
- How will the area be accessible to pedestrians during the work?
- How will ADA be addressed?
- Who is completing the installation?
- How long will the installation take?
    - Note that a typical intersection installation (e.g. curb extensions and crosswalks) takes about four to eight hours to install with about eight people.

When using professionals, volunteers, or any other kind of participant for the design, installation, maintenance, or removal of the project, applicants:

- Are strictly liable for any injuries or damages caused by or inflicted upon said participants
- Are solely responsible for said participants' compliance with construction and safety protocols, including but not limited to use of proper traffic control methods, ensuring persons do not enter the active traffic, and that all participants wear acceptable safety clothing and footwear that meet ANSI/ISEA 107-2004 (or ANSI/ISEA 107-2010) Performance Class 3 or its most current version.[23]
- Must obtain written waivers for all participants releasing the Agency of Transportation of any form of liability relating to their involvement in the project.

7.2 Project Maintenance

The required maintenance of a demonstration project will vary by project type and duration. Shorter duration projects may require minimal ongoing maintenance. Projects lasting longer will require a plan to maintain the project elements in their "as-installed condition". The Applicant will need to determine the amount of maintenance required and prepare a brief plan

[23] For additional information, see www.workzonesafety.org/files/documents/training/toolbox_talks/osha_alliance/OSHA_alliance_high_viz_brochure.pdf

that describes how they will keep elements over the life of the project in a condition that allows them to meet the purpose of the project.

Maintenance plan considerations:

- What activities nearby may impact the demonstration project site (i.e. existing infrastructure, amenities, and/or traffic generators)?
- What kind of materials will be utilized during the demonstration project?
  - Regular review of physical project elements such as flex posts, signs, lighting, barriers, etc. to ensure they have not been damaged, moved, or removed.
  - Regular maintenance of landscape features (i.e. watering and weeding of plants, grass cutting, trimming of shrubs, etc.)
  - Regular review of pavement markings to see if "touch ups" are needed.
  - Regular review of traffic tape edges to ensure replacement of torn or damaged sections are removed and replaced.
  - Will trash removal and street sweeping be needed, and if so, when and how will this occur?

7.3 Project Removal

The Applicant is responsible for removing the demonstration project according to the timeline stipulated in the Section 1111 Permit. If the Applicant fails to remove the project as required, VTrans reserves the right do so at the expense of the Applicant.

The project shall be removed in a way that is safe and clear to the traveling public. Walking, biking, and driving behaviors may have changed while the project was installed. Remove all conflicting signs, pavement markings, and other modifications so that permissible travel behaviors are clear. The local District Maintenance staff shall complete a final project inspection upon demonstration project removal. This inspection report must be submitted by the Applicant to VTrans Permitting Unit as part of the submitted close out documentation.

Removal plan considerations:

- Will the area be accessible to pedestrians and bicyclists during removal?
- Is traffic control required?
- How will permanent impact to the existing infrastructure be mitigated? Existing infrastructure must be restored to its previous condition and to meet MUTCD standards.
- How long will the project take to remove and who will remove it?
- How will the demonstration materials be stored or disposed of?

All demonstration project permits are revocable by VTrans if the permitted project no longer meets the intent of the project described in the approved application or if any safety concerns arise.

8. DATA COLLECTION, EVALUATION AND REPORT

Collecting and evaluating data will help address questions related to the project impact. If the project does not perform as intended, future designs can be altered to reflect lessons learned, and tested again.

A summary report of a demonstration project in Toronto shows an example of the findings and types of data that could be collected. www.880cities.org/wp-content/uploads/2020/06/8-80-Streets-Danforth-Summary-Report-.pdf

8.1 Evaluation Questions

The project evaluation should be based in what site-specific issues have been identified and what the project is attempting to address. Engage key stakeholders within the community such as local advocacy groups, businesses near the project site, and community leaders, to articulate the evaluation questions. Examples of evaluation questions include:

- How many people are engaged with the project site?
- What impact did the project have on driver behavior at this site? On bicyclist behavior? On pedestrian behavior?
- How did the project affect pedestrians' perception of safety at this site?
- What did users like about this project and what would they change?
- Did the project impact economic vitality?

These evaluation questions will help determine the best data collection methods and tools to use. Example evaluation methods to consider based on observed problems at a project site and the demonstration project type selected are included in the Appendix

8.2 Data Collection

Data collection by the Applicant is a key component of the demonstration project evaluation process. Documenting conditions before, during, and after the project installation creates a record of project impact. In addition to collecting typical quantitative data points such as traffic

counts, infrastructure conditions, etc., it is important to take photos and videos before and during project installation- and while the project is active. Careful documentation through data collection, evaluation, and reporting will help the project team understand the successes of the project, create a summary report for future reference, and make adjustments for future iterations.

It will be important to understand what existing data is available and determine whether additional data collection pre-project installation is needed. Existing condition data (pre-demonstration project installation) may be readily available through VTrans, your local Regional Planning Commission (RPC), and/or municipal staff. Your local RPC staff can help you determine what data will be critical to collect for the project and may be able to assist with data collection during the project. Reach out to them early to discuss your needs.

8.3 Evaluating Results

After data collection is complete, compile and analyze the data. Develop materials to include in the report and communicate the findings of the evaluation to VTrans, key stakeholders, and the public. Refer to the evaluation questions to help organize the results. Consider a variety of formats to communicate the results, including reports, fact sheets, infographics, presentations, and social media posts. This report should include an overview of the project, project team representatives, evaluation methodology, and documentation of results/lessons learned. This type of report will be valuable in refining the design, obtaining future funding for a permanent installation and gaining long-term support from stakeholders not directly involved in the demonstration project. Success could also mean showing that the chosen project installation is not right for that site.

8.4 Project Evaluation Report and State Highway Access and Work Permit Close-Out

The Applicant is required to submit a project evaluation report and any other close out documentation specified in the State Highway Access and Work Permit within 30 days of receiving the District Inspection Report. This shall include, at minimum, a project evaluation narrative and a copy of the District Inspection Report. The Applicant may wish to make the report available to stakeholders and the public.

Project evaluation report components:

- Project removal and final inspection report (signed off by District)
- Project summary:
    - Contact information
        - Town
        - Local Project Manager Name & Title
        - Address, Email Address, Phone Number
    - Project Installation Date(s)

    - Project Location:
    - Budget Information (if available)
        - Estimated materials budget (purchased items)
        - Estimated Value of In-Kind Materials Donations
        - Cost of hired services, if any (list service type)
        - Additional costs
        - Total project cost
        - List any In-kind donors or sponsor (Name, Item/Service)
- Before and after photos of the demonstration project
- Project evaluation narrative (inclusive of collected evaluation data and how these related to identified project goals).
    - What worked well?
    - What would you do differently?
    - What challenges arose when planning or implementing your project? How did you address them?
    - Include relevant findings/evaluation metrics, as well as photographs and links to any online information. Attached supporting materials as appropriate.
    - Do you have next steps to continue to advance the goals associated with your project?

9. PERMANENT PROJECT IMPLEMENTATION

After an improvement has gone through the demonstration process, a municipality may want to consider permanent installation. If the improvements are a benefit to pedestrians or bicyclists, there are two possible VTrans grant programs that the municipality could apply to: the Bicycle and Pedestrian Program and the Transportation Alternatives Program. Both programs typically have annual solicitations for new projects. Information on the grant process and timeframes can be found at the Municipal Assistance Program website[24].

Municipalities also have the option of designing and constructing projects using local funds, which would have to be identified and approved through the appropriate local process.

If the improvements are within a State Designated Downtown recognized by the Agency of Commerce and Community Development (ACCD), the municipality could apply for Downtown Transportation Funds[25].

[24] Municipal Assistance Program. vtrans.vermont.gov/highway/local-projects
[25] Downtown Transportation Funds. accd.vermont.gov/community-development/funding-incentives/downtown-transportation-fund

Regardless of funding source, the municipality would need to submit a new section 1111 application requesting a permanent installation for the work within the State highway ROW.

9.1 Class I Town Highways

Some demonstration projects may not be candidates for permanent installation on a state highway but could be possible if the route were to be taken over by the municipality as a Class I Town Highway. The considerations for Class I Town Highways are outlined in the VTrans White Paper on Class I Town Highways[26]. When a Town takes over a section of highway as Class I, they gain additional jurisdiction to implement changes that may not be possible as a state highway. A demonstration project may be a way for a municipality to explore the benefits of Class I Town Highway takeover.

[26] vtrans.vermont.gov/sites/aot/files/planning/documents/planning/Class I Town Highways White Paper.pdf

PHASE TWO

Demonstration Projects in State Highway Right of Way

PHASE 2: TECHNICAL APPLICATION

VERMONT AGENCY OF TRANSPORTATION

The purpose of this technical application is to help interested persons gather the information necessary for assistance from the Agency of Transportation (AOT) for the temporary use of space in a State Highway Right of Way for a demonstration project prior to completing the required Section 1111 Access Permit for work in the State Highway Right of Way.

INSTRUCTIONS: Submit completed application and required materials to AOT Planning Coordinator, jacqueline.dement@vermont.gov. Applications are accepted throughout the year.

PROJECT INFORMATION	
PROJECT LOCATION: *[State Highway Name, Nearest street address, Town/City]*	
PROJECT TYPE: *(i.e. bike lane, curb extension, median refuge island, parklet, wayfinding sign, pedestrian plaza, etc.)*	
POSTED SPEED LIMIT IN PROJECT AREA:	
TARGET INSTALLATION & REMOVAL DATE OR PROJECT DURATION:	
APPLICANT INFORMATION	
APPLICANT NAME:	MAILING ADDRESS:
PHONE:	E-MAIL:
TITLE:	ORGANIZATION/BUSINESS NAME:
CO-APPLICANT *(if applicable)*	
CO-APPLICANT NAME:	MAILING ADDRESS:
PHONE:	E-MAIL:
TITLE:	ORGANIZATION/BUSINESS NAME:

PROJECT DETAILS
Describe the goal/intent of the project.
Are there residents, business owners, organizations, or property owners from the surrounding area (adjacent to the project site) engaged in project planning, or indicating support of the project? *(If yes, list name below. Include relevant materials such as letters of support with your pre-application).*
Describe your public notice and engagement plan. How will you disseminate information about the project to adjacent property owners, businesses, the traveling public, and community members?

Describe all anticipated activities (e.g., music performances, eating and drinking, gathering crowds, etc.) and participants (volunteers, professionals, non-professionals, third-parties, etc.) involved in your proposed project. For each activity and participant, please describe what insurance coverage you will obtain to protect the Agency against their associated risks.

Activities:

Participants:

Insurance Coverage:

Describe how you intend to evaluate the project. Please include details of when evaluation activities will occur, and how many volunteers/people will be involved in each of your planned evaluation activities. *(Please refer to Section 8: Data Collection and Evaluation in the Demonstration Projects in State Highway Right of Way Guidance for requirements and best practices.)*

Installation, Maintenance and Removal Plan
Describe how the project will be **installed**, how long installation is expected to take, and who will be involved in installation.
Describe how the project will be **maintained** during the demonstration and who will be involved in maintenance.
Describe how the project will be **removed**, how long removal is expected to take, and who will be involved in removal.

Please answer the following questions:	YES	NO
Is your project located in a designated downtown or village center? *Visit planningatlas.vermont.gov for land use planning data.*		
Does the project propose a speed limit reduction?		
Will the project avoid interference with normal operation for delivery trucks, public transit routes/stops, or trash/recycling pick up? If project will impact these services, alternate access must be provided and negotiated with impacted parties.		
Does your project design preserve access to public utilizes, utility covers, valves, building standpipes, etc.?		
Does your project design preserve vehicle access within 25 feet of any fire hydrants?		
Does your project preserve normal access to driveways and street intersections? *Projects should not block or limit driveway access, unless the driveway owner specifically permits the use of their driveway for the demonstration (demonstrated by letter of support).*		
Does your project design preserve full access for emergency vehicles?		
Does your project design preserve normal street/sidewalk access for individuals with disabilities?		
Are any street closures needed for your project?		
Do you have an Engineering Partner identified to help you review your proposal and to create a Traffic Control Plan in the event that one is required?		

EXISTING CONDITIONS SKETCH PLAN & PHOTOS

The Applicant must submit an Existing Conditions Sketch Plan and 3-5 photographs of the proposed project location highlighting current conditions. The plan may be hand-drawn or utilize a base map (i.e. Google Earth), as long as all of the required elements are included and legible.

Required elements:

- Proposed site
- 20 feet on either side of the proposed site
- Proposed footprint of improvements with dimensions

Additional elements, as applicable:

- Parking stalls with dimensions
- Adjacent vehicular lane & shoulder width dimensions
- Location of existing utilities
- Location of storm drains
- Driveways, alleyways and accesses
- Sidewalk dimensions (if applicable)
- Street trees and tree wells
- Permanent above the ground street fixtures (such as utility poles, street lights, parking meters, electrical boxes, signs, signal controller box, fire hydrants, etc.)
- Movable above the ground street fixtures (such as trash bins, planters, benches etc.)
- Property lines
- Building entrances

EXISTING CONDITIONS PHOTOS

The Applicant must submit **Existing Conditions Photos** like those shown below with the application.

BUILDING ELEVATION: Take a photo of the proposed site from across the street. Center the proposed site within the frame, including the sidewalk (if applicable), fronting, and adjacent buildings.

UPSTREET SIDEWALK/STREET APPROACH: Take a photo of the proposed site from the sidewalk (if applicable) or the road shoulder.

DOWNSTREET SIDEWALK/STREET APPROACH: Take a photo of the proposed site from the sidewalk (if applicable) or the road shoulder.

UTILITIES, GUTTER, & DRAINS: Take photos of the curb (if applicable), gutters, where the proposed improvements will connect with the sidewalk or road shoulder. Include photos of storm drains and utilities within 20 feet to either side of the proposed site.

ABOVE GROUND FIXTURES: Take photos of existing above ground-fixtures within 20 feet to either side of the proposed improvement site. Include utility poles, parking meters, street trees, benches, etc.

Note: Application and photos adapted from the City of Montpelier

PHASE THREE

Demonstration Projects in State Highway Right of Way

VERMONT AGENCY OF TRANSPORTATION

PHASE 3: S.1111 STATE HIGHWAY AND WORK PERMIT SUPPLEMENTAL FORM

This application form is intended only for those parties who have already submitted a Demonstration Project Phase 2 Technical Application to AOT and have revised their project materials in response to AOT feedback.

INSTRUCTIONS: Submit completed application and required materials to Chief of Permitting Services, VTrans Permitting Section, craig.keller@vermont.gov. State Highway Access and Work Permits for Demonstration Projects are accepted throughout the year, and permit decisions are made within 30 days of receipt of a complete application.

PROJECT INFORMATION
PROJECT LOCATION: *[State Highway Name, Nearest street address, Town/City]*
Describe any project changes since Phase 2 Technical Application:
Please describe any updates to your public engagement plan.
Please describe any updates to how you plan to evaluate the project.

INSTALLATION AND MAINTENANCE

How do you plan to install, maintain, and remove the project in accordance with the Traffic Control Plan (if required) or in accordance with the specifics identified in the Phase 2 Technical Application?

Who will oversee installation, maintenance, and removal, and Traffic Control Plan (if required)?

Who will oversee project volunteers and ensure that all volunteers sign a liability waiver?

Please indicate your desired time for project inspection by AOT District staff. This must occur at the end of installation, before the project officially "opens" to the public.

ATTACHMENTS

Please include the following attachments, as applicable, with your application.

- S.1111 State Highway and ROW Work Permit Application
- Traffic Control Plan. The Plan must be completed by a licensed engineer, according to MUTCD guidelines. Include the contact information for the Engineering Partner who assisted you.
- Public Notices
- Informational Flyers
- Volunteer Waiver
- Updated site plan

APPENDIX 3: RELEASE OF LIABILITY

THIS FORM MUST BE COMPLETED BY ALL PERSONS INVOLVED IN DESIGNING, INSTALLING, MAINTAINING, OR REMOVING A VERMONT AOT-PERMITTED DEMONSTRATION PROJECT

I _____ have read and understand the Release of Liability and willingly and voluntarily agree to participate in this project and abide by all the safety guidelines and other project requirements. I understand that this project may involve potentially dangerous activities in a construction zone within or near an active right of way. I understand that my participation may involve certain risks, including but not limited to: injury or death from vehicles traveling in the right of way, use or operation of construction equipment and tools, inhalation of paint fumes and other chemicals, and lifting or moving heavy objects. I understand that I am responsible for my own health insurance coverage and that I am not covered by the State of Vermont or the Vermont Agency of Transportation.

By signing, I agree that I am in sufficient physical health to engage in this activity and that I release and hold harmless the State of Vermont, the Vermont Agency of Transportation, their appointed or elected officials, employees, contractors, agents, and volunteers from any and all claims, actions, and judgments arising from or related to the actions or omissions of this project's vendors, contractors, employees, and volunteers.

Participant's Full Name: _____ Age:[27] _____

Address: _____ Phone: _____

Intending to be legally bound hereby, the undersigned acknowledges and agrees to the statements above and **have read and will abide by the Safety Guidelines described in this Guide.**

Participant's Signature: _____

Date: _____

_____

*Note: Individuals fifteen years or younger may not volunteer with this project due to safety and liability concerns.

APPENDIX 4: DATA COLLECTION GUIDANCE

Data and general observations should be collected before, during, and after the demonstration project is installed. Collecting data before the project and during the project is especially important when it comes to quantitative data so there is a baseline to examine changes over time. Qualitative data may be less impacted by time of day, day of week, weather, or special events.

Consistency

Consistent data collection is critical for an accurate evaluation process. This is particularly relevant for quantitative data such as traffic counts, vehicle speeds, and pedestrian counts. The means of collecting data during the same time of day and day of week, and making adjustments to account for weather, construction, holidays, or other activities that may impact people's behavior. Depending on the location and surrounding context, it is advisable to collect data during two or more time periods, such as weekday evening peak (or several weekday peaks) and Saturday afternoon (or other weekend peaks such as Sunday afternoon- relevant to major recreation and resort areas). To reduce variability, data collected on multiple weekdays at the same time of day can be averaged together. Data collected from different days/times can provide insight on how conditions and use of the project site differ depending on the day/time.

Day of Week

For typical user counts near schools, collect data midweek on Tuesday, Wednesday, or Thursday. Saturday is recommended for weekend counts, but collections on Sundays may be preferred for some communities or locations to account for site specific impacts (e.g. resort, major recreation attractions, place of worship with Sunday service, etc.).

Time of Day

Collecting data during daily peaks provides the largest sample size for comparing before/during or year after year data. Identify two consecutive hours for data collection that overlap known peak activity. For example, collect counts from 2PM to 4PM on a weekday (to account for school dismissal adjacent to a school zone) or 12PM-2PM on a Saturday.

Weather

Pedestrian and bicycle volumes are much more affected by weather than driving volumes. If it is raining, snowing, or excessively hot, postpone data collection to another day.

Special Events

Avoid collecting data on or adjacent to holidays, during construction, or other special events that may impact pedestrian, bicycle, or driver behavior. Data may be collected during recurring events, but it is strongly recommended to also collect data during non-event times. Qualitative data such as public perception surveys may be less impacted by special events and may benefit from being deployed during special events due to the additional traffic generated.

Qualitative Tools

Qualitative metrics refer to data that is observed rather than measured. This might include quotes or descriptions. Qualitative tools can often be a more interactive form of data collection as the data is collected directly from people. This kind of data is critical in telling the story of the project focusing on the user experience. Consider using the following tools:

Intercept Surveys: Develop a very short (1-3 question) survey to ask people who pass through the project area.

General Surveys/Questionnaires: Use paper or electronic surveys (via laptop or tablet) to gather more in-depth information on site, or as a follow-up to the project. Different surveys can be developed to target a variety of stakeholder groups (ex: residents, local businesses, etc.).

Key Person Interviews & Testimonials: Specific project goals may make input from specific stakeholders particularly valuable. For example, if creating temporary bulb-outs near a school crossing, consider interviewing key personnel such as the crossing guard.

Idea Board/Comments in a Box: Provide a space for people to quickly write down ideas and see what others have shared. This could be a large chalkboard, blank paper or canvas, or other space where people can write or add ideas on sticky-notes. Consider providing prompts to generate feedback such as "I like this because…" or "I dislike this because…" Provide the tools necessary for people to easily share their thoughts on the idea board. If possible, staff the idea board to **orient** people to the project and invite people to share feedback.

Social Media: Develop a hashtag for social media users to have conversations and share input and ideas related to the demonstration project.

Performance Metrics to Evaluate with Interactive Evaluation Methods

Pedestrian and Bicycle Level of Service / Level of Traffic Stress: how users perceive a service condition (delay, travel time, speed, comfort). Walking and bicycling Level of Service and Level of Traffic Stress can be assessed through various methodologies depending on context and desired outcomes, but generally focus on assessing comfort levels under specific situations.

User Perceptions: measurement of how safe a person feels under various network scenarios. For example, a person walking will likely perceive a street to be unsafe if it lacks sidewalks and

permits high motor vehicle speeds. The measure predominantly applies to infrastructure and roadway network conditions, not safety as an element of security.

Quantitative Tools

Quantitative metrics deal with numbers and data that can be measured, such as pedestrian or bicycle volume counts. Select quantitative metrics that demonstrate how the project may have impacted key user groups. Video, automated data collection, and manual data collection are all viable strategies for passive data collection. Potential data points to consider include:

Volume Counts for Vehicles, Pedestrians and/or Cyclists: To measure cyclist volumes, consider using WayCount - an affordable hardware and web platform for crowdsourcing automobile and bicycle traffic count data. Smart phone counter applications (such as CounterPoint) are also available and can help you collect volumes across multiple transportation modes. To conduct a manual count, start by creating a schedule that accounts for uniform counting time periods (ex: the first 10 minutes of every hour, beginning on the hour). Set a time to collect baseline data for comparison at the time periods before the project is in place.

Stationary Activity Counts: Beyond counting who is passing through the project area, consider recording who is staying, and what they are doing. This can be accomplished through regular stationary activity counts, which are conducted in regular intervals just like volume counts. For these counts, record information about what people are doing, how they are interacting, their age, how long they are staying, etc.

Sales Figures: Work with nearby businesses to see if they will share information about their sales figures in relation to your project. For example, compare their sales figures on the project weekend to those of an average weekend in the same season from the previous year, and again to a representative weekend after project completion. Aim to keep time of year and dates consistent, to complete an accurate comparison. If sales figures are unavailable, consider counting/comparing the number of people who visit businesses near the project site. Other options to capture economic activity could include: business owner interviews, zipcode surveys, parking revenue, or tracking lodging occupancy rates.

Vehicle Speeds: In many cases, a project goal may be to slow cars down to a safer speed. Vehicular speed can be counted with a radar gun. Another option is to mark out a 100-ft stretch on the roadway near your project and use a stopwatch tool to record the time it takes a driver to cover this distance.

Yielding Rates for Pedestrians in Crosswalk: Observe and record how many drivers yield to pedestrians in the crosswalk before, during, and after the project.

Red Light Stop Times: These can be valuable measurements if there is concern about back ups at traffic lights as the result of the project. Use a stopwatch to time how long it takes them to get

through the relevant intersection before and after the project is in place. Another option is an informal queue count- count the number of cars waiting at the red light.

Emergency and Transit Vehicle Access: This is an incredibly important consideration. Invite the Fire Department and the local transit agency to come out to the demonstration site to test how well their vehicles can maneuver around the demonstration and record the results.

Noise Levels: These impact quality of life and measuring decibels can be useful. Many smart phones support apps which will allow decibel readings to be taken directly from the phone.

Resources Leveraged: Track volunteer involvement, in-kind donations, financial donations, etc. These metrics demonstrate support for the project in an impactful way.

School Zone Hazard Observation Tool: This resource identifies safety issues surrounding a school. It was developed for Safe Routes to School projects but could be used for broader demonstration project needs. Safety issues may include unsafe crossings, distractions, illegal parking, or others. The tool could be used before the demonstration project to inform site selection or during the project to evaluate the extent to which changes to the site impact behavior.

Pedestrian Crossing Distance and Crossing Time: Measure the pedestrian crossing distance before and during the project and note changes in terms of crossing distance and/or crossing time. Reference the MUTCD for calculations on estimating pedestrian crossing time.

Event Attendance: Record the approximate number of people who attend an event or interact with the project by the number of materials picked up such as pamphlets or stickers.

Bicycle Parking Inventory and Utilization: Track the number of bicycle racks present in the project area and the number of bicycles locked to designated bike parking spaces and/or other objects such as sign posts.

Resources Leveraged: Track volunteer involvement, in-kind donations, financial donations, etc. These metrics demonstrate support for your project in an impactful way.

Performance Metrics To Evaluate With Passive Evaluation Methods

Adherence to Traffic Laws: a measure of how well people driving, bicycling, and walking obey current traffic laws, such as yielding rates and crosswalk usage.

Average Travel Time: the average time it takes road users, including people walking and bicycling, to travel a specified distance.

Delay: average delay (seconds) associated with bicycling and walking at specific locations or across longer distances.

Mode Split: proportion of total commute trips by transportation mode (i.e., walking, bicycling, etc.).

Pedestrian Space: measurement or proportion of public right-of-way dedicated to walking activities, including sidewalks, plazas, median refuges, and crosswalks.

Volume: measured number of people walking and bicycling in a specified area for a designated period of time.

Visual Documentation Tools

Collecting visuals to tell the story of the project can be invaluable. Potential tools include:

- Video recordings of people interacting with the project or sharing their thoughts about it.
- Time-lapse video applications allow you to use your smart phone to create a dynamic video illustrating how your project transforms public space and functions while installed.
- Before and after photographs can be a striking visual. Be sure to consider options for capturing aerial images (from a nearby window or balcony, for example), and establish a uniform shot angle for clear comparison.
- Event photos and videos documenting the various aspects of your project through all stages of its life, from installation to tear-down.
- Photovoice utilizes people using the project, including students, neighbors or other community members, photograph barriers in and around the area. They may also document improvements during the demonstration project. Refer to the guidance provided above regarding the need for sensitivity and school approval when photographing students.

APPENDIX 5: NON-TRANSPORTATION USE DEMONSTRATION PROJECTS

Parklets, pedestrian plazas and road closures are options that utilize public sidewalks and highways for temporary public gathering spaces, providing public space to support economic vitality, and social interaction. Such projects are considered non-transportation uses.

Parklets are public seating platforms that convert curbside parking spaces into gathering spaces for people. Most parklets have a distinctive design that incorporates seating, public art, landscaping, and/or bike racks. Parklets may also utilize a portion of a sidewalk. In locations without curbside parking, the same concept can be used. Similarly, **pedlets** are extensions of the sidewalk around sidewalk dining or retail sales into parking spaces to allow businesses to provide fenced outdoor seating.

Temporary Pedestrian Plazas take advantage of excess space that often exists when roadways intersect at odd angles. A pedestrian plaza will generally provide more space than a parklet for seating, landscaping, and other features but its effect on traffic flow needs to be carefully evaluated.

Road Closures temporarily close a street to motor vehicle traffic making a large space available for community gatherings and events, retail sales, and additional space for people walking and biking, sometimes referred to as Open Streets. Given the amount of space available, road closures could provide outdoor eating and retail opportunities for multiple businesses. Of the three options, road closures will create the greatest disruption to traffic patterns, emergency vehicle access, and access for delivery vehicles and will require significant planning and public outreach. Although this option has the greatest impacts, many municipalities and the Vermont Agency of Transportation have experience successfully managing road closures for parades, bicycling, and running races, other special events and for construction projects.

Special Considerations for Non-transportation Use Demonstration Projects

Changes to public sidewalks and roadways for non-transportation uses have special design considerations that need to be carried out thoughtfully. The following issues should be considered.

Fair Market Value Exception. Per the US Code, fair market value must be charged for non-transportation uses of a highway right-of-way on which federal transportation funds have been spent in the past (https://www.govregs.com/regulations/23/710.403)[28]. Since federal funds have been spent at one time or another on the entire state highway system, this requirement means that unless an exception is granted, the Agency of Transportation is obliged to charge a fee for

demonstration projects that do not have a clear transportation purpose such as parklets, pedestrian plazas or other public gathering spaces, in which transportation use is not the primary goal of the project. Exceptions to the requirement for charging fair market value are allowed if it can be shown that the proposed use is in the overall public interest based on social, environmental, or economic benefits (https://www.govregs.com/regulations/23/710.403 Applicants that are proposing a demonstration project that does not have a clear transportation purpose will be required to provide justification to VTrans for the exception based on at least one of these criteria which will be forwarded to FHWA for their review. Fair Market Value is as defined by State statute and/or State court decisions. Fair Market Value depends on many factors and will be determined by VTrans based on the size and scope of the project, which may require an appraisal. As a rough estimate, Fair Market Value costs could start at $100 per month but could increase significantly depending on project size and scope.

Safety. The project must be designed to ensure the safety of the public using the temporary gathering space, and those traveling through the site on foot, bike or in a motor vehicle. There must be adequate barriers between the people using the temporary gathering space and motor vehicles on the roadway (see the resource section for recommendations). The ability of drivers to see other vehicles, pedestrians, and cyclists travelling along or across the roadway should not be obstructed. Special consideration is necessary near intersections, driveways, alleys, transit stops, and other intersecting travel routes to ensure proper sight distances are provided so drivers can see oncoming pedestrians and vehicles. Changes in traffic patterns must be managed with signs, cones, and other traffic control devices so drivers are warned as they approach the project location and have clear direction on posted speed and how to maneuver through any modified roadway configurations. Signs and other traffic control devices, including markings, must by state law conform with the Manual on Uniform Traffic Control Devices.

Pedestrian Access. Projects that use all or a portion of or connect to an existing sidewalk should be accessible by all and include bypass routes for pedestrians that meet Americans with Disabilities Act (ADA) requirements for slope, width, ramps, and surface.

Parking. On-street parking is often a sensitive topic so care must be taken to involve the businesses and residences that utilize parking spaces that may be converted to a parklet, and it may be necessary to find alternate parking in other locations.

Public Transit Access. Consider if the project will interfere with transit routes and transit stops and if so, how the interference be managed. Replacement bus stops must comply with ADA requirements.

Delivery Truck or Trash/Recycling Access. Consider if the project makes deliveries or trash/recycling removal more difficult and if so, how deliveries or trash removal can be managed.

Emergency Access. Check with local police and fire departments to ensure they will have the access necessary to respond to emergencies.

Public Utilities, Signs, and Street Trees. Make sure the project does not interfere with public utilities, utility covers, valves, building standpipes, streetlights, traffic signage, street trees, etc.

Drainage. Ensure that the components of a parklet or public gathering space do not impede stormwater runoff from roads, alleys, parking lots, driveways, and sidewalks.

Installation and Removal. A safe work zone must be provided while the project is being installed and removed. The extent of the measures taken will depend on how long the installation may take, traffic volume, whether large trucks are frequent, speed and whether traffic flow will be affected during the installation and removal. On state highways, which generally have more traffic and trucks at higher speeds, a temporary traffic control plan may be required as part of the permit application described below. Municipalities should be consulted about their requirements.

Maintenance. All the elements and features of a parklet, public gathering place, and road closure need to be maintained in good condition so they will continue to function properly. Trash removal and cleaning must also be provided. Maintenance will be the responsibility of the Applicant.

Insurance. Approval of a temporary non-transportation use such as a public gathering space requires proof of general liability insurance that names the Agency of Transportation and, if deemed necessary by the Agency, the relevant town or municipality as additional insured. VTrans reserves the right to require additional insurance coverage the Agency deems necessary before granting a Project permit. Such additional insurance coverage may include injury to persons and property, construction installation and removal, engineering design, road and traffic hazards, theft, as well as alcohol, food, festival, and public events.

Considerations for Road Closures. Public outreach is particularly critical for road closures due to the significant change in travel patterns. Identify a detour route that can safely accommodate the volume of traffic and type of vehicles, including large trucks for deliveries or sanitation access. Consider whether public transit, school bus, and postal delivery routes will be impacted. Proper signage and traffic control devices should be utilized. Be prepared to address concerns raised by property owners along the detour route. Depending on the duration of the closure, it may be necessary to develop a plan to accommodate deliveries by truck, access for business employees and customers/visitors, and access for residents along the closed road. Emergency vehicle access must also be addressed.

APPENDIX 6: RESOURCES

The AARP Pop-Up Demonstration Tool Kit. The Tool Kit provides an introduction to the steps that should be followed under more normal circumstances to engage the public, plan and implement temporary "pop-up" projects within a roadway such as bike lanes, enhanced cross-walks, parklets and outdoor eating spaces. www.aarp.org/livable communities/tool kits resources/info 2016/pop up demonstration toolkit.html

Interim Design Strategies Chapter of the Urban Street Design Guide (National Association of City Transportation Officials)**.** This link provides additional details on the critical, recommended, and optional design elements of parklets, temporary street closures, and interim public plazas all of which could support outdoor eating and markets nacto.org/publication/urban-street-design-guide/interim-design-strategies/

Tactical Urbanists Guide to Materials Design (The Street Plans Collaborative). This document provides guidance on the specific types of materials that can be used to build the components of temporary bike lanes, parklets and other public spaces. tacticalurbanismguide.com/

Quick Build Design Material and Material Standards (Burlington Public Works). This document provides design standards with configuration and size recommendations and material standards for a Vermont municipality. Refer to the chapters on parklets (1D) and pedestrian plazas (1E) for the design outdoor eating areas. www.burlingtonvt.gov/sites/default/files/QUICK_BUILD%20GUIDE_0.pdf

Community Led Demonstration Projects Policy Guide (Burlington Public Works). Provides a thorough process and guide for community-led projects including lots of good examples and photos. www.burlingtonvt.gov/sites/default/files/CommunityLedDemonstrationProjectPolicyGuide2018.pdf

City of Montpelier Parklet Ordinance and Application: Montpelier's ordinance outlines an approval process that could serve as a checklist for other municipalities that do not have an ordinance or experience with approving parklets. The application has an excellent one-page layout and design requirements for a parklet. www.montpelier-vt.org/1009/Parklet-Information

Demonstration Project Implementation Guide (State of Minnesota Department of Transportation): Released in December 2019, MNDOT's Guidance is a resource to assist communities and agencies in implementing short-term, low-cost, temporary roadway projects to promote and advance Safe Routes to School and active transportation initiatives. www.dot.state.mn.us/saferoutes/documents/mndot-demonstration-project-implementation-guide-final.pdf

The NACTO Street for Pandemic Response. Helpful during the time of COVID-19. https://nacto.org/streets-for-pandemic-response-recovery/

The Gehl Institute. Resource on demonstration projects with graphics, photos, and diagrams – and examples of the "Test – Measure – Refine" approach. gehlinstitute.org/wp-content/uploads/2017/02/20160301_Planning-by-Doing_print-1.pdf

The Scenic Route: Getting Started with Creative Placemaking and Transportation (Transportation for America). http://creativeplacemaking.t4america.org/what-is-creative-placemaking/

Creative Placemaking (American Planning Association). www.planning.org/knowledgebase/creativeplacemaking/

Arts, Culture and Transportation: A Creative Placemaking. Field Scan by Smartgrowth America commissioned by ArtPlace America. smartgrowthamerica.org/resources/arts-culture-transportation-creative-placemaking-field-scan/

Exploring the intersection of Arts with Transportation (Artplace America). www.artplaceamerica.org/blog/exploring-intersection-arts-transportation

New York City Department of Transportation: Temporary Art Overview. www1.nyc.gov/html/dot/html/pedestrians/dotart-overview.shtml